

Gold Standard

Digital Readout System

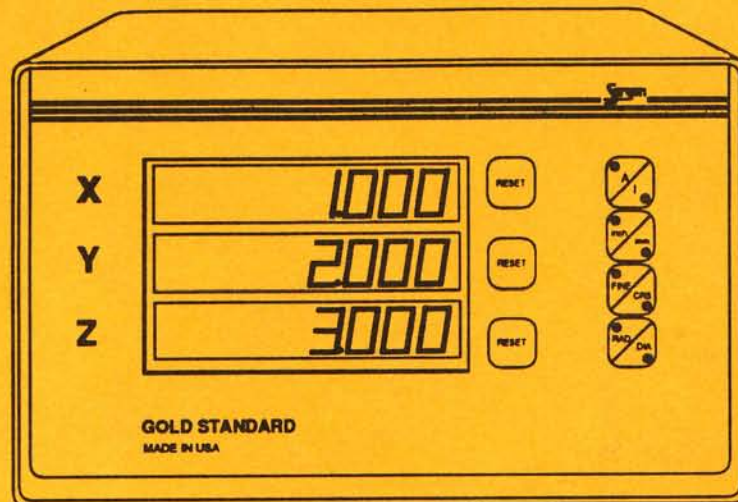


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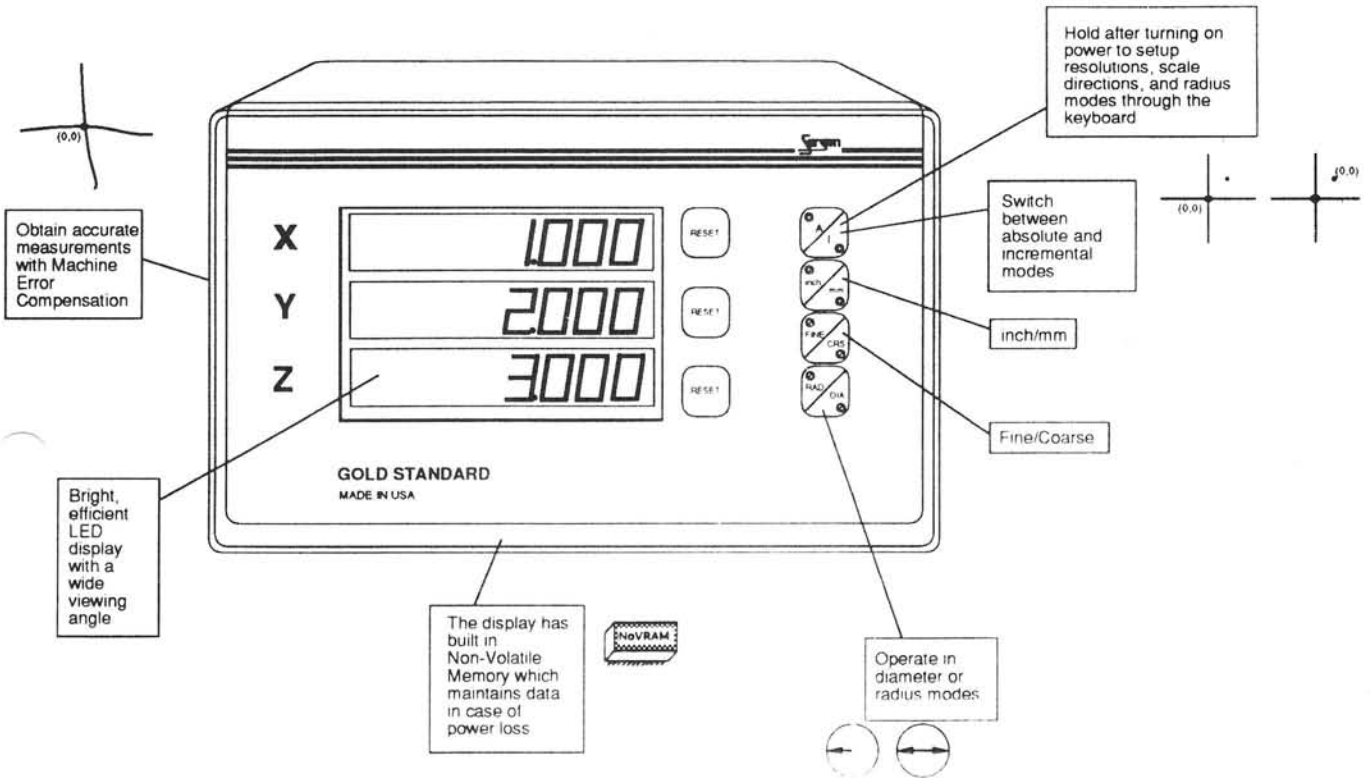
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Rel. 010293-LD-4.1

