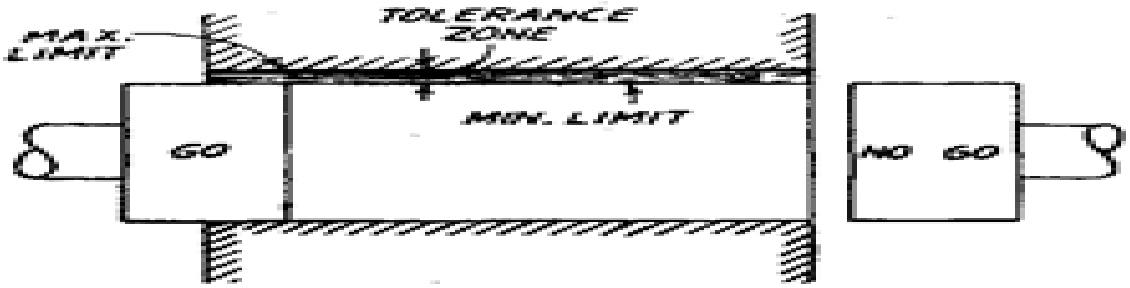
Gauge design - Taylor's Principle.

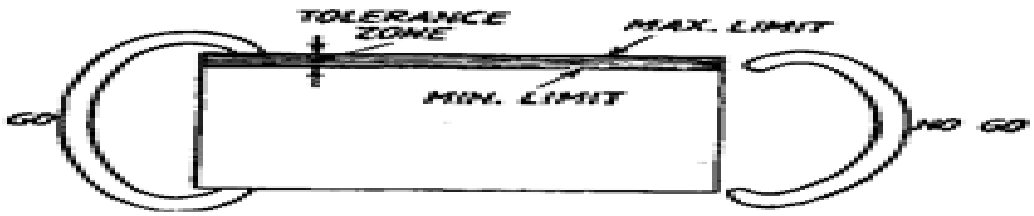
According to Taylor, 'Go' and 'No Go' gauges should be designed to check maximum and minimum material limits which are checked as below. 'Go'Limit. This designation is applied to that limit of the two limits of size which corresponds to the maximum material limit considerations, i.e. upper limit of a shaft and lower limit of a hole. The form of the 'Go' gauge should be such that it can check one feature of the component in one pass.

Wo Go' Limit. This designation is applied to that limit of the two limits of size which corresponds to the minimum material condition, i.e. the lower limit of a shaft and the upper limit hole

'No Go' gauge should check only one part or feature of the component at a time, so that specific discrepancies in shape or size can be detected. Thus a separate 'No Go' gauge is required for each different individual dimension.



Pluggauge.



Snapgauge.

The ‘Go’ plug gauge (Fig. 4.48) is the size of the minimum limit of the hole, while the ‘No Go’ plug gauge corresponds to the maximum limit.

The ‘Go’ snap gauge (Fig. 4.49) on the other hand, is of a size corresponding to the maximum limit of the shaft, while the ‘No Go’ snap gauge corresponds to the minimum limit. Gauging faces of a normal snap or gap gauge must be parallel and square to each other and the gauging points of contact with the work should be in the same plane. The difference in size between the ‘Go’ and ‘No Go’ snap gauges, as well as the difference in size between the ‘GO’ and ‘No GO’ plug gauges, is approximately equal to the tolerance of the tested holeor shaft in case of Standard Gauges, Rigidity and robustness of snap gauges are important features so that gauges function adequately and maintain size. Gauging diameters of components that are slightly larger than the gap setting can produce high wielding action which may lead to gauge distortion and wrong interpretation of reading. Therefore, larger gap gauges should, preferably, be forged in a deep I-section, ensuring maximum rigidity in the plane of gauge and sufficient rigidity in lateral direction.

Taylor’s principle states that the ‘Go’ gauges should check all the possible elements of dimensions at a time (roundness, size, location etc.) and the ‘No Go’ gauge should check only one element of the dimension at a time.

To ‘Go’ plug gauge must be of corresponding section and preferably full length of hole so that straightness of hole can also be checked. Thus it not only controls diameter in any given section but also ensures bore alignability. However it cannot check the degree of ovality.

The ‘No Go’ plug gauge is relatively short and its function is dependent not only on the diameter but also on the circularity of the hole. Thus to some extent, variation of hole shape can be measured.