

AWCY?

# PROTO BARREL

## BUILD GUIDE

10/22 - AR22 - G22



# WHAT IS IT?

I really wanted a sleek looking carbon fiber barrel but didn't want to pay for it. So I've gone and developed the Proto Barrel which has so far cost me more than just outright buying a commercial one due to how many carbon fiber tube's I've purchased, for you however it will be a cheaper as all the leg work is complete!

It is an easy to follow DIY barrel that can be printed on a small form factor printer, it utilizes RC carbon fiber tubes and a 22lr barrel liner with minimal printed parts required. The barrel length can be as long as you want and it will still only require the same amount of printed material.



The 0.305" & 0.315" versions use two carbon fiber tubes, one is used on the inside to reinforce the barrel liner and to shield the heat from the PLA, the second is used as a sleeve on the outside to secure the printed breech and printed muzzle together.



There are four main variations, two for Ruger 10/22 bolts: **Standard OEM** & **Takedown**, And two for CMMG Bravo AR22 bolts: **Conversion (Dummy .556 collar)** & **22lr Dedicated**.

Barrel liner length for the Proto Barrel can be 7" to 20"+

# CHOOSE YOUR MUZZLE END

There are three choices when it comes to the printed muzzle end:

## 1) One Part Option (Permanent)

One piece muzzle end, can be just printed threads but there is also an option for a printed compensator.



## 2) Two Part Option (Interchangeable Threads)

I've developed a plug with internal threads so you can swap between different threads or the compensator. I find printing at a higher resolution (0.1-0.12) helps with the thread quality.



## 3) Metal Thread Adapter Plug (Permanent)

You will need to purchase a 1/2x36 TPI Change to 1/2x28 TPI Converter, they can be found on Amazon for about \$12-15. Just print the plug mount for it, some sanding of the 10mm x 8mm carbon fiber tube will be required for correct fitment. Epoxy the adapter into the plug.



# CHOOSE YOUR BARREL

RUGER  
1. 10/22 STANDARD OEM

RUGER  
2. 10/22 TAKEDOWN

CMMG  
3. AR22 W/ CONVERSION COLLAR

CMMG  
4. AR22 W/ DEDICATED COLLAR

5. 0.375" (3/8") VERSIONS



THE PREPARATION WILL VARY  
SLIGHTLY DEPENDING ON WHICH  
BOLT YOU ARE USING



# REQUIREMENTS

## 1) 22LR Barrel Liner

- 0.305", 0.315" or 0.375" OD
- 22LR Chamber Reamer
- JB Weld (Or another good two-part epoxy)

## 2) 25mm x 23mm x 420mm Carbon Fiber Tube

## 3) 10mm x 8mm x 500mm Carbon Fiber Tube\*

- Tubes can be found on Amazon, HobbyKing etc.
- You'll need at least 330mm in length in order to build a 16" Proto Barrel.

\* The 10mm x 8mm tube isn't needed if using a 0.375" OD barrel liner.

## TOOLS

### A) Hacksaw

### B) Hand Files

### C) 120-Grit Sandpaper

### D) Measuring Tape/Ruler

### E) Masking Tape

### (Optional) 5-8x24" Tap and Die Set

For printed muzzle end threads if they aren't threading easily



**TAKE PRECAUTIONS BY WEARING A RESPIRATOR WHEN CUTTING CARBON FIBER TUBES, IT IS NOT SAFE TO BREATHE IN CARBON FIBER PARTICLES**

# PROTO BARREL

## 10/22 OEM

This version is designed for the 10/22 Standard OEM, such as the Galileo or G22

### ASSEMBLY PREPARATION

- 1) Cut the 10x8mm carbon fiber tube to be the exact same length as your barrel liner
- 2) Cut the 25x23mm carbon fiber tube **3.75" shorter** than your barrel liner and 10x8mm carbon fiber tube. So if your barrel liner is 16.75" you must cut it to 13", 10.75" barrel liner will need a 7" carbon fiber tube and so on.
- 3) Measure the carbon fiber tubes, wrap masking tape around where you plan to cut, throw it in a vice and cut them with a hacksaw. Sand and file for a clean 90 degree cut.
- 4) Check fitment before epoxy, you'll want to make sure the barrel liner, 10x8mm carbon fiber tube and the 25x23mm carbon fiber tube all fit together and that the liner's muzzle end is flush with the top of the inner cf tube when "assembled". If not double check all measurements and adjust as needed.
- 5) The inner 10x8mm carbon fiber tube and liner should protrude beyond the 25x23mm carbon fiber tube sleeve by **30mm**, this is how it needs to be as the muzzle adapter threads will be here.
- 6) You need to REALLY rough up the liner to get it to stick to the 10x8mm carbon fiber tube. Take 120 grit sandpaper to the barrel liner followed by hand files.
- 7) Use a 22LR chamber reamer and cut the chamber into the barrel if you got a liner that didn't have it already done. DB-Firearms sells barrel liners pre-chambered.
- 8) Cut the extractor groove into the liner, taking care not to cut into the inner chamber wall.  
**GO TO PAGE 11 FOR MORE INFORMATION ON CUTTING THE EXTRACTOR GROOVE.**
- 9) Cut a small slot into the 10mm x 8mm carbon fiber tube for the extractor, use the included printed jig if it helps.

