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1 Introduction

1.1 Thank you

Thank you for your purchase of a Raytech Measuring Systems barstock measuring machine. You have purchased a versatile and high quality system that will provide you with years of quality measurements.

We have tried to supply essential information to assist the operator in getting up to speed as soon as possible. It is strongly advised that you keep this manual with the machine as a reference guide. It is possible for anyone to learn the basic functions of this machine in a matter of minutes. This assures you that everyone can be making measurements and assuring your customers of quality.

If you have any questions, comments, or requests, please feel free to call us at

1-800-852-6403

or visit our website at

http://www.raytech-measuring.com

2 Measuring

2.1 Startup

(1) Flip the power switch on the back of the readout.
    The readout will go through its self-test, and if everything tests correctly, you'll be shown the ND 780 splash screen with a message at the top that says:

    "Power was off. Press any key to continue."

(2) Press any key on the readout.
    The "REF" indicator will blink next to the X axis.

(3) Slide the moving angle plate until the "REF" indicator stops blinking and stays solid.

2.2 Zero setting

(1) Look above the X axis to see if the indicator reads "ZERO"
    If it does not, press the left/right arrow key until the 4th softkey reads "SET/ZERO" and press the 4th softkey.

(2) Slide the moving angle plate against the fixed angle plate.

(3) Press the X axis key to set the display to zero.

2.3 Datum setting

(1) Look above the X axis to see if the indicator reads "SET"
If it does not, press the left/right arrow key until the 4th softkey reads "SET/ZERO" and press the 4th softkey.

(2) Slide the moving angle plate against the fixed angle plate.

(3) Press the X axis key to pre-set a value.

(4) Using the numeric keypad, key in the desired offset.

(5) Press the "ENTER" key.

2.4 Measuring length

(1) Slide the moving angle plate away from the fixed angle plate, giving yourself room to place the part to be measured in betwee the angles.

(2) Place the supplied "V" blocks over the rail, making sure the part is evenly supported though the middle and at the ends.

(3) Place the part to be measured in the blocks and slide it against the fixed angle plate.

(4) Slide the moving angle plate against the end of the part and note the reading on the display.

3 Setup

3.1 Changing units (in/mm)

(1) Press the left/right arrow key until the 4th softkey says "INCH/MM".

(2) Press the 4th softkey.
You will notice the unit indicator at the top of the screen change from "INCH" to "MM" as you toggle between the units.

3.2 Changing resolution

(1) Press the left/right arrow key until the 1st softkey says "SETUP".

(2) Press the 1st softkey.

(3) Press the 1st softkey (labeled "INSTALL. SETUP").

(4) If prompted for it, enter the password using the numeric keypad and press "ENTER".

(5) Press the down arrow key to highlight "DISPLAY CFG.".

(6) Press the "ENTER" key to get into the display configuration screen.

(7) With "DISPLAY 1" selected, press the "ENTER" key.

(8) Using the down arrow key, highlight the "DISPLAY RESOLUTION" field.

(9) Press the softkey labeled "COARSER" or "FINER" depending on which way you

would like to adjust the display resolution.

(10) When you have selected the desired resolution, press the "ENTER" key to lock in that change.

(11) Press the "CLEAR" key to back out of the display configuration menu.

(12) Press the "CLEAR" key to exit the setup menu and return to measuring.

3.3 Calibration

Raytech Measuring Systems typically recommends calibration of your measuring system once every year. This seems to be in accordance with most companies' quality programs. When the time comes to calibrate your table you have a few options:

- Bring in an outside service to perform a calibration. They will have certified standards and be able to provide certification for your records.
- Have an internal department of your company perform the calibration. This leaves you with the overhead of maintaining standards, but if you have them, this is the least expensive method.
- Have Raytech Measuring Systems calibrate your table. We use a NIST traceable laser system to calibrate your machines in our plant before they leave, and we use the same laser in your plant to calibrate. The only drawback is, we're not a calibration service, and as a result, we aren't as equiped to travel on short notice, and our distance to your facility may require more travel.

The following instructions will be useful for either your internal calibration or for an outside service.

3.3.1 Clearing old compensation values

(1) Press the left/right arrow key until the 1st softkey reads "SETUP".

(2) Press the 1st softkey labeled "SETUP".

(3) Press the 1st softkey labeled "INSTALL. SETUP".

(4) If prompted for it, enter the password using the numeric keypad and press "ENTER".

(5) Using the up/down arrow keys, highlight "ERROR COMPENSATION".

(6) Press the "ENTER" key to enter the error compensation menu.

(7) Make sure the "INPUT X1" box is set to "NON-LINEAR".
If it is not, press the 1st softkey labeled "TYPE" until "NON-LINEAR" is selected.

(8) Press the 2nd softkey labeled "EDIT TABLE".

(9) Press the 2nd softkey labeled "CLEAR TABLE".

(10) Press the 1st softkey labeled "YES".

(11) Once you have cleared the values, press the "CLEAR" key to exit the table edit screen.

(12) Press the "CLEAR" key to exit the error compensation screen.

(13) Press the "CLEAR" key to exit the setup screen and return to the measuring screen.

3.3.2 Acquiring new values

Using a traceable standard, acquire readings. Due to the software in the ND 780 system, it is possible to take readings and enter compensation values at every 1" increment through the measuring length of the machine, as long as the machine measures under 200" in length. For machines beyond 200" in length, points will be taken every 2" instead of every 1".

3.3.3 Entering new values

(1) Press the left/right arrow key until the 1st softkey reads "SETUP".

(2) Press the 1st softkey labeled "SETUP".

(3) Press the 1st softkey labeled "INSTALL. SETUP".

(4) If prompted for it, enter the password using the numeric keypad and press "ENTER".

(5) Using the up/down arrow keys, highlight "ERROR COMPENSATION".

(6) Press the "ENTER" key to enter the error compensation menu.

(7) Make sure the "INPUT X1" box is set to "NON-LINEAR".
   If it is not, press the 1st softkey labeled "TYPE" until "NON-LINEAR" is selected.

(8) Press the 2nd softkey labeled "EDIT TABLE".

(9) With the "SPACING=" line highlighted, press the "ENTER" key.

(10) Enter the spacing factor.
   If the measuring length of the table is 199" or less, key in "1" and press the "DOWN ARROW" key.
   If the measuring length of the table is longer than 199", key in "2" and press the "DOWN ARROW" key.

(11) Move the moving angle plate against the fixed angle plate.

(12) Press the 1st softkey labeled "TEACH POSITION".

(13) Press the "ENTER" key to lock in those changes and return to the error correction table.

(14) Use the up/down arrow keys to move to the compensation points. To enter a correction value, press the "ENTER" key when you have highlighted the compensation point you want to edit.

(15) Using the numeric keypad, key in the correction and press the "ENTER" key.

(16) When you have finished entering the correction values, press the "CLEAR" key to return to the error correction menu.

(17) Press the "CLEAR" key again to return to the installation setup menu.

(18) Press the "CLEAR" key again to return to the measurement display.