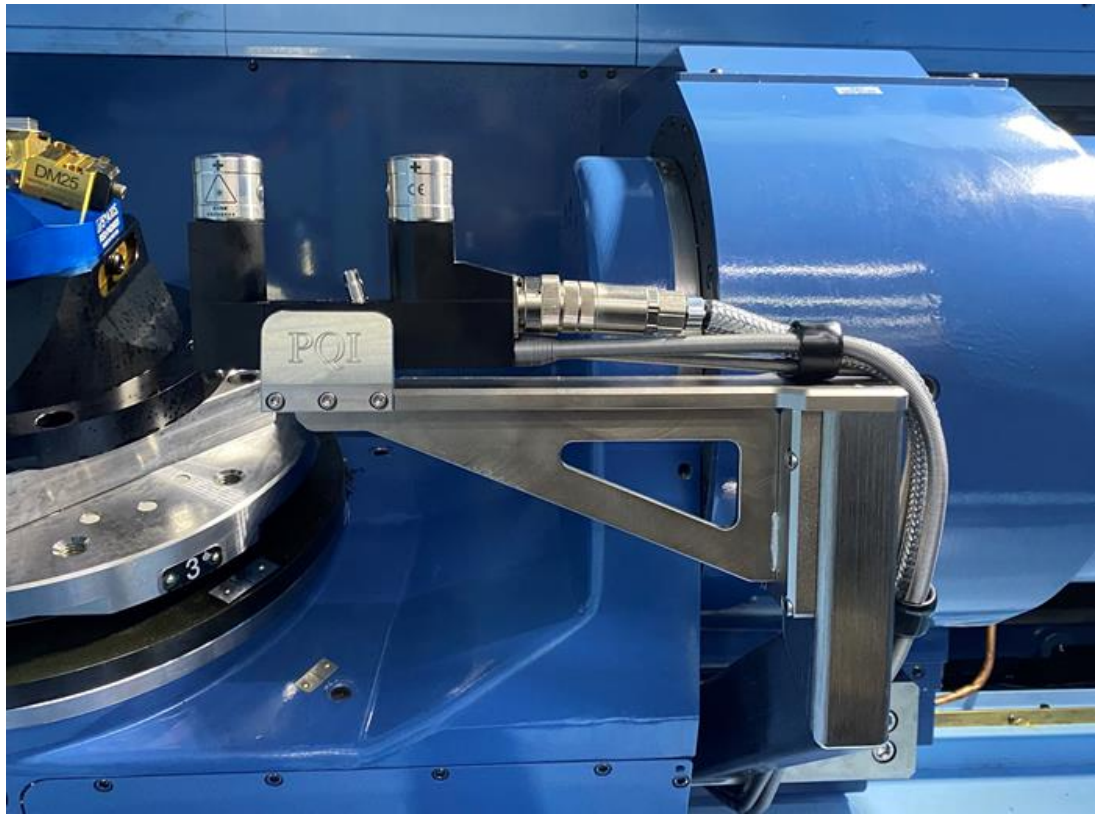
PQI
MT PROBING SOLUTIONS

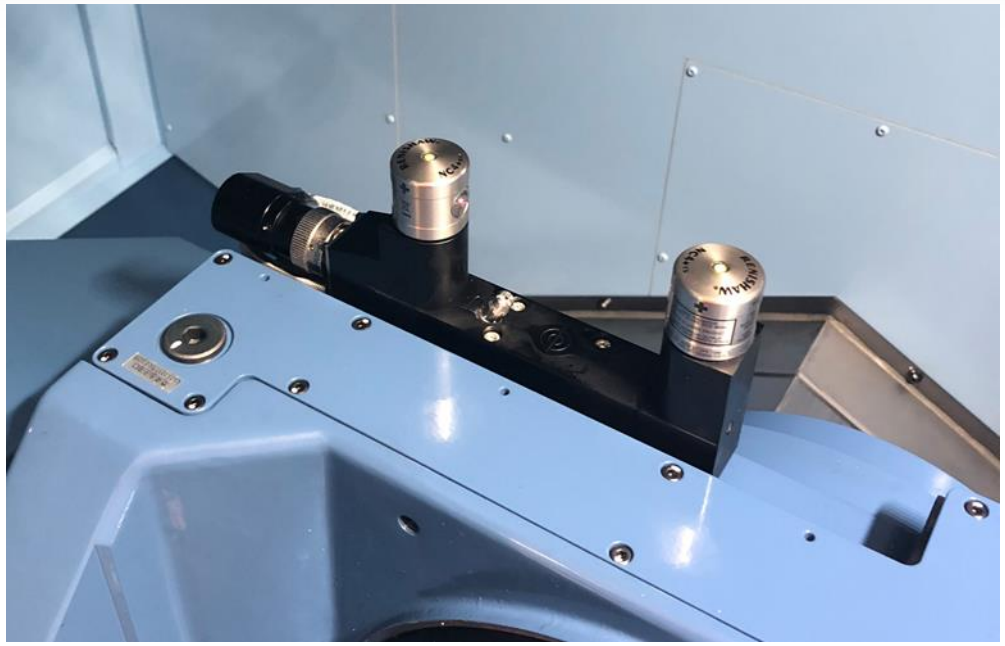
Powered by: RENISHAW




# Non-Contact Tool Setting

## NC4+

PQI
MT PROBING SOLUTIONS



This presentation will give you step by step instructions on (re)aligning and (re)calibrating your laser tool setting system

# Table of Content:

# Vertical Alignment LED status

- Fixed Renishaw laser systems, at rest, should always have Green LEDs
- If you have a NC4+ Blue, your status light should be BLUE
  - If they are any other color consult the 'Basic Troubleshooting Slide'

Renishaw NC4+ Blue

| Probe status LED | |
|---|---|
| Blocked beam / probe triggered | ● |
| Partially blocked beam / probe untriggered | ● |
| Unblocked beam / probe untriggered | ● |

Renishaw NC4+

Red = no signal


Amber = some signal


Green = good signal

# Fixed system adjustment

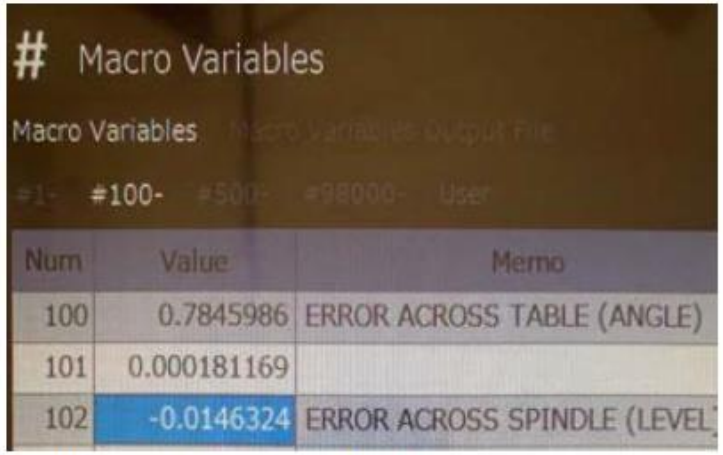
```
(LASER ALIGNMENT)
(ALIGNMENT ERROR IN #102)
G28G91Z0
G00G40G80G90
G53X-12.8Y-26.46
