#Liberator12k

Liberator12k.com

#Liberator12k Manual

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Unlicensed

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Introduction

Welcome to the #Liberator12k project.

This manual contains all the documentation for the weapons, ammunition, and tools in the project. The first few chapters are a build guide: starting with the Minuteman receiver then a CAFE12 break-action 12ga forend. This is a good starting point - a simple, safe, affordable firearm.

The Minuteman receiver is reusable in several other configurations similar to how you might swap AR15 uppers.

Supporting the Project

This has been an ambitious one-man pro-bono operation from the start. The project has cost tens of thousands of dollars and years of my time. Now we have a modular weapons platform, ammunition, and a suite of ECM tooling. I dedicate it to the public domain to secure self-defense for everyone, forever.

I didn't start this to get rich, but I wouldn't mind help. Research and Development (R&D) doesn't pay the bills, it only comes with them. Making new guns and ECM machines full-time is the dream - so if you want to show your appreciation and help continue this work there are a few ways you can help.

Liberator12k.com Store

The [Liberator12k.com Store](#) has complete hardware kits. The hardware can be sourced and fabricated yourself if you have the equipment.

I'm asking the community to support the project by buying directly, or from official vendors - check the website. It's all public domain, so I'm counting on you to do the "encouraging".

Manufacturing is not my field and my time would be better spent in R&D. Contact me via email jeff@liberator12k.com for vendor royalty agreements.

Donations

The [Donation page](#) on the website has info on how to donate with crypto and more.

I also have a [Patreon](#).

Code Contributions

The first code contributions were received June 2021, after the Alpha release. We were able to get the Metric version of the CAFE12 setup as a result. Code contributions are priceless, they just need to be public domain/Unlicensed. Bug reports and improvement requests on GitHub are also a great way to help out if you're not comfortable in OpenSCAD/Bash/Web.

Thank YOU

Prints are the greatest encouragement of all.

I also love [likes, shares, and comments](#) and even hatred - if you're a hater. It's fun doing this, but it's also nice to know other people appreciate it. Thank you so much for joining me on this journey.

Join the Community

Chat with me and other builders! **#liberator12k:matrix.org** on [Element](#)

International Builders

This is a US-based operation. I won't knowingly ship internationally or to a forwarder either, sorry!

There's a metric version but it's less well documented and the STLs are not included in the release. You can render them, but it's a bit manual.

Join the chat, there's other builders around the world who can help out.

How to Laugh at Danger

How do you laugh at danger? From behind a solid barrier - don't be stupid. Everyone's a tough guy until they take a piece of shrapnel to the beanbag.

Make at Your Own Risk

Any experienced printer can complete this build if they buy a kit from the Liberator12k.com Store. I have done my best to make sure the designs included here are safe to the user and bystanders, but ultimately you're the one building your own gun at your own risk.

WARNING

Pre-release designs *may not be safe*. Use extreme caution and two doses of common sense.

Bystander Care

It's one thing if you hurt yourself, it's another if you hurt someone else. The revolver will eject dangerous shot/wadding from the gap. Keep bystanders behind your back and maintain a safe "180 degree" line or I'll shake *their* hand for kicking your ass, because you were warned.

Basic Firearms Safety

1. All guns are always loaded.
2. Never point the gun at anything you are not willing to destroy.
3. Keep your finger off the trigger until your sights are on target and you have made the decision to shoot.
4. Be sure of your target and what is beyond it.

DIY Safety

DIY guns require special precautions and procedures that *are not fully documented here*.

- Use a secure test rig to hold the gun pointed in a **safe direction**.
- Stand behind a bulletproof barrier, such as several feet of dirt, concrete blocks, or very large tree.
- Ensure there is no direct path from the gun to anyone or anything of value.
- Use a long string to pull the trigger from behind cover.
- Test with at least 5 of the highest pressure cartridges you can find.

Gut Check

The power to create weapons and project lethal force hundreds of yards is now in your hands, use it responsibly.

Tools and Equipment

You can print and assemble an official kit with a couple wrenches and a butane torch.

Reaming holes in the prints is recommended. A drill bit will work, but reamers are a lot better. The cheap Chinese ones from Amazon are fine, buy a whole set.

"Close Enough"

All the parts are inch-standard (or all-metric), but there are "close enough" metric equivalents that are readily available even if you live in the US.

Sometimes it's easier and *much* cheaper to find certain parts in metric, that's especially true for little stainless pins. 3/32" is just under 2.5mm, and a #39 drill bit is just over 2.5mm.

You Can DIY Everything

You can fabricate all the required parts yourself - the documentation, jigs, and templates are included in the project files.

If you intend to DIY everything, you'll need more tools. There's not a lot of "machining" required - a couple tapped holes in flat plate and square rods. A cold saw or metal band saw are ideal for cutting the tubing and rods to size. If you're using Schedule 40 pipe, a pipe cutter is just the ticket.

I would strongly recommend a drill press if you're doing it all by yourself, but you *could get by* with some printed fixtures, jigs, and templates. A CNC waterjet/laser/plasma/mill will make life a lot easier later on, but with elbow grease and determination all things are possible.

Some designs may require more advanced tooling, see that specific documentation for more details. Notably, the revolver needs a lathe and TIG.

This Is Spiral Tap

Those bulk pack taps are called "hand taps" and they suck. If you scrap a part with a broken tap, you're already worse off than if you'd just bought a good tap in the first place.

Spend a few bucks on a Spiral Point or Spiral Flute tap. I like spiral point, myself. You only need one, but buy two just in case.

Metric and/or Inch

In general, here's how things go between inch and mm in this project:

Purpose	Inch	Metric
Small Pins	3/32"	2.5mm
Medium Pins	1/4"	6mm
Small Screws	#8-32	M4
Medium Screws	1/4"-20	M6
Large Screws	1/2"-13	12mm
Square Rods	1/4"	6mm

Drill Bits

- 5/16"
- #29
- #39 or 2.5mm

Reamers

- 11/64" - #8-32 Clearance
- 1/4"
- 5/16"
- 1/2"
- #39 or 2.5mm

Taps

- #8-32

How to Read the Manual

Complete assemblies are built from several reusable components. Each component in this manual has its own fabrication instructions. The component sub-chapters all follow the same pattern.

Preview

The component previewed in the assembly position. Refer to the figures depicting the complete assembly to orient yourself.

Description

A brief description of the component and its purpose.

Prints List

A table of parts to be printed. Includes the part name and a thumbnail view of the model in its print orientation.

Hardware List

A table of hardware required to complete the assembly.

Preparation

Any preparation steps for the component. Reminders and tips before you print.

Post-Processing

Details on how to finish the prints, hardware installation instructions, and any notes on sub-assemblies.

Technical Notes

Explains why certain decisions were made, what's important to consider when building or before altering the component.

May discuss alternate hardware.

Printing Guidelines

Unless otherwise stated, every print will use these settings. Most parts are good with a thick shell and low infill.

If a part needs to be printed solid, the build guide will have a note for you. Increase your infill to 100% for these parts.

Compatible Materials

PLA, PLA+, ABS, PETG, Nylon, PC, POM - almost anything. The strength is in the steel.

Check your parts for shrinkage and scale them appropriately in your slicer if necessary. I've been eSun PLA+ for reference size. I often scale ABS to 100.8%, but taller layers shrink more. Your mileage may vary.

Print Settings

These are the only vital Cura settings to override.

Shell

- Wall Thickness: 3mm
- Top/Bottom Thickness: 4mm
- Filter Out Tiny Gaps: Yes *(reduces large-nozzle drool)*
- Z Seam Alignment: Sharpest Corner

Support

- Generate Support: Yes
- Support Structure: Tree
- Support XY Distance: 1.3mm

About Layer Heights

0.2mm layers are a good balance between speed and quality.

0.1mm layers will look 50% better and take twice as long.

You can *probably* print any of the large parts with layers >0.2mm high. This is especially true with larger nozzles. You should expect the tolerances to change because the material shrinkage will be greater.

Smaller parts, notably the small Fire Control Group parts should be printed with standard layer heights. Small parts usually have tighter tolerance requirements and taller layers may cause binding. 0.1mm layers will only help here.

