Decker .380 v1.0

Build Instructions

Required Parts List

Quantity	Description	Alternate Option	Modification Needed	Use
1	M5 threaded Rod (1m long)	10/24 threaded rod (3ft)	Yes	Receiver Rods
1	8mm rod (300mm)	5/16-inch rod (1ft)	Yes	Guide Rod
2	8mm rod (100mm)	5/16-inch rod (4in)	No	Bolt Weights
18	M5x25 socket head screw	10/24 socket head screw	No	Assembly
1	3/8-inch tube	3/8-inch rod or bolt	Yes	Bolt Protrusion
1	Music Wire Torsion Spring Left Hand Wind	Music Wire Torsion Spring Right Hand Wind	Yes	Hammer Spring
1	Ballpoint Pen Spring	Any small spring, 5mm or less	No	Safety Spring
1	Sauce Pump Spring	AK main spring	No/Yes	Main Spring
2	19mm Spring	3/4 inch spring	No	Magazine Spring
1	1/8-inch x 12 inch metal drill bit	4mm x 30cm metal drill bit	Yes	Drilling out bolt and then partial for use as firing pin
1	.380 Chaszel barrel liner	Bersa .380 barrel or ECM.	No	Barrel
2	KG Wheel of Filament – PLA+, PLA Pro or equivalent		No	Body

- See Appendex I for suggested sources for all above items

Manufacturing Metal Components

Receiver Rods:

Taking the full 1m of threaded rod, cut two 380mm lengths. It is highly recommended that you cut each of these 380mm lengths from the two ends of the full-length rod, such that each 380mm length has one end with undamaged thread. Clean and debur the cut ends. Clean and debur both ends of the remaining middle section, which should be about 240mm in length.

Guide Rod:

Taking the full 300mm length of 8mm rod, cut to 275mm in length. Debur and chamfer both ends with a file. Insert the 275mm length of rod into the "Guide Rod Jig" fully. Using a file or rotary tool, cut a notch in the rod corresponding to the notch in the jig. For best results, use a 5mm grinding stone.

Bolt Protrusion:

There are two methods to manufacture the bolt protrusion, one using a tube with a correctly sized hole (type A), and one using either a 3/8-inch rod or a 3/8-inch bolt (Type B). Both versions are functionally identical once completed.

Type A:

Cut a 100mm length of the premade 3/8-inch steel tube. Ensure that both ends are totally flat and perpendicular to the shaft. Sand to a smooth and shiny finish for best results.

Type B:

Cut your 3/8-inch rod to 110mm in length. If you are using a 3/8-inch bolt, cut off the head, and threaded portion of the shaft such that you are left with a 110mm length of 3/8-inch rod.

NOTE: It is critical that these cuts be square and not slanted. A slanted cut may cause the drill bit to drill off-center.

Insert the drill bit into the hole in the “Bolt Protrusion Jig”, such that the cutting end protrudes only a small portion into the concave section of the jig. Securely attach the drill bit such that it cannot move, such as in a vice. Insert your 110mm length of rod into your drill such that it spins when the drill is used. Heavily lubricating the inside of the jig, insert your rod, and begin drilling. Note that the drill bit remains stationary, and the rod is moving. This mimics the action of a conventional lathe, and prevents the drill bit from “walking”, ensuring that the hole you are making is perfectly centered. After a short period pull the metal rod from the jig, removing excess metal shavings. Add more lubricant. Reinsert the metal rod into the jig and continue drilling until you can drill no further. Loosen the vice, and feed more of the drill bit into the jig. Keep repeating this process until the end of the drill bit is at the same level as the opening of the jig where you insert the rod. This process will take a considerable amount of time. Do not rush. Flip the rod in your drill such that the segment you have already drilled is now facing the drill’s chuck and return the drill bit to its starting position in the jig. Repeat the drilling process until both holes meet in the middle. Ensure the hole you have bored through the rod is smooth and allows for the drill bit to be moved inside without much if any friction. The rod is now a tube. Cut it to 100mm in length. Sand to a smooth and shiny finish for best results.

Hammer Spring:

The Hammer Spring may be made from either the left hand wound or right hand wound versions of the torsion spring.

Using the left hand wound version of the spring, place the spring such that the center of the coil is oriented vertically, with the bottom arm facing left, and the top arm facing right. Cut the top arm to 15mm in length as measured tangent from the coil. Cut the bottom arm to 35mm in length as measured tangent to the coil. Using plyers, fold the final 10mm such that it is parallel to the coil and facing upwards.