GO TO PAGE 12 FOR FINAL ASSEMBLY INSTRUCTIONS...

# PROTO BARREL

## 10/22 TAKEDOWN

This version is designed for the 10/22 Takedown, such as the AWCY? Bento Box.

### ASSEMBLY PREPARATION

- 1) Cut the 10x8mm carbon fiber tube to be the exact same length as your barrel liner
- 2) Cut the 25x23mm carbon fiber tube **3.75" shorter** than your barrel liner and 10x8mm carbon fiber tube. So if your barrel liner is 16.75" you must cut it to 13", 10.75" barrel liner will need a 7" carbon fiber tube and so on.
- 3) Measure the carbon fiber tubes, wrap masking tape around where you plan to cut, throw it in a vice and cut them with a hacksaw. Sand and file for a clean 90 degree cut.
- 4) Check fitment before epoxy, you'll want to make sure the barrel liner, 10x8mm carbon fiber tube and the 25x23mm carbon fiber tube all fit together and that the liner's muzzle end is flush with the top of the inner cf tube when "assembled". If not double check all measurements and adjust as needed.
- 5) The inner 10x8mm carbon fiber tube and liner should protrude beyond the 25x23mm carbon fiber tube sleeve by **30mm**, this is how it needs to be as the muzzle adapter threads will be here.
- 6) You need to REALLY rough up the liner to get it to stick to the 10x8mm carbon fiber tube. Take 120 grit sandpaper to the barrel liner followed by hand files.
- 7) Use a 22LR chamber reamer and cut the chamber into the barrel if you got a liner that didn't have it already done. DB-Firearms sells barrel liners pre-chambered.
- 8) Cut the extractor groove into the liner, taking care not to cut into the inner chamber wall.  
**GO TO PAGE 11 FOR MORE INFORMATION ON CUTTING THE EXTRACTOR GROOVE.**
- 9) Cut a small slot into the 10mm x 8mm carbon fiber tube for the extractor, use the included printed jig if it helps.
- 9) Refer to the Bento Box and Galileo guide's for the parts needed to finish the takedown mech assembly.

**GO TO PAGE 12 FOR FINAL ASSEMBLY INSTRUCTIONS...**

# PROTO BARREL

## AR22 CONVERSION

(.556 DUMMY COLLAR)

This version is designed for the CMMG Bravo 22LR Conversion bolt



### ASSEMBLY PREPARATION

- 1) Cut the 10x8mm carbon fiber tube to be the exact same length as your barrel liner
- 2) Cut the 25x23mm carbon fiber tube **30mm shorter** than your liner and 10x8mm cf tube
- 3) Make sure your liner is already prepared to receive the CMMG Bravo 22lr Conversion "dummy round" collar, **GO TO PAGE 11 FOR PREPARING YOUR BARREL LINER CORRECTLY.**
- 4) Measure the carbon fiber tubes, wrap masking tape around where you plan to cut, throw it in a vice and cut them with a hacksaw. Take care not to delaminate them. Sand and file for a clean 90 degree cut.
- 5) Check fitment before epoxy, you'll want to make sure the liner, 10x8mm carbon fiber tube and the 25x23mm carbon fiber tube all fit together and that the liner's muzzle end is flush with the top of the inner cf tube when "assembled". If not double check all measurements and adjust as needed.
- 6) The inner 10x8mm carbon fiber tube and liner should protrude beyond the 25x23mm carbon fiber tube sleeve by **30mm**, this is how it needs to be as the muzzle adapter threads will be here.
- 7) You need to REALLY rough up the liner to get it to stick to the 10x8mm carbon fiber tube. Take 120 grit sandpaper to the barrel liner followed by hand files.

GO TO PAGE 12 FOR FINAL ASSEMBLY INSTRUCTIONS...



