



Radius gauge

Two types of radius gauges

A **radius gauge** is a tool used to measure the radius of an object. Radius gauges require a bright light behind the object to be measured. The gauge is placed against the edge to be checked and any light leakage between the blade and edge indicates a mismatch that requires correction.

A good set of gauges will offer both convex and concave sections, and allow for their application in awkward locations.



Thread pitch gauge

Three different sets of threading gauges

Threading gauges, pictured on the right, are also referred to as **pitch gauges** and are used to measure the pitch or lead of screw threads. The uppermost gauge in the image is an ISO metric pitch gauge, the larger gauge in the center is for measuring the Acme Thread Form, and the lower gauge is for imperial screws.

Thread pitch gauges are used as a reference tool in determining the pitch of a thread that is on a screw or in a tapped hole. This tool is not used as a precision measuring instrument. This device allows the user to determine the profile of the given thread and quickly categorize the thread by shape and pitch. This device also saves time, in that it removes the need for the user to measure and calculate the thread pitch of the threaded item.

Go-NoGo gauge

Go-NoGo gauge refers to an inspection tool used to check a workpiece against its allowed tolerances. Its name derives from its use: the gauge itself has two tests; the check involves the workpiece's having to pass one test (*Go*) and 'fail' the other (*No Go*).

It is an integral part of the quality process that is used in the manufacturing industry to ensure interchangeability of parts between processes, or even between different manufacturers. A Go NoGo gauge is a measuring tool that does not return a *size* in the conventional sense, but instead returns a *state*. The *state* is either acceptable (the part is within tolerance and may be used) or it is unacceptable (and must be rejected).

They are well suited for use in the production area of the factory as they require little skill or interpretation to use effectively and have few, if any, moving parts to be damaged in the often hostile production environment.



Plug gauge

Hardened and ground plug gauge
Replaceable thread and plug gauges

These gauges are referred to as plug gauges; they are used in the manner of a plug. They are generally assembled from standard parts where the gauge portion is interchangeable with other gauge pieces (obtained from a set of pin type gauge blocks) and a body that uses the collet principle to hold the gauges firmly. To use this style of gauge, one end is inserted into the part first and depending on the result of that test, the other end is tried.

In the right hand image, the top gauge is a thread gauge that is screwed into the part to be tested, the labeled *GO* end will enter into the part fully, the *NOT GO* end should not. The lower image is a plain plug gauge used to check the size of a hole, the green end is the *GO*, red is the *NO GO*. The tolerance of the part this gauge checks is 0.30mm where the lower size of the hole is 12.60mm and the upper size is 12.90mm, every size outside this range is *out of tolerance*. This may be initially expressed on the parts drawing in a number of styles, three possibilities may be:

- 12.75mm +/- 0.15mm
- 12.60mm +0.30 -0.00
- 12.90mm +0.00 -0.30

Snap gauge

The usage of this gauge may be more intuitive than the plug type. A correctly machined part will pass the first set of jaws and stop at the second end of test. In this manner a part may be checked in one action, unlike the plug gauge that needs to be used in the correct sequence and flipped to access the second gauge.



These images illustrate an alternative type of gauge. The snap gauge has four anvils or jaws, the first one or pair (outermost) are set using the upper limit (tolerance) of the part and the inner set adjusted to the lower limit of the part.



Plain snap gauge used to measure outside distances (diameters), the image shows two views of a thread snap gauge. Snap gauges are useful for mass production