Features

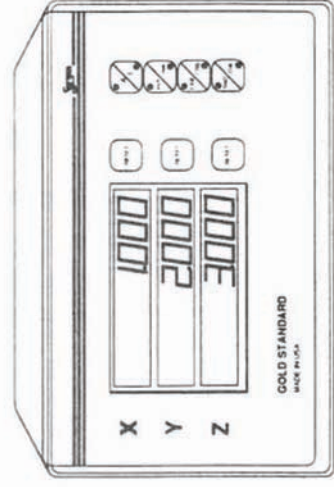
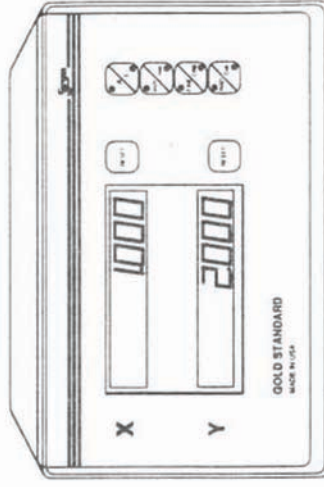
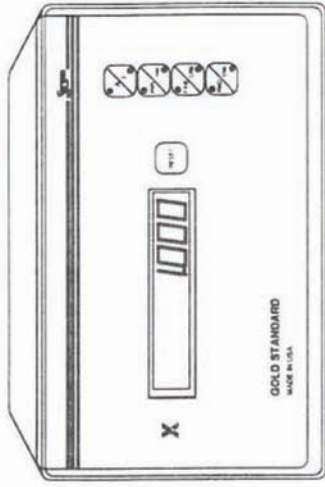


Keypad Configurations

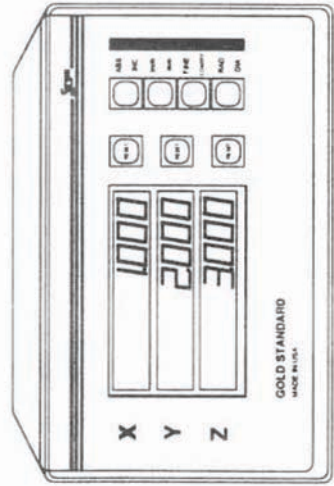
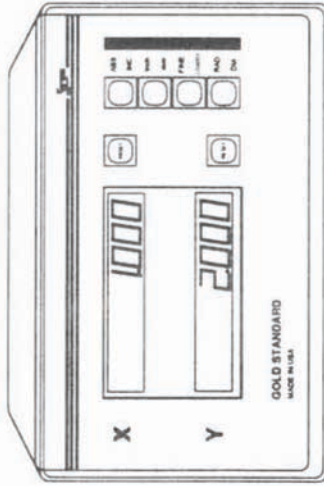
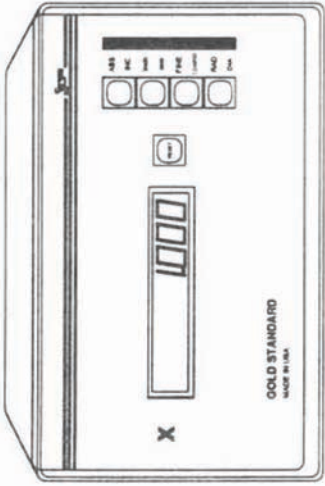
Gold Standard models are configured with either push-button or membrane keypads. Please note that these configurations are functionally equivalent and that the instructions given in this manual apply to both type systems. The following figures show the different face plates for all configurations.

