KADECAD 2021

FROM DETERRENCE DISPENSED

K-CAD 3D PRINTED SUPPRESSOR PACK V1

MANUAL

Following your local laws is recommended.

WARNING: Building and shooting with your own suppressors can be dangerous, use these files at your own risk.
We are not responsible for any dangerous or illegal acts committed with these files.
We are not responsible for any injury caused from using these files.

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INTRODUCTION

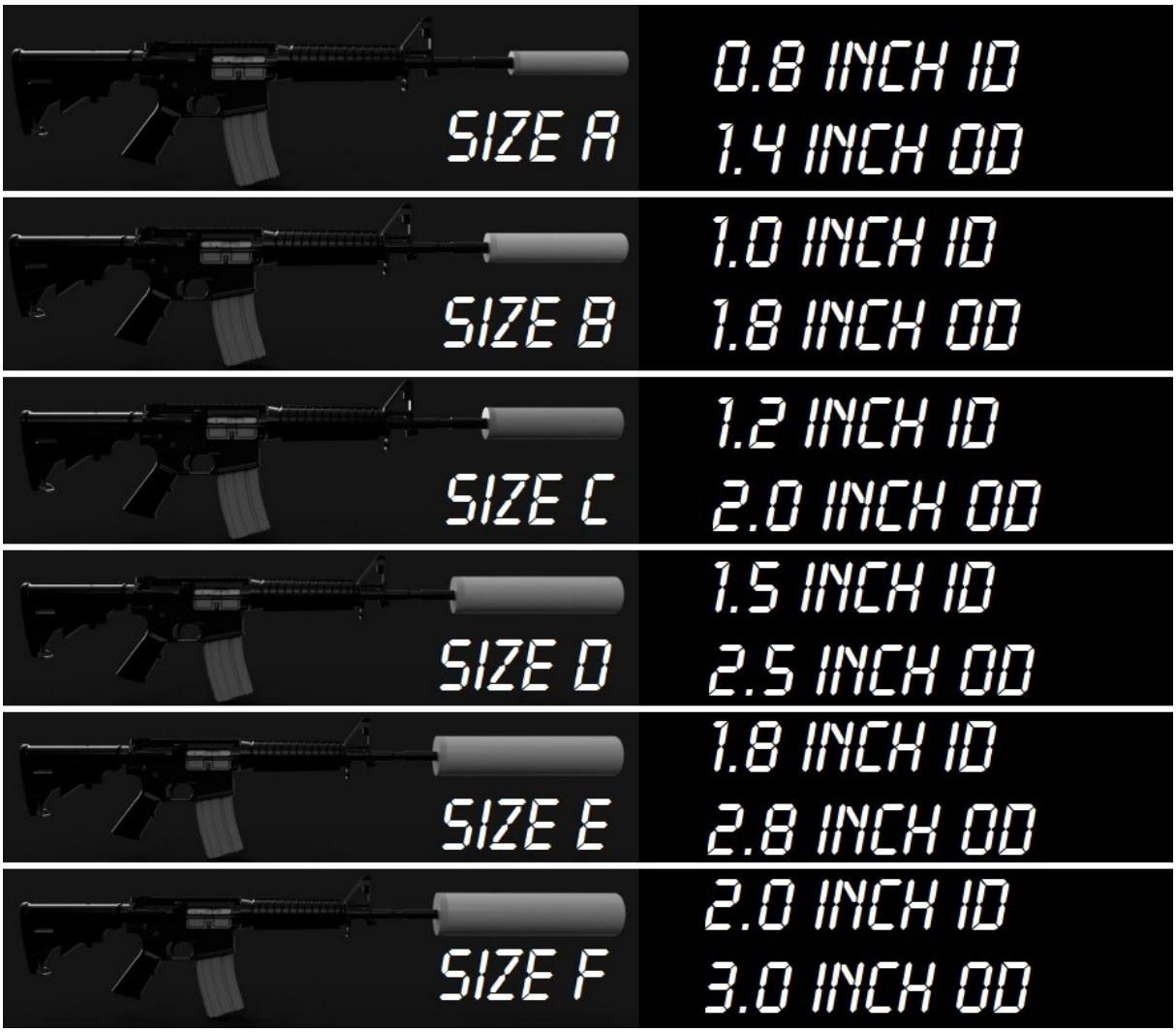
Since the suppressor (also known as the silencer) was first invented in the early 1900's, people all over the world have been finding new ways to build them out of cheap and easily accessible parts. Today, with the help of new 3D printing technology, professional grade, high performance suppressors can now be built by anyone, anywhere. This suppressor file pack contains the information to build a suppressor that will fit almost all firearms with threaded barrels, using only a 3D printer.

