

CHAPTER 8

Height Gauge Mode

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Height Gauge Mode



Height Gauge Mode

The Height Gauge Mode lets you measure point to point distances, slot widths, wall thickness, bore center to bore center distances, and bore diameters.

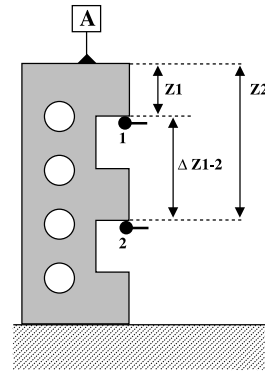
Height Gauge Measurements

In this mode you must take measurement points along one axis (X, Y, or Z). Select the axis and take points along that axis. In the example shown, the Z axis is selected.



Point to Point

The first measurement point (1) gives the distance ($Z1$) from Datum A. The second point (2) gives the distance ($Z2$) and also the distance ($\Delta Z1-2$) between points 1 and 2.



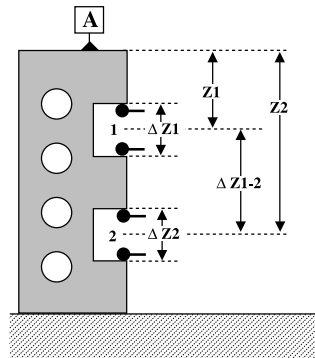
Slots or Walls

To measure a slot width or wall width, take one measurement on each side of the slot or wall.

Two measurement points at slot (1) give the distance of the midpoint ($Z1$) from Datum A and the width of the slot ($\Delta Z1$).

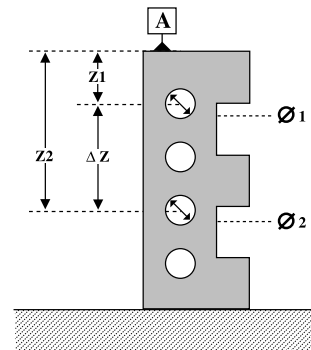
Two measurement points at slot (2) give the distance of the midpoint ($Z2$) from Datum A and the width of the slot ($\Delta Z2$).

The distance between the slots ($\Delta Z1-2$) is also calculated.



Bore Locations and Diameters

When you measure bores, the system computes the diameter and location of the bore's center along the measurement axis. You can get center distance measurements by measuring various bores.



Height Gauge

Measuring in the Height Gauge Mode



Height Gauge Mode

1. Select the Height Gauge Mode softkey from the "Startup Options" screen.
2. From the "Select Measurement Axis" screen, select the measurement axis you will use by pressing the "X Axis", "Y Axis" or "Z Axis" softkey.

IMPORTANT: Once you have selected an axis, the system computes locations and distances only along that axis. You may only measure in that axis.



Recall Probe Tip



Recall Datum

3. Depending on the axis selected, the corresponding screen is displayed. This screen has a "Recall Probe Tip" softkey to recall a previously qualified probe tip, a "Recall Datum" softkey to recall a previously saved datum and a "Select Axis" softkey to change the measurement axis. When you change the measurement axis, all previous measurements are deleted.
4. When you start taking measurements, the system displays the "Taking Points" screen. You can measure a single point, a slot or wall or a bore.



Select Axis

Measuring a Single Point:

- | | |
|------------|---|
| Hard Probe | Move the probe along the selected axis and hold the probe against the surface. Press the Scan button once and then the Done button. |
| TTP | Move the probe along the selected axis until the probe deflects. Press the Done button. |

Measuring in the Height Gauge Mode

Measuring a Slot or Wall (2 points):

- Hard Probe** Move the probe along the selected axis and hold the probe against the first surface. Press the Scan button once. Move the probe against the second surface. Press the Scan button once and then the Done button. Be sure to take only one point on each side. If you take more than one point, the system will think its a bore.
- TTP** Move the probe along the selected axis to the first point until the probe deflects. Move to the second point and deflect the probe. Press the Done button after taking two points.

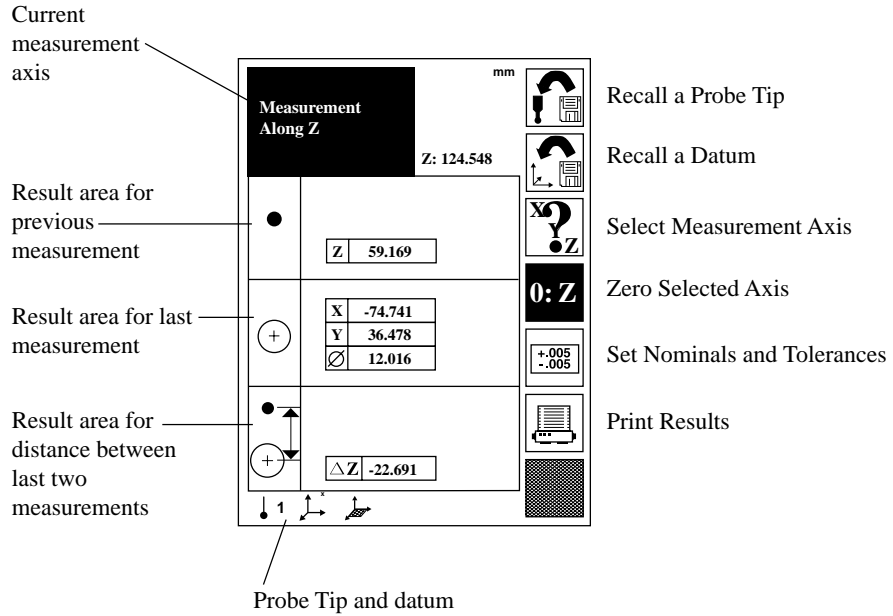
Measuring a Bore:

- Hard Probe** Move the probe along the selected axis and hold the probe against the bore. Press and hold the Scan button while scanning the complete bore diameter. Press Done.
- TTP** Move the probe along the selected axis to the bore until the probe deflects. Take at least 3 measurement points. Press Done.