See the following page...

Membrane Models



Pushbutton Models



Warning: Use extreme caution!

Hazardous voltages!

All required electrical work should be performed by a qualified electrician.

Mount the display arm a minimum of 12 inches (≈ 30 cm) away from any motors.

Installation

Display

Remove the large "eye-bolt" located on top of the milling machine column (see Figure 1). Mount the arm onto the machine and the display onto the arm with the 5/16-18 bolt provided in the Sargon hardware kit (see Figure 1).

Should you wish to mount the display under the arm, open the display and reverse the top and bottom halves of the case (see Figure 2). Bolt the display under the arm using the 5/16-18 bolt provided in the Sargon hardware kit (see Figure 3).

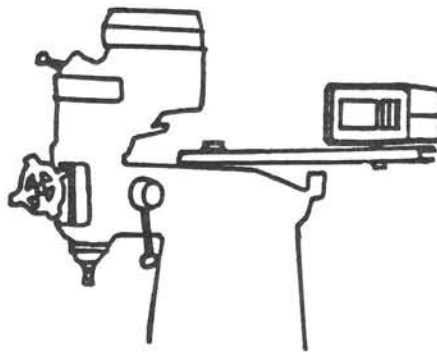


Figure 1: Display on a milling machine (normal configuration)

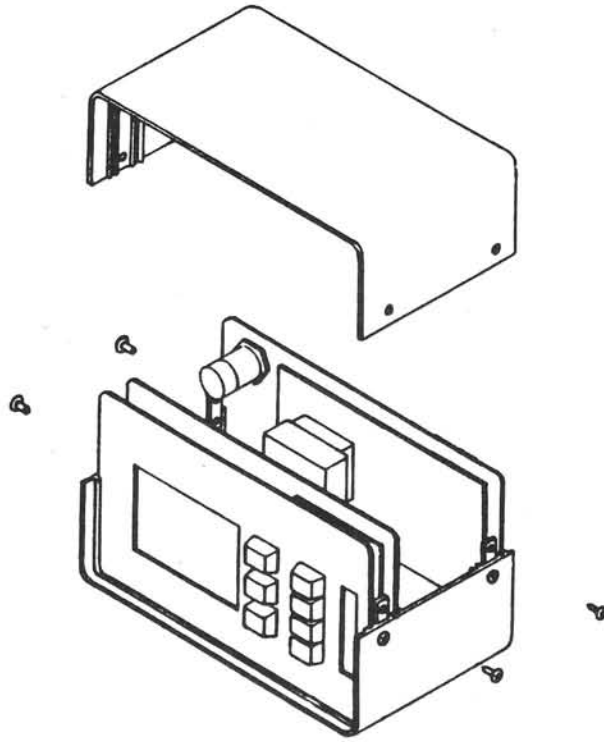


Figure 2: Opening of the display to reverse case halves

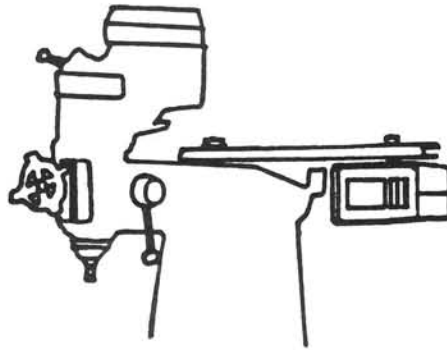


Figure 3: Display on a milling machine (reverse configuration)

AC Ground

The AC socket used should be a three prong grounded outlet (as per Article 250 of the US National Electrical Code). If a three prong outlet is not available, use a grounded adapter and verify that the adapter is grounded.

Note: Verify that the machine is grounded; if it is not, a ground must be installed.

