

# Proper Ring Gage Setting Procedures Are Important to Assure Good Thread Quality



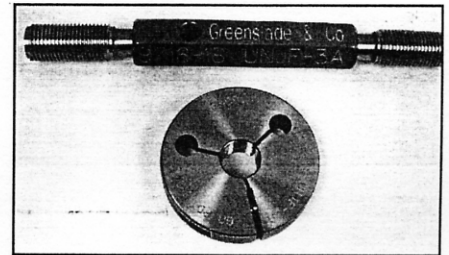
**Joe Greenslade** is President of Greenslade and Company, Inc. His company specializes in providing manufacturing tooling and inspection equipment to suppliers of screws, bolts, rivets, and nuts throughout the world. Greenslade is an associate member of the Industrial Fastener Institute (IFI), a member of the American Society of Mechanical Engineers B1 Thread Specification Committee, and a member of the Public Law 101-592 Task Force.

The American Society of Mechanical Engineers (ASME) standard B1.3M designates ring gages, Tri-roll gages, and segment gages as equally approved thread gages for determining the acceptability of the functional pitch diameter (maximum material) of screw and bolt threads. Even though this standard approves of these gage types they are only effective in determining thread quality if they are properly calibrated before use.

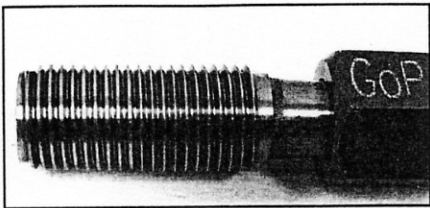
Of these approved gage types the adjustable thread ring gage is the simplest. Unfortunately, many ring gage users do not know how to properly inspect and set ring gages. Even when users do know how to set ring gages, they frequently

allow too much time between calibration intervals. Below is a description of the proper procedures for setting thread ring gages:

## Inspecting and setting ring gages

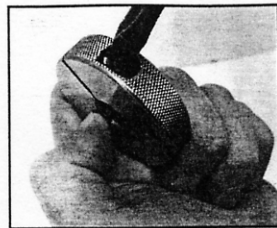


**Step #1.** Thoroughly clean the ring gage of dirt and oil by soaking the gage briefly in a non-toxic solution such as clean light machine oil or mineral spirits. Then gently brush all surfaces, including the threads, with a brass or bristle brush to remove any stubborn particles.



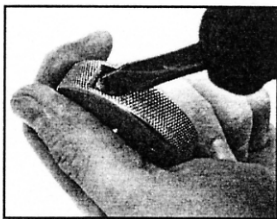
**Step #2.** Carefully screw the proper truncated setting plug into the ring gage the entire length of the setting plug's threaded length and observe the rotational resistance exhibited between the ring and plug. If the rotational resistance

between the ring and plug are the same on both the truncated and full form portions of the setting plug the ring gage is properly set and needs no adjustment and can be certified. If the rotational resistance is less when the ring is engaged on the truncated portion of the plug than it is on the full formed portion of the plug the ring must be re-set to be certified.



**Step #3.** When performing a ring gage calibration the wax in the two recesses on the side of the ring gage must be removed to provide access to the locking and adjusting screws. Unfortunately, there is no simple way to do this. The only

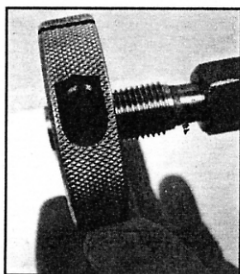
way to do this is to pick the wax out of the recesses with a small, sharp object.



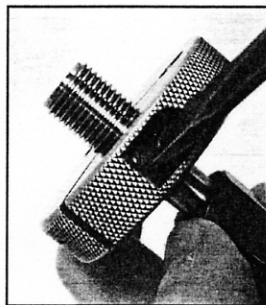
**Step #4.** Break loose the locking screw (the one with the solid, slotted head) by turning it counter clockwise. Then slightly loosen the setting screw (the one with the hole through its head) by turning it clockwise.



**Step #5.** Screw the appropriate size and class of truncated setting plug into the ring until the full-form portion (that nearest the gage handle) is completely engaged in the ring.



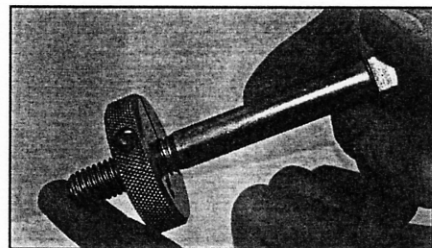
**Step #6.** Adjust the setting screw until there is a very light rotational resistance between the ring and the setting plug.



**Step #7.** Screw the setting plug outward until the ring is completely engaged on only the truncated portion of the setting plug. The amount of rotational resistance should feel the same on both the full-form and truncated portions of the setting plug. If the rotational resistance feels the same, tighten the locking screw to secure the ring's setting.

If the rotational resistance is less on the truncated portion of the setting plug than it is on the full-form portion of the setting plug go back to step #6 and adjust the ring again. If step #6 is performed several times and the ring still has less rotational resistance on the truncated por-

tion of the setting plug than it has when engaged on the full-form portion, the ring gage is worn beyond acceptable limits and must be replaced. When the ring gage cannot be adjusted to make the rotational resistance of the ring the same on the two portions of the setting plug, it is evidence that the thread flank angles in the ring gage have been excessively worn.



**Step #8.** After the ring is properly set, the recesses in the side of the ring over the locking screw and setting screw should be filled with wax. Gages that do not have hardened wax in these recesses should not be used to inspect product, because there is no assurance that the ring gage is properly set.

## Calibration intervals

There are no standard rules on how frequently ring gages should be inspected and/or cali-

brated. It is better to set the calibration cycle based on the amount of use a ring gets instead of the amount of time that has passed since the last calibration.

A ring gage that is used everyday should be checked at least every few days. Those that are used much less frequently can be checked less frequently. The frequency has to be based on good judgment. For ring gages that are used every day in production the best calibration practice for detecting worn gages quickly is to inspect them once per day.

Ring gages do not have to be re-set every time they are inspected. If the same amount of rotational resistance is exhibited while the setting plug is screwed into ring its entire length, over the truncated and full-form portions, the ring gage is still properly set. The ring gage can be used without re-setting until the rotational resistance of the ring gage is less on the truncated portion than it is on the full form portion of the setting plug.

Consistent screw and bolt quality is demanded by all customers today. It is not enough to own gages and use them regularly. Quality is only assured if the fastener supplier has the appropriate gages, uses them properly and frequently, and has established an effective gage calibration program that is used without fail.



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