

The 37mm Handbook (Vol 1. Basics)

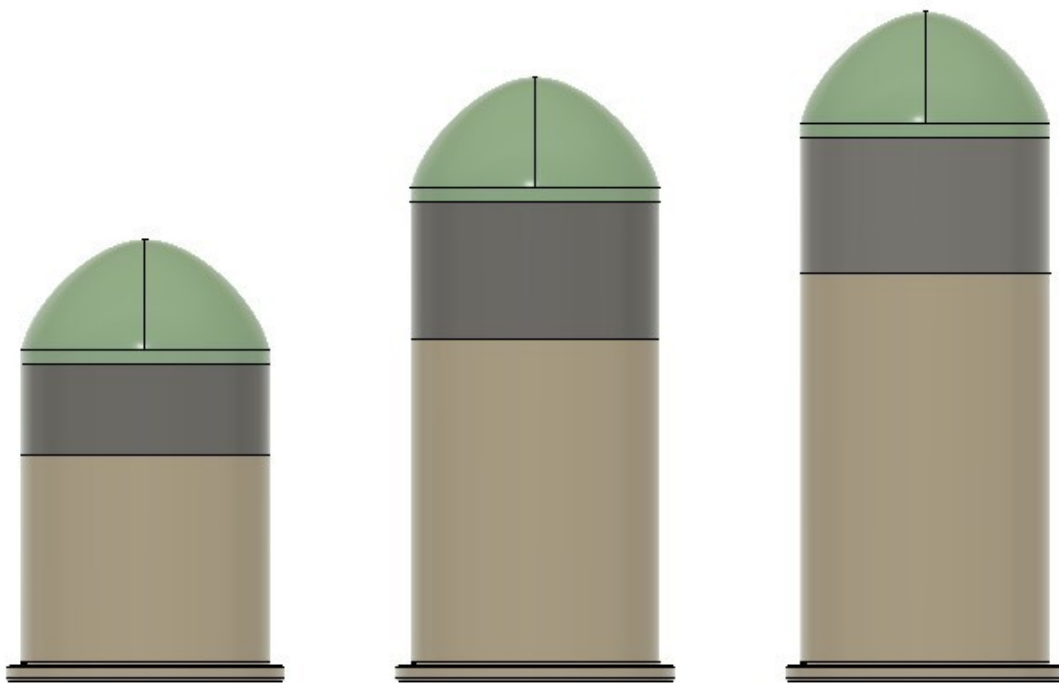


Table of Contents

<u>Legal & Warning Statements</u>	3
<u>Prequel</u>	4
<u>Chapter 1: Basics</u>	5
<u>Governing Documents and Regulations</u>	5
<u>Choosing a 37mm Launcher</u>	7
<u>Types of 37mm Ammunition (Commercial)</u>	11
<u>Types of 37mm Ammunition (Homemade)</u>	13
<u>37mm Ammunition Nomenclature</u>	14
<u>Historical Designs</u>	15
<u>Chapter 2: Building Your Launcher</u>	16
<u>Good to Know</u>	16
<u>Prep Work</u>	16
<u>Testing Your Build</u>	18
<u>Chapter 3: Building Your Shells</u>	19
<u>Getting Started</u>	19
<u>Lift Charges</u>	20
<u>Shell Casings</u>	27
<u>Chapter 4: Projectiles</u>	30
<u>Getting Started</u>	30
<u>Assembly</u>	32
<u>Chapter 5: Conclusion</u>	36

Legal & Warning Statements

Under no circumstances should this document be taken as legal advice nor advice at all. Every act performed by the reader of this document is performed solely under the responsibility of the reader.

Homemade weapons, launchers, ammunition, and alike are inherently dangerous and should be treated as such. Complacency, disrespect, or idiocy involving these items **will** result in injury or death.

This document is designed to get the reader pointed in the right direction to perform their own research on the covered topics. Regardless of the topic, it is always recommended you do your own research and arm yourself with information before designing or building any homemade device.

By continuing to read this document, you agree that any action carried out by the reader is performed at the readers discretion and solely under the responsibility of the reader.

Be safe and follow your local laws.

Prequel

In an attempt benefit of the community, it was decided that education about and standardization of 37mm should be started. This document and accompanying file pack is our attempt at such.

With 37mm becoming more popular within our community, we believe it is in the best interest to educate new users on best practices and warnings related to making 37mm ammunition and launchers.

Launchers can be incredibly fun if used correctly, but can also be unsafe and a legal nightmare if used improperly.

As we progress with our launcher designs and printing technology, hopefully this guide will remain up to date. We will try to update it frequently.

If you're interested in contributing to any of the following information, or want to add information, please reach out. We're always looking for better ways to improve our launchers.

We look forward to seeing your builds!

Chapter 1

Basics

Governing Documents and Regulations

[1] 18 U.S. Code Chapter 44 - FIREARMS

[2] 26 U.S. Code Chapter 53 - MACHINE GUNS, DESTRUCTIVE DEVICES, AND CERTAIN OTHER FIREARMS

[3] ATF Rul. 95-3 (Doc# 1995-3)

Summery:

The above documents define and regulate what a firearm is and the associated rules/restrictions.