#FatNozzleGang

All print times are given for 0.4mm nozzles at 0.2mm layer height.

The Fire Control Group (FCG) will benefit most from smaller nozzles, print these parts first and then go ahead and swap to a 1.0 (or something in between).

Increasing nozzle diameter yields exponential speed gains. Since you gain so much speed from a larger nozzle, you can slow down your print speed and use lower layer heights for better print quality - and *still* be faster than stock.

Diameter	Area	Time Factor	Effective Time
0.4mm	0.13mm^2	1	1 day
1.0mm	0.79mm^2	1/6	4 hours

Almost everything can be printed with a 1.5mm nozzle; 0.4mm works too - it just takes a lot longer.

But Seriously

You can buy a multipack of nozzles on Amazon Prime for $15. A nozzle swap takes less than 5 minutes and will save you days of machine time.

There's a few tricks to it. Watch some videos about how to do the swap on your machine.
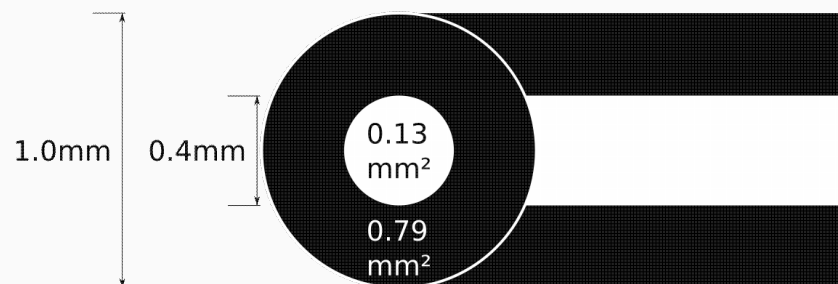
1: The "Minuteman" Receiver

Figure 1: The Minuteman Receiver

To get very technical this is a *Large Frame Receiver with a Stock*. That's a mouthful, so I call it the [Minuteman](#). It works with most of the designs in the project. There are other ways to configure the receiver, but we'll save that for a future build.

After the receiver is assembled, first-time builders can continue on to building a CAFE12 forend. [Chapter 2: Forends - Choose Your Weapon](#) covers the different forend configurations in detail, but for now lets focus on the receiver.

Components

Each of the following components has its own subchapter. Familiarize yourself with figures 1-5, this is your map. You can complete these components in any order and assemble them all at the end.

- Large Framed Receiver
- Fire Control Group (FCG)
- Lower
- Stock

Large Framed Receiver

This is "the gun" in the US. I can sell you everything **except** one of these. It's just one marathon print - almost two days at 0.4mm or just 20h at 1.0mm.

Figure 2: Large Framed Receiver

Fire Control Group

Abbreviated "FCG" - the most involved of all the components. Literally all the moving parts are here.

Figure 3: Fire Control Group

Lower
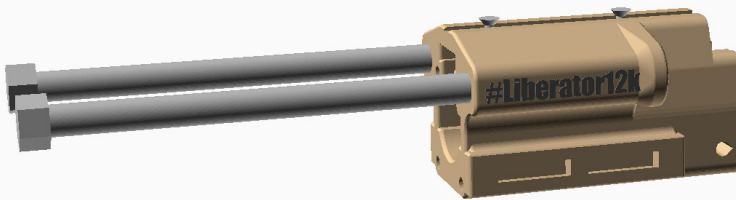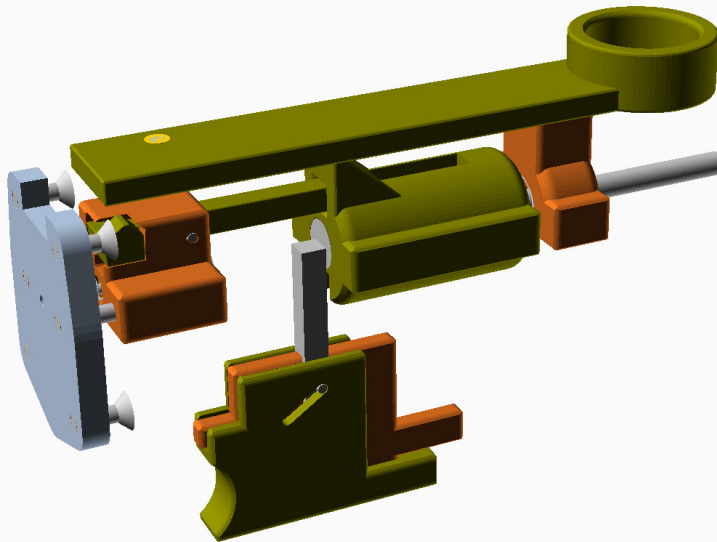
The grip for the gun, also holds the trigger from the FCG.

Figure 4: Lower

Stock

A spacer and buttpad for your receiver. Another of the major prints that will benefit greatly from a large nozzle.
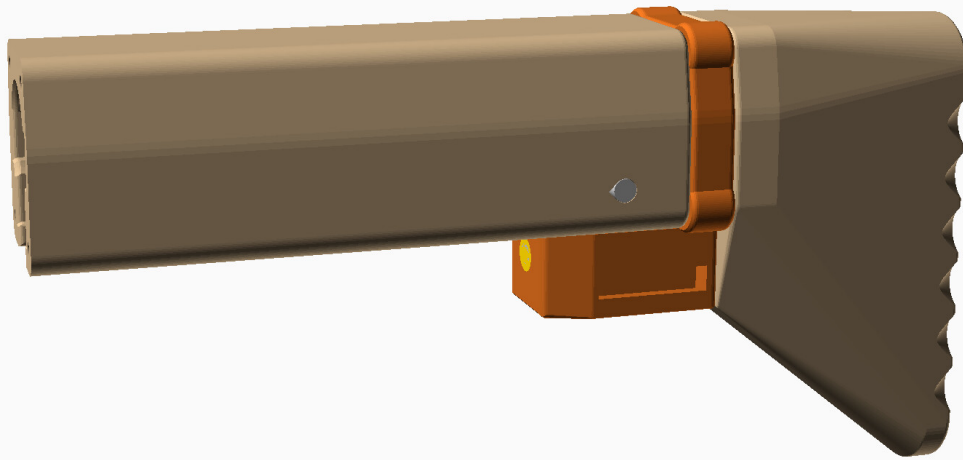
Figure 5: Stock

Preparing to Print

Pick Your Colors

Two-tone is canon - that means it's official.

Spool 1: Base Color

We'll be using a full 1kg spool for the base color. Most of the "big" parts will be printed with this filament.

Spool 2: Accent Color

The accent prints will take about 500g of plastic, or half a typical spool. Accent parts are often smaller and bear some kind of load, so if you want to splurge - do it here.

Spool 3: TPU For Your Buttpad

The buttpad was designed to be printed with "90D" TPU filament. 90D TPU is a semi-flexible filament, and takes some of the sting out of the shot because it's rubbery. The 90D stuff will run in a stock Ender 3. Lower than 90D is not advised as it requires printer modifications not documented here.

You may not find TPU that matches your base color, keep that in mind when you choose your colors. You can print the buttpad in any filament, but it may be more punishing than necessary.

Configure Cura and Preheat

Next we need to print the receiver parts. The STL files are located in the Liberator12k zip file where you found this PDF or from Liberator12k.com.

Configure Cura according to the Printing Guidelines in the Introduction and slice each part for printing.

The models are already in the proper orientation for printing, so leave the bottom side down. You are free to position them on the build plate however you like.

Printing one part at a time will produce higher quality prints, but it will take longer. You should know your machine.

Minuteman Receiver Complete Print List

The table below can be used as a checklist. **Print this page** then refer to the sub-chapters for complete build instructions.

