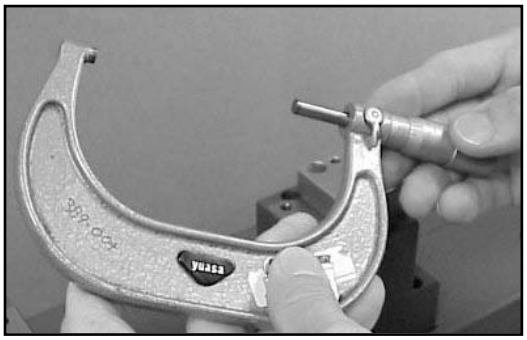
Setup

Materials Needed:

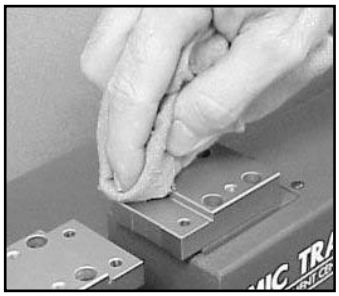
- MIC TRAC MT-3000 base unit and CPU readout
- Micrometer 6” – up
- Flat face anvils (TF-1F Blocks) cap screws and washers
- Micrometer & standards fixture (TF-SV Blocks)
- 5/32" hex wrench
- 50 in/lb torque wrench
- Cloth
- ZEP I.D. Red cleaner

1. Inspect the micrometer visually as follows:

- Check for damage and excessive wear.
- Verify spindle and anvil alignment.
- Check for slack in the spindle thread by pushing the assembly in and out. Adjust to remove excessive play.
- Check for smoothness of travel by rotating the thimble throughout the range.
- Check anvil face parallelism with optical parallels.
- Check anvil face flatness with optical flats.



2. Clean both of the receiver pads and the mounting surfaces of the flat face anvils using the cloth and ZEP I.D. Red cleaner.



3. Locate the left flat face anvil. Place the shoulder side of the anvil against the left receiver pad shoulder.

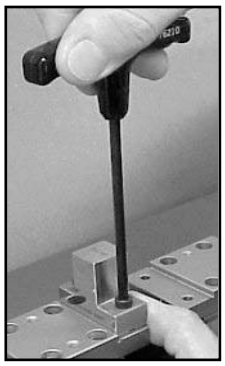
© 2008 Gagemaker, LP.

Setup

4. While holding the anvil against the receiver pad shoulder, insert the two cap screws with washers into the holes on either side of the fixture.

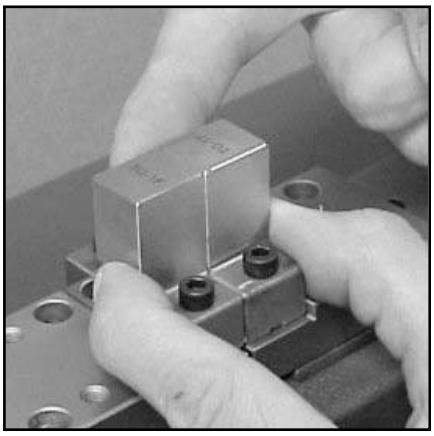
5. While applying pressure toward the receiver pad shoulder, use a 5/32" hex wrench to slightly tighten the screws.

6. Use a 50 in/lbs torque wrench to secure the cap screws.



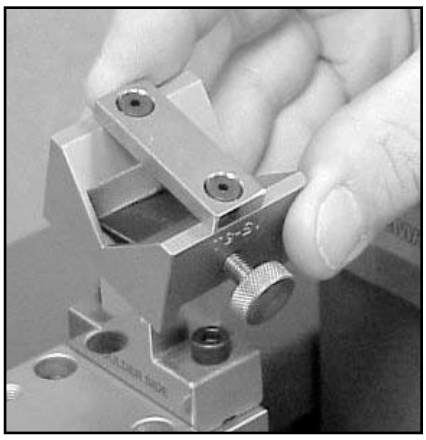
7. Repeat the same process with the right flat face anvil, but before completely tightening the screws, be sure the anvils are aligned:

- Bring the flat face anvils together using the coarse adjust knob.
- While holding the anvils together with your fingers, move your finger back and forth along the backside of the anvils to verify alignment.
- If not aligned, loosen the right anvil and align.
- Once aligned, use the torque wrench to secure the right anvil.