You will notice the definition of “Destructive Device” includes “...any type of weapon...which has any barrel with a bore of more than one-half inch in diameter...”

37mm is clearly larger than 1/2in, but if you read further within the Code you will see the exemption that reads “The term “destructive device” shall not include any device which is neither designed nor redesigned for use as a weapon; any device, although originally designed for use as a weapon, which is redesigned for use as a signaling, pyrotechnic, line throwing, safety, or similar device;...”

This is where the 37mm launchers live; the key phrase being “...neither designed nor redesigned for use as a weapon...”. This means developers and builders of 37mm launchers must develop and build them with the intent to use them within the guidance of the exemption. Most developers design their launcher systems as signaling devices and intend for the builders to use them as such.

Its important to understand that just because a launcher is designed and built as a signaling device doesn't mean it will always stay within that classification. The launcher space can slip into gray areas not explicitly defined by law, but we do have some guidance on the matter. The ATF published a ruling on things that will change the classification of you launcher to a destructive device.

The ATF ruling states “When a gas/flare gun is possessed with “anti-personnel” type ammunition... registration as a destructive device is required”. This means that even possessing both a 37mm and 37mm ammunition ruled to be “Anti-Personnel” changes the classification of your launcher. Regardless of your actual intent, the ATF will likely assume your intent to be unlawful.

In that same ruling, the ATF defines “Anti-Personnel” ammunition as “consisting of cartridges containing wood pellets, rubber pellets or balls, or bean bags...”. So, unless you have the proper licensing, we will stay clear of these types of projectiles.

To add to the above, intent alone may change the classification of your launcher. Anyone who intends to use the launcher against another person has now potentially shown the intent to harm them, thus reclassifying the launcher as a “Weapon” and a “Destructive device” regardless of the ammunition type.

All that being said; We, as members of this community, have an inherent responsibility to act in a moral and responsible manner to build and uphold our reputation.

Now, to the fun bits.

Choosing a 37mm Launcher

Below are a list of Homemade launcher available for you to build yourself.

AWCY? Thump 'n' Grind ([Link](#))



GU-37 ([Link](#))



BFGL ([Link](#))



NT-79 ([Link](#))



DMB B.A.L.L.S. ([Link TBD](#))



In addition to homemade launchers, there are countless manufactured ones available to the public.



Its important to understand that most (if not all) homemade launchers require some level of mechanical competency of the builder to assemble it correctly. These devices are not toys and incorrect assembly can cause serious injury.

Below is a difficulty scale for the builds listed above:

[Easy] [Moderate] [Medium] [Hard] [Very Difficult]

Commercial Launcher	[Easy]
GU-37	[Moderate]
BFGL	[Moderate]
Thump 'n' Grind	[Medium]
NT-79	[Medium]
DMB B.A.L.L.S.	[Hard]
Crank N Grind	[Very Difficult]

Dependent on the supplies available, the difficulty scale may change. Most homemade launchers can be completed for less that \$100 in materials. You can find parts kits sold for some of them, eliminating the need for cutting equipment & separate sourcing of hardware.

Parts Kits Suppliers:

<https://daikondefense.com/>
<https://parts-dispensed.com/>
<https://pnwtacticalsupply.com/>
<https://opensourcekits.co/>
<https://deadheadparts.com/>
<https://inmc.fun/>

Types of 37mm Ammunition (Commercial)

Similar to the launchers, the ammunition can either be commercially manufactured or homemade. While “Anti-Personnel” commercially manufactured ammunition exists, just because you may be able to buy it doesn’t make it legal when also in possession with the launcher, so stay away from it.

There are a wide variety of manufactured ammunition available for purchase depending on the effect you are after. We will list some below:

Pyrotechnics (Fireworks)



Smoke Producing



Noise Producing



Illumination



Often times you will find ammunition that will utilize more than one of the effects listed above. In addition to completed rounds, vendors usually also sell kits of shells and payloads so you can assemble them how ever you would like.



While we may not be able to list all vendors, below is a good place to start:

- <https://exotic-firearms.com/>
- <https://www.exoticammo.com/>
- <https://www.firequest.com/>
- <https://gumgully.com/>
- <https://www.skylighter.com/>
- <https://www.precisionpyrosupply.com/>

Types of 37mm Ammunition (Homemade)