Install a 14 AWG stranded wire (customer provided) from the ground lug on the back of the Gold Standard to the machine power ground connection. If this is not possible, locate an alternate place on the machine and drill+tap. Use star or split washers to secure the ground wire to provide an adequate connection. Use an approved anti-oxidation compound on the connection where the paint was scraped.

AC Power Connection

Do not connect the Gold Standard to an outlet which is also used to power a *machine* ; use a separate outlet. If an outlet is not available, one should be installed near the display mounting location.

The AC power outlet should be of the same voltage indicated on the identification/serial number on the back of the display.

Use the power cord supplied. Do not modify the power cord.

Connect and secure the scale cable connectors to the display. Using tie-wraps, secure the scale cables and *dress* any excess slack. Do not wrap any AC power lines together with the scale cables. Maintain a minimum of 12 inches (~30 cm) from AC lines and cross them at right angles.

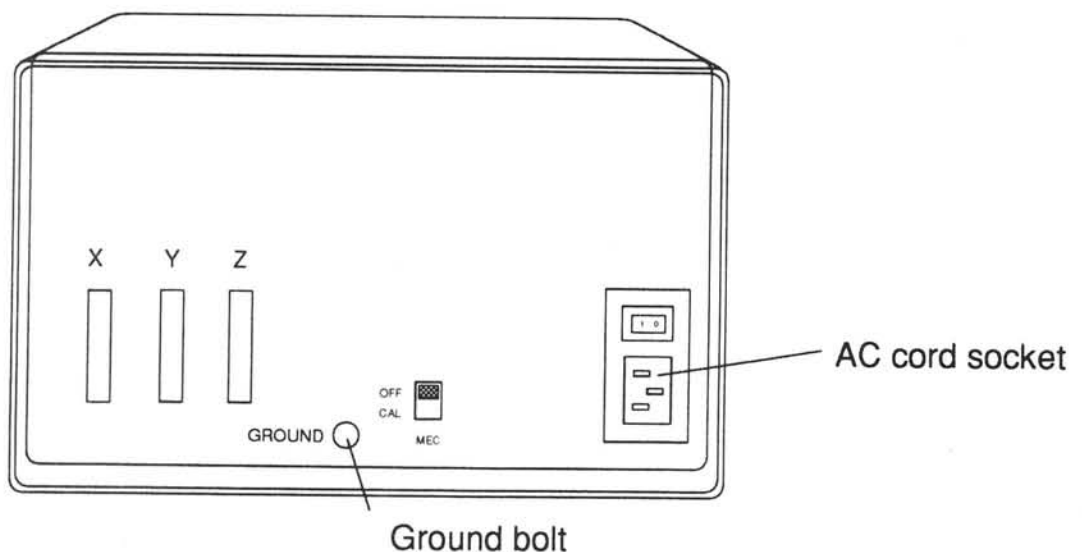


Figure 4: Power cord, AC outlets, ground bolt

Power Up

Turn the unit on using the power switch located on the back of the display (see Figures 5 and 6). The DRO will display and flash "8.8.8.8.8.8.8.8."