The STL files are located in the Liberator12k.zip file's `Receiver/` directory. For instance: `Receiver/FCG/Prints/FCG_Hammer.stl`

Done	Color	Print Settings	Part	Filament	Time
[_]	Accent	See Below	FCG_FiringPinCollar	1g	0h48m
[_]	Accent	See Below	FCG_Trigger	14g	1h55m
[_]	Accent	See Below	FCG_Housing	16g	2h12m
[_]	Accent	See Below	FCG_Disconnector	4g	29m
[_]	Accent	See Below	FCG_Hammer	34g	4h37m
[_]	Accent	See Below	FCG_HammerTail	13g	1h38m
[_]	Accent	Standard	FCG_TriggerMiddle	11g	1h23m
[_]	Accent	Standard	FCG_ChargingHandle	34g	4h07m
[_]	Accent	Standard	Lower_MountRear	23g	2h21m
[_]	Accent	Standard	Lower_MountFront	22g	2h09m
[_]	Accent	Standard	Lower_Middle	68g	5h20m
[_]	Base	Standard	Lower_Left	66g	5h52m
[_]	Base	Standard	Lower_Right	66g	5h52m
[_]	Base	Standard	Frame_Receiver	272g	1d18h01m
[_]	Base	Standard	Stock	243g	1d08h52m
[_]	Base	Standard	Stock_Backplate	95g	12h05m
[_]	TPU	See Below	Stock_Buttpad	181g	19h31m
Totals					
Base Color				?g	?d?h?m
Accent Color				?g	?d?h?m

Standard Print Settings

Review the [Printing Guidelines](#) from the Introduction. Use the right accent or base color!

FCG Print Settings

These small FCG parts have special print settings:

- Infill: 100%
- Layer Height: 0.1mm

Buttpad Print Settings

I have printed Amazon-brand TPU 95 on my stock Ender 3, just select the proper material in Cura. Be sure to **reset the material** before slicing other parts. You can use other plastics, but TPU is softer and will absorb some recoil.

Just select *Generic TPU* for the material in Cura.

Bill of Materials

Full hardware list for the Minuteman receiver

Component	Purpose	Part	Quantity
Receiver	Frame Bolt	1/2-13x10 Hex Bolt	2
Receiver	Frame Nut	1/2-13 Hex Nut	4
Receiver	Rail Nuts	#8-32 Heatset Nut (Long)	2
Receiver	Tension Bolt	#8-32x12 Threaded Rod	4
Receiver	Tension Bolt Nut	#8-32 Heatset Nut (Long)	4
Receiver	Tension Bolt Washer	#8-32 Washer	4
Receiver	Tension Bolt Acorn Nut	#8-32 Acorn Nut	4
Lower	Lower Nut	#8-32 Heatset Nut (Short)	5
Lower	Lower Bolt	#8-32x1.25 SS Flat-Head Bolt	5
Lower	Lower Pin	Universal Clevis Pin 1/4x2"	1
Lower	Lower Pin Retaining Pin	6Dx2" Box Nail	1
Stock	Stock Pin	Universal Clevis Pin 1/4x2"	1
Stock	Stock Pin Retaining Pin	6Dx2" **Box** Nail	1
Stock	Stock Backplate Nut	1/4-20 Heatset Nut (Short)	2
Stock	Stock Buttpad Bolt	1/4-20x3-1/2" Flat Head Screw	2
FCG	Charging Handle Bolt	#8-32x1/4" SS Socket Cap Bolt	1
FCG	Charging Handle Nut	#8-32 Short Heatset Nut	1
FCG	Disconnector Pivot Pin	3/32"x3/4" Steel Pin	1
FCG	Disconnector Spring	0.22" OD 0.625" Long (0.02" wire)	1
FCG	Firing Pin	6Dx2" Box Nail, cut flush to 1.54" OAL	1
FCG	Firing Pin Spring	0.22" OD 0.625" Long (0.02" wire)	1
FCG	Hammer Bolt	1/4-20x5" Flat Head Bolt	1
FCG	Hammer Bolt Sleeve	9/32"x3.5" K&S Brass Tube	1
FCG	Hammer Cap Nut	1/4-20" Acorn Nut	1
FCG	Hammer Nut	1/4-20" Heatset Nut (Short)	1
FCG	Hammer Spring	0.052x0.625x3" ~6.3lbs/in Compression Spring	1
FCG	Recoil Plate (L12k)	#Liberator12k Official Alloy Recoil Plate	1*
FCG	Recoil Plate (DIY)	2x2-3/8x3/8" Mild Steel Plate	1*
FCG	Recoil Plate Center Bolts	#8-32x1.5 SS Flat-Head Bolt	2
FCG	Recoil Plate Side Bolts	#8-32x0.5 SS Flat-Head Bolt	4
FCG	Sear	1/4"x1.67" Steel Square Rod	1
FCG	Sear Pin	3/32"x1/2" Music Wire	1
FCG	Sear Return Spring	0.02" Wire, 0.25"x1.25"	1

* Pick one, these parts have alternates.

Metric BOM

Full hardware list for the Minuteman receiver.

Component	Purpose	Part	Quantity
Receiver	Frame Bolt	**DIN931** M12x260 Hex Head Bolt	2
Receiver	Rail Nuts	**DIN934** M12 Hex Nut	4
Receiver	Tension Bolt	**DIN795** M4x305 Threaded Rod	4
Receiver	Tension Bolt Nut	M4 Heatset Nut (**M4xD7xL8**)	4
Receiver	Tension Bolt Washer	**DIN125** M4 Washer	4
Receiver	Tension Bolt Acorn Nut	**DIN1587** M4 Domed Hex Cap Nut	4
Lower	Lower Nut	M4 Heatset Nut (**M4xD7xL5**)	5
Lower	Lower Bolt	**DIN7991** M4x35 A2/A4 Countersunk Bolt	5
Lower	Lower Pin	None	1
Lower	Lower Pin Retaining Pin	2.5x50mm Nail	1
Stock	Stock Pin	None	1
Stock	Stock Pin Retaining Pin	2.5x50mm Nail	1
Stock	Stock Backplate Nut	M6 Heatset Nut (**M6xD9.5xL6**)	2
Stock	Stock Buttpad Bolt	**DIN7991** M6x90 Countersunk Bolt	2
FCG	Charging Handle Bolt	TODO: **DIN????** M4x1/4" SS Socket Cap Bolt	1
FCG	Charging Handle Nut	TODO: M4 Heatset	1
FCG	Disconnector Pivot Pin	2.5x18mm Stainless Steel Pin	1
FCG	Disconnector Spring	0.5mm Wire, 6mm OD, 20mm Length Spring (Cut to 16mm)	1
FCG	Firing Pin	2.5x50mm Nail, , cut flush to 40mm OAL	1
FCG	Firing Pin Spring	0.5mm Wire, 6mm OD, 20mm Length Spring (Cut to 16mm)	1
FCG	Hammer Bolt	**DIN7991** M6x130 Countersunk Bolt	1
FCG	Hammer Bolt Sleeve	6mm ID Sleeve for *Hammer Bolt*	1
FCG	Hammer Cap Nut	**DIN1587** M6 Domed Hex Cap Nut	1
FCG	Hammer Nut	M6 Heatset Nut (**M6xD9.5xL6**)	1
FCG	Hammer Spring	1.4mm Wire, 16mm OD, 80mm Length Spring	1
FCG	Recoil Plate (L12k)	None	1*
FCG	Recoil Plate (DIY)	6mm Thickness 50.80x60.325mm AISI 4140 Steel Plate	1*
FCG	Recoil Plate Center Bolts	**DIN7991** M4x40 A2/A4 Countersunk Bolt	2
FCG	Recoil Plate Side Bolts	**DIN7991** M4x40 A2/A4 Countersunk Bolt	4
FCG	Sear	6mm x 42.42mm Steel Square Rod	1
FCG	Sear Pin	None	1
FCG	Sear Return Spring	0.5mm Wire, 6.5mm OD, 35mm Length Spring	1

* Pick one, these parts have alternates.

1.1: Large Frame Receiver

This is the core of the gun. In the United States it's the receiver. Legally-speaking it's a gun. If you need to dispose of it, burn it to ash. Don't make one for a stranger - that's a Fed, especially if they're offering money in exchange. Screenshot it and ridicule them online.

The *Large Frame Receiver* is the same as the standard *Receiver*, but with two large (1/2") bolts support heavy forends.