8. Locate the left micrometer & standards fixture. With the thumbscrew facing forward, slide the micrometer fixture over the left flat face anvil until the cross brace touches the top of the flat face anvil.

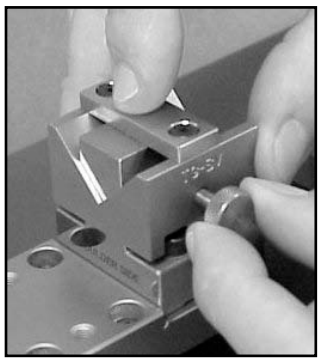
   Note: Be sure that the thin end of the "V-groove" on the micrometer & standards fixture is flat against the outside face of the anvil.



© 2008 Gagemaker, LP.

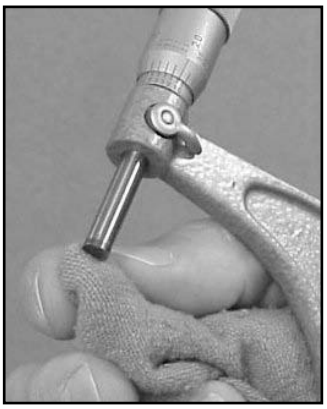
Setup

9. While holding down the cross brace on the micrometer & standards fixture, tighten the thumb screw.

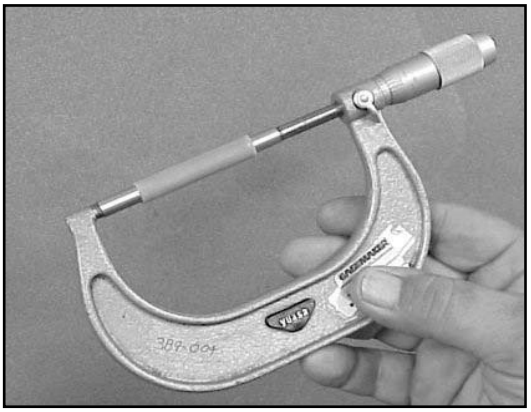


10. Repeat this process with the right micrometer & standards fixture.

11. Clean the micrometer with a cloth and ZEP I.D. Red cleaner.



12. Use a micrometer standard to zero the micrometer then lock the micrometer.



© 2008 Gagemaker, LP.

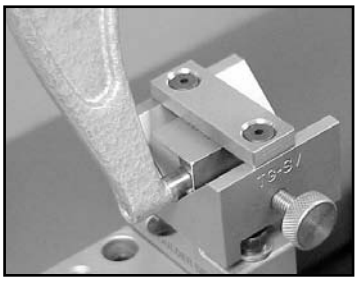
Setup

13. Using the coarse adjust knob, move the right micrometer fixture closer to the left fixture. As the fixtures move closer together, place the faces of the micrometer anvil and spindle in the "V-groove" of each fixture.

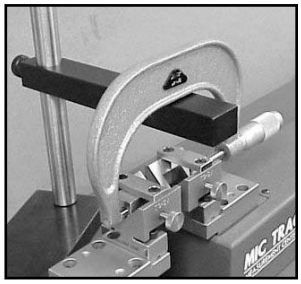
    Note: To ensure the micrometer frame is vertical during calibration, support it with a brace, such as Gagemaker's support arm base.

14. Turn the coarse adjust knob counterclockwise to bring the flat face anvils together.

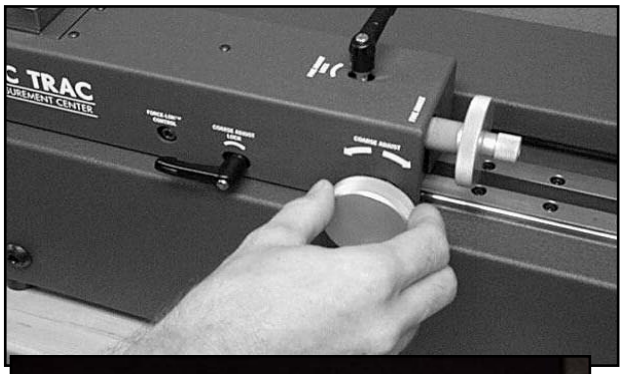
15. Apply slight pressure until the in the axis display lights up. The display will read 0.00000 and the gaging force will be preset to 2.0 lbs of force.



