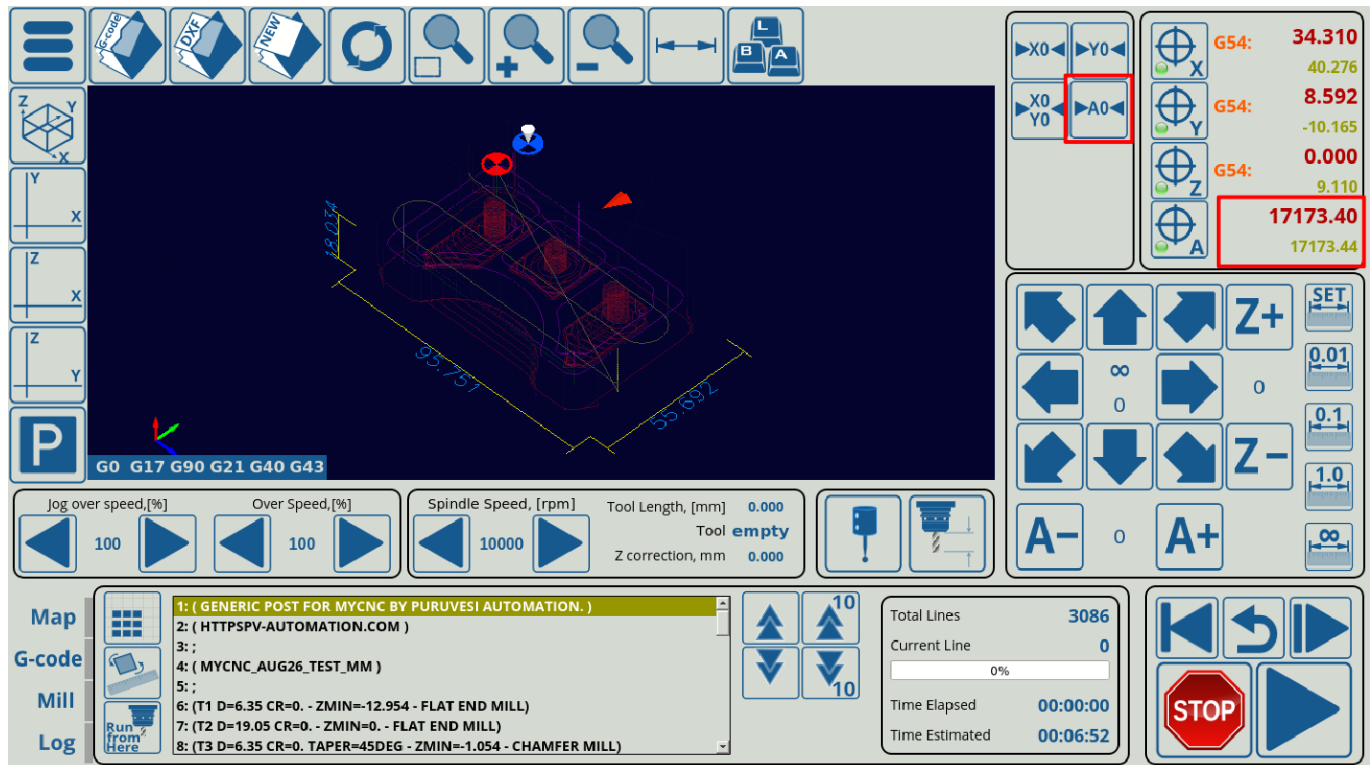# Rotate A axis to 0 position

For certain applications, the A axis is programmed as being endlessly rotating. Therefore, the **A** position (in both machine and program coordinates) may be specified as several thousand degrees after the G-code has completed running. An example of such behaviour can be seen in the screenshot below:

At the start of a new job which uses the A axis, the A position will have to be rewound back to zero before starting a new run. Jogging (physical rotation) to "0" from a large A position left over from the previous job may take a considerable time (can be hundreds of complete turn to run). In some cases it's possible to simply reset the A axis position to zero at the end of the job run, indicating that whatever point the A axis has stopped at will be the next zero, thus saving time on the rewind process. This, however, runs into the problem of losing the proper A-axis orientation which may then require homing. Therefore, the best way to keep the A-axis orientation, but still save time by foregoing the physical rewind back to zero, is to reset all complete rotation turns of the A axis (each 360 degrees), and then physically jog to the A-axis "0", retaining the previous A-axis orientation.

