

Ghost Guns: Past, Present, and Future



NYPD Intelligence Division

Major Case Field Intelligence Team

Commanding Officer: Inspector Courtney Nilan

Personally Made or Privately Manufactured Firearms, also known as *PMF's*, are firearm that are assembled by an individual. Federal law (1968 Gun Control Act) permits individuals to build these firearms for personal use only. The 1968 Gun Control act also designates the Lower Receiver known as the *Frame* for handguns and the *Receiver* for rifles as a firearm itself, and is the only part of a firearm that is regulated and requires serialization. The term *Frame or Receiver* refers to Lower Receivers in general when speaking about Ghost Guns or PMF's. Under new laws passed in New York State in 2021 that are now in effect, un-serialized PMF's are what are called *Ghost Guns*.



Ghost Guns built with Unfinished Frame or Receivers

US FEDERAL RULES

- The **Lower Receiver** is the part of a firearm which integrates and houses the internal action or fire control components.
- The Federal Government considers a Lower Receiver a firearm.
- A Lower Receiver **MUST** be serialized to be sold.
- If a Lower Receiver is *unfinished* it is **NOT** considered a firearm, and is not required to be serialized.



UNFINISHED LOWER RECEIVER AND GHOST GUN DEFINITION

- An **Unfinished or 80% Lower Receiver** is an object that is nearly a Lower Receiver and does not yet require serialization per US Federal Law and ATF rules.
- A **Ghost Gun** is a firearm manufactured from a Lower Receiver that has not been serialized, or using a unique non-commercial design.
- Either path can be taken to manufacture a firearm without any identifying markings and no record of it.

*All other parts of a firearm are unregulated

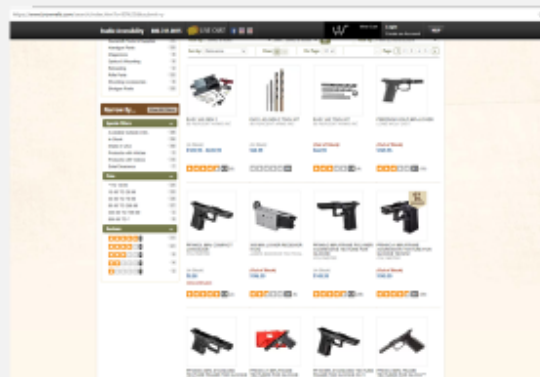
Unfinished Frames or Receivers along with all of the parts that one would need to complete them can be purchased in several ways.

1. From Online Firearm Part Retailers and secondary markets such as EBay or Gun Broker
2. In person at gun shows which are held in states with less strict gun laws
3. Through the traditional Iron Pipeline



80% LOWER RECEIVERS FOR SALE ONLINE

- These Online Firearm Parts Retailers sell 80 % Lower Receivers for handguns and rifles, along with a huge variety of other parts and accessories.
- Those parts and accessories can be combined with modified 80% Lower Receivers to complete Ghost Guns.



Ghost Handguns built with Unfinished Frame or Receivers

GHOST HANDGUN TYPES

- To date 80% Lower Receivers are commercially available for three handgun models.



GLOCK TYPE



SIG SAUER TYPES



1911/2011 TYPE

- Of the 436 Ghost Guns recovered by the NYPD in 2022, 361 were Glock model handguns (82.8%).

Glock Type Ghost Handguns

GLOCK TYPE GHOST GUN

There are 6 documented brands of commercially available 80% Glock Type Lower Receivers:

- The P80 is produced by www.Polymer80.com
- 93.7% of Glock type Ghost Handguns recovered in 2021 were manufactured with a P80 brand Lower Receiver
- The SS80 is produced by www.Glockstore.com



- The Strike 80C produced by www.StrikeIndustries.com
- The GST-9 produced by www.80PecentArms.com
- The Freedom Wolf produced and sold by www.LoneWolfDist.com
- The Geisler produced by www.GeislerDefense.com



Below are pictures of the packaging that each of the commercially available Frames are sold in.

GLOCK TYPE GHOST GUN

- Packaging each of the Glock type 80% Lower Receivers currently comes in.



Commercially available Frame or Receivers are sometimes sold with assembly jigs.



Certain types of tools have become very popular amongst individuals who build Glock type Ghosts from Unfinished Frames.

TOOLS TO BUILD A GLOCK TYPE GHOST GUN

- Tools most frequently used to make the modifications to a Glock Type Lower Receiver are a Dremel Tool and a Power Drill.

- Other tools such as files, sandpaper, razor knives, wire clippers, small screw drivers, punches and hammers can be used to complete a Glock Type Handgun.

Sig Sauer Type Ghost Handguns

There are several models of Sig Sauer type handguns that Unfinished Frames are manufactured for.

SIG SAUER TYPE GHOST GUN

- The Sig Sauer P320 semi-automatic is a semi-automatic handgun.
- All of the internal mechanism for the Lower Receiver are in one removable unit. This unit is called the Fire Control Unit.
- Because of the design of the P320 only the Fire Control Unit requires serialization.
- There is a gap in the Lower Receiver that the serial number can be seen through.