Prints

STL Files Location: `Receiver/Frame/Prints/`

Frame_Receiver

Vitamins - Imperial

Purpose	Part	Quantity
Frame Bolt	1/2-13x10 Hex Bolt	2
Frame Nut	1/2-13 Hex Nut	4
Rail Nuts	#8-32 Heatset Nut (Long)	2
Tension Bolt	#8-32x12 Threaded Rod	4
Tension Bolt Nut	#8-32 Heatset Nut (Long)	4
Tension Bolt Washer	#8-32 Washer	4
Tension Bolt Acorn Nut	#8-32 Acorn Nut	4

Vitamins - Metric

Purpose	Part	Quantity
Frame Bolt	**DIN931** M12x260 Hex Head Bolt	2
Frame Nut	**DIN934** M12 Hex Nut	4
Rail Nuts	M4 Heatset Nut (TODO: Long)	2
Tension Bolt	**DIN795** M4x305 Threaded Rod	4
Tension Bolt Nut	M4 Heatset Nut (**M4xD7xL8**)	4
Tension Bolt Washer	**DIN125** M4 Washer	4
Tension Bolt Acorn Nut	**DIN1587** M4 Domed Hex Cap Nut	4

Post-Processing

Install Tension Nuts

These four threaded inserts are installed in the front of the receiver.

Insert a threaded rod through the receiver from the rear and screw on the threaded insert while you install the threaded inserts, this will help keep them aligned.

Install Rail Nuts

Insert a threaded rod through the receiver from the top and screw on the threaded insert while you install the insert.
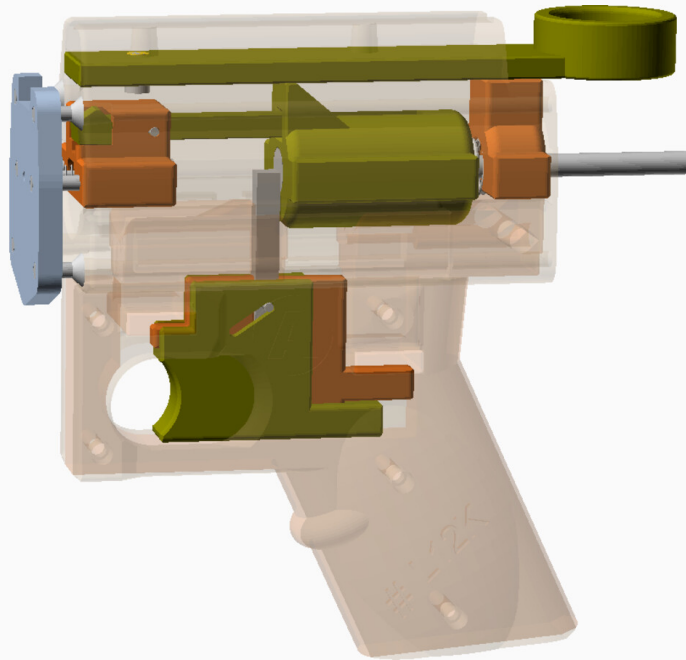
Epoxy Acorn Nuts

The acorn nuts need to be permanently secured to the threaded rods so you can actually unscrew them from the back. Red threadlocker or 2-part epoxy are both good options.

File/Sand Internal Surfaces

The smoother these surfaces, the nicer the gun will run. Mostly optional, print at 0.1mm for better overall quality.

1.2: Fire Control Group

A fire control group for fixed recoil plate designs. Trigger is based on [The Unknown Cat's](#) design.

The sear is a square rod with a cross-pin near the bottom. An inclined slot in each side of the trigger forces the cross-pin and sear downward when the trigger is pulled. A central support tab keeps the sear and its return spring (not pictured) oriented vertically.
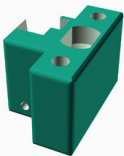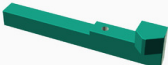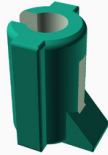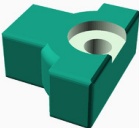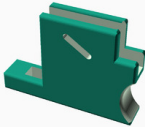
A compression spring located below the sear pushes the sear into the upward position, driving the trigger forward via the sear pin.

A linear hammer strikes the firing pin, which protrudes through the recoil plate.

The FCG is designed to support slamfire via the optional disconnector.

Prints

STL Files Location: `Receiver/FCG/Prints/`

FCG_Housing	FCG_Disconnector	FCG_FiringPinCollar	FCG_ChargingHandle
FCG_Hammer	**FCG_HammerTail**	**FCG_TriggerMiddle**	**FCG_Trigger**

Vitamins - Imperial

Purpose	Part	Quantity
Charging Handle Bolt	#8-32x1/4" SS Socket Cap Bolt	1
Charging Handle Nut	#8-32 Short Heatset Nut	1
Disconnector Pivot Pin	3/32"x3/4" Steel Pin	1
Disconnector Spring	0.22" OD 0.625" Long (0.02" wire)	1
Firing Pin	6Dx2" Box Nail, cut flush to 1.54" OAL	1
Firing Pin Spring	0.22" OD 0.625" Long (0.02" wire)	1
Hammer Bolt	1/4-20x5" Flat Head Bolt	1
Hammer Bolt Sleeve	9/32"x3.5" K&S Brass Tube	1
Hammer Cap Nut	1/4-20" Acorn Nut	1
Hammer Nut	1/4-20" Heatset Nut (Short)	1
Hammer Spring	0.052x0.625x3" ~6.3lbs/in Compression Spring	1
Recoil Plate (L12k)	#Liberator12k Official Alloy Recoil Plate	1*
Recoil Plate (DIY)	2x2-3/8x3/8" Mild Steel Plate	1*
Recoil Plate Center Bolts	#8-32x1.5 SS Flat-Head Bolt	2
Recoil Plate Side Bolts	#8-32x0.5 SS Flat-Head Bolt	4
Sear	1/4"x1.67" Steel Square Rod	1
Sear Pin	3/32"x1/2" Music Wire	1
Sear Return Spring	0.02" Wire, 0.25"x1.25"	1

* Pick one, these parts have alternates.

Vitamins - Metric

Purpose	Part	Quantity
Charging Handle Bolt	TODO: **DIN????** M4x1/4" SS Socket Cap Bolt	1
Charging Handle Nut	TODO: M4 Heatset	1
Disconnector Pivot Pin	2.5x18mm Stainless Steel Pin	1
Disconnector Spring	0.5mm Wire, 6mm OD, 20mm Length Spring (Cut to 16mm)	1
Firing Pin	2.5x50mm Nail, , cut flush to 40mm OAL	1
Firing Pin Spring	0.5mm Wire, 6mm OD, 20mm Length Spring (Cut to 16mm)	1
Hammer Bolt	**DIN7991** M6x130 Countersunk Bolt	1
Hammer Bolt Sleeve	6mm ID Sleeve for *Hammer Bolt*	1
Hammer Cap Nut	**DIN1587** M6 Domed Hex Cap Nut	1
Hammer Nut	M6 Heatset Nut (**M6xD9.5xL6**)	1
Hammer Spring	1.4mm Wire, 16mm OD, 80mm Length Spring	1
Recoil Plate (L12k)	None	1*
Recoil Plate (DIY)	6mm Thickness 50.80x60.325mm AISI 4140 Steel Plate	1*
Recoil Plate Center Bolts	**DIN7991** M4x40 A2/A4 Countersunk Bolt	2
Recoil Plate Side Bolts	**DIN7991** M4x40 A2/A4 Countersunk Bolt	4
Sear	6mm x 42.42mm Steel Square Rod	1
Sear Pin	None	1
Sear Return Spring	0.5mm Wire, 6.5mm OD, 35mm Length Spring	1

* Pick one, these parts have alternates.

Post-Processing

Trigger Subassembly

1. Insert the trigger middle portion into the glued sides. It should slide freely.
2. Drop the sear return spring into the trigger middle.
3. Insert the sear and and compress the return spring until the pin hole is visible through the side slot.
4. Insert cross-pin through the inclined slot through the sear. It should lay flush or just below the surface of the trigger sides.
5. Verify the trigger moves freely.
6. Lube the cross-pin hole, both sides of the slot, front and rear of the sear.
7. Squeezing the trigger should now feel silky smooth.