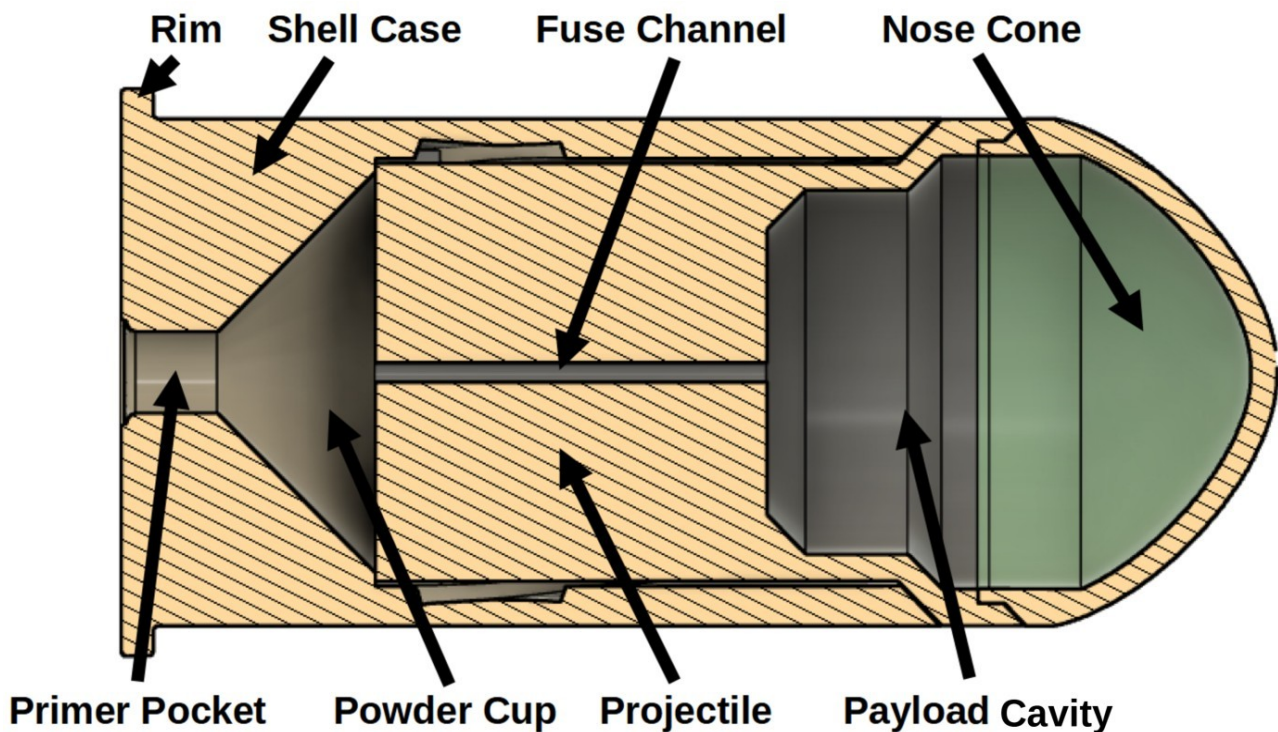
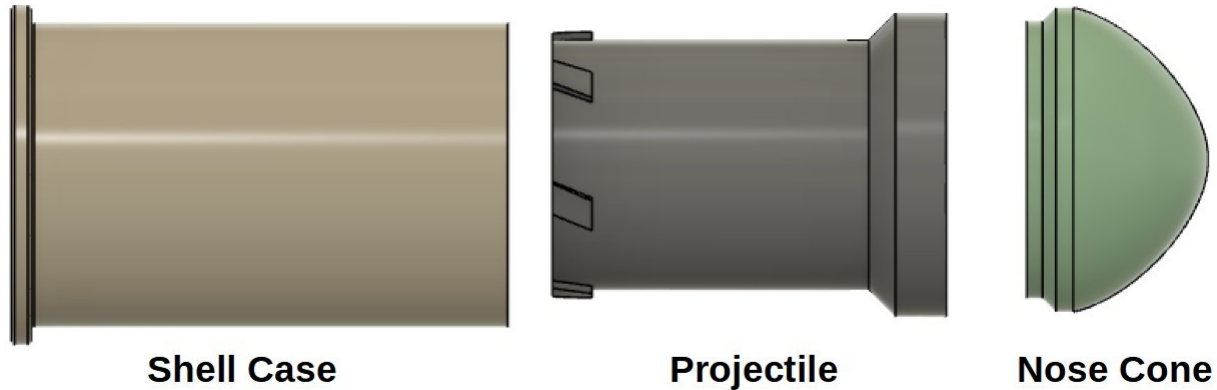
Homemade rounds come in the same variety as commercial rounds and are often based largely on the same design concepts with the addition that homemade rounds are only limited by the imagination and competency of the designers.

We will get into how to assemble homemade rounds in a future chapter but, for now, just know that the homemade 37mm community is growing fast. With the ingenuity and engineering of the community, homemade launchers and ammunition is quickly approaching the reliability and performance of their manufactured equivalents.



37mm Ammunition Nomenclature

Below are a few images showing some nomenclature and configurations of some 37mm rounds. Keep in mind that some designers may call their parts something different the concepts are mostly the same. Additionally, Some designs may have additional features dependent on the use case.



Historical Designs

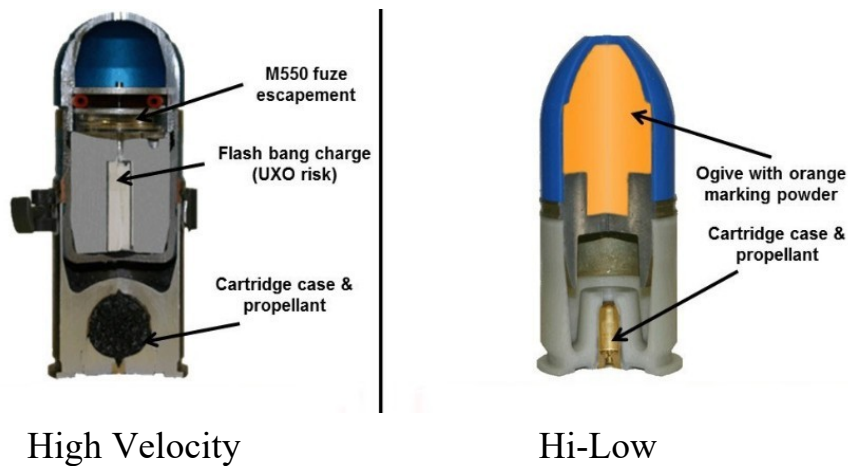
To understand launcher design concepts, we will first look at historical 40mm concepts.