Micrometer Anvil Face in V-Groove



Support Arm Base



© 2008 Gagemaker, LP.

Calibration

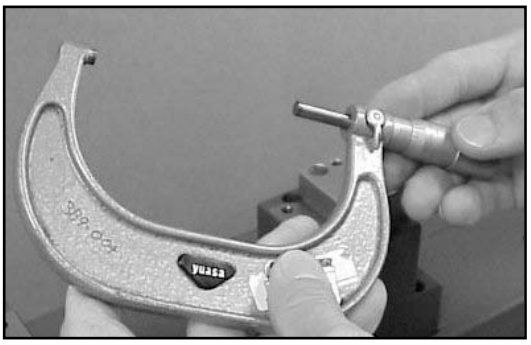
If using a computer with the MT-3000, go to page 9.

Materials Needed:

- MIC TRAC MT-3000 base unit and CPU readout
- Seiko printer (optional)
- Micrometer 6” – up
- 5/32" hex wrench
- Lightweight gage oil
- Gage Calibration Record

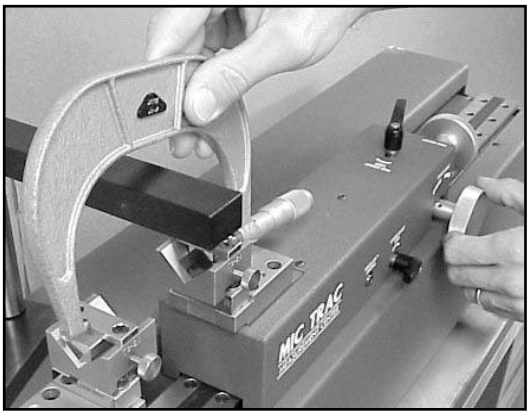
1. Turn the micrometer spindle to the first calibration value and lock.

Note: If you pass the calibration value, turn the spindle back and approach the value again, from the same direction. This practice will increase the accuracy of the calibration.



2. Use the coarse adjust knob to reposition the micrometer & standards fixtures. Remount the faces of the micrometer anvil and spindle in the “V-groove” of each fixture.

3. Tighten the coarse adjust lock.

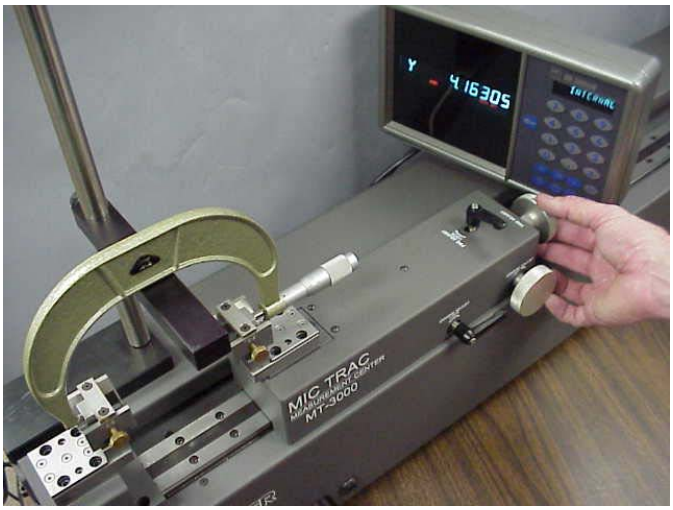


© 2008 Gagemaker, LP.

Calibration

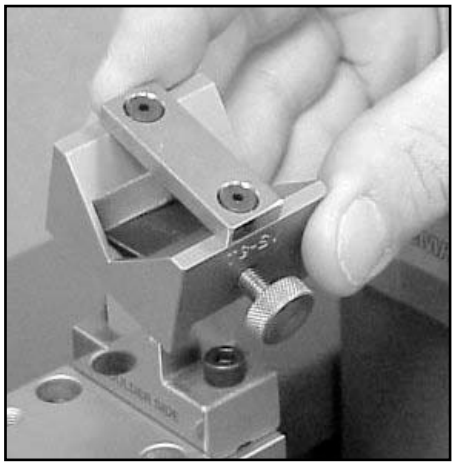
4. Turn the fine adjust knob clockwise until the in the axis display lights up. If you have a Seiko Printer attached to your MIC TRAC a permanent record of the measurement prints.