Hammer Subassembly

Install the 1/4-20" heatset nut into the rear of the hammer (the portion with the large pocket) and wait to cool.

Install the hammer bolt and slip the hammer bolt sleeve over the extended portion. Add the hammer spring, hammer tail. Finally, install the hammer cap nut with threadlocker.

Firing Pin Subassembly

Prepare the firing pin by cutting the 6D box nail to 1.535" in length. Cut generously, file flush and gently round the outer edge of the end. Sand smooth with 220 grit or finer.

Ream the firing pin collar hole to 2.5mm and install into the firing pin collar from the rear, the flared portion is forward.

Install the firing pin spring into the flared portion of the firing pin collar.

Charging Handle

Install the #8-32 heatset nut into the charging handle and allow to cool.

Before installing the #8-32x1/4" Socket Cap Screw, chuck it up in a drill and file/sand the side of the bolt cap smooth. Then install the bolt into the charging handle from the underside.

DIY Hardware

If you don't want to purchase a kit from the Liberator12k.com Store, you can make your own. It won't be faster or cheaper, but all the information you need is freely available and the hardware is available at your local hardware store or metal supplier.

Sear

- 1/8" hole 5/16" from the bottom for the sear cross-pin
- This hole should be drilled under-size and reamed if possible.
- Filing any burrs is Good Enough

Sear Cross-Pin

- 3/32" Music Wire
- 1/2" long
- Ends should be slightly rounded and smooth.

Recoil Plate

Required Tool	Metric Alternative
#8-32 Tap	M4 Tap
#29 Drill Bit	3.5mm Drill Bit
5/16" Drill Bit	8mm Drill Bit
2.5mm Drill Bit	N/A

Instructions

The full How To is incomplete, but at a high level:

1. Print a Recoil Plate template (TODO).
2. Mark the holes with a punch and drill to specified size.
3. Tap the holes for the tension rods and FCG Housing holes with #8-32.

Technical Notes

Recoil Plate

2" wide (fits between the frame bolts) and 2.375" high, 1/4" thick. This covers the tension rods and provides room for the revolver spindle pin.

Firing Pin

When the hammer is in the full forward position, the back of the *Firing Pin* will be flush with the back of the *FCG Housing*, meaning anything beyond 1.5" will stick out of front of the recoil plate.

However... nails have a pointed tip - and you have to cut that off.. plus a little deformed metal rear of the tip. So plan for some loss. A bare minimum of, 40mm worth of nail to work with.

The nail is intended to be glued into the collar, and the collar is indexed with wide flats, so it can't rotate - making it rimfire-friendly.

Why won't my firing pin fit? It's a 6D, but it's got a 2.75mm shaft

You've got "Common" nails. You need 6D "Box" nails - they're thinner. Sorry :) A 6D Box nail has a 2.4mm shaft.

Hammer Spring

There's some flexibility here. "If it fits, I sits." >5/16" ID and < 5/8" OD.

You shouldn't need a stupid strong spring - 10lb is probably too much, but it shouldn't ever be an issue for the FCG. The hammer tail would probably fail first, or the charging handle bolt. If you can't charge it by hand, it's too strong.

Trigger Pull

The coefficient of friction for lubed steel/steel is ~0.16, the trigger has a mechanical advantage of 1.5. Give or take, trigger pull is 10% of hammer spring.

Plastic-on-plastic friction probably contributes much more to trigger pull than the hammer spring does.

For improved performance:

1. Polish and lube the sear surfaces and pin.
2. Sand/polish the friction surfaces of the trigger sides.
3. Use a needle file to clean up the inclined slot in the Trigger.
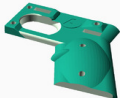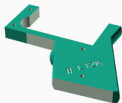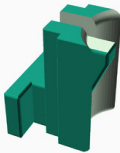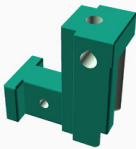4. Sand/polish slot smooth.

1.3: Lower Receiver

Provides a grip, trigger guard, means of attachment via T-lugs. The printed parts are sandwiched and bolted together. The mount is sandwiched in with the lower side plates. The T-lug tabs secure the mount into the lower. The lower mount couples the lower to the receiver.

Prints

STL Files Location: `Receiver/Lower/Prints/`

Lower_Left	Lower_Middle	Lower_Right
Lower_MountFront	**Lower_MountRear**	

Vitamins - Imperial

Purpose	Part	Quantity
Lower Nut	#8-32 Heatset Nut (Short)	5
Lower Bolt	#8-32x1.25 SS Flat-Head Bolt	5
Lower Pin	Universal Clevis Pin 1/4x2"	1
Lower Pin Retaining Pin	6Dx2" Box Nail	1

Vitamins - Metric

Purpose	Part	Quantity
Lower Nut	M4 Heatset Nut (**M4xD7xL5**)	5
Lower Bolt	**DIN7991** M4x35 A2/A4 Countersunk Bolt	5
Lower Pin	None	1
Lower Pin Retaining Pin	2.5x50mm Nail	1

Post-Processing

Install Heatset Nuts

Install the heatset nuts into Lower_Left.

Pin Retainer

Locate the small hole in the Lower_MountRear. Insert Lower Pin Retaining Pin, press it into the mount until flush.

Subassembly

Requires the trigger from the [Fire Control Group](#).

1. Lay Lower_Left flat-side up.
2. Install Lower_MountFront - the extended portion points left.
3. Install Lower_MountRear - the extended portion points left.
4. Tuck the trigger up between the two LowerMounts.
5. Add Lower_Middle to the stack.
6. Add Lower_Right, it should seat on the LowerMount tabs.
7. Gently compress the stack by hand.

If there are large gaps in the stack, light tapping with a rubber mallet should close them. If you need a lot of force, there's probably something binding. Figure out what's bulging, and file it down. Needle files are great for this.

Technical Notes

Trigger Pull

File, sand smooth, and lube any friction surfaces that are dragging.
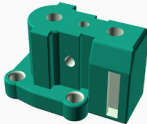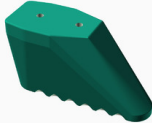
1.4: Stock

A stock and buttpad designed to fit the standard receiver.

Four Tension Rods secure the stock to the Receiver.

A Stock Pin keeps the Stock_Backplate on the stock - this secures the guts of the Receiver in place. Remove to field strip the gun.

Prints

STL Files Location: `Receiver/Stock/Prints/`

Stock	Stock_Backplate	Stock_Buttpad

Vitamins - Imperial

Purpose	Part	Quantity
Stock Pin	Universal Clevis Pin 1/4x2"	1
Stock Pin Retaining Pin	6Dx2" **Box** Nail	1
Stock Backplate Nut	1/4-20 Heatset Nut (Short)	2
Stock Buttpad Bolt	1/4-20x3-1/2" Flat Head Screw	2

Vitamins - Metric

Purpose	Part	Quantity
Stock Pin	None	1
Stock Pin Retaining Pin	2.5x50mm Nail	1
Stock Backplate Nut	M6 Heatset Nut (**M6xD9.5xL6**)	2
Stock Buttpad Bolt	**DIN7991** M6x90 Countersunk Bolt	2

Post-Processing

Stock Backplate

Insert the *Stock Pin Retaining Pin* into the back of the *Stock_Backplate*.

Buttstock

Insert the *Stock Buttpad Bolts* through the *Stock_Buttpad*, and screw into the back of the *Stock Latch Subassembly*.

Technical Notes

Stock Pin

The Universal Clevis Pin is simply an off-the-shelf item that works for the job. A better, purpose-made pin can be easily made: 2x1/4" round rod. Cut a small groove cut around the center to act as a detent for the *Stock Pin Retaining Pin*. This secures the pin in place.

Stock Pin Retaining Pin

I've used 3/32" music wire, 6D box nails, 2.5mm stainless wire. It just needs to be about that size and about 2" long.

Drill out the hole in the *Stock_Backplate* to size, and hammer in your pin. Add superglue to the last bit before you hammer it all the way in.