# PROTO BARREL

## AR22 DEDICATED

**This version is designed for the CMMG 22LR Dedicated bolt**



### ASSEMBLY PREPARATION

- 1) Cut the 10x8mm carbon fiber tube to be the exact same length as your barrel liner
- 2) Cut the 25x23mm carbon fiber tube **3.75" shorter** than your barrel liner and 10x8mm carbon fiber tube. So if your barrel liner is 16.75" you must cut it to 13", 10.75" barrel liner will need a 7" carbon fiber tube and so on.
- 3) Measure the carbon fiber tubes, wrap masking tape around where you plan to cut, throw it in a vice and cut them with a hacksaw. Take care not to delaminate them. Sand and file for a clean 90 degree cut.
- 4) Check fitment before epoxy, you'll want to make sure the barrel liner, 10x8mm carbon fiber tube and the 25x23mm carbon fiber tube all fit together and that the liner's muzzle end is flush with the top of the inner cf tube when "assembled". If not double check all measurements and adjust as needed.
- 5) The inner 10x8mm carbon fiber tube and liner **should protrude beyond** the 25x23mm carbon fiber tube sleeve by **30mm**, this is how it needs to be as the muzzle adapter threads will be here.
- 6) You need to REALLY rough up the liner to get it to stick to the 10x8mm carbon fiber tube. Take 120 grit sandpaper to the barrel liner followed by hand files.
- 7) Cut the extractor groove into the liner, taking care not to cut into the inner chamber wall.  
**GO TO PAGE 11 FOR MORE INFORMATION ON CUTTING THE EXTRACTOR GROOVE.**
- 8) Cut a small slot into the 10mm x 8mm carbon fiber tube for the extractor, use the included printed jig if it helps.

**GO TO PAGE 12 FOR FINAL ASSEMBLY INSTRUCTIONS...**

# PROTO BARREL

**0.375" (3/8")**  
**OD BARREL LINER**

**A whole page just for this one sentence! Follow the instructions above for your bolt but ignore any mention of the 10x8mm carbon fiber tube, print the breach and muzzle you need that have the suffix "375in Liner Only".**

NEXT PAGE FOR FINAL ASSEMBLY INSTRUCTIONS...

PG 10

# DRILL INFO & EXTRACTOR

## AR22 CONVERSION

a 1/4" drill bit, drill into the liner  
~1/4" deep.

This will allow the liner to slip over the  
chamber adapter and ensure a gas tight seal.

Use a chamfering tool to clean up the end of the liner.



## AR22 DEDICATED & 10/22 OEM/TAKEDOWN

With some needle hand files, carefully add a  
slope for the extractor, you need to copy the  
slope as seen in the reference photo on the right.

The liner is not as thicc as a stock barrel so don't  
rush, go slow and check if the extractor can grab an  
empty shell every couple of minutes of filing.



**DO NOT CUT INTO THE INNER CHAMBER WALL OTHERWISE YOU  
RUN THE RISK OF CAUSING AN OUT OF BATTERY DETONATION.**

# FINAL

# ASSEMBLY

**Epoxy Time! I don't recommend using a fast drying epoxy, JB Weld works great.**

## ASSEMBLY PROCESS

1) Epoxy the 22lr barrel liner into the 10x8mm carbon fiber tube.

Make sure you align the extractor grooves on both the liner and the tube before letting it set.  
(*Not applicable to AR22 Conversion Proto Barrel*)

2) Epoxy the barrel liner + 10x8mm cf tube into the barrel retainer, plug the chamber with a q-tip and a cleaning patch or use the included jig to plug it:  
*Proto Jig Epoxy Blocker.stl*

3) Epoxy the 25x23mm carbon fiber tube onto the barrel retainer. At this point, before it's set, make sure the liner and inner carbon fiber tube are as centered as possible to the 25x23mm tube sleeve, if your cuts to the tubes weren't clean, it could affect the alignment. Press fit the muzzle end in to hold the tubes center while the epoxy sets, just don't epoxy the muzzle end in yet.

4) When the rest of the epoxy has had time to set you can go ahead and epoxy your muzzle end in. If you want to press fit it for now you can fire it without having it epoxied, this is as long as you are not using a metal muzzle device at the same time as the weight could cause it to work its way loose.



**ALLOW THE EPOXY TO DRY FOR 24 HOURS BEFORE USING**



**You have just made your own carbon fiber barrel!  
Congratulations you, have a cookie, fresh out of the oven.**



# FIN

If you have any questions or concerns with this guide please go to:

**[awcy.org/join-awcy/](https://awcy.org/join-awcy/)**

Join our chat room, we have a room dedicated to the Proto Barrel.

