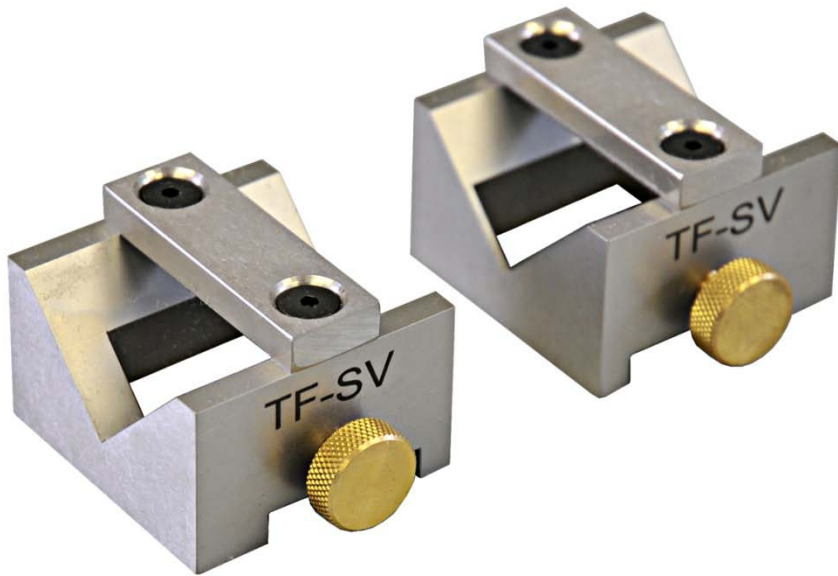


**GAGEMAKER**

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***MIC TRAC MT-3000***  
***TF-SV Micrometer***  
***Standard***  
***CAL-PAK Fixture Manual***

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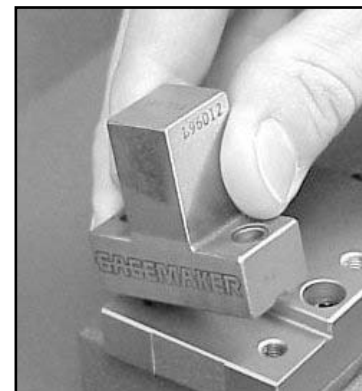
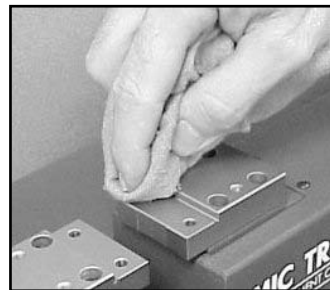
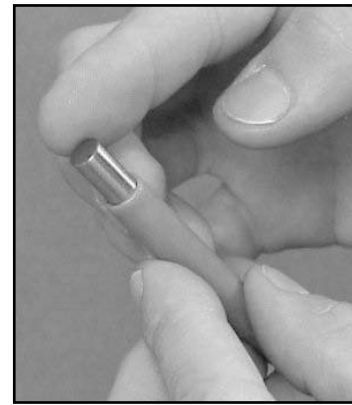


## Setup

### Materials Needed:


- MIC TRAC™ MT-3000 base unit and DRO/Computer
- Micrometer standards
- 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

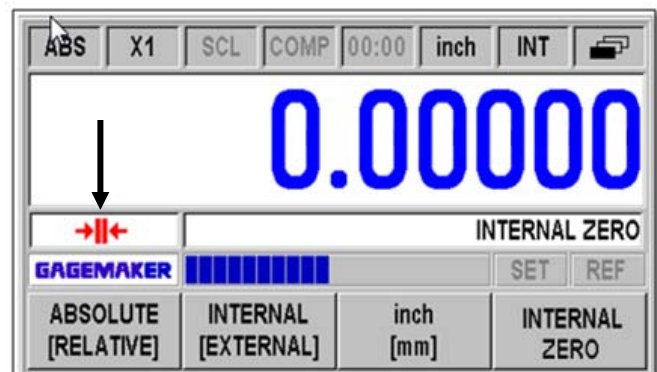
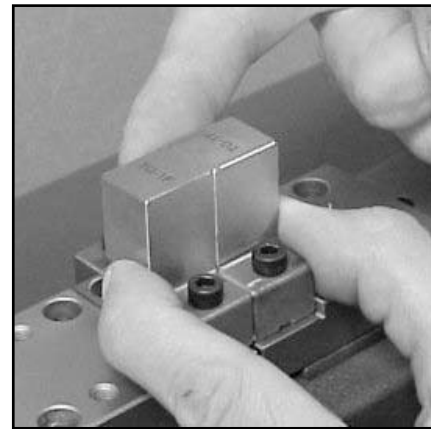
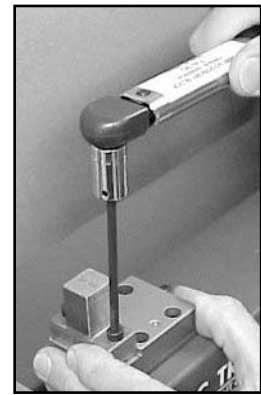
1. Inspect the micrometer standard visually as follows:
  - Check for damage and excessive wear.
  - Check the standard for straightness.
  - Check for burred or scarred ends.
2. Clean both of the receiver pads and the mounting surfaces of the flat face anvils using the cloth and ZEP I.D. Red cleaner.
3. Locate the right flat face anvil. Place the shoulder side of the anvil against the right receiver pad shoulder.