2: Forends - Choose Your Weapon

Your First Build

Your first build should be a CAFE12 break-action 12ga. Even if there's another design that caught your eye: The CAFE12 is training wheels for the project and a great way to kick the tires on your receiver build.

CAFE12 or CAFE12+

The **Plus** version uses 4130 tube instead of Schedule 40 pipe. 3/4" Schedule 40 pipes and 4130 tube are different sizes, so the CAFE12 and CAFE12+ forends do not share parts.

The CAFE12 will be slightly cheaper, and you can easily source the parts from your local hardware stores. The pipe seam must be removed from the barrel, a large rat tail or half-round file works nicely. This may take some WORK. Pipe seams suck and are sketchy.

The CAFE12+'s normalized 4130 tube is much stronger **and** seamless. You'll have to purchase it from a metals supplier. Since it's stronger, machining is harder as well - don't use a pipe cutter on 4130 tubing.

Using an Official Liberator12k.com Store Kit? Go to 2a: CAFE12+ Forend

Planning to fabricate all your own parts? Go to 2b: CAFE12 Forend

The Models

This list includes models that don't fit into the Universal Receiver system, like BARBB. Most of these forends can be mounted to the universal receiver without modification.

Model	Class	Status
CAFE12+	Top Break	Alpha
CAFE12	Top Break	Alpha
FP37	Top Break	Alpha
ZZR 6x12	Zig Zag Revolver	Prototype
BARBB	Bolt-Action Bullpup	Prototype

Just a reminder, the Liberator12k.com Store has complete parts kits if you don't want to source your own hardware. Your support is greatly appreciated, thank you!

CAFE12 Plus

This upgraded kit uses 4130 tubing instead of Schedule 40 pipe.

Jump to 2a: CAFE12+ Forend

CAFE12 Base

A CAFE12 break-action shotgun that uses Schedule 40 pipe instead of 4130 tube. [2b: CAFE12 Forend](#) has the full details about what pipes you need to buy and tips for how to prepare them.

FP37

The FP37 was mostly "For Fun" and because it was an easy demonstration of how flexible the #Liberator12k platform can be.

[2c: FP37 Forend](#) will put a flare launcher in your hands.

ZZR6x12

Still a work-in-progress, but there's enough here that you could run a set of prints. No guarantees that any of it'll work or even go together properly.

2a: CAFE12+ Forend

A 12ga [Top Break](#) variant inspired by the venerable pipe shotgun.

The gun I set out to make when I started the project. Since it's built with #Liberator12k platform components it features:

- Optics-ready Picatinny Rail
- QD Sling
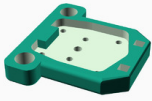- Modular components
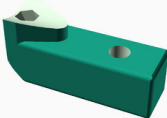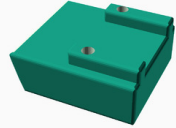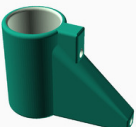- Ambidextrous

The Easy Way

You can buy a kit from the [#Liberator12k store](#) for the CAFE12+, which includes everything you need for the better, faster, stronger 4130 alloy steel tubing version of the gun.

CAFE12 or CAFE2+

This is the documentation for the **Plus Version** using 4130 tube instead of Schedule 40 pipe. 3/4" Schedule 40 pipes and 4130 tube are different sizes, so the CAFE12 and CAFE12+ forends do not share parts. See [Chapter 2b: CAFE12 Forend](#) if you're sourcing your own barrel from pipe.

Prints

STL Files Location: `Forend/TopBreak_CAFE12+/Prints/`

ReceiverFront	Forend	BarrelCollar	Extractor
LatchTab	**Cluster**	**Vertical Foregrip**	**Sightpost**

Part	Filament Used	Print Time @ 0.4mm
ReceiverFront	57g	07h17m
Forend	189g	1d01h10m
BarrelCollar	114g	15h00m
Extractor	14g	1h55m
LatchBlock	114g	15h00m
Cluster	?g	?h?m
Vertical Foregrip	?g	?h?m
Total	**420g**	**2d08h09m**

Vitamins

Purpose	Part	Quantity
Extractor Bit	#2 flat 1/4" Hex Bit	1
Extractor Retainer	1/4"x1" Dowel Pin	1
Extractor Spring	TODO: 12lb 5/6" OD 2.75" Long	1
Latch Bars	1/4"x3" Square Rod	2
Latch Screws	#8-32x3/4" Flat Head Screw	2
Latch Springs	(same as sear spring)	2
Cluster Bolts	#8-32x1/2" Flat Head Screw	2
Foregrip Bolt	1/4"-20x3.5" Flat Head Screw	1
Foregrip Bolt Nut	1/4"-20 Heatset Insert	1
Barrel Collar Bolts	#8-32x1/2" Socket Head Screw	1
Barrel Sleeve	1.25"x0.125" 4130 Tubing 8" Long	1
Barrel	1"x0.093" 4130 Tubing 18.5" Long	1

Metric BOM

TODO

Post-Processing

If you purchased a kit, all the machining is already done for you - proceed to the subassemblies. To DIY all the parts yourself, read the Machining section and then come back here.

Subassemblies

Foregrip Cluster

Install the *Foregrip Bolt Nut* on the inside of the *Cluster*.

Barrel Group

1. Insert the *Barrel Sleeve* into the rear of the *Cluster* and line up the threaded holes on top.
2. Insert the *Barrel* into the front of the *Cluster*. Extractor cutout-side first.
3. Headspace on a dummy cartridge. The *Barrel Sleeve* should be flush and the *Barrel* slightly recessed.
4. Install the *Cluster Bolts*.
5. Install the *Foregrip Bolt* into the *Foregrip* and screw into the *Cluster* from the bottom.

Extractor

1. Insert the *Extractor Bit* into the *Extractor*, shim it if loose.
2. File/sand the extractor's top/bottom/sides smooth.
3. Drop the *Extractor Spring* into the *Barrel Collar*'s large rectangular hole.
4. Insert the *Extractor* into the hole.
5. With the *Extractor* pressed inwards, install the *Extractor Retainer*. You can access the top of the extractor from the large round hole for the barrel.

Latch

1. Insert the *Latch Springs* into the small square holes in the *Barrel Collar*.
2. Insert the *Latch Bars* into the square holes in the *Barrel Collar*.
3. Ensure the *Latch Bars* slide smoothly - file the holes if necessary.
4. Insert the two rectangular tabs of the *Latch* into the underside of the *Barrel Collar
5. Depress the *Latch Bars* while you install the *Latch Screws*.
6. Lube the slots and bars.

Forend

1. Rotate the *Barrel Collar* up into the *Forend*.
2. Holding the *Barrel Collar*, install the *Barrel Group* from the front.
3. Secure the *Barrel Collar Bolts*

Machining

Drill and Tap the Barrel Sleeve

DO NOT DRILL THE BARREL

A fixture located at `Forend/TopBreak_CAFE12+/Fixtures/BarrelSleeveFixture.stl` can be used to help you drill and tap your own *Barrel Sleeve*.

Using a #8-32 tap, thread the hole in the middle of the fixture. Use a 1.5" #8-32 to hold the *Barrel Sleeve* in place, like a set screw. Now you're ready to drill and tap the holes.

DO NOT DRILL THE BARREL

Drill the holes out with a #29 wire bit, start out very slowly so the drill bit doesn't walk on the round surface. Be sure to clear your chips early and often, use lots of cutting fluid.

Tip: Use a small end mill to put a flat on it first, if you have one. This will prevent the drill bit from wandering.

Once you've finished drilling and tapping, ensure the inside of the *Barrel Sleeve* is clear of chips and debris.

Cut the Extractor Slot

File out a 1/4" wide slot in the 6-O'clock position for the extractor bit. Aim for a 45 degree angle 1/8" deep.

File this same notch in a matching location on the barrel. This is easiest to do with the *Barrel Sleeve* installed on the barrel so you can do both at once. A large square-edged file makes quick work of this operation but you can also use a Dremel or angle grinder (and a lot of finesse).

Tip: Use a vise.