For the right hand version of the spring, mirror these steps.

Safety Spring:

Cut the pen spring to 20mm in length. If your spring feels weak, you may leave it longer. Note that lengths over 20mm may make safety installation more difficult.

Firing Pin:

Cut the drill bit shaft to about 127mm in length. Grind one end to a dull point. If you are manufacturing a Type B bolt protrusion, you can use the same drill bit you used to drill the hole.

Printing Polymer Components

A Foreword:

There are several variations of the Decker platform to choose from. All use identical metal components, so the decision is purely based upon how you want your firearm configured. All parts are to be printed in the provided orientation, with 10 walls, 98% infill, and without any support.

We recommend your first layer be printed slow. Using a brim can assist with adhesion and preventing curling.

TUNE YOUR PRINTER FIRST!

Receiver:

The receiver is found under the “Receiver” folder. This part is identical between all versions of the Decker.

Bolt Carrier Group:

The Bolt and Firing Pin Block are found under the “BCG” folder. Print all parts contained in the “BCG folder.

Grip:

There are two grip options for the decker, Short and Long. Both versions are fully compatible with all versions of the decker and all trigger layouts. Print whichever grip you prefer.

Magazine Orientation:

The first major choice is magazine orientation. The Decker supports side and top loading options (known as the Side Decker and Upper Decker respectively). Both versions are fully ambidextrous. This choice will dictate the type of gun you make and should be viewed as a permanent decision for that specific receiver

The Side Decker can have the magazine installed in either side at any time with no modification, disassembly, or alternate parts. This configuration is similar to a STEN or Sterling submachine gun. The Side Decker does have an option featuring a picatinny rail for optics mounting.

The Upper Decker has the magazine installed in the top of the gun, and ejects downwards, akin to an Owen or F1 submachine gun. On the Upper Decker, the sights must be offset so as not to be occluded by the magazine. There are therefore both right and left options for the Dust Cover and Handguard. It is highly recommended that you print the version corresponding to your dominant hand (If you are right hand dominant, print the TL Dust Cover Right and TL Handguard Right).

Inside the "Version Specific Parts" folder you will find "Side Decker Parts" and "Upper Decker Parts" files, respectively.

You must print the following parts corresponding to your preferred version: Magwell, Impact Plate, Handguard, and Dust Cover.

Trigger Layout and FCG:

The next major choice is trigger layout. There are two layouts available, Conventional and MG34. Both layouts can be made with either a standalone standard semiautomatic trigger, or with a double trigger featuring a standard semiautomatic trigger in the front and an enhanced rate of fire semiautomatic trigger (referred to as recoil assisted reset or "RAR") in the rear.

The Conventional trigger layout features a trigger guard deigned for the user's index finger to operate the trigger. If using the RAR trigger, users switch their index finger between triggers to fire.

The MG34 trigger layout features a trigger guard designed for both the user's index and middle fingers to operate the trigger. If using the standalone standard semiautomatic

trigger, both fingers operate the trigger. If using the RAR trigger, the user's index finger operates the standard semiautomatic trigger, and middle finger operates the RAR trigger.

Inside the "Fire Control Groups" folder you will find "Universal FCG Parts", "Conventional Layout" and "MG34 Layout" folders.

You must print all parts contained in the "Universal FCG Parts folder, and all parts within whichever trigger version's sub-folder you choose.

NOTE: the RAR trigger system is in practice a version of a Forced Reset Trigger. FRTs are under extremely high scrutiny by the BATFE, and may be deemed to be machine guns by the BATFE. Despite the mechanical difference and the developer's contention that the RAR system is mechanically distinct from a machine gun, print and use the RAR trigger system at your own risk. The developer is not your attorney, and neither this document nor the accompanying files, nor any statements made by the developer should be deemed as legal advice, nor should be taken as an endorsement of any activity.

Barrel Mounts:

There are two options for the barrel mount, each designed for one of the barrel options. If using either a store-bought liner or an ECM barrel, the "Barrel Mount (Liner)" should be printed. If using a Bersa barrel "Barrel Mount (Bersa Barrel and Busing)" should be used.

Rear Support Parts:

There are four options for the rear support part of the gun. All options are quick disconnect using the Decker's proprietary rear mounting system. You can print any of the following parts: Brace, Stock, 1913 Endcap, Smooth Endcap.