5. Record any deviations on the Gage Calibration Record or in-house calibration report. Continue with remaining measurements.



6. Remove the micrometer and continue with the same calibration process for the next micrometer.

7. After calibrating all micrometers, be sure to remove the micrometer & standards fixtures and flat face anvils from the MT-3000. Oil the fixtures and anvils and return them to the storage case.



© 2008 Gagemaker, LP.

Calibration

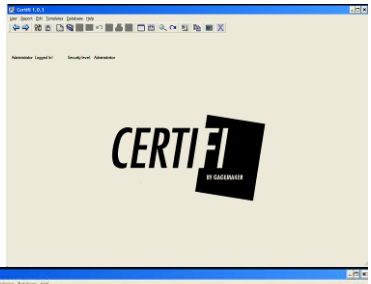
If using a computer with the MT-3000, begin here.

Materials Needed:

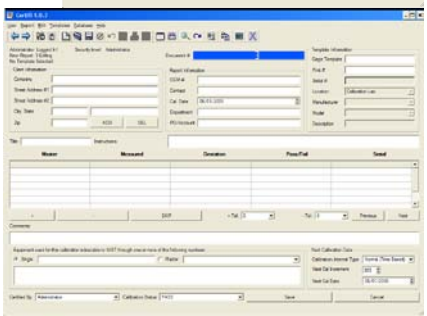
- MIC TRAC MT-3000 base unit and CPU readout
- Computer
- CERTIFI software
- MT-4-USB Digital Data Acquisition Card
- Micrometer 6” and up
- 5/32" hex wrench
- Lightweight gage oil
- Brother P-Touch Label Printer (optional)

1. Start Certifi by double clicking the Certifi icon.

CERTIFI Icon



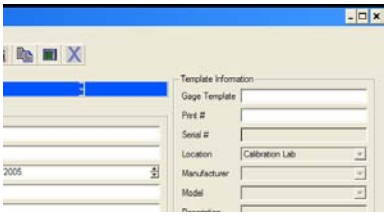
2. Start Certifi by double clicking the Certifi icon.



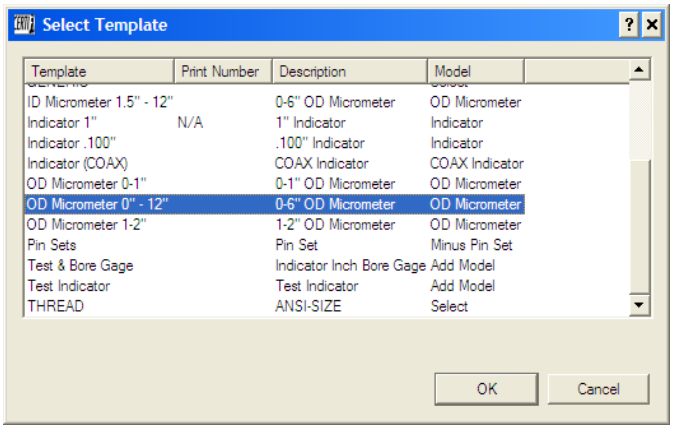
© 2008 Gagemaker, LP.