This file pack contains 640 files, offered in both STL and STEP file format, each file was custom designed. Most of the files are compatible with each other, giving this pack a total of 66,380 suppressor combinations. They come in various sizes and lengths, as well as all calibers from 17 caliber up to 73 caliber, or 12 gauge. These 100% 3D printed suppressors can be used with all calibers with subsonic ammunition, as well as all 22 Long Rifle ammunition supersonic and subsonic. This manual will take you through the processes of customizing your suppressor to fit your needs.

CUSTOMIZING YOUR SUPPRESSOR

PART 1: SUPPRESSOR HOUSING SIZE SELECTION

Customizing your suppressor begins with selecting a housing size. There are six sizes to choose from, A through F, with A being the smallest size and F the largest. The larger the housing size, the more gas the suppressor can catch. So in general, a larger housing size means a better performing suppressor. However, if you plan on using subsonic 22 caliber only, with your suppressor, for example, a large housing size is not necessary. This is why commercial 22lr suppressors are so small. Other disadvantages of larger suppressors are: longer printing times, more filament needed to build and replace parts, a larger suppressor may block the view of your firearm's sights, the larger the suppressor the heavier it is, etc. Also, something to note is that some larger calibers are only available in larger suppressor sizes. Each housing size has 10 different lengths, we will discuss this more in the next part. For more information about these suppressor housing sizes, and for a better understanding, here are some renderings and dimensions (seen on the next page):



NOTE: As stated before, the sizes range from smallest to largest as A, B, C, D, E, and F. The pictures may be deceiving at first glance.

PART 2: SUPPRESSOR BORE SIZE

Next, we choose a suppressor bore size. The smaller the suppressor bore, the better the gas seal, so to speak. So the smaller the bore size, the better the performance, but also the higher the risk of a baffle strike, which is bad. If a bullet strikes a suppressor baffle as it travels through, the accuracy of the shot will decrease substantially, and the damaged baffle will most likely need to be replaced before the suppressor can be used again. In a worse case scenario, a baffle strike could blow the suppressor off the firearm, possibly also sending debris/shrapnel back at the operator. It is recommended to use a bore size that is 0.06 inches larger than the largest caliber bullet that you intend to shoot through it. This is the commercial suppressor industry standard. For an example, if you intend to shoot 45 caliber (0.45 inch diameter) bullets through your suppressor, it is recommended to use a 51 caliber (0.51 inch) suppressor bore size. If you need a suppressor bore size that is not one of the calibers listed, you can either edit the files with computer-aided design software or use a drill to ream out the bore diameters of your baffles and suppressor housing. If you decide to use CAD software to edit the files, we recommend you edit a suppressor housing and suppressor baffles that are one bore size smaller than what you need, and then cutting the bore larger. The same concept goes for someone who chooses to drill their suppressor bore to a larger diameter. Print a suppressor housing and baffles that are smaller than the caliber you need, then use any type of drill to ream out the bores to the correct size.

PART 3: SUPPRESSOR LENGTH SELECTION

The best suppressor length for you depends on some of the same factors mentioned in part 1: suppressor housing size. Just like the suppressor housing, the longer the suppressor the more gas that it can capture. In some cases, trading suppressor size for length is a better option. For example, if you need a suppressor with a large amount of volume to catch a larger amount of gas, but also have a rifle scope, or sights, that sit low to the firearm, you may want a long suppressor, rather than a large size suppressor. This would ensure that you can see over your suppressor with your low sitting sights, while also being able to catch a larger amount of gas.

PART 4: SUPPRESSOR MOUNT SELECTION

The suppressor mount is the piece that mounts to the muzzle of your firearm. With each suppressor size, there are up to fifteen different thread sizes to choose from. If the threads on the muzzle of your firearm are not one of these sizes, you will need to buy a thread adapter. The thread options are listed below along with the size housings at which they are offered:

Imperial threading:

Note: All imperial threads are right hand

- 1/2×20 Size A, Size B, Size C, Size D, Size E, Size F
- 1/2×28 Size A, Size B, Size C, Size D, Size E, Size F
- 3/4×24 Size A, Size B, Size C, Size D, Size E, Size F
- 5/8×24 Size A, Size B, Size C, Size D, Side E, Size F
- 5/8×32 Size A, Size B, Size C, Size D, Size E, Size F
- 9/16×24 Size A, Size B, Size C, Size D, Size E, Size F
- 7/8×14 , Size B, Size C, Size D, Size E, Size F
- 1×14 , , Size C, Size D, Size E, Size F

