

C-Axis Engagement Offset - NGC Lathe

C-Axis Disc Runout Check/Adjust



1

Make sure the C-axis is disengaged (M155), and the spindle can turn freely.

Loosen the bolts that hold the C-axis disc just enough so that the runout of the disc and union can be adjusted with a soft mallet. Verify that the runout of the hydraulic union is less than 0.001" TIR. If it is not, gently tap with the mallet until it is within spec.

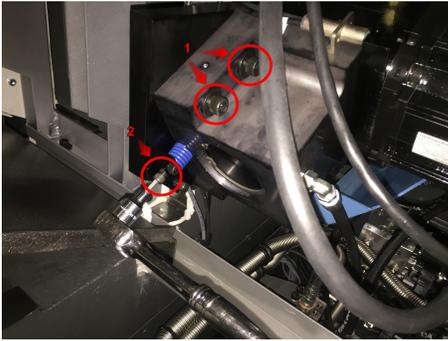


2

Once the runout of the union is within spec, set the runout of the C-axis disc.

Place a small drill bit across the C-axis disc teeth for the indicator to land on. This prevents the indicator from interfering with the gear teeth.

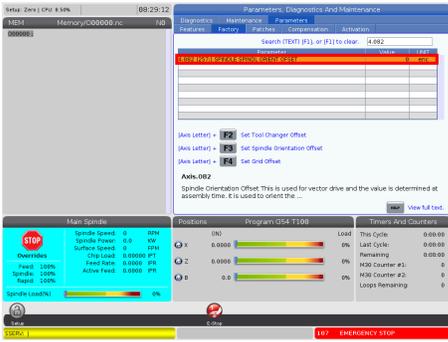
Set the drill bit at four spots around the entire diameter of the disc to measure the runout. If the runout is greater than 0.001" TIR, tap the C-axis disc with a soft mallet to bring it within spec.



1

Break the C-axis mount bolts loose but keep them slightly snug [1].

Move the mount away from the disc by turning the adjustment screw to the right (tightening on normal bolts) [2].

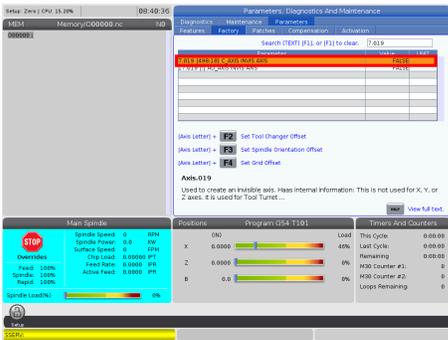


2

Insert the Service USB key and go into Service Mode.

Go to the Parameters > Factory tab and set the value to 0 to the following parameters:

- 4.082 SPINDLE ORIENT OFFSET
- 7.078 C_AXIS TOOL CHANGE OFFSET
- 7.140 C_AXIS GRID OFFSET



3

Set 7.019 C_AXIS INVIS AXIS to False (this makes the C-axis visible).



4

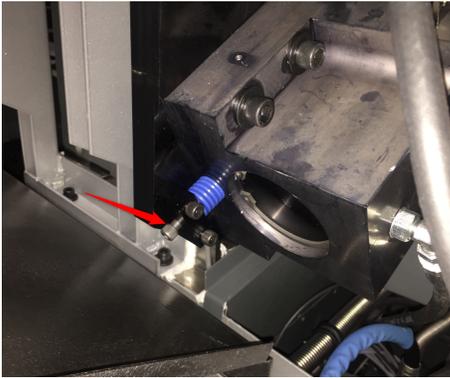
Make sure the C-axis is NOT engaged and the gear teeth will not touch.

Orient the Spindle:

- Press **[Current Commands]** go to Devices Tab
- Press **[F2]**

Zero Return the C-Axis:

- Press **[Zero Return]**
- Press **["C"]**
- Press **[Single]**

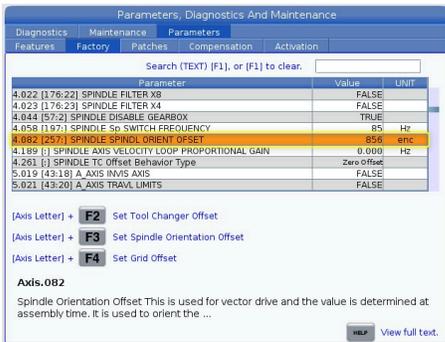


5

Press **[RESET]** but do not move the spindle or C-axis gears more than a tooth. **Reset button used instead of E-stop so C-axis stays oriented**

Mesh the gears by turning the adjuster screw to the left until the C-axis drive gear is fully engaged with the disc gear. Fig 1.

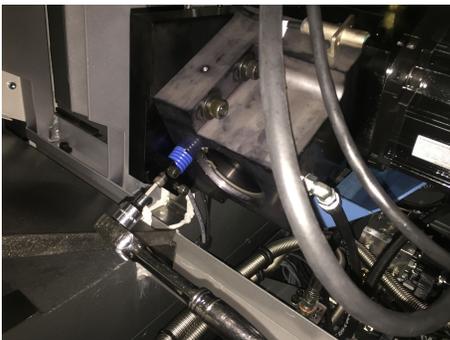
Push the mount in by hand and make sure the gears are fully meshed. The screw will start to stick out when fully engaged. See Red Arrow.



6

With the C-axis gears fully engaged, set the Spindle Orient Offset:

- Press **[Diagnostic]** and go to Parameters Tab, then Factory Tab
- Enter 4.082, then press **[S+F3]**
- Press **[Y]** for yes

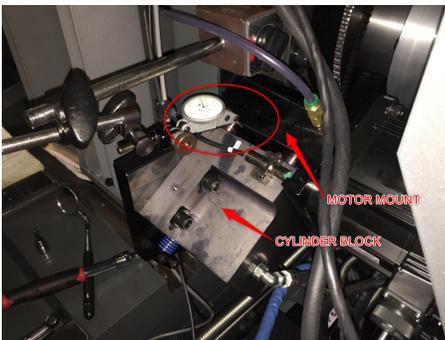


7

Now that the spindle offset is set, back the C-axis off using the adjustment screw. Fully disengage the gears, and move them apart until they can not touch. Don't move the spindle to check, just watch the gears. Fig 1.

Engage the C-axis in MDI using command M154.

The axis should engage smoothly and push the mount out. If the teeth do not mesh, restart the procedure.



8

Place a .0005" indicator against the motor mount and hand jog the C-axis to check the runout.

To hand jog the C-Axis

- Type "M154" and cycle start
- Type "C" and the hand jog button
- Jog the C-axis with the hand wheel

As you jog the C-axis, the cylinder block should not move more than .0005". If it does, the runout of the C-axis disc needs to be reset.

```
MEM ...08012_ST20-9.22.17... N2
O08012;
(SS/ST C-AXIS PROGRAM) ;
#1107= 1 ;
S100 M03 ;
G04 P1. ;
M05 ;
M154 ;
G04 P1. ;
G00 C720. ;
G04 P1. ;
C0 ;
M155 ;
G04 P1. ;
M99 ;
;
```

9

Run the C-axis test MDI program to verify the C-axis engagement is correct.

Download the program [HERE](#).

Listen for smooth operation and no gear noises during engagement. If any faults occur, restart the procedure.