## 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 left 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 left anvil and align.
  - Once aligned, use the torque wrench to secure the left anvil.
8. Turn the coarse adjust knob counterclockwise to bring the flat face anvils together.
9. Apply slight pressure until the  in the display lights up. The display will read 0.00000 and the gaging force will be preset to 2.0 lbs of force.





## Setup

10. Locate the right micrometer & standards fixture. With the thumbscrew facing forward, slide the micrometer fixture over the right 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 on the inside face of the anvil.

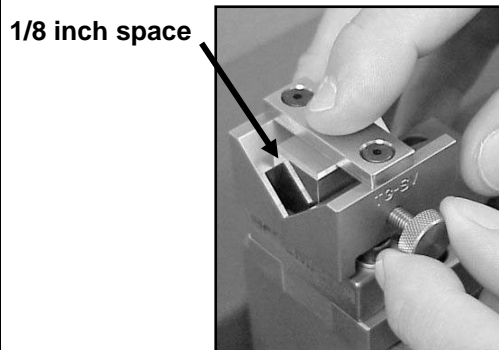
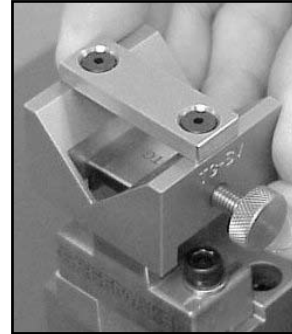
11. While holding down the cross brace on the micrometer & standards fixture, align the end of the micrometer & standards fixture 1/8” away from the inside face of the anvil. Tighten the thumb screw.

12. Repeat this process with the left micrometer & standards fixture.

13. Clean the micrometer standard with the cloth and ZEP I.D. Red cleaner.

14. Using the coarse adjust knob, move the right micrometer fixture closer to the left fixture. As the fixtures move closer together, place the ends of the micrometer standard in the “V-groove” of each fixture.

15. Tighten the coarse adjust lock.






## Calibration

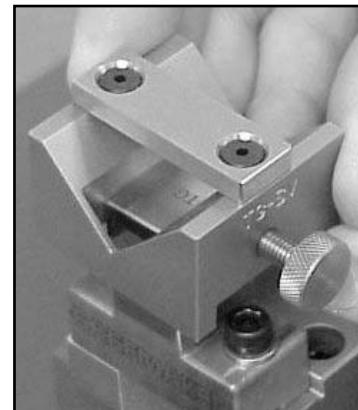
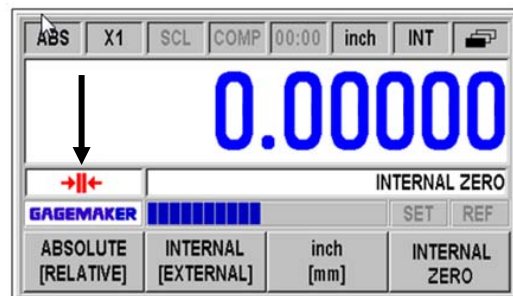


If using a computer with the MT-3000, go to page 5.

### Materials Needed:

- MIC TRAC™ MT-3000 base unit and DRO
- Micrometer standards
- Gage Calibration Record
- 5/32" hex wrench
- Lightweight gage oil

1. While turning the fine adjust knob clockwise, roll the standard between the thumb and forefinger to square the ends with the faces of the flat face anvil.
2. Continue turning the fine adjust knob until the  in the display appears.
3. Record any deviations on the Gage Calibration Record or in-house calibration report. Continue with remaining measurements.
4. Remove the micrometer standard and continue with the same calibration process for the next standard.
5. After calibrating all micrometer standards, 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.