NOTE: printing and installing a stock on a Decker with a barrel less than 16 inches in length may constitute a violation of federal law. Do so at your own risk.

Magazine:

The magazine is found under the "Magazine" folder. All 4 parts should be printed to make one magazine.

Assembling The Firearm

Once all parts have been printed and machined, you may begin assembling your Decker. The assembly process is almost identical between both the Upper Decker and Side Decker. All screws are self-tapping. Do not overtighten.

Main Gun:

1. Take your Magwell, and Impact Plate. Screw the impact plate to the rear section of the Magwell using 3 Screws, such that the impact plate straddles the protrusion at the rear of the Magwell. Two Screws will go into the rear of the Impact Plate screwing into the Magwell, and one will go into the bottom of the Magwell screwing into the impact plate. These Screws should not be tight at this point to allow for some movement. NOTE: If you are printing a Side Decker, install another screw into the bottom of the Magwell such that it protrudes into the cavity slightly. This will serve as a magazine over insertion stop.

2. Screw the Magwell assembly into the Receiver. One screw will go through the Receiver's front screw hole into the protrusion at the rear of the Magwell. This will hold the Magwell to the receiver during assembly.

3. Take one of the Receiver Rods cut previously and coat with a dry lubricant (wax or bar soap is recommended). Insert the lubricated Receiver Rod into your drill, such that the cut end is facing your hand. Slowly begin screwing the rod into one of the two side holes of the Magwell such that it will pass through the Magwell and Impact Plate into the Receiver. Continue screwing all the way into the receiver at a slow

speed and stop once you begin to feel any significant resistance. Roughly 10mm of the rod will protrude out of the front of the assembly once done. Repeat the process on the other side.

4. Tighten all screws in the finalized assembly. Do not overtighten.

5. Take your Trigger Guard, and insert its front into the small void between the Magwell Protrusion and the Receiver. Insert one Screw into the Receiver, and screw the Trigger Guard onto the Receiver.

6. Using one screw, screw the Grip onto the Trigger Guard.

7. You are now finished with the Main Body of your gun.

Barrel:

1. Take your Barrel and insert either a spent case or a snap cap, into the chamber. If using a Liner or ECM barrel, you may want to use some tape to further ensure that the chambered end of the barrel is fully protected from material intrusion.

2. Mix a moderate amount of JB weld. Spread it inside of the Barrel Mount, full coating the grooved sides.

3. Insert the Barrel into the Barrel Mount. JB weld will spill out the back.

4. Clean as necessary. Particular not should be taken of the incline towards the chamber and the front flat surface of the Barrel Mount.

5. Remove the casing or snap cap. Ensure that the chamber is clean.

6. Let the JB Weld Cure Fully.

7. Install the Barrel Assembly into the front of the Main Body of the gun.

8. Using two Screws, screw the Handguard onto the front of the Main Body. Be sure to tighten evenly. You may find that the barrel either remains static or spins with some

friction. Either is fine. If it does spin, consider tightening the two Screws further, but do not overtighten.

9. You are now finished and have installed the Barrel.

Dust Cover:

1. Take your Guide Rod and install it into the Dust cover such that the notch is towards the rear of the Dust Cover and is facing upwards.

2. Inert one Screw into the side of the Dust Cover, such that its shaft holds the notch of the Guide Rod in place. If you feel that the screwing process is uncharacteristically difficult, readjust the rod's placement slightly. Once fully assembled there will be some play in the Guide Rod. This is to be expected and is intentional.

3. Place the Spring on the Guide Rod

4. You have now finished the Dust Cover Assembly.

Bolt:

1. Take the printed bolt and insert 1 Screw into the screw hole in the front of the Bolt, and two Screws into the forwardmost screw holes on the side of the Bolt (The ovoid hole). Tighten.

2. Mix a small amount of JB weld. Spread a small portion (slightly more than a pea sized amount) inside each of the two holes at the rear of the bolt. Insert the Bolt Weights into these holes. Fully insert the bolt weights as far as you can. There may be up to a 5mm gap between the end of the weights and the end of the bolt. The installed weights will not protrude from the bolt at all.

3. Mix a small amount of JB weld and coat about 10mm of the end of the Bolt Protrusion with it. Avoid the hole in the bolt protrusion where reasonable.