Calibration

3. With the cursor in the Gage Template field, press the Enter key.

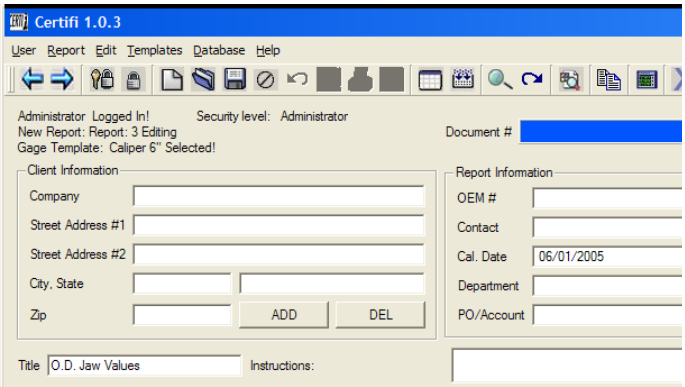


4. Highlight the OD Micrometer 0”-12” line and click on the OK button.



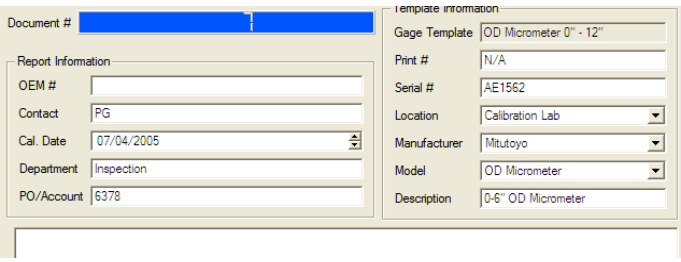
5. Complete the following Client information:

   - Company name and address.
   - OEM #
   - Contact name.
   - PO/Account - purchase order or account number.
   - Calibration Date - automatically displays, but can be changed by typing over the displayed date.
   - Print #
   - Serial #



6. Enter the following information about the gage you are calibrating:

   - Serial Number
   - Location
   - Gage Manufacturer
   - Model
   - Description

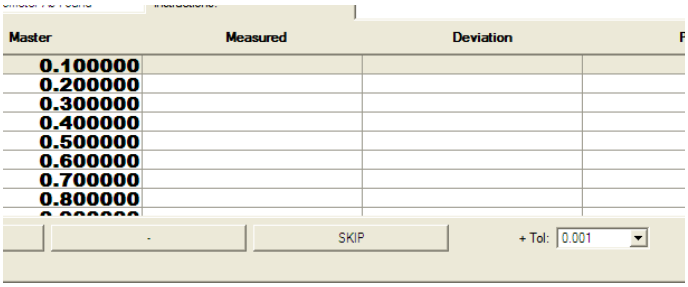


© 2008 Gagemaker, LP.

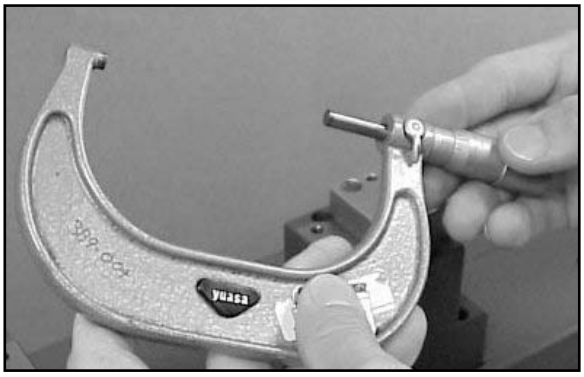
Calibration

7. You may change the tolerances for the micrometer if you wish.

8. You can enter additional master values by right clicking your mouse over an existing master value. Select **Insert** to insert a new line. Then type in the new master value in that line.



9. Turn the micrometer spindle to the first calibration value and lock.

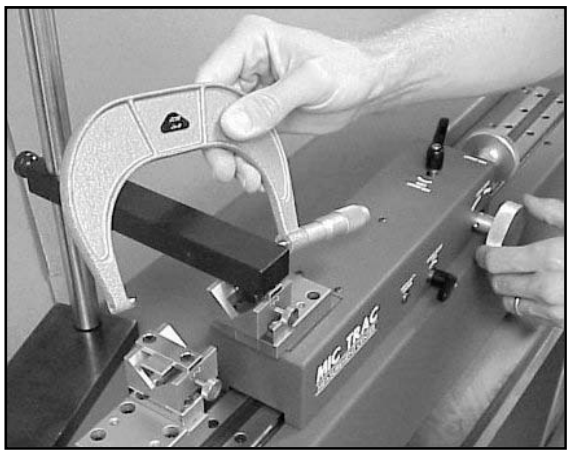


Note: If you pass the calibration value, turn the spindle back and approach the value again, from the same direction. This practice will increase the accuracy of the calibration.

© 2008 Gagemaker, LP.

Calibration

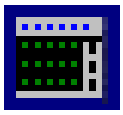
10. Loosen the coarse adjust lock. Turn the coarse adjust knob counterclockwise to release the micrometer. Remove the micrometer.