Metric threading:

LH = left hand threads
RH = right hand threads

- M14×1 LH Size A, Size B, Size C, Size D, Size E, Size F
- M15×1 RH Size A, Size B, Size C, Size D, Size E, Size F
- M16×1 LH Size A, Size B, Size C, Size D, Size E, Size F
- M16×1 RH Size A, Size B, Size C, Size D, Size E, Size F
- M18×1 RH Size A, Size B, Size C, Size D, Size E, Size F
- M18×1.5 RH Size A, Size B, Size C, Size D, Size E, Size F
- M24×1.5 RH , Size B, Size C, Size D, Size E, Size F
- M26×1.5 LH , , Size C, Size D, Size E, Size F

PART 5: BAFFLE SELECTION

Now that you have decided what suppressor housing and mount you are going to use, finding the right baffle for your housing is easy. Since you have already chosen a housing size, use that same size baffle, then choose the bore diameter you have previously determined. For example, if you have chosen to use a Size C housing with a 42 caliber bore (for a 9mm or 355 inch diameter bullet), you will want to use a Size C baffle with a 42 caliber bore. You are now ready for printing.

SUPPRESSOR PRINTING INSTRUCTIONS

Now that you have determined what suppressor housing, suppressor mount, and suppressor baffles you need, you are now ready to print. These suppressors work fine when printed in standard PLA, but the stronger the filament you use, the better the strength and longevity of your suppressor will be.

When it comes to the strength of the suppressor housing, print orientation is CRITICAL. This is because the most fragile areas on a 3D printed part are where the printed layers converge. If you print a suppressor housing vertically, the suppressor will only be strong enough for subsonic 22 caliber ammunition and 22 long rifle ammo. However, if the suppressor is printed horizontally, so the printed layers have a larger area to adhere, the suppressor can handle all subsonic ammo (and even some supersonic handgun ammunition). If you decide to print vertically, you will want to print the housing on its nose so that support material is not needed. If you decide to print horizontally, take as many precautions as possible to prevent warping, and only use a small amount of support material over the threads of the housing. Printing more support material is not really necessary, and if you did print support material all throughout the housing, it would be very hard to remove.

The mount can be printed vertically due to the threads evenly distributing the pressure on many printed layers. Print the mount on its back (the side with most flat area), and without support material.

Printing the baffles is easy. The baffles can be printed back side (flat side) down, and without any support material.

NOTE: Make sure your printer settings are properly tuned before printing.

PART CLEAN UP AND ASSEMBLY

Once the parts have been printed, if you printed the housing horizontally, you can use a pair of pliers to take out the support material inside the housing. You can use a file and/or sandpaper to take out any abnormal bumps or marks your printer may have left behind. Then it's recommended to check the bore diameters of your baffles and housing with calipers, in order to verify that they are the proper diameter.

Assembly is easy, slide the baffles into the housing, back side (flat side) down. Once all baffles have been installed, you can now screw in the mount to hold them all in place. If the mount doesn't screw all the way in, you can still use the suppressor, as long as there is only a small gap between the mount and housing. However, it is recommended to take the baffles out and sand or file them down slightly, then reinstall to create a perfect fit. Then, look through your suppressor to make sure there is no debris and there is a perfect channel for a bullet to pass through. From here, all you need to do to use the suppressor is to screw it onto the muzzle of your firearm before shooting. Please make sure that your suppressor is straight and true before shooting, to ensure the bullet will pass through the suppressor properly. The threads may be tight when you first screw in the suppressor, but this should loosen up slightly over time.

PROPER SUPPRESSOR USE AND TIPS

As stated in the introduction of this manual, these suppressors are rated for all calibers with subsonic ammunition, except for 22 long rifle ammunition, which can be subsonic or supersonic. As you may know, there are two main reasons that guns are loud. The first reason is that a standard supersonic bullet makes a supersonic "crack" when it exits the muzzle of the firearm, and the second reason is that, after the bullet exits the barrel, the pressure from behind that bullet is released, and the remaining gas burns off as it comes in contact with the oxygen in the air. Since we are only using subsonic ammunition, we eliminate the first reason, reducing the sound by a significant margin, but not by enough to be hearing-safe. Now, when we install the suppressor that catches the expanding gas, this almost eliminates (depending on your suppressor choice) the second reason. Your firearm is now hearing-safe.