SIG SAUER TYPE GHOST GUN

- The Online Firearm Parts retailer JSDSupply.com now produces a metal frame in 80% form which can be converted into a Fire Control Unit.
- JSD Supply also sells all of the Lower Receiver parts required for a functional Fire Control Unit.
- JSD Supply markets and sells this frame as its Modular Universal Pistol Unit (MUP-I). This completed unit can function as a Fire Control Unit and create a Ghost Sig Sauer P320.



SIG SAUER TYPE GHOST GUN

FCU Unit with a serial number



MUP-I without a serial number




SIG SAUER TYPE GHOST GUN

- The retailer **MatrixPrecisionParts.com** sell metal Sig Sauer Model 80% Lower Receivers and jigs that can be used to modify them.

CART (0)

220, 226, AND 229 FRAMES, TOOLS, AND JIGS

 <p>226 80% FRAME from \$293.00</p>	 <p>229 80% FRAME WITH 226 MAGWELL from \$220.00</p>	 <p>229 80% FRAME from \$230.00</p>	 <p>228 80% FRAME from \$230.00</p>
 <p>MATRIX PRECISION RAIL CUTTER FOR 1911, 2011, SIG SAUER \$75.00</p>	 <p>DRILL JIG FOR P220 FRAME \$75.00</p>	 <p>DRILL JIG FOR P226 OR P229 FRAMES \$70.00</p>	 <p>220 10MM DRILL FOR HAMMER STRUT \$65.00</p>

1911/2011 Type Ghost Handguns

1911/2011 TYPE GHOST GUN

- 1911 or 2011 type Ghost handgun is also built with an all metal 80% Lower Receivers.
- This Lower Receiver required more work to complete than the Glock type Ghost handgun.



1911 Type Handgun



2011 Type Handgun



Ghost Rifles

Unfinished Receivers are sold for many types and models of rifles, which include but are not limited to:

- AR-15 (Intermediate rounds)
- AR-10 (Shoots a .308 and 6.5 Creedmoor rounds)
- AR-9 (Shoots a 9mm round)
- AK-47 (Shoots a 7.62x39mm cartridge)
- MAC Types (Mac 10 & Mac 11)

GHOST RIFLE MODELS

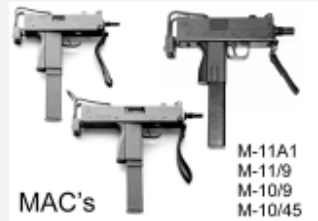
- To date 80% Lower Receivers are commercially available for several Rifle models. The most popular of which are:



AR TYPES



AK-47 TYPES



MAC TYPES

GHOST RIFLES



80% AR Rifle Receiver



80% AK-47 Rifle Receiver



80% MAC Rifle Receiver
Blank and Weld Parts Kit

GHOST RIFLES

- By far the most common rifles that 80% Lower Receivers are sold for are AR type rifles.
- Most are made of metal and have no brand name on them
- Metal 80% Lower Receivers require more work and different tools to be completed.
- Firearm retailers sell AR 80% Lower Receivers with and without an assembly jig and drill bits.



Rifle Lower Receiver



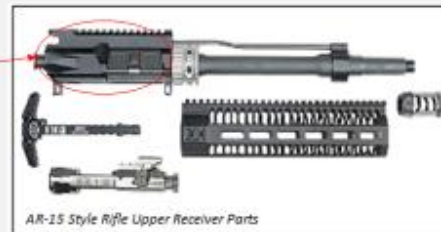
Rifle Lower Receiver with Plastic Jig

GHOST RIFLES

- If not yet fully assembled, Police Officers may encounter the parts to assemble a Ghost Rifle in the course of their work.
- Below are pictures of those Rifle parts.



Unfinished AR-15 Style Rifle Upper Receiver



AR-15 Style Rifle Upper Receiver Parts

LOWER RECEIVER MILLING MACHINE

- Additionally, there is an online based company (GhostGunner.net) which produces an automated milling machine known as the “Ghost Gunner.”
- This machine is designed to modify 80% Handgun or Rifle Lower Receivers to 100% condition.
- It has recently retailed for \$2500.



Ghost Guns built with Privately Manufactured Frames or Receivers

PRIVATELY MANUFACTURED LOWER RECEIVERS

- Lower Receivers can also be privately manufactured by individuals using the latest home 3D printing and CNC technology



The Ghost Gunner and Zero Percent Lower Receivers

CODY WILSON & DEFENSE DISTRIBUTED

Cody Wilson's quest to make 3D printable guns available to everyone just came very close to reality