4. Install the Bolt Protrusion into the bottom most hole at the front of the Bolt. Use force to ensure that the Bolt Protrusion is full seated into this hole. About 9mm of the Bolt Protrusion should be exposed. You may find that hitting the Bolt Protrusion lightly with a piece of wood or rubber mallet helps to seat it. Do not hit it with an unreasonable amount of force.

5. Mix a small amount of JB weld and coat the rear of your Firing Pin with it, Insert it into the Firing Pin Block.

6. Let the JB Weld cure fully.

7. Insert the Guide Rod into the hole in the bolt, such that the Spring abuts the shelf roughly halfway down the length of the Bolt. Compress Bolt and Dust Cover together such that the spring is compressed. Inserting the Bolt Protrusion into the hole in the impact plate, angle the Dust Cover such that it becomes parallel to the Receiver. When you release the tension on the spring, the tail of the Guide Rod will enter the hole at the rear end of the Receiver. (This is the process for general assembly and disassembly with the finished firearm).

8. Pull back the Bolt against spring pressure and insert a spent case or snap cap into the Barrel. Allow the bolt to move forward, so that the Bolt Protrusion gently rests on the case head. You will notice that the front of the Bolt likely does not hit the Impact Plate. Using an Allen Key slowly back out the forward-facing Screw in the bolt, until the force is exerted on it rather than the cartridge. This sets the headspace.

9. Remove the Bolt and Dust cover assembly. Remove the bolt from the Guide Rod.

10. Remove the spent cartridge.

11. Using the Drill Bit, drill through the Bolt Protrusion's hole, into the Bolt's plastic. This will clear out any JB weld which has made its way into the protrusion and remove the sacrificial layer of filament in the Bolt. You may want to move the Drill Bit back and forth to ensure that there is no material in the newly created firing pin channel.

12. Install the finished Firing Pin through the rear of your bolt, such that the pointed end of your firing pin protrudes slightly from the bolt Protrusion. It should move freely. Install one Screw into the Bolt such that it retains the Firing Pin.

13. Install the Reset Wheel into the rear of the Bolt using one Screw, such that the shaft of the Screw acts as an axle for the wheel. It should spin freely.

14. You have now finished the Bolt.

Fire Control Group:

1. Insert the Safety Spring into the hole at the rear of the left side safety selector hole in the receiver.

2. Insert the Detent into the hole. It will protrude somewhat from the hole into the main Safety hole.

3. Forcing the detent into the hole, insert the Safety into the left side of the Receiver, such that once fully inserted the Detent would sit in one of the two depressions on the Safety. Do not fully insert the safety yet. The safety's right side should be flush with the inside wall of the left side of the trigger pocket.

4. Install either the Standard Semiautomatic Trigger or both the Semiautomatic and RAR Semiautomatic Triggers into the trigger pocket. Slide the Safety all the way into position, and then insert one Screw into corresponding hole in the Receiver. Do not overtighten.

5. Inert the Hammer Spring over the internal round portion of the Hammer. Install the hammer using one Screw.

6. You have now installed the Fire Control Group.

Brace/Stock:

1. Take your Brace, and screw in the remaining length of threaded rod. In the alternative a length of 150mm or more may be used. Only about 10mm should protrude out of the front of the Brace.

2. You have now installed the Fire Control Group.

Magazine:

1. Insert the Mag Catch into the Mag Body. Insertion may take additional pressure or force as the Mag Catch must flex into place. Once installed, the hole at the bottom of the Mag Catch will be flush with the bottom of the Mag Body.

2. Insert the Mag Follower into the Mag body, and place two Magazine Springs, one atop the other, into the Mag Body such that they act as a single longer spring.

3. Install the Mag Baseplate. Insert one Screw into the Mag Baseplate, such that it screws into the Mag Catch.

4. You have now installed the Magazine

Final Assembly:

1. Check to make sure that the gun is not loaded. Make sure the hammer is cocked, and the gun is safe (Safety all the way to the right)

2. Install the Bolt and Dust Cover Assembly as before.

3. Move the Dust Cover forward about 15mm, such that the tail end of the Guide Rod no longer protrudes from the rear of the Receiver.

4. Install your Brace, by inserting the male end of the Brace into the female hole in the rear of the Receiver. This insertion will be 90 degrees offset. Once inserted, rotate the brace in the socket such that it is facing correctly, and release the Dust Cover, locking the Brace in place and preventing rotation.