NOTE: Bolt action firearms are more effective with suppressors because of the fact that the bolt does not move upon firing. Some firearms, such as Armalite rifles (AR-15s and AR-10s), have a mechanism called the forward assist. When shooting these firearms with subsonic ammunition, the operator can hold down the forward assist to keep the bolt locked in place, as they fire the rifle. Making the gunshot even quieter.

Before you use your suppressor for the first time, you should know about "first round pop". First round pop is a phenomenon where the first shot of a firearm that is using a suppressor is just as loud as it would be if it did not have a suppressor. The following shots are then much quieter. This happens because when the firearm is fired for the first time in a while, the suppressor is full of air, which obviously contains oxygen. So when the suppressor catches the expanding gases, the oxygen helps the remaining gas burn quickly, causing the suppressor to not be very effective. However, after the first shot, the suppressor now contains carbon dioxide, which does not assist the burning of the gas. Therefore, the sound of the following shots is effectively reduced. You can prevent first round pop in a few different ways.

One way to prevent first round pop is to use a spray bottle to spray water into the suppressor. The objective is not to flood the suppressor, but to make a coat of water on the internal surfaces of the suppressor. This coat of water will turn to vapor when the pressure and temperature of the suppressor increases, and help extinguish the gas. The second and easiest way to prevent first round pop, is to simply blow/breathe through your suppressor for a few breaths. This way, we fill the inside of the suppressor with carbon dioxide from our breath. Blow/breathe through the suppressor at a slow and constant rate for a few breaths, then screw the suppressor onto your firearm, and then we recommend to shoot within a couple minutes.

If you are shooting consistently, make sure you check the baffles every so often to make sure they are not melting or cracking. If they are, you will want to slow down your shooting. The rate at which a 3D printed suppressor melts and chips is determined by the type of filament you use, the burn rate of your gunpowder, the speed, and the size of the bullet that passes through it.

IMPROVING THE STRENGTH AND HEAT RESISTANCE OF 3D PRINTED SUPPRESSORS

As stated in previous sections of this manual, the type of filament you use and the print orientation of your suppressor largely dictates its strength and longevity. However, there are more ways to improve durability. Thanks to the research by Keybase user Aan'allein, we can now improve baffle strength and heat resistance by several times. Simply coating the top surface of the baffle and sides of the baffle arms with Epoxy (not the surfaces that are always in contact with each other), we can improve the strength and heat resistance by 3 times. Instead, if we coat the baffles with an epoxy and ceramic mix, we can increase the heat resistance by 5 times, and the strength by 2 to 3 times. To do this, mix the ceramic and epoxy mixtures separately, as you would normally, then add as much of your ceramic mix as you can to the epoxy, while maintaining enough epoxy that it will still stick to the surfaces of the baffle.

PART DIMENSIONS

OD: OUTER DIAMETER
ID: INNER DIAMETER
H: HEIGHT
L: LENGTH

BAFFLES DIMENSIONS:

SIZE A BAFFLES -
OD: 0.80 INCHES OR 20.32 MM H: 0.60 INCHES OR 15.24 MM

SIZE B BAFFLES -
OD: 1.0 INCHES OR 25.40 MM H: 0.80 INCHES OR 20.32 MM

SIZE C BAFFLES -
OD: 1.2 INCHES OR 30.48 MM H: 0.80 INCHES OR 20.32 MM

SIZE D BAFFLES -
OD: 1.5 INCHES OR 38.10 MM H: 1.0 INCHES OR 25.40 MM

SIZE E BAFFLES -
OD: 1.8 INCHES OR 45.72 MM H: 1.2 INCHES OR 30.48 MM

SIZE F BAFFLES -
OD: 2.0 INCHES OR 50.80 MM H: 1.2 INCHES OR 30.48 MM

SUPPRESSOR HOUSING DIMENSIONS:

SIZE A HOUSINGS -
OD: 1.4 INCHES OR 35.56 MM ID: 0.80 INCHES OR 20.32 MM

SIZE B HOUSINGS -
OD: 1.8 INCHES OR 45.72 MM ID: 1.0 INCHES OR 25.40 MM

SIZE C HOUSINGS -
OD: 2.0 INCHES OR 50.80 MM ID: 1.2 INCHES OR 30.48 MM

SIZE D HOUSINGS -
OD: 2.5 INCHES OR 63.50 MM ID: 1.5 INCHES OR 38.10 MM

SIZE E HOUSINGS -
OD: 2.8 INCHES OR 71.12 MM ID: 1.8 INCHES OR 45.72 MM

SIZE F HOUSINGS -
OD: 3.0 INCHES OR 76.20 MM ID: 2.0 INCHES OR 50.80 MM