#3006=150(MOVE TOOL INTO POSITION)
G65P9860T1B1.D2.K5.00012R.62543A-22.30Z.15
M30
```

- If you make any adjustments to your laser, you **must** run O8060 (alignment cycle) **then** O8061 (calibration cycle)
- When to align the laser:
  - You hit / bump the laser bracket.
  - If you think the system may have shifted / moved.
  - A change in the machines Grid Shift or Spindle
- Run O8060
  - Use caution when Manually driving the Laser Tool to the beam, as you may be able to crash into the laser body!
  - Looking at the LEDs change its status to ‘Broken Beam’ with the tool, then slightly back out, restoring the original LED status

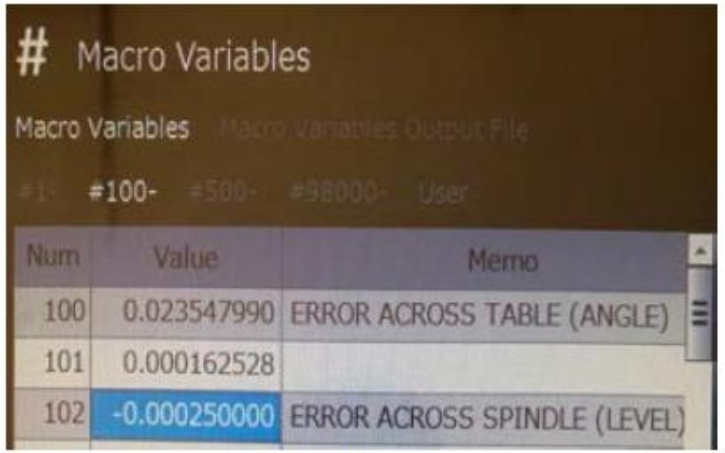
# Spindle Axis

- Check Var #102 for the alignment along the spindle axis. This value should be less then +/-.0005 in.
- To adjust along the spindle axis, you must adjust the level of the base. It will be adjusted with a set screw/cap screw type setup.
- When adjusting with a M3 Alan-wrench, make sure to loosen first then tighten the opposite.