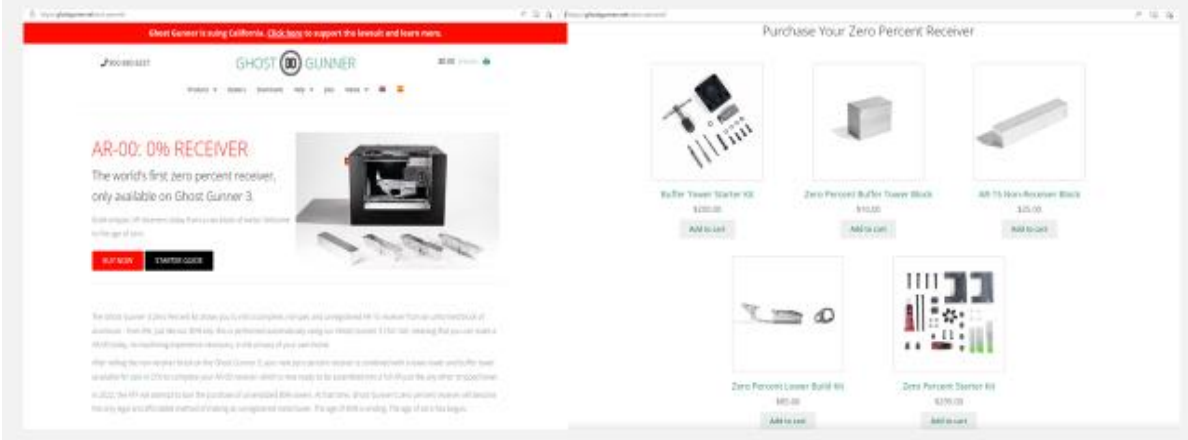
'This is a question about the future of information and the regulation of the internet'

CBC Radio - Posted: Aug 03, 2018 6:01 PM ET | Last Updated: August 9, 2018



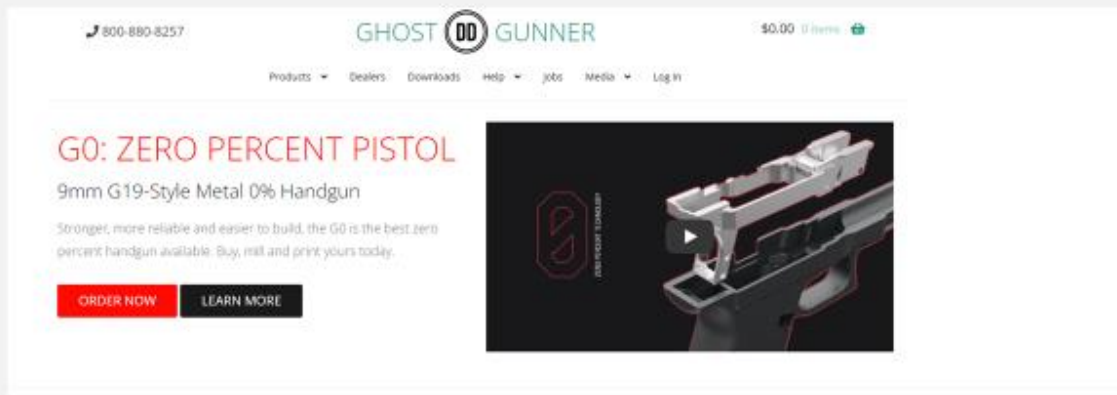
GHOST GUNS BUILT WITH 0% LOWER RECEIVERS

- An AR-15 can also be built with a Lower Receiver made from a 0% Lower Receiver
- Companies JSD Supply, I776 Company, and White Wolf also now sell the Ghost Gunner-3



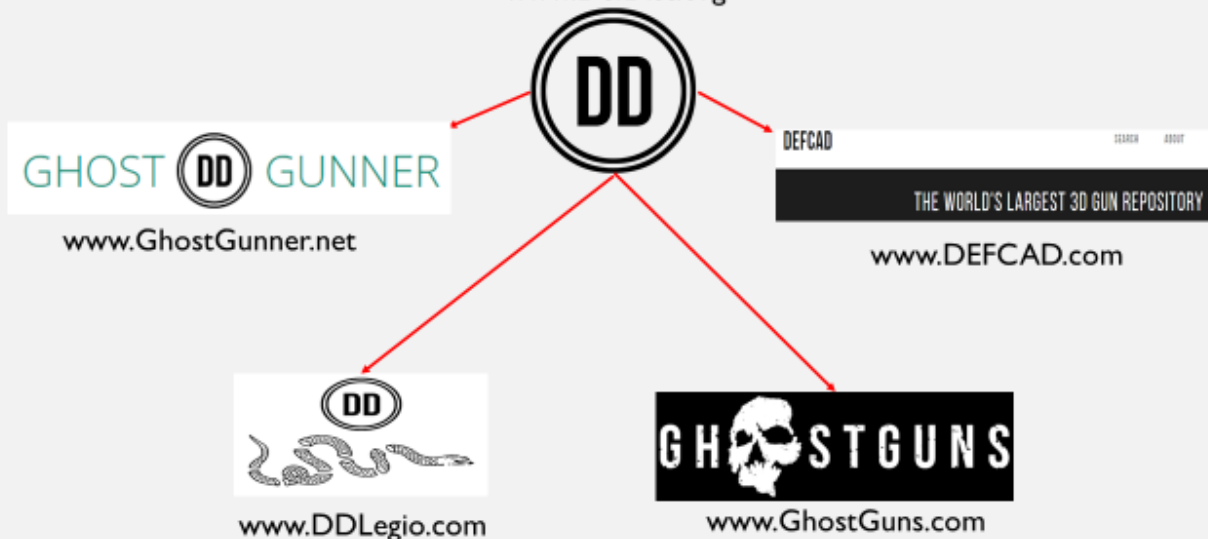
THE ZERO PERCENT PISTOL

- Cody Wilsons Company has now developed a Zero Percent Block and Ghost Gunner coding that can mill out a Fire Control Unit that is compatible with a 3D Printed Glock Frame that his company has also designed a digital blueprint for