Drill and Tap the Latch Bars

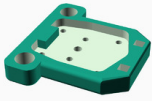Drill and tap (#8-32) the *Latch Bars* 1" from the end
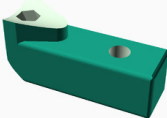
2b: CAFE12 Forend

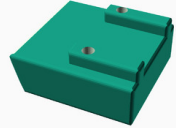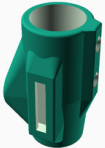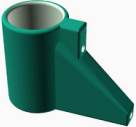A 12ga Top Break variant based on the venerable pipe shotgun.

This version uses Schedule 40 3/4" and 1" pipe. Read the Chapter 2a: CAFE12+ Forend for the better, faster, stronger 4130 tube forend.

Prints

STL Files Location: `Forend/TopBreak_CAFE12/Prints/`

ReceiverFront	Forend	BarrelCollar	Extractor
LatchTab	**Cluster**	**Vertical Foregrip**	**Sightpost**

These numbers are wrong, TODO: Redo them. Copied from CAFE12+, ballpark accurate.

Part	Filament Used	Print Time @ 0.4mm
ReceiverFront	57g	07h17m
Forend	189g	1d01h10m
BarrelCollar	114g	15h00m
Extractor	14g	1h55m
LatchBlock	114g	15h00m
Cluster	?g	?h?m
Vertical Foregrip	?g	?h?m
Total	**420g**	2d08h09m

Vitamins

Purpose	Part	Quantity
Extractor Bit	#2 flat 1/4" Hex Bit	1
Extractor Retainer	1/4"x1" Dowel Pin	1
Extractor Spring	TODO: 12lb 5/6" OD 2.75" Long	1
Latch Bars	1/4"x3" Square Rod	2
Latch Screws	#8-32x3/4" Flat Head Screw	2
Latch Springs	(same as sear spring)	2
Cluster Bolts	#8-32x1/2" Flat Head Screw	2
Foregrip Bolt	1/4"-20x3.5" Flat Head Screw	1
Foregrip Bolt Nut	1/4"-20 Heatset Insert	1
Barrel Sleeve	1" NPT Schedule 40 Pipe 8" Long	1

Purpose	Part	Quantity
Barrel	3/4" NPT Schedule 40 Pipe 18.5" Long	1

Schedule 40 Pipe

These Schedule 40 galvanized pipes are common in every single hardware store in the United States. They'll be in the plumbing section, with a silvery finish.

Pipe Seam

Pipes have a seam - this is not a good thing for many reasons, but it is what it is. You'll have to file the seam out of the 3/4" pipe near the chamber area, and out of the entire 1" pipe.

1" Pipe Nipples

"Pipe nipples" - they're just short pipes threaded on both ends. They're more expensive per foot, but they tend to be smoother on the inside and will require less filing.

Metric BOM

TODO

Post-Processing

If you purchased a kit all the machining is already done for you.

Foregrip Cluster Heatset

Install the *Foregrip Bolt Nut* on the inside of the *Cluster*.

Barrel Sleeve Machining

The *Barrel Sleeve* has several #8-32 holes drilled along the top. These holes are used to secure the *BarrelCollar* to the *Barrel Sleeve* and the *Foregrip Cluster* to the *Barrel Sleeve* and *Barrel*.

DIY Fixture

DO NOT DRILL THE BARREL

A fixture located at `Forend/TopBreak_CAFE12/Fixtures/BarrelSleeveFixture.stl` can be used to help you drill and tap your own *Barrel Sleeve*.

Using a #8-32 tap, add threads to the hole in the middle. Use a 1.5" #8-32 to hold the *Barrel Sleeve* in place like a set screw. Now you're ready to drill and tap the holes.

DO NOT DRILL THE BARREL

Drill the holes out with a #29 wire bit, start out very slowly so the drill bit doesn't walk on the round surface.Be sure to clear your chips early and often, use lots of cutting fluid.

Once you've finished drilling and tapping, ensure the inside of the *Barrel Sleeve* is clear of any chips and debris.

Extractor Slot Machining

File out a 1/4" wide slot in the 6-O'clock position for the extractor bit. Aim for a 45 degree angle 1/8" deep.

File this same notch in a matching location on the barrel. This is easiest if you wait until you've installed the *Cluster*.

Latch Bars Machining

Drill and tap the the *Latch Rods* 1" from the end -

Barrel Subassembly

Install the *Barrel* into the *Barrel Sleeve*, add the *Cluster* and *Foregrip*. The *Foregrip Bolt Nut* and *Cluster Bolts* should act as set screws to secure the *Barrel* into the *Barrel Sleeve*.

Barrel Collar: Extractor Subassembly

1. Insert the *Extractor Bit* into the *Extractor*.
2. Drop the *Extractor Spring* into the *Barrel Collar*'s large rectangular hole.
3. Insert the *Extractor* into the hole, and install the *Extractor Retainer* from the large round hole for the barrel.

Barrel Collar: Latch Subassembly

1. Insert the *Latch Springs* into the small square holes in the *Barrel Collar*.
2. Insert the *Latch Bars* into the square holes in the *Barrel Collar*.
3. Ensure the *Latch Bars* slide smoothly - file the holes if necessary.
4. Insert the two rectangular tabs of the *Latch* into the underside of the *Barrel Collar
5. Depress the *Latch Bars* while you install the *Latch Screws*.
6. Lube the slots and bars.

Forend Subassembly

1. Rotate the *Barrel Collar* up into the *Forend*.
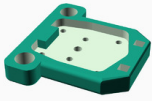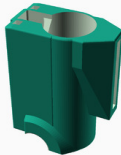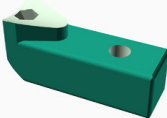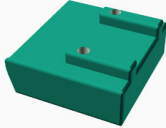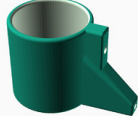2. Install the Barrel with the sleeve

2c: FP37 Forend

"Flare Projector" 37mm - It's not a weapon.

- Manual Charging
- Linear Hammer
- Single shot
- Top-break action

Prints

STL Files Location: `Forend/TopBreak_FP37/Prints/`

ReceiverFront	Forend	BarrelCollar	Extractor
LatchTab	**Cluster**	**Vertical Foregrip**	**Sightpost**

These numbers are wrong, TODO: Redo them. Copied from CAFE12+, ballpark accurate.

Part	Filament Used	Print Time @ 0.4mm
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Forend	189g	1d01h10m
BarrelCollar	114g	15h00m
Extractor	14g	1h55m
LatchBlock	114g	15h00m
Cluster	?g	?h?m
Vertical Foregrip	?g	?h?m
Total	**420g**	**2d08h09m**

Vitamins

Purpose	Part	Quantity
Extractor Bit	#2 flat 1/4" Hex Bit	1
Extractor Retainer	1/4"x1" Dowel Pin	1
Extractor Spring	TODO: 12lb 5/6" OD 2.75" Long	1
Latch Bars	1/4"x3" Square Rod	2
Latch Screws	#8-32x3/4" Flat Head Screw	2
Latch Springs	(same as sear spring)	2
Cluster Bolts	#8-32x1/2" Flat Head Screw	2
Cluster Bolt Nuts	#8-32x3/4" Heat Set Short	2
Foregrip Bolt	1/4"-20x3.5" Flat Head Screw	1
Foregrip Bolt Nut	1/4"-20 Heatset Insert	1

Purpose	Part	Quantity
Barrel	1-5/8-in fence post 18.5" Long	1

Fence Post Barrel

1-5/8-in x 1-5/8-in W x 8-ft H Silver Galvanized Steel Line Fence Post Lowes has this stuff for $26/8ft. Item #552282Model #58910128

Barrel Sleeve

There is no barrel sleeve.

Post-Processing

If you purchased a kit, all the machining is already done for you.

Foregrip Cluster Heatset

Install the *Foregrip Bolt Nut* on the inside of the *Cluster*.

Extractor Slot Machining

File out a 1/4" wide slot in the 6-O'clock position for the extractor bit. Aim for a 45 degree angle 1/8" deep.

File this same notch in a matching location on the barrel. This is easiest if you wait until you've installed the *Cluster*.

Latch Bars Machining

Drill and tap the the *Latch Rods* 1" from the end -

Barrel Subassembly

Install the *Barrel* into the *Cluster* and *Foregrip*. The *Foregrip Bolt Nut* and *Cluster Bolts* should act as set screws to secure the *Barrel* into the *Barrel Sleeve*.

