

CNC Lathe Calibration Procedure

Memorial University Technical Services

Document No.: TS-0056

Revision: 2

1.0 Standards and Equipment

The following equipment is required:

Calibrated Dial Indicator

Calibrated Finger Dial Indicator

NOTE: Standards and equipment used must have a valid calibration certificate

2.0 Calibration Procedure

“TS-0078 CNC Lathe Calibration Record Sheet.pdf” must be used

Clean the Dial Indicator and Finger Dial Indicator’s measuring surfaces and stand, the lathe bed, chuck, and all mounting points for the magnetic base

NOTE: Ensure that the dial indicator stylus is perpendicular to the X and Z scales, the rim and the face when performing any measurement

Step 1:

Measure the ambient temperature and record it. If the temperature is $<18^{\circ}\text{C}$ or $>24^{\circ}\text{C}$, see the Division Manager for further instructions.

Step 2:

Test Characteristic: Run-Out of Face and Rim

Test Method: Remove the chuck jaws by loosening the allen bolts holding them in. Mount the magnetic base securely on the inner walls of the machine or the bed if it’s close to the chuck (Fig 1). Place the finger dial indicator against the face of the chuck and zero it, then slowly move the chuck 360 degrees, recording the maximum deflection. Repeat for the rim of the chuck. MAKE

SURE TO RE-ATTACH THE CHUCK JAWS AND TIGHTEN THE ALLEN BOLTS.

Acceptable Limit: ± 0.001 " or 0.025 mm

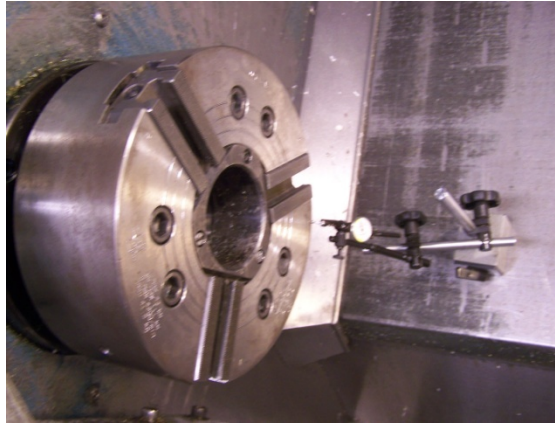


Figure 1

Step 3:

Test Characteristic: X - Axis Scale

Test Method: Mount the dial indicator securely on the surface of the tailstock, perpendicular to the machine wall, and place the dial stylus against the bottom face of the carriage (Fig 2). Move the turret into the dial stylus until it just begins to deflect. DO NOT MOVE THE TURRET BACKWARDS FROM THIS POINT ON. Zero the dial indicator and the digital readout. Continue to move the turret until the digital readout displays 1.0000". Check the dial indicator reading at this point, if it reads around 0.5000", move the carriage until the digital readout displays 2.0000", because it is measuring diameter. Record both the digital readout and dial indicator reading.

Acceptable Limit: ± 0.001 " or 0.025 mm

Figure 2



Step 4:

Test Characteristic: Z - Axis Scale

Test Method: Mount the dial indicator securely on the machine wall and place the stylus against the edge of the turret perpendicular to the wall surface (Fig 3). Move the turret into the dial stylus until it just begins to deflect. **DO NOT MOVE THE TURRET BACKWARDS FROM THIS POINT ON.** Zero the dial indicator and the digital readout. Continue to move the turret until the digital readout displays 1.0000". Record both the digital readout and dial indicator reading.

Acceptable Limit: +/- 0.001" or 0.025 mm

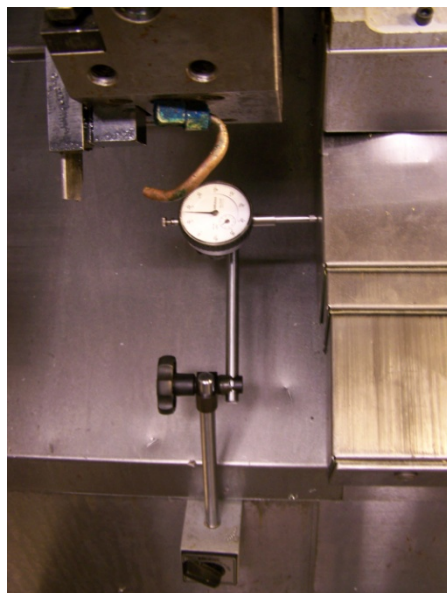


Figure 3