

Checking the Pitch Diameter of a Thread with a “No Go” Gage.

The pitch diameter of a thread is the most important characteristic because it reflects the widest spectrum of possible defects in a threaded part or gage.

It is possible for the minor or major diameter of a threaded part to be undersize within a limited extent without affecting the screw assembly of the mating parts. There might also be little or no effect on its strength as well, or at least none significant enough to measure. The pitch diameter however, must always be precise or within a certain tolerance, and never undersize or oversize. For external threads the “No Go” thread ring gage ensures parts are not undersize.

The main differences in thread forms between “Go” and “No Go” thread gages is that the “Go” gage can be affected by other variables and conditions in addition to pitch diameter variations, and its roots are only “cleared.” In contrast, a “No Go” gage not only has its roots “cleared” to a greater extent than the Go member, but the peaks of the gage’s threads are truncated as well. The purpose of this is so that the “No Go” gage only checks pitch diameter without being affected by any other conditions.

A pitch diameter of an external threaded part is considered to be undersized if it can enter a “No Go” thread gage in most cases by more than $2\frac{1}{2}$ - 3 turns depending on the applicable standard.

In most cases it is better to hold the ring gage and screw the work piece into it. This method typically results in a more sensitive measurement with less wear on the gage. If the part is large and heavy than the opposite is typically true where the ring gage should be turned onto the part. While it is better to introduce the part to the ring gage, in most cases the reverse is true for thread plug gages.