Barrel Collar: Extractor Subassembly

1. Insert the *Extractor Bit* into the *Extractor*.
2. Drop the *Extractor Spring* into the *Barrel Collar*'s large rectangular hole.
3. Insert the *Extractor* into the hole, and install the *Extractor Retainer* from the large round hole for the barrel.

Barrel Collar: Latch Subassembly

1. Insert the *Latch Springs* into the small square holes in the *Barrel Collar*.
2. Insert the *Latch Bars* into the square holes in the *Barrel Collar*.
3. Ensure the *Latch Bars* slide smoothly - file the holes if necessary.
4. Insert the two rectangular tabs of the *Latch* into the underside of the *Barrel Collar
5. Depress the *Latch Bars* while you install the *Latch Screws*.
6. Lube the slots and bars.

Forend Subassembly

1. Rotate the *Barrel Collar* up into the *Forend*.
2. Install the *Barrel*.
3. Install the *Barrel Collar Screws*

3: Ammunition

Now that you've got a receiver and forend, you need some ammo.

The good news is there are printable shells in the project. The bad news is they aren't rendered to STL yet.

Swing by the chat if you want to 3D print some ammo.

4. Developers

Want to customize the designs to fit the materials you have on hand? Change gauge or caliber completely, or something even more extreme?

The real "secret sauce" of this project, is the software library I developed during the design process of these guns. I tried a lot of different ideas, and what I came away with, is an OpenSCAD software library chock-full of useful *configurable* gun parts.

If you browse through the code, you'll see the project has been grouped into major functional areas.

- Ammo - Printable Ammunition
- Receiver - Lower+Universal Receiver
- Forends - Interchangeable forends for the receiver
- Tooling - Printable tools for gun making
- Vitamins - Store-bought parts, nut and bolts, collars, etc.
- Toys - Ideas I've tried and thrown away, or not.

Requirements

If you're running Linux/Mac and have `make` available, there are Makefiles here.

OpenSCAD

OpenSCAD is required to render printable STLs.

Liberator12k Source Code

You will also need the complete source code ZIP for the project. If you're reading this, you should have a copy. Otherwise, download the zip.
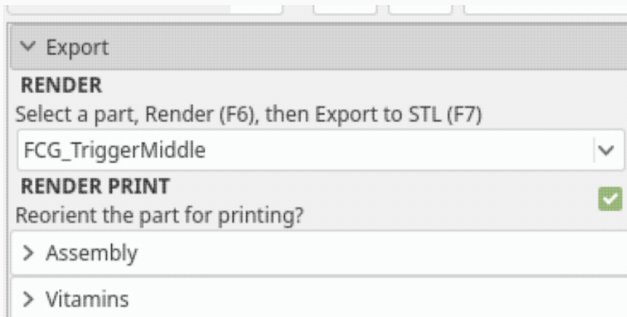
Rendering STLs

OpenSCAD has a "Customizer" pane which can be enabled from the View menu. Only very advanced users and developers need to touch the source code - everything else can be done with the customizer panel:
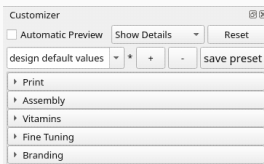
Some of the designs have other presets, like the break-action:
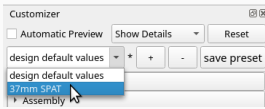
Export STL for Printing

1. Choose the part you want and push F6 to render it, or from the *Design* menu, select *Render*.
2. Once you've rendered a part for printing, you need to export the STL.
3. Push F7 or *File -> Export -> Export as STL*.
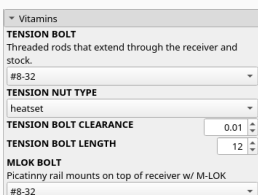4. Save it with a unique filename based on the part name.stl

For instance:

- ReceiverFront.stl
- ReceiverForend.stl
- BarrelCollar.stl
- Extractor.stl
- Latch.stl
- Foregrip.stl

Assembly

When you preview (F5), you will see the complete assembly of all the related parts. This section lets you show/hide parts, cutaway parts, and control transparency.

Vitamins

Customize the nuts, bolts, tubes, rods, etc used to render the model. This is a great way to customize a design to your own uses/materials.
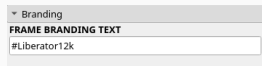
Fine Tuning

Allows customizing some of the parameters of a model. Useful for customizing.

Branding

Control the branding text by model.

5. Why

It is the imperative of every living thing to defend itself.

That means: it's up to you to fight back when something tries to eat you. Get help if you can, but sometimes no help is coming.

I hope this project is a light for you in dark times.

No Step

Rosebushes and rattlesnakes get along like hemlock and honeybees. The Golden Poison Dart Frog's skin is so deadly it can kill over a dozen adults. But they'd all have to touch it.

Go in peace and prosper. Lets trade stories, food, goods, and good times.

Don't fuck with me, and I won't fuck with you.

Life is an evolutionary arms race, and it's complicated. Do you think it's a good idea to be armed?

Bigger Fish to Fry

States run like mindless machines. Code written by lawyers, run on flawed human beings each doing their own small task. Its ultimate tool: violence - to death.

The great [democides](#) and [wars](#) have shown the need for individuals to be armed.

If it comes to that, you might die complying anyway. So be like a honeybee, and fight like hell anyway.

The second greatest danger to human prosperity and life is the order giver. Stalin, Hitler, and Mao never personally murdered anyone. Neither did Charles Manson or Jim Jones for that matter.

The greatest danger is the unquestioning order-follower. Nothing more than a cog in a machine.

1. Enforce the current government's current laws, even if they are atrocious.
2. Fight the current government's enemies, even if manufactured or imagined.

What About Mass Shooters?

Most definitions of "mass shooting" use something along the lines of 3+ people.

States have body counts in the tens of millions, with precedents in living memory. When a state is murdering it's own people, that's a Tuesday morning... so routine and monotonous that they make up sick games to spice things up.

What About Terrorists?

The US Government gave them billions of dollars worth of equipment way better than this when it left Afghanistan.

What About Tanks and Nukes?

Read up a bit on [Guerrilla Warfare](#) tactics.

Some other thoughts of others

> A man's natural rights are his own, against the whole world; and any infringement of them is equally a crime; whether committed by one man, or by millions; whether committed by one man, calling himself a robber, or by millions calling themselves a government.

Lysander Spooner, No Treason: The Constitution of No Authority

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> And how we burned in the camps later, thinking: What would things have been like if every Security operative, when he went out at night to make an arrest, had been uncertain whether he would return alive and had to say good-bye to his family? Or if, during periods of mass arrests, as for example in Leningrad, when they arrested a quarter of the entire city, people had not simply sat there in their lairs, paling with terror at every bang of the downstairs door and at every step on the staircase, but had understood they had nothing left to lose and had boldly set up in the downstairs hall an ambush of half a dozen people with axes, hammers, pokers, or whatever else was at hand?... The Organs would very quickly have suffered a shortage of officers and transport and, notwithstanding all of Stalin's thirst, the cursed machine would have ground to a halt! If...if...We didn't love freedom enough. And even more - we had no awareness of the real situation.... We purely and simply deserved everything that happened afterward.

Aleksandr I. Solzhenitsyn , The Gulag Archipelago 1918-1956

> My political opinions lean more and more to Anarchy (philosophically understood, meaning abolition of control not whiskered men with bombs) - or to 'unconstitutional' Monarchy. I would arrest anybody who uses the word State (in any sense other than the inanimate realm of England and its inhabitants, a thing that has neither power, rights nor mind); and after a chance of recantation, execute them if they remained obstinate! If we could get back to personal names, it would do a lot of good. Government is an abstract noun meaning the art and process of governing and it should be an offence to write it with a capital G or so as to refer to people. If people were in the habit of referring to 'King George's council, Winston and his gang', it would go a long way to clearing thought, and reducing the frightful landslide into Theyocracy.

The Letters of J.R.R. Tolkien, pg. 74, Letter 52.

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