



Bi-Point™ Internal Thread Measuring Gaging System

Set-up & Operating Manual



The Bi-Point Gaging System is a variable thread measuring system. It is easy to set up and easy to use. It is ideally suited for use in final inspection as well as in-process inspection, particularly when SPC is being employed. It can be connected to most electronic data collection systems for fast recording and analysis of inspection results.

The basic gage consists of a gage frame, base, and an electronic indicator (unless ordered otherwise). There are two gage frame sizes. The small gage covers from #10 through 2 1/2 inch (M5 - M60) and the other covers 2 5/8 inch through 5 inch (M62 - M120).

The Bi-Point Gage is set with a certified, internally threaded, solid master set ring. Rings are typically marked with functional diameter & pitch diameter.

There are three common types of fingers used for inspecting internal threads:

Functional Diameter Fingers



These are fingers with threads covering the entire finger length. These measure the thread's Functional Diameter. These fingers are an alternative to the use of a Go/No-Go work plug gage. This measurement is a requirement of ALL thread measuring standards and systems.

Pitch Diameter Fingers



These fingers measure the internal thread's simple Pitch Diameter. These fingers have a single "cone" on one finger and a single "vee" on the other. This measurement is NOT required for most commercial nuts which are covered by the requirements of ANSI/ASME B1.3M, System 21. This measurement is required when inspecting to System 22.

"VARIMINOR" Fingers



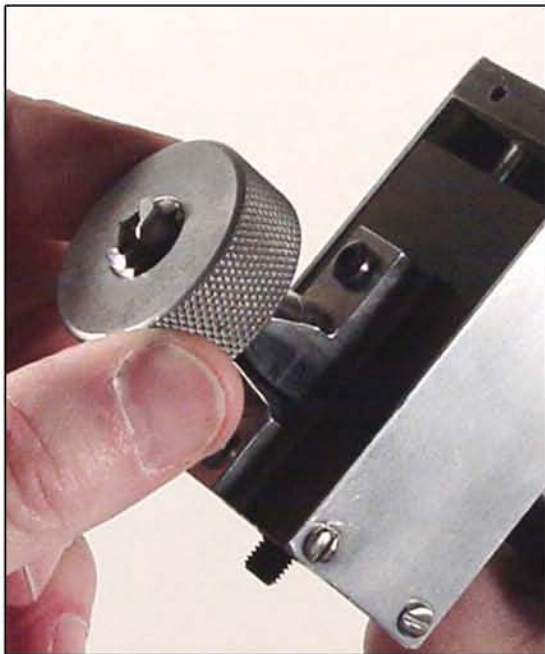
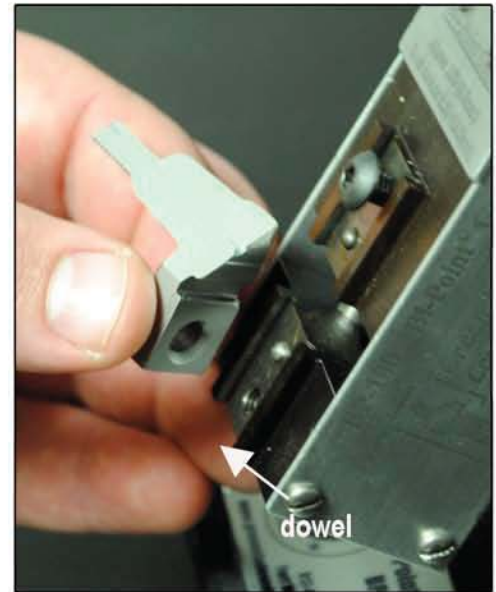
These fingers are for measuring the Minor Diameter on internal threads or the inside diameter of parts with holes in them. This measurement is a requirement of ALL thread measuring standards and systems.

Bi-Point Gage Set-up Procedure for Pitch & Functional Diameter Fingers:

1. Select the correct style and size of fingers needed to do the required inspection. Place the back of one of the fingers in the lower mounting slot of the gage frame so that the dowel in the gage frame slot will enter the slot in the back of the fingers. The hole in the finger will be over the threaded hole in the frame. Insert the attachment screw and tighten securely.

Place the second finger on the upper mount and repeat the procedure. Either finger can be on the upper or lower mount.

Push or squeeze the black knob on the back of the gage down and see that the fingers will close completely together. If they interfere and do not close, loosen both attachment screws, press down on the thumb lever until they shift slightly allowing the fingers to close, and then re-tighten the attachment screws.



2. Push the fingers together and place the master ring on the fingers and release the thumb lever so that the fingers open into the ring. Rotate the ring clockwise 1/4 to 1/2 turn to insure that the fingers are seating into the ring threads. Take care to be sure that the ring is not cocked so that the fingers are engaged in the same ring thread. If the ring will not turn smoothly, the ring is probably cocked. If this is the case, close the fingers and re-position the ring until you can turn it smoothly.

3. Turn the indicator ON. The indicator should read "0.0000". Push the black knob down to see that the number reads "-" as the fingers come together. If not, press the "-/+ " button. Determine if you want to measure in inches or millimeters. Press the IN/MM button to select your desired increments.

Now "Preset" the indicator so that the displayed value on the indicator is the exact characteristic size the gage is measuring. For measuring functional diameter, set the indicator to the value on the master ring marked "Min. P.D. or Func. Dia.". For measuring the pitch diameter, set the indicator to the value on for pitch diameter indicated on the calibration certification.