5. Function-test the firearm to make sure there is no binding or parts breakage.

6. Install the Magazine.

7. You have now finished manufacturing your Decker.

Appendix I

Where to get the bits and bobs

M5 Threaded Rod / 10/24 Threaded Rod

Online Source:
https://www.homedepot.com/p/Everbilt-10-24-x-36-in-Zinc-Plated-Threaded-Rod-802207/204274027

Other Sources:
The 10/24 threaded rods are extremely common in any medium or larger sized hardware store in the US. Look in the section where they keep their raw metal stock / welding stock.

8mm / 5/16-inch Rod x 100mm (Bolt Weights)

Online Source:
https://www.amazon.com/uxcell-Lathe-Round-Solid-Length/dp/B07KY8858F?ref_=ast_sto_dp&th=1&psc=1

Other Sources:
Like the 10/24 threaded rods above, the 5/16-inch rods are extremely common in any medium or larger sized hardware store in the US. Look in the section where they keep their raw metal stock / welding stock.

8mm / 5/16-inch Rod x 300mm (Guide Rod)

Online Source:
https://www.amazon.com/uxcell-300mm-Stainless-Steel-Solid/dp/B082ZNM4L3?ref_=ast_sto_dp&th=1&psc=1

Other Sources:
Like the rods above, the 5/16-inch rods are extremely common in any medium or larger sized hardware store in the US. Look in the section where they keep their raw metal stock / welding stock.

M5x25 (10/24) Socket Head Screws

Online Source:
https://www.amazon.com/Socket-Screws-Grade-Alloy-Thread/dp/B0BQJ3DZ34?ref_=ast_sto_dp&th=1&psc=1

Other Sources:
Both the M5 and the 10/24x1-inch socket head screws are usually available in hardware stores as well, though you will often find they won't have enough in stock. May require a couple of trips to other stores.

<u>3/8-inch Tube / 3/8-inch Bolt</u>

Online Source:
https://www.mcmaster.com/89955K729/

Other Sources:
The 3/8-inch tube is best had online from McMaster. If you MUST source locally, find a well-stocked metal supply house. If you are going to use the 3/8-inch bolt and drill it yourself, source a 3/8-inch x 4.5-inch hex bolt from your local hardware store where you can buy them singly. You can get these online too, but usually they force you to buy a box of 25 or 50. In that case, it would make more sense to just order the part from McMaster Carr.

Music Wire Torsion Spring

Online Source:
https://www.amazon.com/gp/product/B005XQEMKK/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&psc=1

Other Sources:
No brick and mortar source that I know of. You can also use this same spring in right hand twist as long as use the mirrored hammer. I have also seen these on Ebay.

Ballpoint Pen Spring

Online Source:
https://www.amazon.com/100PCS-Customized-Galvanized-Compression-Diameter/dp/B08FMJN2P9?ref_=ast_sto_dp

Other Sources:
The online link is just one example. Any small spring like that will work fine. You can take apart a ball point pen and use that spring, or even get one out of a mixed box of springs like you can get from Lowes or Harbor Freight.

Sauce Pump Spring

Online Source:
https://www.amazon.com/gp/product/B00HV0MAXC/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&psc=1

Other Sources:
This particular type of spring is available everywhere online, not just Amazon. Try Ebay and any company that sells to food service. Use the model number and no matter what the title is, it will be the same spring.

Magazine Springs

Online Source:
https://www.lowes.com/pd/Hillman-2-Pack-3-1-2-in-Zinc-Gate-Spring/3115915

Other Sources:
These are gate springs. You can find them in Lowes in the drawers in the springs/screws aisle.

1/8-inch 12-inch-long Drill Bit (4mm x 30cm)

Online Source:
https://www.amazon.com/Drill-America-GLBCOX121-Aircraft-Extension/dp/B00B2QY4VW?ref_=ast_sto_dp&th=1&psc=1

Other Sources:
You have a couple of options here. If you plan on drilling out the bolt length to create your own bolt protrusion, you will need to get a good quality one like listed here that is raged to drill steel. If you have the McMaster tube, you can go with a cheaper version that isn't steel rated, as you're just going to be using it to clear out the bolt hold and make a firing pin. ADVICE: Get more than one in case you break it.