40x53mm (High Velocity):

Initially, 40mm launchers used traditional firearm concepts where the chamber and barrel sustained large amounts of pressures during firing. To handle these pressures, the launcher platform was made from thicker steel and was often heavy. Some modern designs still use this concept, like the Mk19. The Mk19 doesn't need to be lightweight since it is often vehicle mounted or treated similarly to a crew-served weapon. Although it is heavy, it is afforded the benefit of reaching further distances. These rounds are often called "High Velocity" rounds or 40x53mm.

40x46mm (Hi-Low):

On the other side, you have lightweight launchers that use a system called "Hi-Low". As its name implies, the casing allows for initial high pressure to initiate the propellant, followed by a quick drop in pressure while the projectile enters the barrel. This is accomplished using some sort of burst disk within the casing. Once the propellant reaches high enough pressure, the burst disk ruptures and the gases are allowed to expand into the open area behind the burst disc causing the pressure to drop. This concept provides the distinct advantage of allowing the chamber/barrel to be very light weight; usually aluminum.



The 37mm uses a few different concepts. In addition to the Hi-Low system, we also use black powder charges as propellants with considerable success.

We will look into the different methods a little further on.

Chapter 2

Building Your Launcher

Good to Know

Every launcher listed above comes with a guide. Read the guide and if you have a question, read the guide again. Chances are, if you've run into an issue, you're not the first person to find that issue. Ensure you have the most up-to date files. You can check and see if there are any forum posts about the issue, or you can see if there is a public chat room to help builders.

As mentioned before, DIY guns, and especially launchers, can be extremely dangerous. Competency & respect will keep you safe and complacency kills. Dev & Testing teams make sure they go through all of the steps to make sure the launcher is safe to use, but no-one can account for idiocy.

Builds will often call for very specific hardware listed on a Bill of Materials. Its important to follow that listing as close as possible. Substituting materials is discouraged and always done at the risk of the builders. This is especially true with things like adhesives. If the build calls for a specific epoxy, that is because it was tested and verified with that specific epoxy.

Prep Work

Some items need preparing before use. Most launchers use fence posts as barrels. These fences posts are naturally built with flaws.

Fence posts have a weld seam that runs the entire length on the inside. It is important that you smooth that down. Additionally, fence posts aren't always perfectly round. The steel used isn't hardened and is prone to denting. These issues can lead to a projectile becoming lodged within the barrel.

While you may look strange at the hardware checking the roundness of a fence post, it can make building much easier. Additionally, threaded/linear rods, bar stock, and other structural materials should be straight and free of damage for the best results.

Parts kits usually go through a quality control process and are a good source for quality parts.

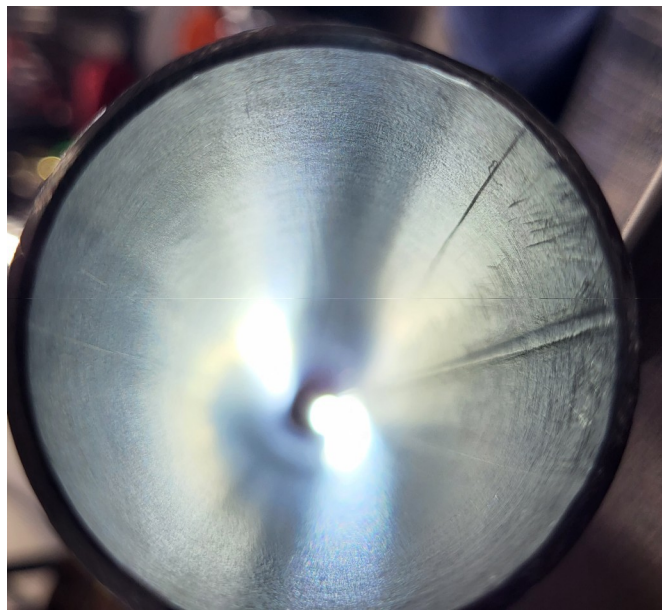
Use of a Caliper Hone or Flex Hone will assist in making the bore most suitable for your launcher. If you wish to use a cheaper option, sand paper and a dowel rod will eventually get you the same result. Be sure to use a lubricant or cutting fluid while preping your barrel. The goal is to flatten and smooth the seam and remove any internal coating or debris that may have found its way into the post.



Caliper Hone



Flex Hone



Finished Barrel

While building your launcher, it is important to keep in mind what kind of shells you will be launching. This will usually dictate the shape and size of your firing pin.

We will talk about them in chapter 3 but 209 primers will use a more traditional firing pin, with a rounded front, while ramsets will require more of a chisel shaped tip.

As with any build, you will go through the trial and error process to get your launcher reliably firing.