CODY WILSON & DEFENSE DISTRIBUTED

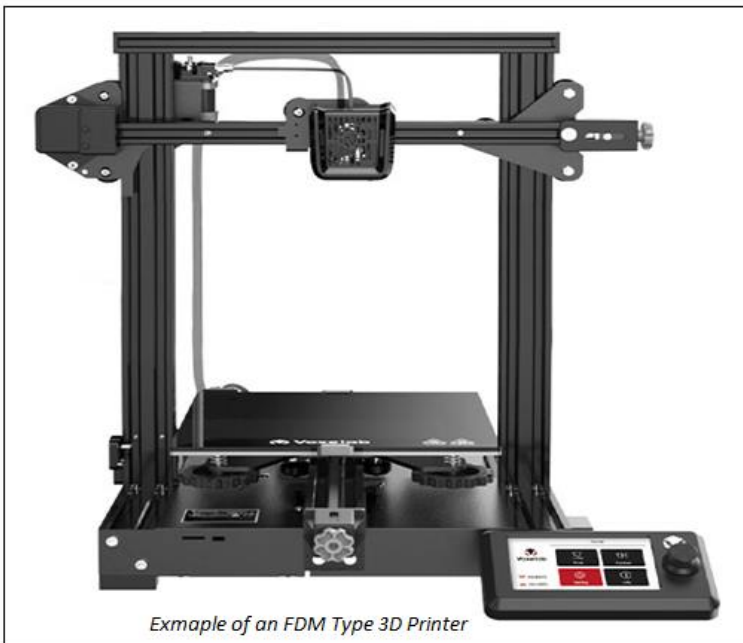
www.DefDist.org



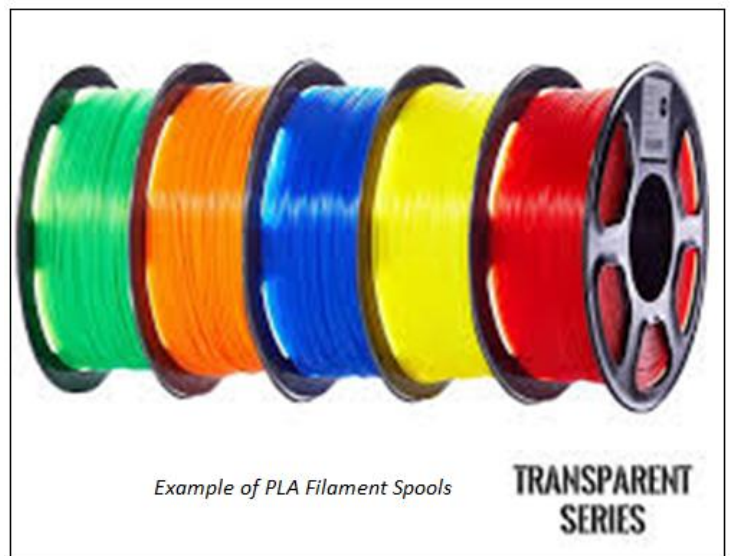
3D Printing and the manufacture of Lower Receivers used to build Ghost Guns

3D PRINTING

- **3D printing** is a manufacturing process that produces three dimensional physical objects from a digital model by laying and bonding thin layers of material in succession.
- There are different types of 3D printing such a SLA (Stereolithography) or FDM (Fused Deposition Modeling)
- Many models of FDM type 3D printers are now small enough, and simple enough to be operated ay home.
- Some models retail for as little as \$200 and can be purchased on popular websites such as EBay,Amazon and Micro Center.
- FDM 3D printers can print objects from several types of material. The most popular is polymer-based material called Polylactic Acid (PLA) that comes in spools, and in a variety of colors.



Exmaple of an FDM Type 3D Printer



Example of PLA Filament Spools

**TRANSPARENT
SERIES**

TYPES OF FILAMENT FOR 3D PRINTING

PLA/PLA+/PRO (Polylactic Acid)

- Affordable (Pro/+ Versions Stronger)

ABS (Acrylonitrile Butadiene Styrene)

- Affordable and commonly used in LEGOS

Polycarbonate

- Strong and Heat Resistant Material

Nylon and Nylon Carbon Fiber

- Tough, High heat, impact and abrasion resistant

PETG(Polyethylene Terephthalate Glycol modified)

- Water resistant, strong, and slightly flexible

TPU (Thermoplastic Polyurethane Material)