Barrel

Online Source:
https://chaszel.com/product/380-barrel-liner/

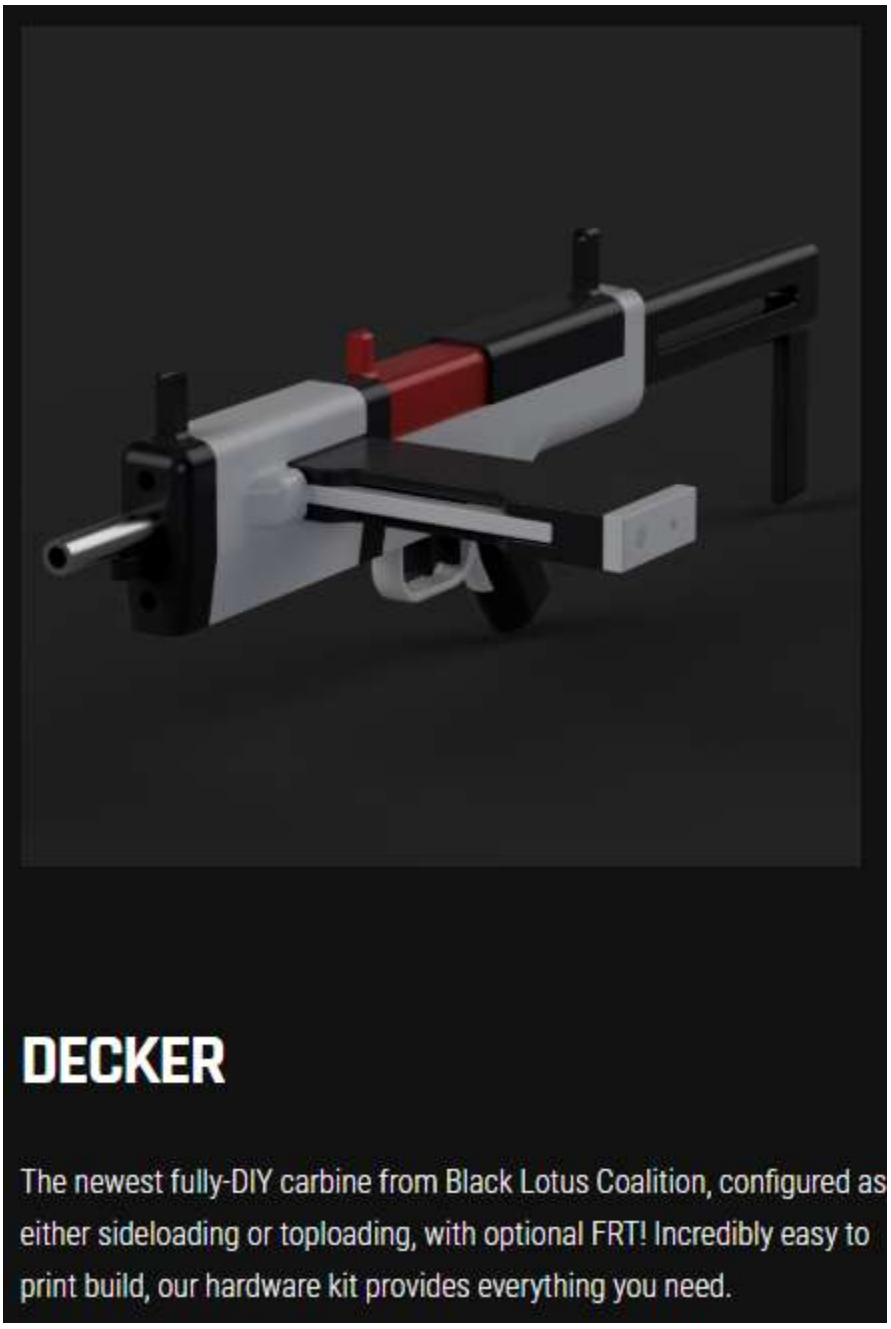
Other Sources:
The link is to acquire a barrel liner. You can also go the route of getting a "380 Bersa Barrel".

These are still fairly common and can be had for about $25 on EBay at the moment (Nov, 2024). You can also ECM your own barrel, but that is beyond the scope of this guide.

Appendix II

Complete parts kits

You can also order a full parts kit for your build. At this time 3dprintfreedom.com has build kits for the Decker.



Appendix III

Video Guides

There are two build videos that can assist you with building, tuning and maintaining your Decker:

Let's Build The .380 Decker
https://odysee.com/@BowTiedAnkylo:0/380DeckerBuildAlong:b

.380 Decker – Full Release Update
https://odysee.com/@BowTiedAnkylo:0/DeckerFinalUpdate:d