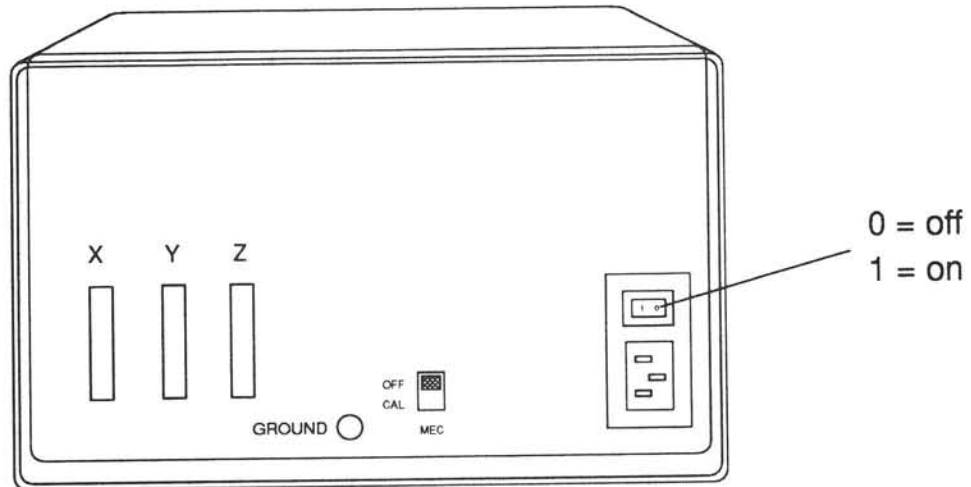


Figure 5: ON/OFF switch

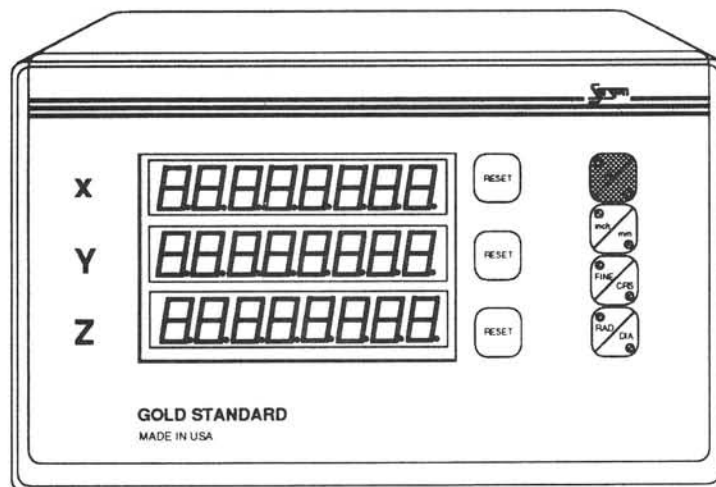


Figure 6: Flashing 8's (initial display)

The flashing 8's, will remain until you press a button. If you press and hold the A/I button, the display will enter the Setup Screens (see Setup Screens). If you press any other key, the display will enter the Normal Mode (see Normal Mode).

Setup Screens

After power up when the display is still flashing "8.8.8.8.8.8.8.", press and hold the A/I button to enter the Setup Screens (see Figure 7).

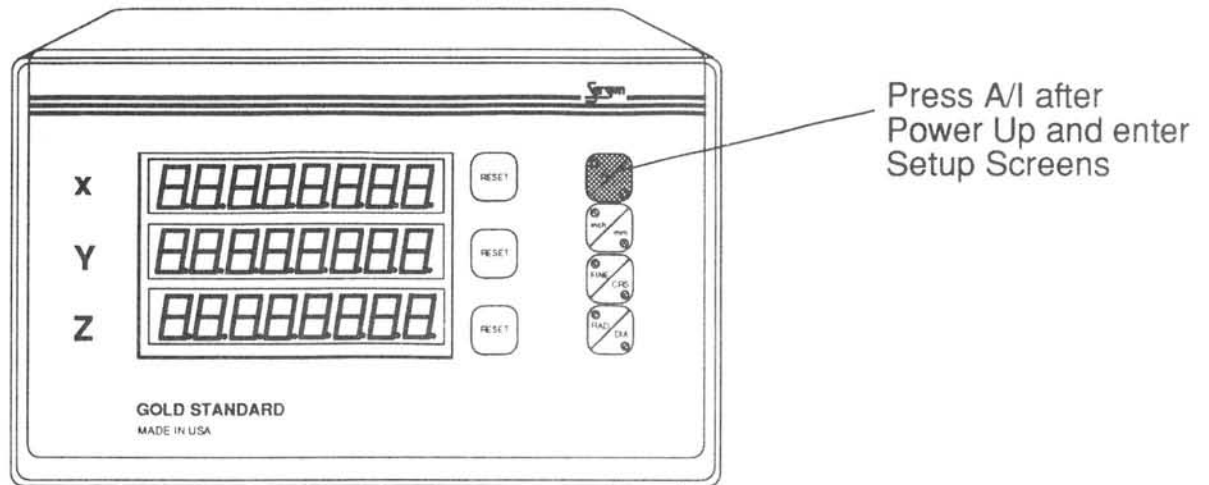


Figure 7: Entering Setup Screens

In the Setup Mode, there are 3 screens that enable you to select:

