How to Effectively Inspect for Internal Thread Depth

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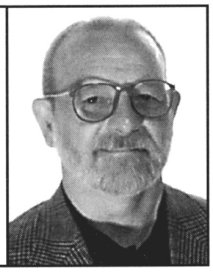


Work plug gages are slow and provide subjective results.

Indicating thread gages yield faster, more objective readings.

Minimum thread depth is a common inspection requirement on parts having tapped blind holes. The minimum thread depth is critical on these parts to assure that the externally threaded mating part will seat properly against the face of the tapped part when they are assembled.

Thread depth is commonly inspected using a standard threaded work plug gage. The use of a work plug gage for measuring minimum thread depth is slow and inspection results are subject to dispute between inspectors. It is slow because the plug must be screwed into the part its full thread depth and then unscrewed to remove it. Inspection disagreements can occur because thread depth is judged by the inspector based on "eye-balling" the location of the plug gage when it bottoms out in the blind hole. Thread depth acceptability decisions made using this method are subjective, and different inspectors may reach different conclusions when inspecting the same parts.

Indicating internal thread gages provide a much faster, more objective means of inspecting the internal thread depth in blind holes. Three to six parts can be inspected using an indicating gage in the time it takes to inspect only one part using a work plug gage. Thread depth acceptability decisions are based on objective numerical results when using an indicating gage. Using objective results eliminates the potential controversies between different inspectors.

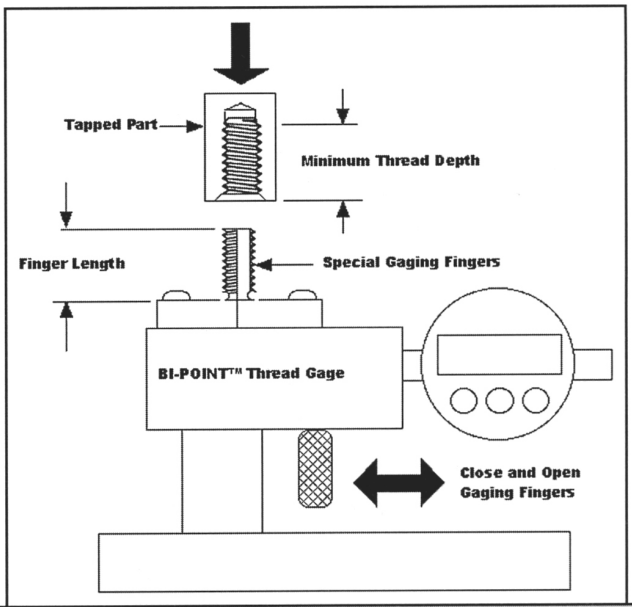
To inspect the minimum thread depth of a tapped part using an indicating thread gage, the gage must be equipped with a set of special gaging fingers having a thread length equal to the tapped part's minimum thread depth requirement. The finger's thread length is measured from the finger's extreme end to its outward face.

Referencing the accompanying graphic, the procedure for making a minimum thread depth inspection with an indicating thread gage is as follows:

- Close the gaging fingers.
- Slide the internal thread of the part over the gaging fingers until the face of the part is within approximately 1/2 thread pitch of the outward face of the gaging fingers.
- Release the gaging fingers so that they expand and engage the internal threads of the formed part.
- For parts having right-hand threads, rotate the part clockwise until the face of the part is in contact with the outward face of the gaging fingers. For parts having left-hand threads, rotate the part counterclockwise until the face of the part is in contact with the outward face of the gaging fingers.
- Observe the gage's indicator reading. If that reading is between the thread's required high and low limits for functional pitch diameter size, both the thread's size and its minimum full thread depth are in conformance to the part's requirements.
- Compress the gaging fingers to disengage them from the tapped part and lift the part straight off the gage.

To obtain faster inspections that are less susceptible to dispute, suppliers of tapped parts should consider the use of indicating thread gages instead of threaded work plug gage when inspecting for minimum thread depth.

For more information on this or other measurement challenges, contact the author or **Circle 202.** FTI



Inspecting internal thread depth with internal thread gages.

Greenslade & Company, Inc. *is a supplier of gages, tooling and other equipment to the fastener manufacturing industry.*

Joe Greenslade *is a regular contributor of articles to this magazine. He has been active in the fastener industry since 1970 and has held positions with major fastener producers.*