AR00 milling guide

Milling an AR00 is a more challenging and involved task than milling an 80% receiver. You will need to perform several tool changes throughout, and you will need to frequently reorient the workpiece, which will involve careful positioning and mounting in the clamps. Make sure to read this guide prior to running the AR00 program.

Check out our three tips for success. These tips should help you avoid most problems.

-Caution. Make sure to read the instructions until you have a clear understanding of each step. Failure to do so can result in damage to the workpiece, tooling and/or Ghost Gunner.

-Never insert your hands into the machine while code is running and never run a movement step without first having the cover in place to keep metal chips from exiting the enclosure and to prevent body parts from getting crushed or cut by the moving/rotating equipment.

-Make sure to pay attention to which "job" you are selecting and running as there are many options. Read the description and decide which one is most appropriate for your situation and what you would like to accomplish.

-Running the Zero Percent program requires multiple position changes as well as tool changes. This increases the chance for an error. Carefully read instructions.

-Once you have begun running the milling procedure, do not reset WCS. New versions of DDCut may ask to reset WCS. Once you have begun the process DO NOT reset WCS until you have completed the last operation. Resetting the WCS will delete the coordinates from probe points. In operations 4 and 7, you may not be able to re-probe the part if indicating surfaces have been milled off.

Tools

The GG3 is the only Ghost Gunner model that can run the AR00 program. The Ghost Gunner 1 and 2 cannot run the AR00 cutcode.

Make sure you have the Zero Percent starter kit as well as a small paint brush, a metal file and a piece of paper or feeler gauge.

The AR00 cutting programs use the following operations to complete an 0% AR15 lower.
Operation 1-3 uses the 1/4” end mill for facing.
Operation 4, 5, 6 and 7 use three tools in each operation.

- First it will rough and mill the features with the 1/4” end mill,

- Next it will be followed with the 1/8” end mill to clean the corners and small features,
- Finally it will finish with the 1/8” deburr tool in each operation.

For each operation it is important the collet is properly installed and is not over tightened.

Stock size

Make sure to use aluminum stock that is no larger than 1.5”x1.5” and between 7.875”-8.125” in length.

Using stock that is over sized may cause the tool to stall or crash.

Probing

Proper probing is important to ensure there are no errors or improper offsets in the cuts. When probing, make sure to pay attention to the machine and ensure the tool makes contact. If the tool is clean you should hear the tool make slight contact with the stock, letting you know a good probe occurred. If you do not hear the tool make contact, it is possible a stray piece of aluminum stuck to the tool or workpiece surface tripped the probe slightly early. If you are unsure if the probe made good contact, rerun the probing process using the AR00 Probe.dd file in the additional code folder. Before re-probing, make sure to clean the tool and workpiece to ensure a good probe will occur.

Checking for gaps

When clamping the stock it is important that the stock is mounted flush with the back of clamps. While it may not always be possible to mount the stock perfectly flush with the back of the clamps, make sure that at least some portion of the stock is touching the back of the clamps.

Deburr

It is important to deburr the corners, especially those on the side touching the clamps. Burrs can cause the stock not to sit flat or can cause an early probe trip. While the machine will deburr some areas, there is no deburring in the first three operations and in between tool changes. Sometimes you can use a small file to remove burrs while stock is still in the machine.

Vacuum

Vacuum the stock, clamps, table and under the table after every machining process to avoid probe errors and damage to the chip guards. When chips accumulate under the table, the chip covers can crash if the table comes down enough. This can raise the front of the machine and possibly damage the metal chip guards.

Additional files and Stoppages.

There are different reasons for stoppages, but the additional files can help get you back on track.

First thing to remember is, if there is a stoppage, DO NOT RESET OR CLEAR THE WCS. The work coordinate system (WCS) stores the position of the stock to the machine. Even if you change computers, the offsets will not change. When the machine probes, it creates these offsets that it uses for position.

If there is a stoppage, you can run the “no probe” file to re-run the ¼” end mill operation that needs to be completed.

There are no “no probe” jobs for the ⅛” end mill or debur, since you can just use the main file to jump to those sections that only probe the tool length.

The “Probe Jobs” file is useful if the tool did not probe correctly and needs to be re-probed without having to remove the part from the clamps.

If you have any questions, contact support@ghostgunner.net for support.

Finishing

Once you complete the upper lower, you may need to do some manual filing to achieve proper fitment in the magwell. Some polymer magazines may be a bit tight on the magwell. If you experience this problem, you can use a file to remove material from the magwell until your magazines can fall free when the mag catch is pressed.

You may need to sand down the rear curved area above the grip. There may be burrs that can cut the skin. There are grips that will cover this area fully such as the Magpul MOE AR-15 grip. You may also be able to use a ball end mill (like the one used in the 1911 program) to smooth that area with software that will be later released.

Takedown pins

As you may have noticed, standard take down pins will not be held secure to the receiver, since there are no channels for the takedown detents. To secure a lower to an upper, you can use

push button takedown pins such as those from KNS. Set of KNS Push Button Pivot/Takedown Pins