1. Scale Resolutions
2. Scale Directions (polarity)
3. Diameter/Radius Selections

1. Scale Resolutions

While in the Setup Mode, press RAD/DIA until the DRO displays the following (see Figure 8):

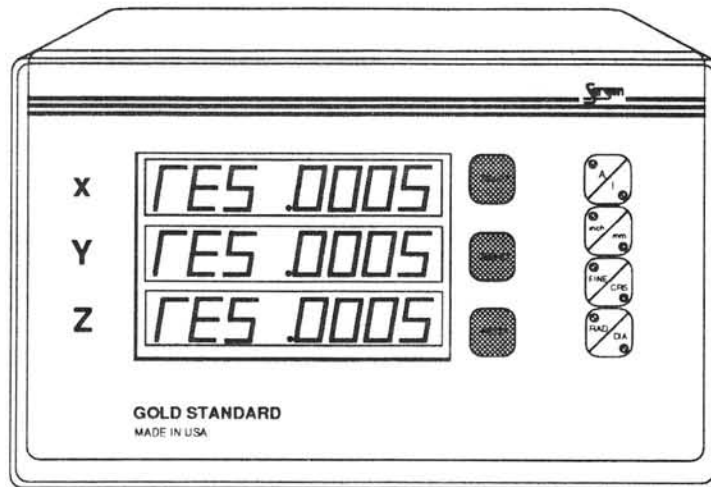


Figure 8: Scale Resolutions

Press the RESET button of the desired axis to toggle through available scale resolutions. When the appropriate scale resolutions are displayed, press A/I or any button other than RESETs, inch/mm, or RAD/DIA to exit to Normal Mode or press RAD/DIA to advance to the next Setup Screen. The last displayed value(s) and setting(s) will be saved automatically.

Note: The scales determine the system resolution, not the DRO. This screen allows the DRO resolutions to match the scale resolution for each axis.

2. Scale Directions

While in the Setup Mode, press RAD/DIA until the DRO displays the following (see Figure 9):

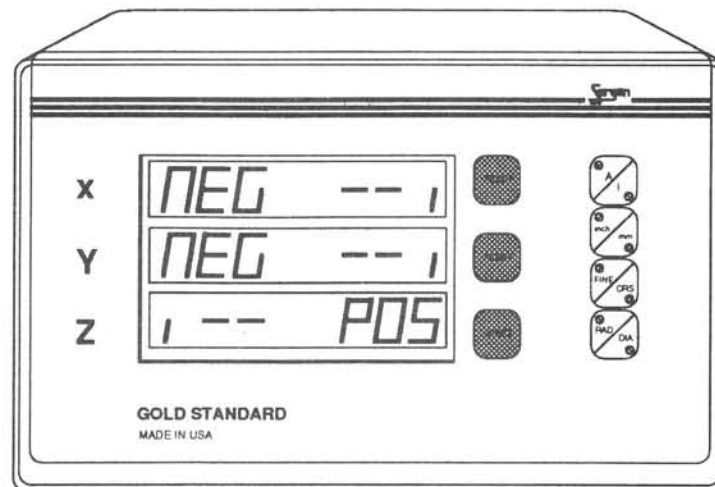


Figure 9: Scale Directions

Press the RESET button of the desired axis to toggle between positive and negative scale directions. When the appropriate scale directions are displayed, press A/I or any button other than RESETs, inch/mm, or RAD/DIA to exit to Normal Mode or press RAD/DIA to advance to the next Setup Screen. The last displayed value(s) and setting(s) will be saved automatically.