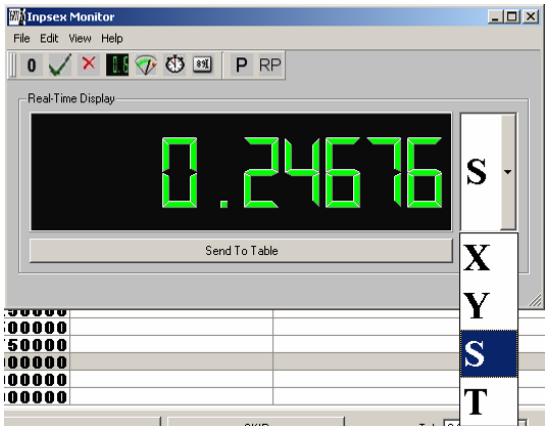
© 2008 Gagemaker, LP.

Calibration

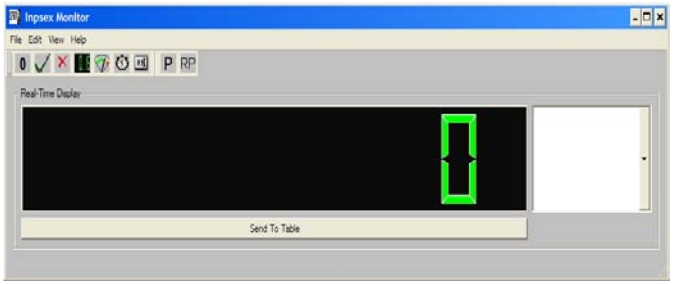
11. Click on the CERTIFI Monitor icon to open the CERTIFI Monitor Window.



12. Choose the "Y" axis from the pull down box.



13. Bring the MIC TRAC jaws together and click the Zero button twice.



14. Click the Send To Table bar to enter zero to the measured column.

CERTIFI records the value and displays a green box in the Pass/Fail column if the value is within tolerance. A red box displays if the value is not within tolerance. The Deviation column shows the deviation of the measured value from the master value.

Master	Measured	Deviation	
0.000000	0.000000	0.000000	
0.100000			
0.200000			
0.300000			
0.400000			
0.500000			
0.600000			

15. Adjust micrometer to next master value.

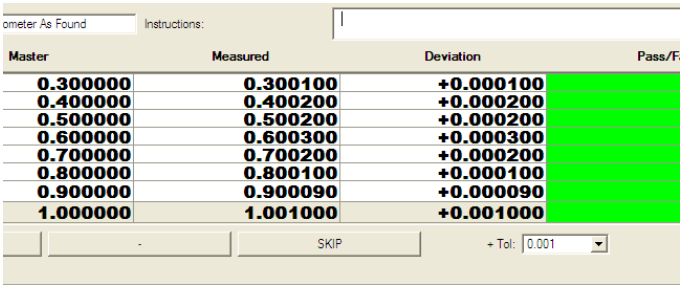
Note: If you pass the calibration value, turn the spindle back and approach the value again, from the same direction. This practice will increase the accuracy of the calibration.

© 2008 Gagemaker, LP.

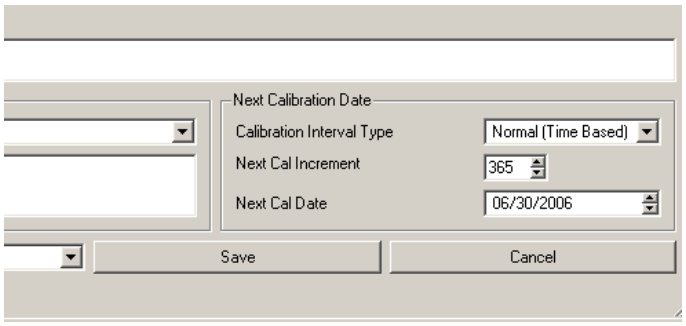
16. Enter the gage measurements in the Measured column as follows:

- Turn the X axis adjust knob clockwise until the ball anvil contacts the micrometer spindle and pull out the knob.
- Click the Send to Table bar.