- Flexible Material

BRANDS OF FDM 3D PRINTERS

CREALITY

PRUSA
RESEARCH
by JOSEF PRUSA

ANYCUBIC

Bambu Lab

FLASHFORGE

Just several of the many Companies that sell FDM type 3D Printers

A Chinese based company called **Creality** is by far the most popular in the Online 3D Gun Community

They sell several cheap and easy to use models including:

Ender 3

Ender 3 V2

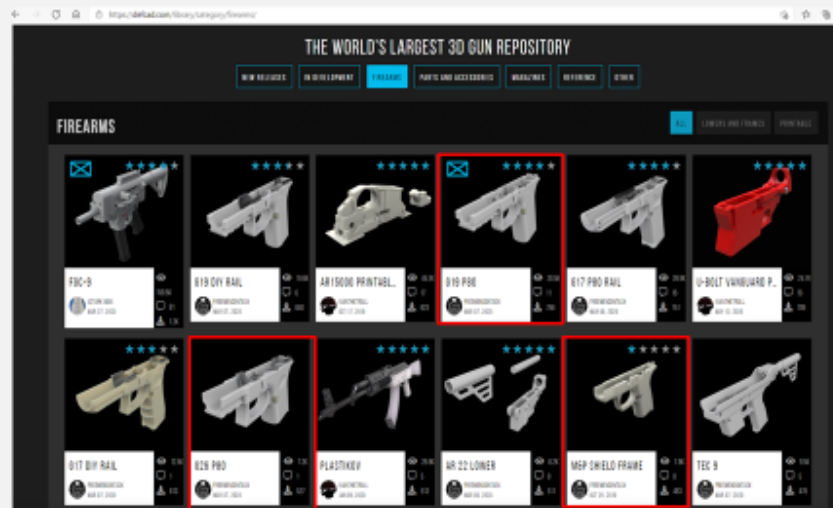
Ender 3 S1/S1 Pro

Ender 5

Ender 5 S1

3D PRINTED LOWER RECEIVERS AND GHOST GUNS

- There are numerous websites where the digital files needed to print a Lower Receiver or other gun parts are crowdsourced and shared.
- [DefCad.com](https://defcad.com) is one such site.
- These blue prints are called STL files.



STL FILES “3D DIGITAL BLUEPRINTS” FOR FIREARM PARTS AND ACCESSORIES

- STL stands for Standard Tessellation/Triangle Language
- The STL files (.stl file extension) are the most common format that firearm related 3D digital blueprints are available online