Testing Your Build

Its always a good idea to test your build with non-energetic rounds and smaller lift charges. During your first few shots, its recommend to analyze your build for any cracks or damage that may have formed. Continue to do this as you increase the power of your rounds. If damage exists or starts to form, stop using your launcher and rebuild the damaged part.

Initial tests can be done with no projectile at all. Just a primer or weaker ramset. Then you can start adding powder and different projectiles into the mix.

Its important watch out for are firing pin over-travel. This can puncture your primer and allow gases to escape out of the back of the round.

Its a good idea to drop the projectile down the barrel before attempting to fire it explosively. This will ensure the barrel is free of any obstructions and you printer is calibrated correctly. **DO NOT** force a round into the chamber. If your round gets stuck, identify and fix the problem before proceeding.

Chapter 3

Building Your Shells

Getting Started:

There is a list of basic equipment and supplies that are suggested for building your rounds. That list includes:

- | | | |
|--------------------------------|---------------------|-------------------------|
| -3D Printer | -Calipers | -Hot Glue Gun (w/ glue) |
| -Masking Tape | -Rubber Bands | -Modeling Clay |
| -Gorilla Glue | -Line Marking Chalk | |
| -BP Volumetric Powder Measurer | | |

Additionally, you'll need energetic materials:

- | | | |
|--------------|---------------------|--------------------------|
| -209 Primers | -.22 or .27 Ramsets | -FFF Black Powder (3FBP) |
|--------------|---------------------|--------------------------|

First we will look at Lift Charges. A Lift Charge is our main powder charge to push the projectile out of the barrel. It can not be over stated enough, improper decisions on a lift charge can result in catastrophic failure of the round or worse, the launcher.

NEVER USE SMOKELESS POWDER AS A LIFT CHARGE.

There are 3 main ways we project our projectiles: 209 Primer & BP, Ramsets, & Blanks.

Lift Charges:

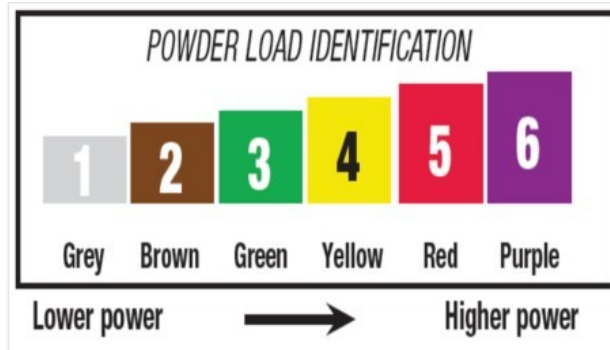
Ramsets:

Ramsets are traditionally used in Ramset Nail Guns to drive nails into hardened surfaces. These shells are powered by smokeless powder and are surprisingly powerful.

Ramsets are an all-in-one solution as a lift charge, as they provide enough pressure to launch your projectile. They act in a similar fashion as a Hi-Low round. The crimping on top contains the expansion of gasses until it cannot anymore.

Ramsets are not without flaws though. You will find that ramsets are inherently difficult to initiate. This is due to the rimfire design. Firing pins used for ramsets need to be specifically shaped (squared) and the round in a specific orientation in the chamber to achieve initiation. Additionally, you will find that most 3d printed shells made for ramsets integrate a washer at the base, since rimfire requires a hard surface to be struck onto.

Ramsets come color coded on the packaging and crimps to identify power levels. The general consensus is that DeWalt brand ramsets in yellow or red are most reliable.

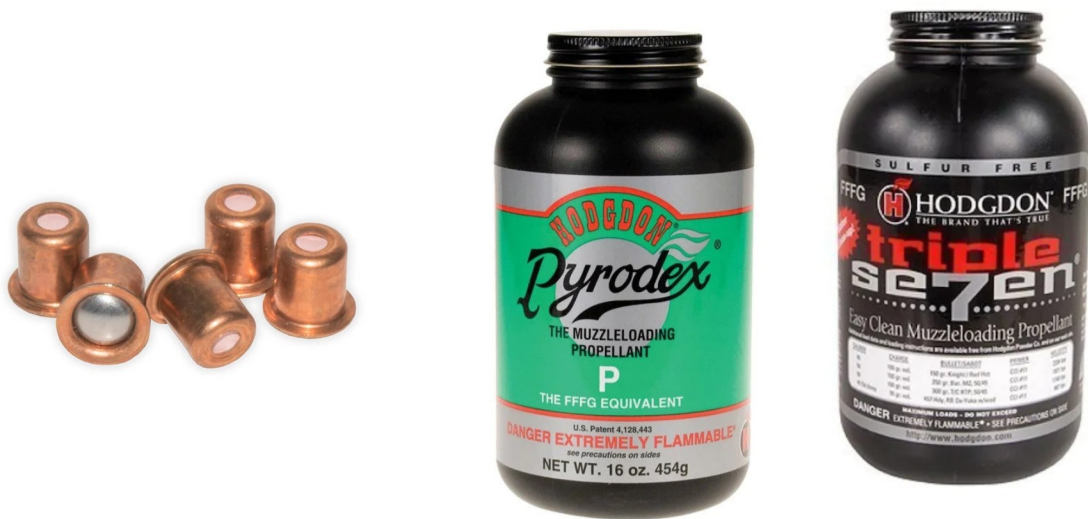


Standard Firing Pin Shape

With a little trial and error, ramsets can be rewarding, offering distances of 100yds+

209 Primers & Black Powder:

This is the most widely used method of lift charge, not only in homemade shells, but in the majority of commercial and pre-made cases.