IMPORTANT: You can measure a bore in the Top, Side or Front planes regardless of the measurement axis selected. The system will automatically determine the orientation of the bore.

Height Gauge Mode Results Screen

As you take measurements, the results are displayed for the last two features and the 1D distance between them. The Results screen for two slots or walls appears as shown:


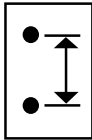

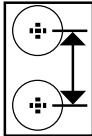
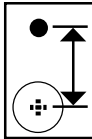


The system will track the last two measured features and the distance between them. The results are displayed as shown above.

IMPORTANT: The system always shows the results of the last two measurements. When you measure a new feature it displaces a previously measured feature. If you press the Select Measurement Axis key, the screen will clear and you are ready to measure features in the new selected axis.


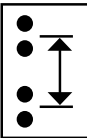
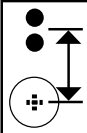
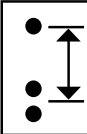
Height Gauge Mode Results Screen

Following are the Measurement Types and Result descriptions:

Type Symbol	Measured Axis	Description												
	X Y Z	Location of a point along the measurement axis.												
	X Y Z	Distance between two points along the measurement axis.												
	XYPL (Top) YZPL (Side) ZXPL (Front/ Back)	Major and minor location of the bore center and the bore diameter. The major and minor axes are determined by the bore reference plane: <table border="1"> <thead> <tr> <th>Reference Plane</th> <th>Major</th> <th>Minor</th> </tr> </thead> <tbody> <tr> <td>XYPL</td> <td>X</td> <td>Y</td> </tr> <tr> <td>YZPL</td> <td>Y</td> <td>Z</td> </tr> <tr> <td>ZXPL</td> <td>Z</td> <td>X</td> </tr> </tbody> </table>	Reference Plane	Major	Minor	XYPL	X	Y	YZPL	Y	Z	ZXPL	Z	X
Reference Plane	Major	Minor												
XYPL	X	Y												
YZPL	Y	Z												
ZXPL	Z	X												
	XYPL YZPL ZXPL	Distance between two bores along the the bores' major and minor axes. Note: If the bores were measured in different planes, no relationship is computed.												
	X Y Z	Distance between a point and a bore center. Note: The distance is computed only if the reference plane of the bore contains the measurement axis of the point.												

Height Gauge Mode Results Screen

Following are the Measurement Types and Result descriptions:

Type Symbol	Measured Axis	Description
	X Y Z	Location of the midpoint of two measurements and the distance between the two along the measurement axis.
	X Y Z	Distance between two midpoints along the measurement axis.
	X Y Z	Distance between a midpoint and the center of a bore along the measurement axis. Note: The distance is computed only if the reference plane of the bore contains the measurement axis of the midpoint.
	X Y Z	Distance between a point and a midpoint along the measurement axis.

Height Gauge Mode Softkeys

The Height Gauge Mode softkeys:



Recall Probe Tip

The "Recall Probe Tip" softkey lets you recall a previously qualified tip. To qualify a probe, use the "Probes" softkey in the "Startup Options" screen.



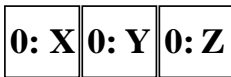
Recall Datum

The "Recall Datum" softkey lets you recall a previously saved datum created via the measurement mode.



Select Axis

The "Select Axis" softkey lets you choose the desired measurement axis.



Zero Axis

The "Zero Axis" softkeys zero the current measurement axis at the location of the current measured feature. The softkey displayed depends on the measurement axis. For slots and walls the zero is set at the center of the slot or wall. For bores the zero is set at the center of the bore.



Print

The "Print" softkey prints the results of Height Gage Measurements.



Tolerance

The "Tolerance" softkey displays the tolerance window. In this screen, you can set tolerances of measured features as well as setting the printer output format. See the next page for descriptions of softkeys used in the tolerance screen.

Height Gauge Mode Tolerance Softkeys

The Height Gage Mode's tolerance screen softkeys:



Abort



Scroll Down



Change Option

The "Abort" softkey discards changes made in the tolerance window and returns you to the Height Gauge Measurement screen.

The "Scroll Down" softkey advances the highlight to the next item (Output, Nominal, Upper Tolerance, Lower Tolerance) in the tolerance window.

The "Cycle Option" softkey cycles through the following "Output" choices:

- Measured:** The system prints only the measured value.
- Full:** The system prints the measured value, nominal value, upper tolerance, lower tolerance, deviation and out-of-tolerance graph.
- Tol Band:** Prints only the tolerance graph showing measured value location in the tolerance zone or out-of-tolerance deviation.
- Out-Of-Tol:** Same as Full Format except it is only printed when the selected feature is out of tolerance.
- None:** Does not print the highlighted value. Use this option to print only the items desired. When None is selected, the value will not show on the screen or the printout.



ISO Tolerance



Keyin Value

The "Keyin Value" softkey is used for entering nominal or tolerance values. When this key is pressed, you can change the value of the highlighted item using the "+1", "-1", and "+/-" softkeys. After the value has been keyed-in, press the Done softkey to return to the tolerance window.



Next Result

The "Next result" softkey advances the highlight to the next result window. The nominal, tolerance, and output type must be specified for each window.



Done

When the "Done" softkey is selected, all changes are accepted and you are brought back to the Height Gage mode's measurement screen.