

Custom Over/Under Sets

NOMINAL DIAMETER INSPECTION

Vermont Gage Over / Under sets are built around one nominal diameter. Twenty-four additional pins are supplied in .0001" increments. Twelve gages above and below the nominal diameter. The Class X tolerance insures a separation between each pin in the range around the nominal diameter. This allows the gage user to more accurately identify where the hole diameter is in relation to the nominal hole size.

- *Be more efficient with Vermont Gage Class X Over/under sets*
- *Stock Class X pins provide a quick turnaround time*
- *Certificates of Calibration and A2LA ISO 17025 Accredited Certificates available*
- *25 pin set in .0001" increments*
- *Available in in both Plus and Minus tolerances*
- *Diameters .0040" to 1.000"*
- *NIST Traceable*
- *Durable plastic box and closed cell foam insert with easy to read markings*

Range	Price
.0040" to .0250"	\$375.00
.0251" to .0750"	\$295.00
.0751" to .2810"	\$220.00
.2811" to .4060"	\$220.00
.4061" to .5100"	\$245.00
.5101" to .6350"	\$270.00
.6351" to .7600"	\$375.00
.7601" to 1.0000"	\$395.00

How to Order:

27 0 000

Direction of Tolerance
 [1] Go (Plus)
 [2] NoGo (Minus)

Range
 [01] .0040" to .0250"
 [02] .0251" to .0750"
 [03] .0751" to .2810"
 [04] .2811" to .4060"
 [05] .4061" to .5100"
 [06] .5101" to .6350"
 [07] .6351" to .7600"
 [08] .7601" to 1.0000"

When ordering:
 Configure part number and add "Nominal" size required.
Example:
 270103000 - Go - .2500"
Note:
 Largest "Nominal" size for series is .9988"
 Smallest "Nominal" size for series is .0052"



Gage Fact Sheet

What are Gages used for?

Fixed limit gages are primarily used to check dimensions and geometries; plug gages check internal and ring gages external dimensions and geometries. They effectively ensure that a part being measured is within its designed tolerance limits. Fixed limit gages are highly accurate, economical and easy to use.

Principles of Go/NoGo Gaging

To use as a "Go/NoGo" functional check, try and fit both the "Go" and "NoGo" gages into or onto a part being measured. The measured part passes if the "Go" gage fits and the "NoGo" doesn't, otherwise the part fails. A "Go/NoGo" check is strictly a pass/fail test. The actual part size is never measured.

Types of Fixed Limit Gages

Plug gages are available in two types, plain cylindrical and thread, and in several popular styles: reversible, taperlock and trilock. Style is usually determined by the size of the gage. Ring gages are also available as plain cylindrical and thread type gages.

Wear Resistance and Tolerance

Gages are available in tool steel, Black Guard™, chrome plate, and carbide. Chrome plate and carbide are harder and therefore provide additional wear resistance. A choice of tolerance is also available. See chart for explanation of Gagemaker's tolerances.

Calculate Gage Tolerance

Normal practice for determining gage tolerance is to allow 10% of product tolerance to be divided between the "Go" and "NoGo"

GAGEMAKER'S TOLERANCE CHART (ASME B89.1.5)

Diameter Range	XXX	XX	X	Y	Z	ZZ
Above - Including						
Inch						
.010" - .825"	.000010"	.000020"	.000040"	.000070"	.0001"	.0002"
.825" - 1.510"	.000015"	.000030"	.000060"	.000090"	.00012"	.00024"
1.510" - 2.510"	.000020"	.000040"	.000080"	.00012"	.00016"	.00032"
2.510" - 4.510"	.000025"	.000050"	.0001"	.00015"	.0002"	.0004"
4.510" - 6.510"	.000033"	.000065"	.00013"	.00019"	.00025"	.0005"
6.510" - 9.010"	.000040"	.000080"	.00016"	.00024"	.00032"	.00064"
9.010" - 12.010"	.000050"	.0001"	.0002"	.0003"	.0004"	.0008"
Metric						
.254mm - 20.96mm	.00025mm	.00051mm	.00102mm	.00178mm	.00254mm	.00508mm
20.96mm - 38.35mm	.00038mm	.00076mm	.00152mm	.00229mm	.00305mm	.00610mm
38.35mm - 63.75mm	.00051mm	.00102mm	.00203mm	.00305mm	.00406mm	.00813mm
63.75mm - 114.55mm	.00064mm	.00127mm	.00254mm	.00381mm	.00508mm	.01016mm
114.55mm - 165.35mm	.00084mm	.00165mm	.00330mm	.00483mm	.00635mm	.01270mm
165.35mm - 228.85mm	.00102mm	.00203mm	.00406mm	.00610mm	.00813mm	.01626mm
228.85mm - 305.05mm	.00127mm	.00254mm	.00508mm	.00762mm	.01016mm	.02032mm

gages. For plug gages "Go" is normally a plus tolerance and "NoGo" a minus tolerance. For ring gages the opposite is true; "Go" is normally a minus tolerance and "NoGo" a plus tolerance.

Using this practice as a guideline, gage tolerance is always included in the part tolerance and accounts for up to 10%. This means that 10% of good product could potentially fail the inspection but that no bad product would ever pass!

Care and Use of Gages

- 1.) Dimensions to be gaged must be cleaned and free from burrs to prevent gaging interference.
- 2.) Gage should be turned slowly into or onto the part being checked. The fit should be snug but not forced. Air flats on a "Go" gage can facilitate the inspection of blind holes where air pressure is a problem.
- 3.) Temperature of the gage and the part should be the same. This is because of the effects of thermal

expansion on material. The normal temperature at which gages are calibrated is 68 degrees Fahrenheit. This is therefore the best temperature at which both part and gage should be when inspected. This effectively eliminates any error due to thermal expansion.

- 4.) Gages should be protected from exposure to excessive heat, moisture, and corrosive chemicals. After use, gages should be cleaned and then coated with a thin-film rust preventative and stored properly.
- 5.) Gages should be periodically calibrated to ensure accuracy. Gages and "Go" gages in particular, will wear with normal use and require recalibration. Frequency of calibration is dependent on such factors as frequency of use, part abrasiveness, tolerance, and applicable quality procedures. All gages should be monitored and maintained accordingly.