First we will address designations used to classify Black Powder. BP is measured in “F”s from 1-4 depending on the coarseness of the grain. “F” being the coarsest & slowest burning and “FFFF” being the finest & fastest burning.

It is recommended that you use “FFF” Rifle/Cannon, or Pyrodex P (BP substitute) powder as your lift charge. Be mindful that BP is measured volumetrically and NOT by weight.

While building a BP shell may not be as easy as it is with a ramset, you will become proficient as you build more. The process is still rather simple though. First you press the 209 primer into the rear of the shell. It is recommended that you use a softer material with a large surface area to press in the primer (ie. a wooden block) as direct pinpointed pressure can initiate the primer. Next you will load your powder charge.

Powder charges can vary dependent on how well your shell and projectile is made. Please note that a higher volume of BP DOES NOT mean that you will get better performance. For your first shells it is recommended that you use around 20-30gr of 3FBP. Then hone in your assembly process. Once you're comfortable with your design you can increase the lift charge. DO NOT EXCEED 70gr as a lift charge. You can achieve optimal distances with 35gr and proper assembly.

A good seal will launch your projectile more efficiently with less BP. A bad seal will cause a lot of smoke and fire out of the muzzle and lesser distances will be observed. These seals are usually accomplished with O-rings, tape or hot glue. Additionally, adding wadding over the powder in the powder cup will ensure a nice even burn. This is an often overlooked step, but it will definitely make a difference.

It is important that you DO NOT ATTEMPT to permanently affix the projectile to the shell with high strength adhesives (Gorilla Glue, Super Glue, etc.) as this may cause a catastrophic failure of the shell or launcher. Hot glue is the only recommended adhesive to be used. Assembly will be covered in a later chapter

Blanks:

Traditionally, some commercial, and even military shells, use blanks to launch the projectile. As deceiving as it may be, blanks are extremely powerful, and offer some of the best performance. They are not without downside though, as they can be expensive and require additional considerations to handle the higher pressures.

38S&W blanks are most commonly used in manufactured shells of this type. You can purchase blanks in some surplus shops and cowboy action supply shops. You can also make them yourself, but we will add a stipulation: **If you are reading this, you should probably start with the 2 above methods. Making blanks includes the use of smokeless powder, which can become far more volatile in certain circumstances. In-fact, before we continue, we will talk a little about the differences between BP and smokeless powder.**

While it is extremely easy to get lost in the gun powder section of the gun shop, there are extremely distinct differences in the types of gun powder, especially in smokeless.

If you were to set up an experiment by laying a small amount of BP on the ground and light it, you will see that it burns quickly with a bright flame and grey smoke. If you do the same with smokeless powder, you will see that the burn is much slower with no smoke. This is very deceptive. BP burns at a relatively constant rate, regardless of its environment, meaning that pressures are predictable. This is why we can use such high volumes of BP in shells. Smokeless, on the other hand, burns at an increasing rate as the pressure rises within its container. This can lead to runaway pressures, ultimately resulting in catastrophic failure of the container.

All of that is to say, Smokeless can become extremely energetic, extremely quickly. Measurements should be accurate and details paid attention to when working with smokeless powder.

Now that we have an understanding, lets look into the construction of DIY blanks.

There are a few ways to create a your own blanks with varying levels of effectiveness. Because smokeless powder can get to dangerous pressure levels very quickly so it is best to start low and work your way up.

You will want Shotgun powder or slower burning pistol powder like Bullseye or Herco for this application. In most cases there will be a powder weight that falls somewhere between 3-9 grains of powder. Testing and experimentation is always needed to find that right load with any form of reloading. To start this process you will need a sized and primed 38 case. If you do not have the ability to do a size, de-prime and prime we suggest learning the fundamentals of reloading before using blanks.

There are two ways of making a blank, Crimped and Non-Crimped.



Crimped



Non-crimped

Crimped:

For crimped blanks you will need a reloading die designed specifically for crimping cases. Hornady sells a universal crimping die that will crimp anything from .22-.45.

First you'll need your sized and primed case and desired powder pre-measured out, again slower pistol powder between 3-9gr, put the powder into the primed case and head over to your reloading press. At this point it would be safe to assume your crimp dies are set so go ahead and give the charged case a crimp. After the crimp has been set it would be best to coat the end of the crimp with some 100% silicone to seal the end and to help achieve full powder burn.

Take your newly created blank and put it into the appropriate hull. One last tip to help achieve full powder burn would be to also fill the area that the blank sits in with some more silicone, only up to the top of the blanks chamber. Smokeless needs pressure to burn fully so a little extra silicone on top helps.