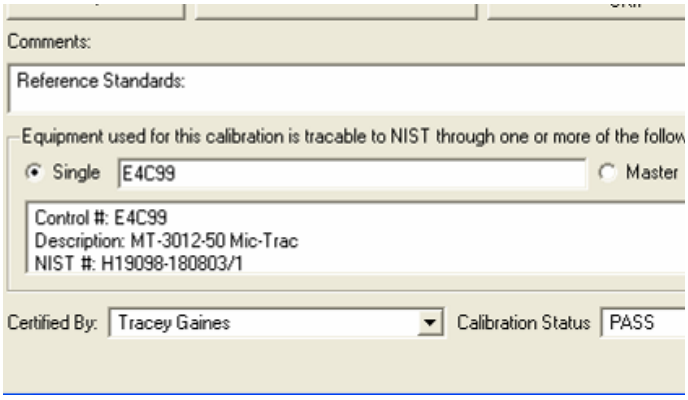
17. Using each master value, continue measuring the micrometer until all measurements are recorded in CERTIFI.



18. Change the Next Calibration Date, if necessary, by typing over the displayed date.



19. Enter NIST information as necessary. With the cursor in the single box press the Enter key to bring up a list of current NIST information. For new NIST information select Edit from the menu and press the Preferences box. Select the NIST tab to enter new information.



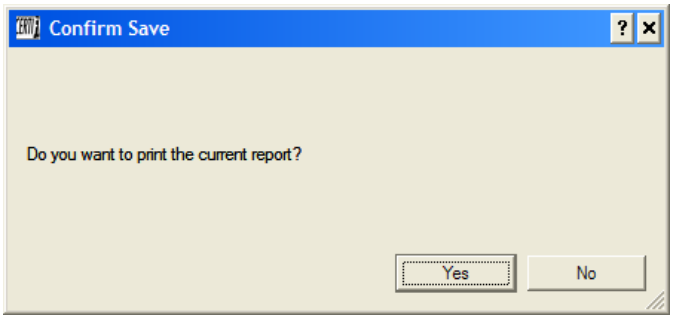
© 2008 Gagemaker, LP.

Calibration

20. Click the Save button.

Note: CERTIFI automatically assigns a filename to each calibration. **DO NOT** change the filename to avoid problems with the CERTIFI database.

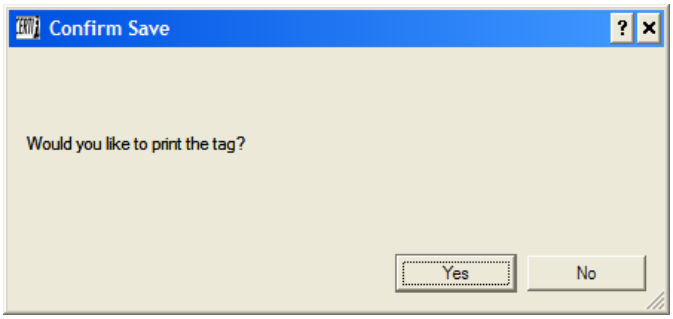
21. When the confirm window displays, click the Yes button if you want to print the calibration report.



Note: If you have a Brother P-Touch Label Printer for printing calibration stickers, the Confirm window for printing a calibration tag displays.

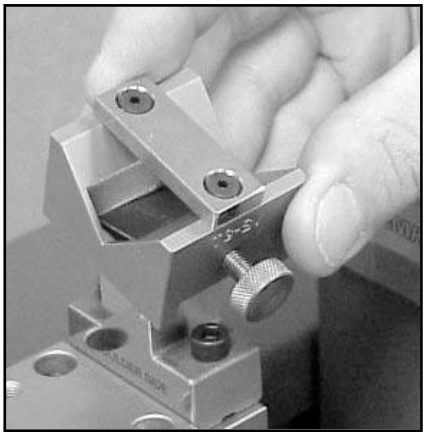
22. Click the Yes button to print the calibration tag. Affix the Calibration Tag to the micrometer.

23. Remove the micrometer and continue with the same calibration process for the next test micrometer.



© 2008 Gagemaker, LP.

24. After calibrating all micrometers, be sure to remove the micrometer lead fixture from the MT-3000. Oil the fixtures and return them to the storage case.



© 2008 Gagemaker, LP.

Notes:

© 2008 Gagemaker, LP.

Notes:

© 2008 Gagemaker, LP.

Notes:

© 2008 Gagemaker, LP.

Gagemaker, LP, P.O. Box 87709, Houston, Texas 77287-7709
712 East Southmore Ave., Pasadena, Texas 77502
Phone: 713-472-7360
Fax: 713-472-7241
www.gagemaker.com