CAD Program
Create a 3D Digital
Design **STEP** File

Use CAD Program to
convert CAD file into
an **STL** File

STL File Imported to
Slicing Program where
layering data can be
edited

Slicing Program
converts the **STL** File
into **Gcode**



File Type:
.stp

The STL file is used by
a slicer to prepare a
design to be printed



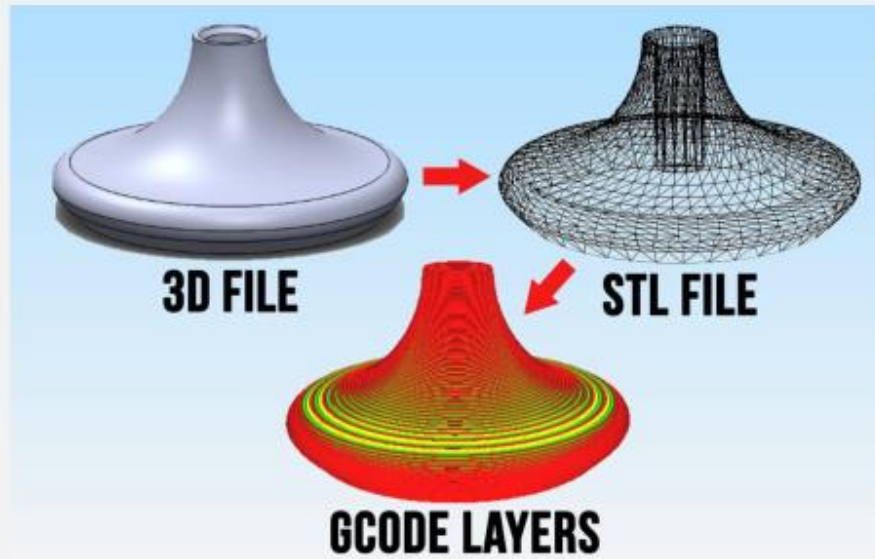
File Type:
.stl

The gCode is used by
a 3D Printer to
generate an object



File Type:
.gcode

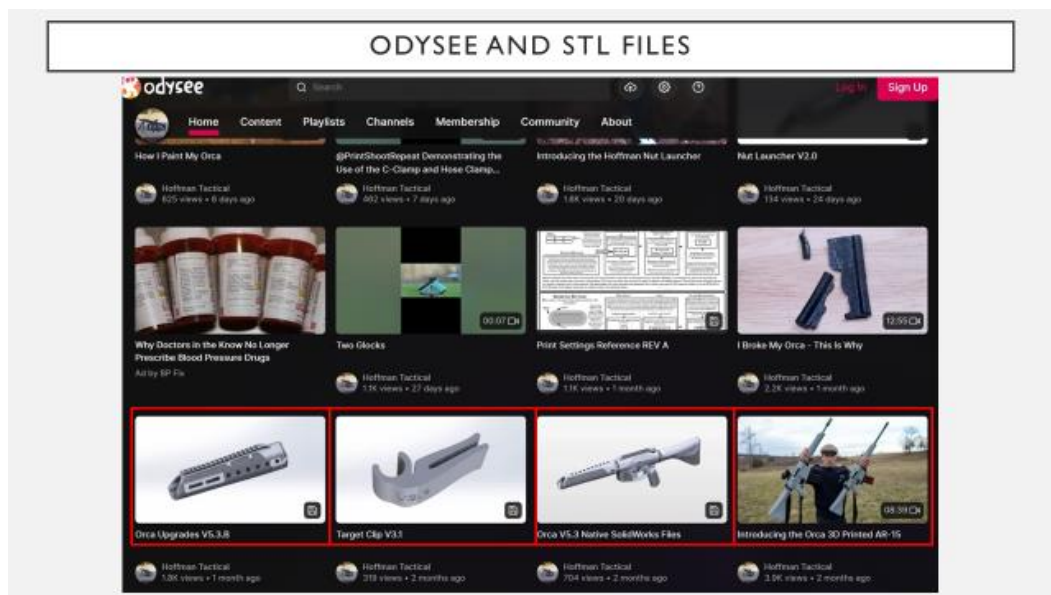
STL FILES “3D DIGITAL BLUEPRINTS” FOR FIREARM
PARTS AND ACCESSORIES



POPULAR SLICING SOFTWARE

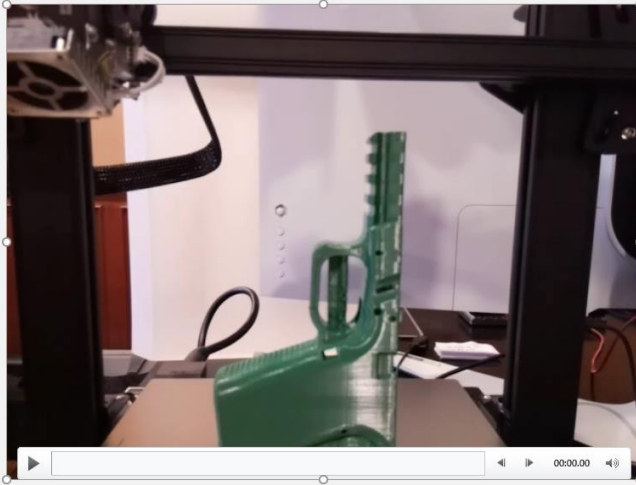


There are numerous video sharing websites such as YouTube, Odysee, Rumble, and Utreon that have become popular amongst Ghost Gun designed and builders, which host videos on how to design and construct firearms built from 3D printed Frames or Receivers. YouTube which is owned by Alphabet Inc., is beginning to become more restrictive in the types of videos related to this topic that it will allow to be posted on its website and app. Odysee is unique among these video sharing websites in that you can directly download files such as STL files directly from the websites. Odysee is built on the LBRY blockchain technology. The links for the files can sometimes appear next to the icons for a video about a model of firearm that can be constructed from those STL files.



3D PRINTED LOWER RECEIVERS AND GHOST GUNS

- The image below is of a 3D Printer producing a Handgun Lower Receiver using the plastic-based material.



3D PRINTED LOWER RECEIVERS AND GHOST GUNS

Note the layers
of printed
material



GHOST GUNS BUILT WITH 3D PRINTED LOWER RECEIVERS

- There are many Firearms that 3D printed Lower Receivers are now designed for and the number is steadily growing
- Like with commercial Ghost Guns the GlockType Handgun is the one most popular to produce with 3D printed Frames/Lower Receivers
- Two of the most popular models of Glock type 3D printed Frame/Lower Receiver:
The FMDA (Free Men Don't Ask)
The PY2A (Print Your 2A)



- The STL Files for the FMDA Frames will sometimes be noted as DD19.2 or DD(Glock Model).2
- The DD stands for Deterrence Dispensed



GHOST GUNS BUILT WITH 3D PRINTED LOWER RECEIVERS

- Because of the Unique design of the of these Lower Receivers, the rail system required to fit them is different then for a P80 or other commercially available 80% Lower Receivers
- Versions of the FMDA rails are sold on eBay, and both designed are sold by numerous commercial companies including: (AvesRails.com, RipTideRails.com, PrintYour2A.com)



GHOST GUNS BUILT WITH 3D PRINTED LOWER RECEIVERS

- Rail design for some of the popular 3D printed Lower Receivers vs the traditional Polymer80 design for most commercially available 80% Lower Receivers



3 PIECE RAIL SYSTEM FOR POPULAR 3D PRINTED GLOCK TYPE LOWER RECEIVERS
KEYWORDS: FMDA, PY2A, AVES, RIPTIDE, DIY RAILS



TRADITIONAL 2 PIECE POLYMER80 DESIGNED RAIL SYSTEM FOR COMMERCIAL 80% GLOCK TYPE LOWER RECEIVERS

GHOST GUNS BUILT WITH 3D PRINTED LOWER RECEIVERS



- Note: STL/G-Code files will also be needed to complete the printing of a 3D printed Lower Receiver or Privately Designed Firearm.