Non-Crimped:

If you lack the reloading equipment to do crimped then this is your only other option. Find yourself some once fired 38 brass from your local range or neighboring fudds and clean them up. A simple wash with warm soapy water should be enough. To remove the primer you can set the once fired brass on top of a stack of washers with the primer directly over the hole and use a thin punch to pop the spent primer out. The best option for priming the cases would be to buy a cheap hand priming tool from your local gun store, but you could always try to set the case on block of wood and gently tap the primers in with a small rubber mallet, just be careful not to ignite the primer or smash the case.

Once you have the case cleaned and primed you can now add powder. You will absolutely need to buy a powder scale to measure how much powder you are adding, winging it will not cut it here. Smokeless is measured by weight not volume.

Now that you have the correct amount of powder added into the primed case you will make a wad to sit on top of the powder, anything thin and light will work here. Tissue paper, cardboard, card stock, tablet paper or floral foam will be the easiest and most readily available. Set the wad all the way down on the powder and use 100% silicone to seal off the top of the case. You will want to fill the case all the way to the top with the silicone.

Put the now live blank into the appropriate 37mm hull taking care to not ignite it. Once the blank is set you can fill the rest of the blank chamber with silicone. Last thing to do is add a desired projectile.



Shell Casings

Shell casings are classified in 3 basic types: Fully Printed, Commercial, & Hybrid.

As everything else, there are pros and cons of each.

Commercial:

Commercial shells are the easiest to deal with. They are usually aluminum and set up to receive a 209 primers and BP. They are what most launcher enthusiast use and can be purchased at the vendors listed in chapter one. The only downside is that they are pricey at \$15-20 a shell. They usually fit thick cardboard tubes as payloads.



Fully Printed:

Fully Printed shells are, of course, the cheapest option here. You can basically think of these as disposable, due to the fact that they WILL break eventually. The current common printing materials aren't designed to handle the repeated heat and pressures of multiple launches. This can become dangerous, as you may not know when the shell is ready to fail. It may also damage your launcher.

This is not to say you cannot learn using printed shells, in-fact quite the opposite. Printed shells are a good place to start, especially with lesser lift charges. They are also good to test your new launcher build.

Fully Printed shells usually come in 209 & BP and Ramset setups. There are quite a few designs floating around. But because of the deficiencies listed above, its better to work in the lower limits of recommended BP volume/weaker classes of Ramsets.



Hybrids:

Hybrid shells are our best option when it comes to the performance to cost ratio. While it make take a little work to build them, you will find that they are well worth it, and for only a few dollars for multiple shells.

Hybrid designs usually incorporate a metal hull, with a printed base-plate. The metal hull can be made from any material of the correct diameter, and cut to the proper lengths. 1 ½in OD, 17ga brass pipe is recommended though steel, aluminum, and even PVC (occasionally) has been used.

Since you're already building your launcher, you will likely have all the required equipment to make these shells. Build materials include: sandpaper/files, epoxy, & cutting tools.

Specific guidance and material lists for these shells are usually found within the launcher files. The included file pack has a large assortment of shells and guides and is an excellent place to start.



Chapter 4

Projectiles & Round Assembly

Getting Started:

Its important to remember that when developing projectiles for launchers, the purpose must be related to signaling in some way or form. We have a few categories that meet this requirement, mainly Visual and Audible. Other purposes can be used that aren't directly tied into signaling, like bird bangers, that have a specific purpose of scaring birds away from a designated location. We tend to stay away from gray areas that can be mistaken for Anti-personnel purposes.

One goal while writing this guide was to standardize/organize home-made ammunition. With any new technology, users developed plenty of shells and projectiles. We took the best ideas of what we could find and combined them all together. This isn't to say new and improved methods shouldn't be attempted, but instead it provides a good starting point for those who may want to innovate further. Hunting down all of the rounds within the community can be difficult, but we will continue to update the file pack as we come across more.

We previously mentioned commercial projectiles. These round usually come with instructions for best practices and should be followed. Commercial projectiles are often consistent, as long as the instructions are followed. Though pricey, they offer a large variety of payloads and can be very flashy. Generally speaking, commercial projectiles will usually not fit into printed shells. This is largely due to the thin walls needed to fit them.



This handbook more revolves around homemade shells and projectiles. While we will not get into the “advanced” projectiles that involve explosives or specific chemistry, we will go over the step by step of assembling your rounds.

The most common round you will see people using is the Zipdic/IMA shells. These come in a variety of lengths and initiation methods and devs often use them to develop new projectiles for. Regardless of which printed shells you use, the assembly concepts remain the same.

Easy home made rounds are usually non pyrotechnic signaling rounds. These are cheap and easy, and don't have a risk of setting your target area on fire.

Balloon LEDs work great. ([Link](#))

Of course, a clear nose cone will work best for this application.