- Make slight adjustments Hitting cycle start and repeat until #102 is an acceptable value
- Check that your Cap and Set Screws are snug. Run it one more time to ensure you still have good numbers
- If #100 and #102 are acceptable you **MUST** now run O8061
    - #100 is the angle of the laser on the table, our angle beam software compensates for this value



This is not an acceptable value.



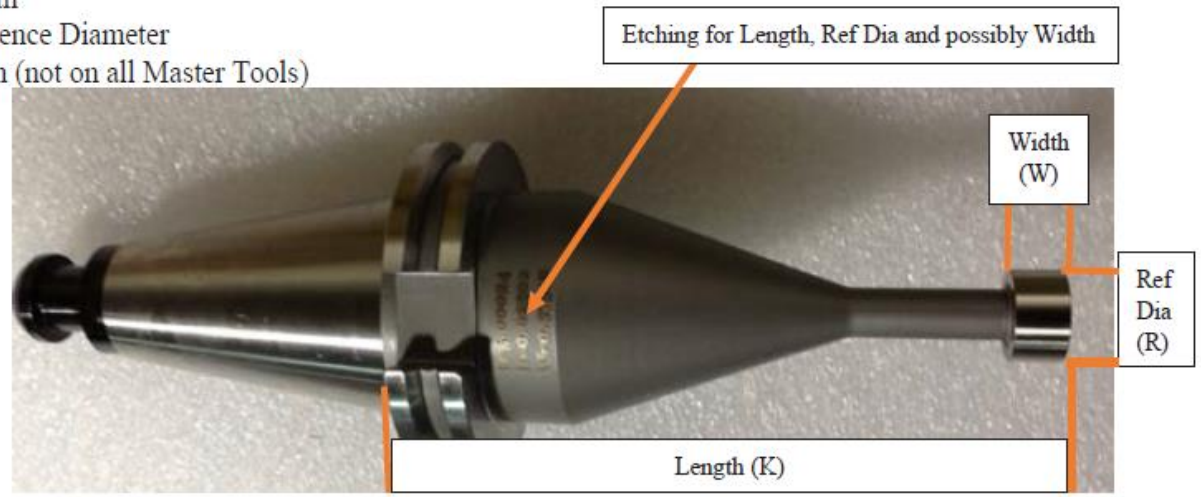
This is an acceptable value.

# Calibration

- Double check that all values match your master tool exactly:
  - K (tool length)
  - R (reference tool diameter)
  - W (tool width)
  - Y (tool radius – .055 in)
- Run O8061
- After calibration Var #520-#531 are populated (This depends on the O9460 or O9760 settings program. The program number will depend on the age of Renishaw software.
  - O9760 = TSM1(push in measurement)

  or
  - O9460 = TSM2(pull out measurement)) will be updated with the Laser Calibration values.
    - #120=520(BASE NUMBER)
- Do **NOT** overwrite the values in these macro variables with your own cycles.
- Now your laser is ready to use.

K= Length
R= Reference Diameter
W=Width (not on all Master Tools)




```
(LASER CALIBRATION)
G91G28Z0
G90G80G49G40G0
G65P9861B1.T1K5.00012R.62543Z.15
G65P9861B1.T1K5.00012R.62543Z.15Y.272W.37436
M30
```

***NEWER SOFTWARE VERSIONS ONLY REQUIRES ONE 9861 LINE

```
(LASER CALIBRATION)
G91G28Z0
G90G80G49G40G0
G65P9861B1.T1K5.00012R.62543Z.15Y.272W.37436
M30
```

# Basic Troubleshooting

- If you have Red LED status
  - Check to see machine air is ON and air is coming out of laser heads
  - Check to see if Transmitting laser is hitting the Receiving head on center
- Amber LEDs
  - Re-align and Re-Calibrate laser
- Green / Amber rapidly flashing LEDs
  - Switch the set-up Switch 2 on the laser interface (slide 6) for 5 seconds and then switch back.
- Is the laser-beam a ‘shotgun pattern’ not a ‘pin-point’
  - Clean laser heads
- LEDs on laser won’t turn on
  - Contact PQI
    - Office: 763-249-7149
    - Toll Free: 800-772-0620