Privately Designed and Manufactured Firearms

In addition to using 3D printing to construct Frames and Receivers for commercially designed models of firearms, individuals and groups have begun to design unique firearms that in some cases require parts from several different commercially available firearm models.

PRIVATELY DESIGNED AND MANUFACTURED FIREARMS

- Below is a picture of the FGC-9, which is a personally designed and manufactured firearm.
- This is an example of a Ghost Gun that has been designed and manufactured largely from parts that can be made on a 3D Printer.



PRIVATELY DESIGNED AND MANUFACTURED FIREARMS

- Below is an example of a 3D designed and printed firearm (FGC-9) which has been made to look like a Nerf brand toy gun.



PRIVATELY DESIGNED AND MANUFACTURED FIREARMS

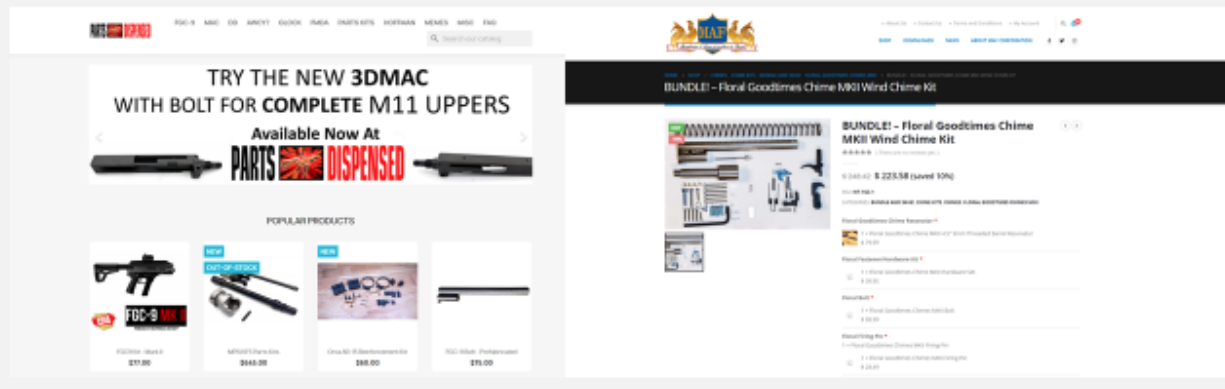


- This picture is an example of a completed Mac Daddy. It combines MAC-11, AR-15 parts, and uses a Glock magazine.

In addition to the firearm parts, these firearms can sometimes require unique sizes of screws, washers, nuts and other parts to construct a firearm based on one of these designs. There are webpages that have pieced together all of the firearm components and all of the unique non-firearm parts for many of these firearm designs and sell them as complete kits. None of those parts are regulated under federal law.

PRIVATELY DESIGNED AND MANUFACTURED FIREARMS

- There are numerous Privately Designed Firearms which require unique combination of parts from multiple firearm models, or in some cases parts that are unique to a particular privately designed firearm.
- A number of online retailers have begun to assemble all of these unique parts and sell them in one kit.

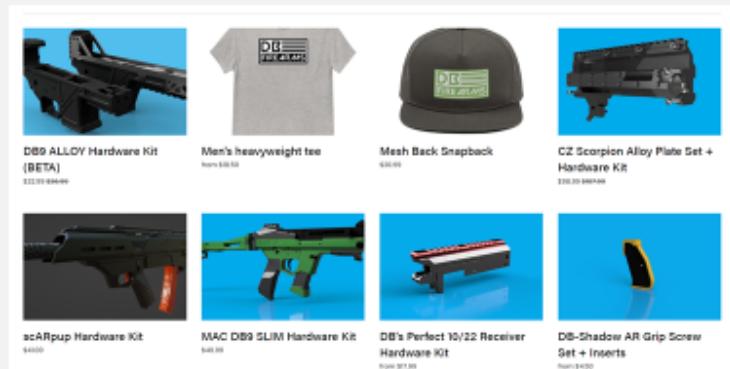


PRIVATELY DESIGNED AND MANUFACTURED FIREARMS

- Some of those retailers are:
- www.GhostGuns.com
- www.Parts-Dispensed.com
- www.FGCKits.com
- www.1776SupplyCo.com
- www.maf-arms.com

PRIVATELY DESIGNED AND MANUFACTURED FIREARMS

- There are numerous Privately Designed Firearms which require unique sizes and numbers of non firearm parts such as screws, nuts, springs and washers in order to complete the build of the firearm.
- A number of online retailers have begun to assemble all of these unique parts and sell them in one kit.