Assembly:



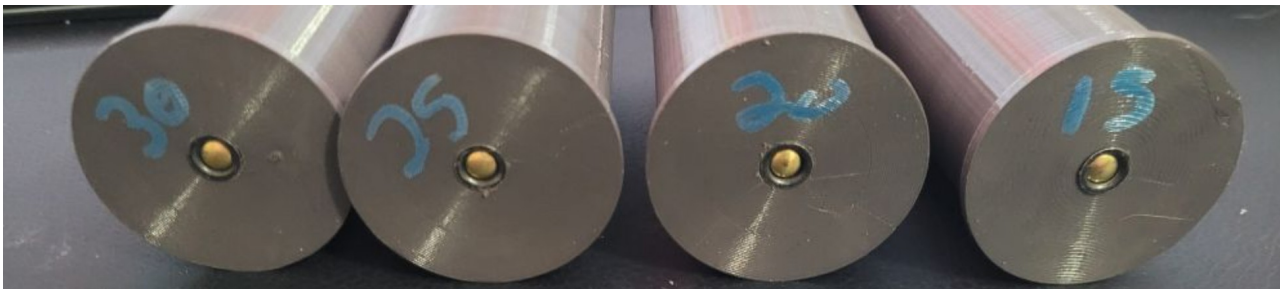
-First you must print the bits for the round. This is usually with all walls and dimensional accuracy is pretty important. For Hybrid Shells, you'll want to follow the assembly instructions for that specific shell.

-Next we'll do some prep work to our prints. Dependent on how clean your prints are, you'll likely want to sand the Z-seam down and get rid of any elephants foot, strings, etc. Many guys like to apply a small amount of E-Tape or Filament tape to the outside of the shell case. This helps with sealing the round so we don't get any back gas out of the breech.



-After you've cleaned up your round, we'll look at the primer pocket. Ensure there are no loose strings or support material because we need the primer to sit pretty flush. Don't drill out the pocket just yet, as we need a snug fit.

-For 209s you should be able to start it into the hole by hand, it should get pretty tight though. For that, we will use a press, vise, or clamps. Ensure you use a soft material like wood, plastic or hard rubber (free of protrusions) and place it on the primer side. Primers are pressure sensitive, so if yours applying enough pressure to deform the primer, STOP and re-assess. You'll likely need to widen the diameter of the primer pocket a little.



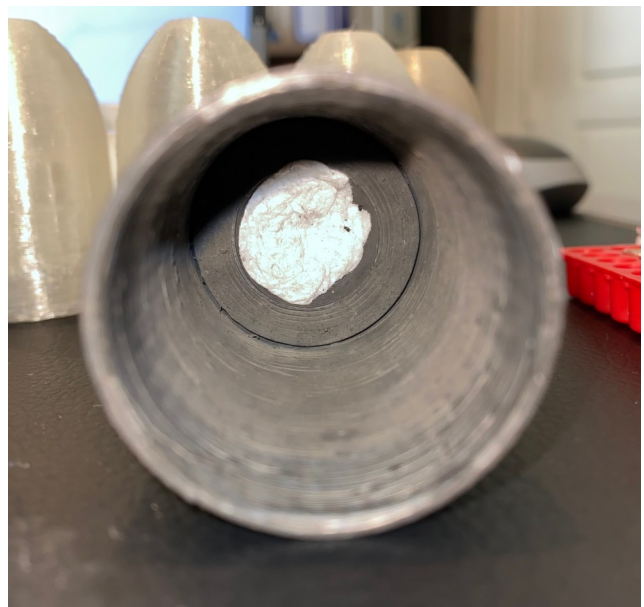
-For ramsets, you'll want to be a little more cautious, as the entire rim of the ramset contains the primer compound. If you damage the rim, it may ignite. But inserting them is the same as 209s except they will not sit flush. The rim will protrude so it can get crushed by your firing pin.



-Next we'll load our powder (This step may not be needed with higher level ramsets). Remember, start small. Measure out your powder in a volumetric measurer and add it to the shell. Try to get all of the powder into the powder cup. You don't want accidental ignition from the friction of inserting the round.



-Depending on the shell you use and powder amount, you might not fill the entire powder cup. For this we use wadding, usually toilet paper or something similar. The goal is to keep the powder together and not shaking around in the shell. This helps with efficiency of your round. You'll ball up the TP (1 Square should work) and place it on top of the powder.



-This next step is probably the most important for round performance: The Seal. Next we will be creating the seal around the projectile. We can accomplish this one of a few ways. Some like to use Electrical or Mono-Filament Tape. The goal here is to add enough wraps (Usually 1 or 2) to achieve a rather snug fit withing the case. Another option is hot gluing the projectile into the shell case. DO NOT use anything other than hot glue to do this. Dependent on your powder type, dimensional accuracy, etc, you may want more or less Tape or glue. At minimum, you'll want a bead of glue around the tapered edge of the projectile, where it interfaces with the shell case. Tape is the easiest option as you can remove the projectile if needed. If you're struggling to get good performance, give hot glue a try.

-The last step is optional. If not already completed, you can add some tape around the nose cone (at its widest spot). This will help stop gas from escaping around the projectile.



You now have a completed shell!

Remember standard gun safeties apply!

Chapter 5

Conclusion

This guide is not the end-all be-all. The beauty of printed ammunition is that it is only limited by the imagination of the builder.

We cannot stress enough that energetic materials are not to be taken lightly. Please maintain a level of respect on your launcher endeavors.

Contributors:

Methmatics
Bitplumb
Ptact
DannyMeatball
GoonGunDesigns
TrophyTrout

Lulzgoat
40oz
V8Vtwin
EWW
JustinHates

IMA
ZipDic
Mussy
Caska
Zer0Fux

and probably a bunch of others that I forgot to add in... If you've contributed to the 37mm community, please reach out to DannyMeatball to get your information listed.