Note: Directions must be correct for angle functions to operate properly. Each axis is set independently.

3. Diameter/Radius Selections

While in the Setup Mode, press RAD/DIA until the DRO displays the following (see Figure 10):

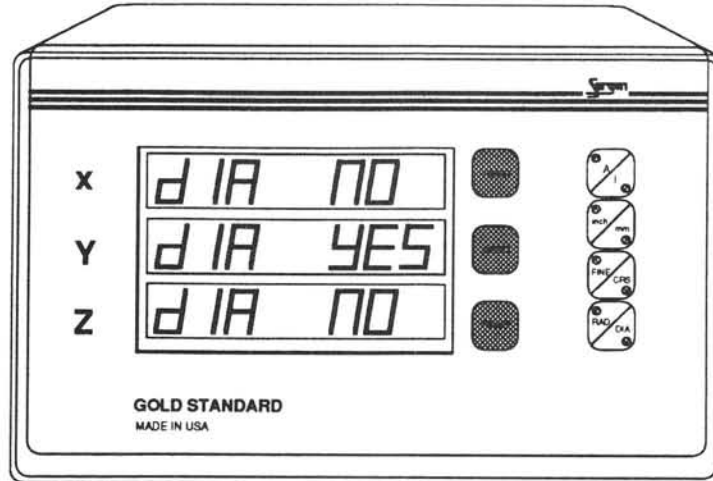


Figure 10: DIA/RAD

Press the RESET button of the desired axis to toggle between radius and diameter settings; (DIA NO = diameter disabled (radius), DIA YES = diameter enabled). When the desired settings are displayed, press A/I or any button other than RESETs, inch/mm, or RAD/DIA to exit to Normal Mode or press RAD/DIA to advance to the next Setup Screen. The last displayed value(s) and setting(s) will be saved automatically.

Note: The RAD/DIA button will affect each axis for which this feature has been enabled.

Resetting the Absolute Coordinates

Using the A/I button, toggle to the Absolute Mode (A). Then press and hold the A/I button until the unit displays ZERO ABS (see Figure 11). At that point press the relevant RESET button(s) to reset the corresponding absolute coordinate(s) to zero.