Presetting the indicator:

1. Press the SET button once and a little "p" should start to flash in the upper right corner of display.
2. Press and hold the SET button until a "+" sign located to the left of the numbers on the display begins to flash (release the button).
3. You are now ready to enter the preset value (from the ring gage). Press the SET button once to move from digit place to digit place. Press the MODE button once to increase the digits at the position you are at.
 - Example preset .2258": press SET once to move to the digit just right of the decimal point.
 - Press MODE twice to enter value of 2, press SET once to move to the 2nd decimal position.
 - Press MODE twice to enter value of 2, press SET once to move to the 3rd decimal position.
 - Press MODE five times to enter the value of 5, press SET once to move to the 4th decimal position.
 - Press MODE eight times to enter the value of 8, press SET once to move to the 5th decimal position.
 - Press SET once more to accept the "0", and then the small "p" in the upper right corner of display should start to flash again.
4. When the preset value is correct, hit the SET button one more time to finally accept the preset value.
5. Place the ring gage over the fingers, and hit the SET button twice to preset the BI-POINT gage to the master ring gage.
6. Actuate the BI-POINT gage to make sure the indicator value gets larger when the fingers get further apart. If it does, you are ready to measure parts, if it does not, go to the "Setting Indicator Direction" section.



Setting Indicator Direction:

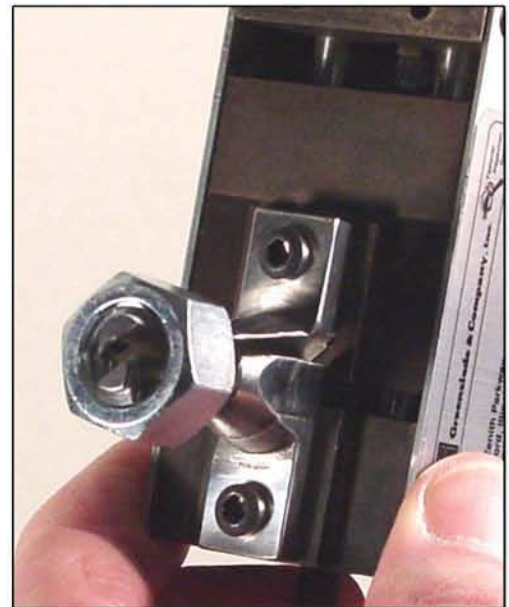
1. Press and hold the MODE button till "DIR" appears on display and begins to flash.
2. Press the SET button once and the "DIR" should stop flashing.
3. Press the MODE button once and a down arrow should appear to the left of the "DIR" display. The down arrow means the indicator is in reverse read mode, which the BI-POINT gage needs to operate correctly.
4. Press the SET button once to accept this and move to the next set up mode. Since no other set up features are necessary for the BI-POINT gage, you must press and hold the DATA button to turn the indicator off and get out of set up mode.
5. Press the DATA button once to turn the indicator back on.
6. Verify that the gage is working properly by placing the ring back into the fingers, pressing the SET button twice to re-preset, and that the indicator values get higher as the fingers get further apart (note: the down arrow should still be displayed to the left of the indicator values telling you it is in reverse read mode).

4. Close the fingers and remove the ring. Allow the fingers to open completely. Close the fingers again and place the ring on again turning as described above. If the value indicated is the same as on the Master Ring, you are ready to inspect product. If the value indicated is different, place the ring on properly again. Press ZERO once and press PRESET twice. This has set the gage to the preset value again. Repeat the test and do so until you can put the ring on twice and indicate the same value.

5. Close the fingers. Place the internally-threaded product to be tested on the fingers and allow them to open. Rotate the product 1/4 to 1/2 turn clockwise and record the indicator reading as the inspection value. Be sure the product rotates smoothly. If not, close the fingers and straighten the product so the fingers are seated in the same thread at the top and bottom.

Threads are acceptable if the readings are within the required Pitch Diameter tolerance. This is true for both Pitch Diameter and Functional Diameter inspections. Reading outside of the required tolerance are rejectable.

IMPORTANT: To effectively gage parts you only need to follow the simple procedure above. Do not rotate the master ring or products on the gaging fingers any more than necessary, such as screwing a nut completely on and off. This will cause unnecessary wear on your gaging fingers, slow down testing, and not improve measuring.



Note: If there are any questions, don't hesitate to call Greenslade & Company, Inc. at 817-870-8888, and we would be happy to walk you through the process and get you going.

Bi-Point Gage Set-up Procedure for VARIMINOR Fingers:

1. Slide the “VARIMINOR” fingers into the slot in the gage frame with the carbide pins closest to each other. Insert the screws with a reduced diameter into the threaded hole in the gage frame and tighten. Make sure that the backs of the fingers are flush with the gage to assure accuracy.

2. Push or squeeze the black knob on the bottom of the gage to the right to close the fingers together. Place the master ring or setting plate on the fingers and release the thumb lever. Press the ring or plate flat against the face of the fingers and rotate the ring clockwise about 1/4 turn.

3. Preset the indicator with the value on the ring or plate marked “Min. Dia.” or take the value from the master ring certification for “Minor Diameter”.

If the I.D. size you want to measure is larger than the fingers will go apart when the thumb lever is released, loosen one of the fingers and slide it away from the center of the gage. Both fingers can slide outward. If they still are not far enough apart, you can take the fingers off and rotate them so that the carbide pins are away from the center of the gage. With the pins toward the center, the I.D. measuring range is from .187 inch to approximately 1.000 inch. With the pins mounted away from the center, the range will go up to approximately 2 1/2 inches.

4. After the indicator is set, close the fingers and remove the master. You are ready to inspect parts. Push the black knob down to close the fingers and place the product on the fingers so that product's face touches the face of the fingers. Release the lever allowing the pins to contact the I.D. of the part. Rotate the part clockwise approximately 1/4 turn to assure the product is completely seating on the fingers.