This can be done through macro programming, using the M309 macro by default. All recent myCNC profiles should have the M309 macro in their Macro List. If your profile does not have the M309 macro, it is possible to add it using the code provided below.

In the macro we will:

- Check if our A-position is positive (A-axis program position value is mapped to global variable #5044)
- Check the current coordinate and subtract 360 degree if current coordinate is more than 360 degree (more than 1 full turn)
- Enter a code loop which will continuously check if the current remaining coordinate is more than 360 degrees, and repeat the previous step if it is.
- After the coordinate is less than 360 degrees, this value will be stored as the current A-axis

position
- Move A-axis to "0"
- Add a similar branch for a situation in which we have a negative A-coordinate value.
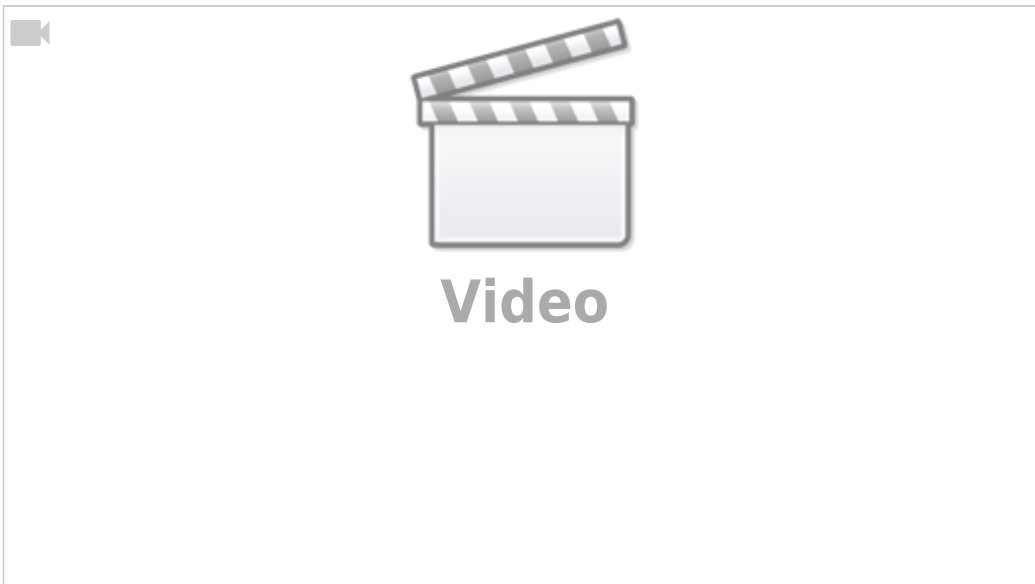
M309

```
G90G0Z[#7020] (Lift to a safe height)
#10=#5044 (Store A coordinate in register #10)

N10
IF [#10 LT 180]  20 (Go to line 20 if the loop is complete)
#10=#10-360
JUMP 10

N20
IF [#10 GT -180]  50 (Go to line 50 if the loop is complete)
#10=#10+360
JUMP 20

N50
G91 G0 A [-1*#10]
G90 G10 L70 P0 A0 (resets machine coordinates)
G90 G10 L70 P#5220 A0 (resets program coordinates)
```

Below is a video which illustrates the way the M309 macro functions:

The main screen of the myCNC software already has a "Move A to 0" button which uses the M309 macro by default, as shown in the screenshot at the top of this page. The process to add such a button to the screen is described here: Add a "Move A to 0" button example, and more information on adding buttons and on-screen elements can be found in the MyCNC Screen Configuration manual.

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