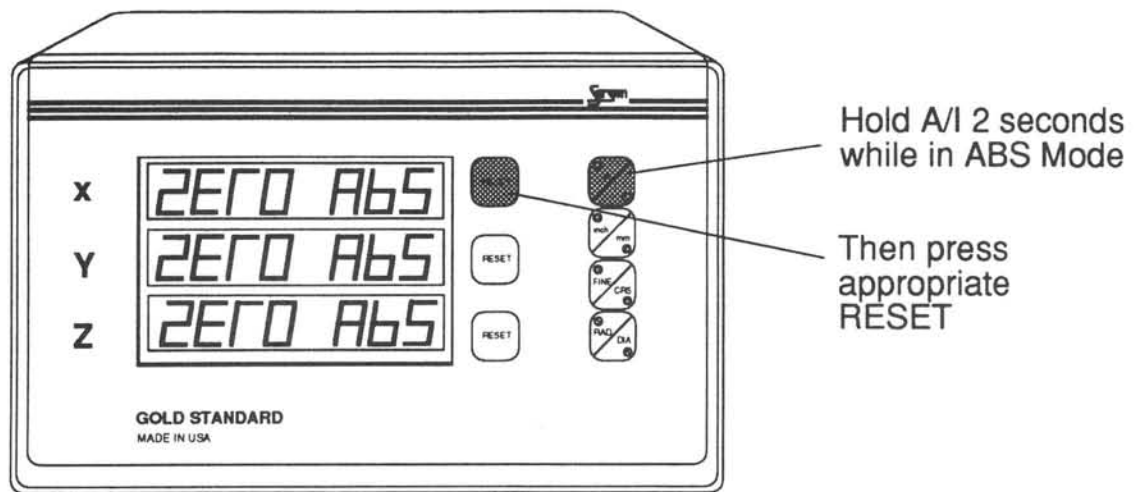


Figure 11: ZERO ABS

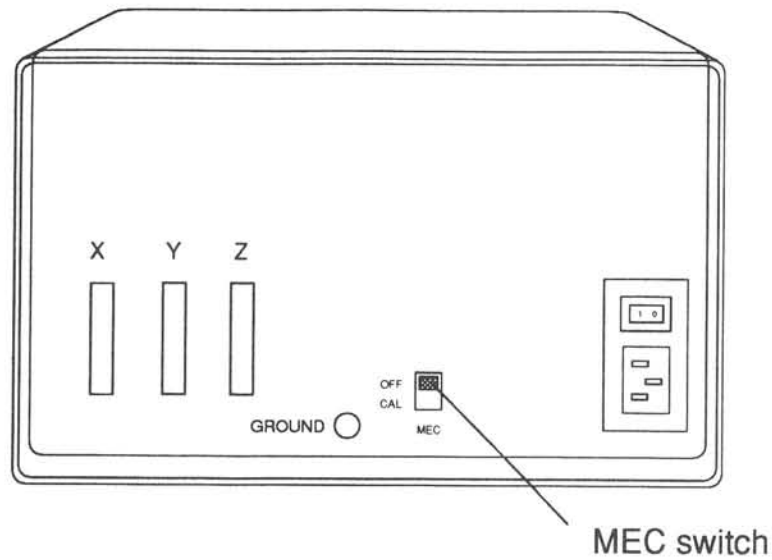


Figure 12: DRO back illustration with MEC switch

Clearing the MEC Factor

While viewing the MEC factors, press RESET for selected axis(es) to reset the factor(s) to zero.

CAL

Calibrating MEC

Clear the MEC as described above. Set FINE/COARSE switch to FINE and the RAD/DIA switch to RAD. Also, set the inch/mm switch to appropriate units in which you will perform your work.

Enter the actual certified gauge block length by moving the table until the Gold Standard displays the numerical value of the length. This is simply a method to enter numerical data without the use of a numeric keypad. Set the MEC switch to CAL and press the RESET for the selected axis.

Move table until the gauge block measurement is displayed. Set MEC switch to OFF. The value displayed should now be corrected to the certified gauge block length entered.

Repeat gauge block measurement to ensure unit is properly calibrated for that axis.

Repeat procedure for the remaining axes.

Machine Error Compensation (MEC)

A standard vertical milling machine would not have any error if its table movements followed perfectly straight lines. This, however, is not the case. There will always be some finite transfer error.

Machine error can be seen as the difference between the actual length of a standard gauge block and the value displayed by the digital readout. This error will also be present in any workpiece machined in that axis.

Machine Error Compensation (MEC) multiplies the internal display count by a conversion factor so that the displayed value will be correct. This factor is stored in the display's non-volatile memory and is set at the factory to a 1:1 ratio.

Example: A standard 10.0000 inch gauge block is measured on a knee mill using proper machine shop practices, but yields a result of 10.0050 inch on the display. MEC is used to re-proportion the dimension so that the display indicates the correct measurement of 10.0000 inches of travel. The 0.0050 inch error is displaced within the 10.0000 inches of travel.

MEC factor range is from -0.999999 to +0.999999.

$$\text{MEC Factor} = \frac{\text{Measured Value} - \text{Gauge Value}}{\text{Measured Value}}$$

MEC should be a one time job. However, an operator may wish to recalibrate for a particular area on the machine table where a particular work is performed.

Although MEC can compensate for machine table problems, it is not intended as a substitute for proper machine maintenance.

Viewing the MEC Factor

Set the MEC switch on the back of the display to CAL and hold the A/I button (see Figure 12). The MEC factor will then be displayed. When finished, move the MEC switch back to OFF.

Note:

1. The MEC procedure is performed one axis at a time.
2. For best results, the display should be calibrated in units in which it will be used (inch or mm).
3. ABS and INC modes always have the same calibration factor for a given time.
4. Standard machine shop procedures are used for gauge block set up and measurement.