## Calibration



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

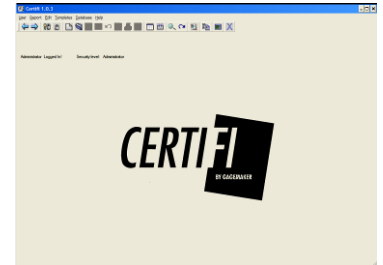
### Materials Needed:

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

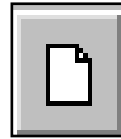
1. Start CERTIFI™ by double clicking the CERTIFI icon.



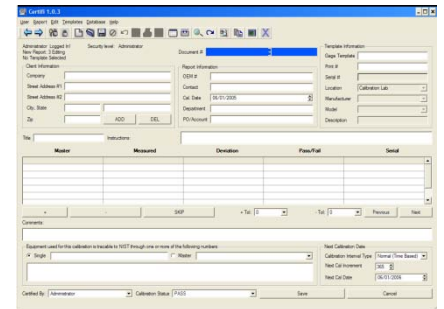
CERTIFI Icon



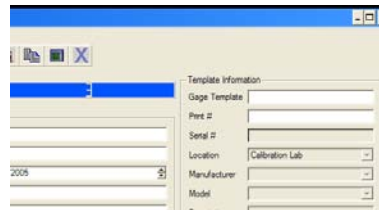
2. Click the New Calibration Report icon.



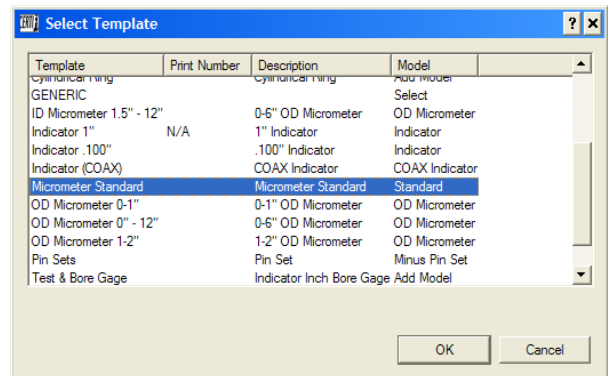
New Report Icon



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



4. Highlight the Micrometer Standard line and click on the OK button.





## Calibration

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 #

**Certifi 1.0.3**  
 User Report Edit Templates Database Help  
 Administrator Logged In! Security level: Administrator  
 New Report: Report: 3 Editing Document # [redacted]  
 Gage Template: Caliper 6" Selected!

**Client Information**

Company: [text box]  
 Street Address #1: [text box]  
 Street Address #2: [text box]  
 City, State: [text box] [text box]  
 Zip: [text box] [ADD] [DEL]

**Report Information**

OEM #: [text box]  
 Contact: [text box]  
 Cal. Date: 06/01/2005  
 Department: [text box]  
 PO/Account: [text box]

Title: O.D. Jaw Values Instructions: [text box]

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

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

**Document #** [redacted]

**Report Information**

OEM #: [text box]  
 Contact: [text box]  
 Cal. Date: 07/10/2005  
 Department: [text box]  
 PO/Account: [text box]

**Template Information**

Gage Template: Micrometer Standard  
 Print #: [text box]  
 Serial #: [text box]  
 Location: Calibration Lab  
 Manufacturer: Mitutoyo  
 Model: Standard  
 Description: Micrometer Standard

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

Master	Measured	Deviation	Pass/Fail	Serial
1.000000				
2.000000				
3.000000				
4.000000				
5.000000				
6.000000				

+ Tol: 0.001 - Tol: -0.001 Previous Next

Comments:

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.





## Calibration

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

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

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

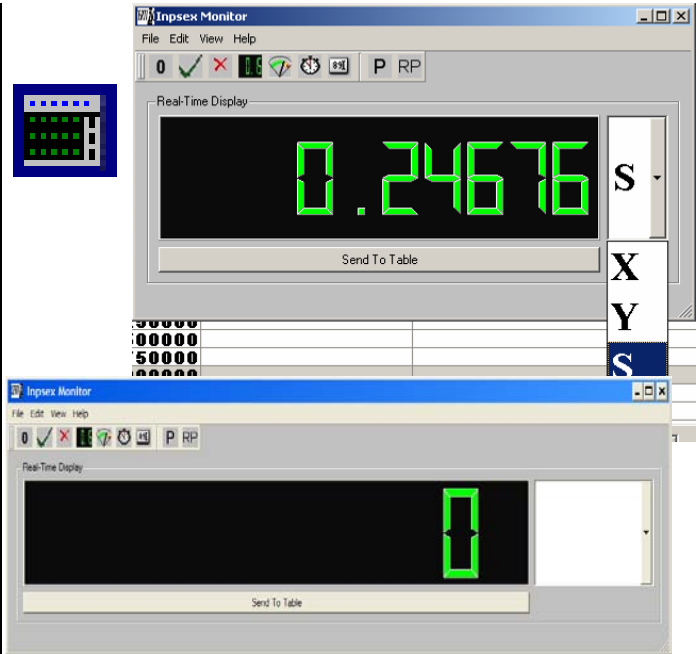
12. Loosen Lock 1 and 2.