PRIVATELY DESIGNED AND MANUFACTURED FIREARMS

- Some of those websites include:
- www.DBDesignWorks.com AKA DB Firearms
- www.Parts-Dispensed.com
- www.InvaderZip.com

PRIVATELY DESIGNED AND MANUFACTURED FIREARMS



Abe's killing haunts Japan with questions on homemade guns

By YURI KAGEYAMA July 10, 2022



Other Firearm Parts and Accessories that can be Manufactured with 3D Printing

3D PRINTED MAGAZINES

- Firearm magazine, including High Capacity Magazines can also be 3D Printed.
- In addition to a 3-D printer, one would only need the proper spring.
- Firearm magazine springs can be found on multiple websites including Ebay.



3D PRINTED GLOCK COMPATIBLE SLIDE

- Members of the Online Design Group Deterrence Dispensed AKA The Gatalog (www.TheGataLog.com) are now working on a design for a partially 3D printed Glock compatible slide.

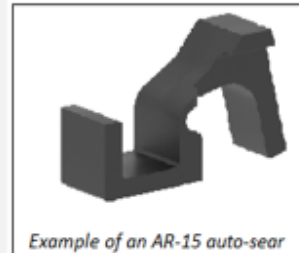


Below is an example of a Glock type Ghost Handgun built with a Polymer80 Unfinished Frame that has had a 3D printed Glock Switch installed into it.



IMPORT OF AUTO SEARS

- Several collaborative investigations have also shown that Glock compatible metal auto-sears (aka Glock Switches) are often shipped from Asia and marked as something other than an auto-sear
- Any local Law Enforcement Agency that is seeing an increase in Glock Switch recoveries should consider collaborating with their local CBP/HSI Office



IMPORT OF SOLVENT TRAP SILENCERS

- It has become increasingly popular to convert fuel oil filters and gun solvent traps in silencers. By drilling a hole of the correct dimension or using a fuel filter thread adaptor these items can be converted into a fully functional firearm silencer.
- These items can be purchased online and are often shipped from overseas.



IDENTIFY HOW GHOST GUNS PARTS ARE BEING OBTAINED



ESTABLISH YOUR COLLABORATIVE INVESTIGATIVE TEAM

Local Law Enforcement
Investigators



District Attorney's and Local
Prosecutors



Outside Partner Agencies



GHOST GUN INVESTIGATIONS IN THE FUTURE



- The Future of successful proactive Ghost Gun investigation developed in these ways will involve combining elements from both models
- This will include Postal Data gather from Online Firearm Parts Retailers who sell Parts Kits and Hardware Kits for Unique 3D Printed Firearm Designs
- This will also include data from sources such as Amazon, Micro Center, and data from traditional investigative methods into one data pool to identify potential targets
- This will also include obtaining data pertaining to sales from Financial Data/D-Orders/Email Search Warrants as some of these retailers are likely to be difficult

POST ARREST INVESTIGATIVE WORK

- Post arrest work for a Ghost Gun investigation can be just as important as the work put in before the arrest
- The digital footprint generated by Ghost Gun targets leaves opportunities for follow up investigations
- This can include:

Analysis of records recovered during the warrant (**Evidence of Firearm Sales from the Data**)

Search Warrants for Electronic Devices and analysis of the data (**Analysts**)

The analysis is also important for successful prosecutions (**Parts purchases and 3D Files**)

Proffers to identify local Ghost Gun builders and seller(s)

Targeted interviews of persons arrested for possessing Ghost Guns to generate new leads (**Sometimes obtaining a Search Warrant for their phones or other devices**)

GUN SHOW OPERATIONS

- Individuals can also attend Gun Shows in states with more lax laws and bring the parts back into states where they can be built and sold locally as street guns
- The NYPD and NY State Police have begun conducting operations at Gun Shows in adjoining state(s) in order to combat this issue as part of the Governors Ghost Gun Initiative



GHOST GUNS AND CRYPTO CURRENCY

- In more recent investigations the Ghost Gun Team has begun to observe overlap between individuals who are building 3D Printed Ghost Guns and the utilization of Crypto Currency
- Some retailers including GhostGuns.com, JSDSupply.com, and GhostGunner.net will now accept payment for various products in Bitcoin or other crypto currencies



REPACKAGING COMPANIES (INCOMING)



Original Sender



Sent to Repackaging Company
or Drop Box



Held by Repackaging Company
for Pickup



Resent by Packaging Company
to Recipient

REPACKAGING COMPANIES (OUTGOING)



Original Sender



Sent to Repackaging Company



Sent Overseas

AGENCY EDUCATION

- Many Police Officers, Investigators and Prosecutors do not know what a Ghost Gun is, how to properly identify one, and the applicable local charges
- Local Investigators may not recognize signs of a Ghost Gun manufacturer
- This can lead to arrest mischarging and good faith errors in court room testimony
- This can be largely rectified with a 1 hour in-service training, and handout reference materials



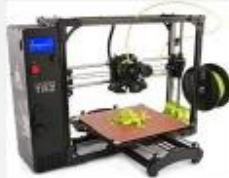
TRACKING DATA

- Tracking Ghost Gun recoveries can help identify clusters in neighborhoods where there is a local builder (**take a more in depth look at shipping data in that area**)
- Police executives often require and demand firearm recovery data for a variety of reasons



BE ON THE LOOKOUT

- Items to be on the lookout for during the execution of the warrants



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