13. While turning the Y axis adjust knob clockwise, roll the standard between the thumb and forefinger to square the ends with the faces of the carbide anvil.

14. Enter the measurements in the Measured column as follows:

- Continue turning the Y axis adjust knob until the X axis moves approximately 1/2 inch.
- Click the Send to Table button.

CERTIFI™ records the value and displays a green box in the In/Out 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
1.000000	1.000040	+0.000040
2.000000		
3.000000		
4.000000		



## Calibration

15. Using each master value, continue measuring the standards until all values for the range are recorded in CERTIFI™.

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

17. 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.

22. 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.

A screenshot of a software dialog box for calibration settings. At the top, there are two dropdown menus for tolerance: '+ Tol: 0.001' and '- Tol: -0.001', followed by 'Previous' and 'Next' buttons. Below these are several empty input fields. A section titled 'Next Calibration Date' contains a dropdown for 'Calibration Interval Type' set to 'Normal (Time Based)', a 'Next Cal Increment' spinner set to '365', and a 'Next Cal Date' spinner set to '06/19/2006'. At the bottom are 'Save' and 'Cancel' buttons. The system tray at the bottom right shows icons and the time '6:04 PM'.

A screenshot of a software form for entering NIST information. It has a 'Comments:' section at the top. Below it is a 'Reference Standards:' section with a text area containing the text: 'Equipment used for this calibration is traceable to NIST through one or more of'. Underneath is a 'Single' radio button selected, followed by a text box containing 'E4C99'. Below that is a text box containing 'Control #: E4C99', 'Description: MT-3012-50 Mic-Trac', and 'NIST #: H19098-180803/1'. At the bottom, there is a 'Certified By:' dropdown menu set to 'Tracey Gaines' and a 'Calibration Status' dropdown menu.



## Calibration

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

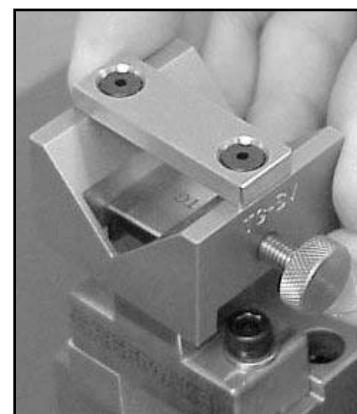
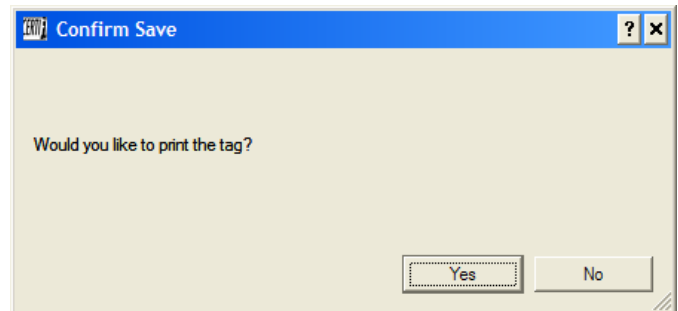
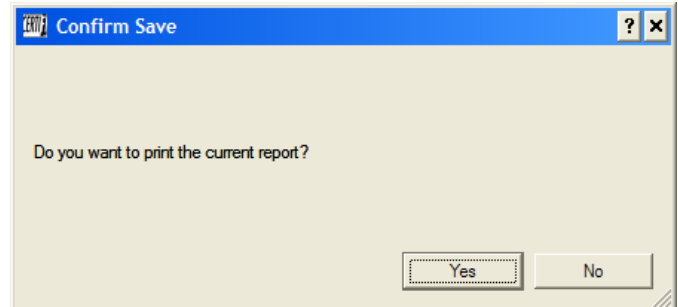
**Note:** If you have a Brother P-Touch Label Printer for printing calibration stickers, the Confirm window for printing a calibration tag displays.

24. Click the Yes button to print the calibration tag. Affix the Calibration Tag to the Micrometer standard.

25. Continue with the same calibration process for the next micrometer standard.

22. Continue with the same calibration process for the next micrometer standard.

23. After calibrating all micrometer standards, be sure to remove the anvils from the MT-3000. Oil the anvils and return them to the storage case.



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