

FIXED LIMIT GAGE FACT SHEET

GAGEMAHER'S TOLERANCE CHART							
RANGE	XXXX	XXX	XX	X	Y	Z	ZZ
.0009" to .8250"	.000005"	.00001"	.00002"	.00004"	.00007"	.0001"	.00020"
.8251" to 1.5100"	.000008"	.000015"	.00003"	.00006"	.00009"	.00012"	.00024"
1.5101" to 2.5101"	.00001"	.00002"	.00004"	.00008"	.00012"	.00016"	.00032"
2.5101" to 4.5100"	.000013"	.000025"	.00005"	.00010"	.00015"	.00020"	.00040"
4.5101" to 6.5100"	.000017"	.000033"	.000065"	.00013"	.00019"	.000250"	.00050"
6.5101" to 9.0100"	.00002"	.00004"	.00008"	.00016"	.00024"	.000320"	.00064"
9.0101" to 12.260"	.000025"	.00005"	.0001"	.0002"	.0003"	.000400"	.00080"

METRIC EQUIVALENTS						
RANGE	XX	X	Y	Z	ZZ	
.74mm to 20.96mm	.00051	.00102	.00178	.00254	.005	
20.96mm to 38.35mm	.00076	.00152	.00229	.00305	.006	
38.35mm to 63.75mm	.00102	.00203	.00305	.00406	.008	
63.75mm to 114.55mm	.00127	.00254	.00381	.00508	.010	
114.55mm to 163.35mm	.00165	.00330	.00483	.00635	.013	
165.35mm to 228.85mm	.00203	.00406	.00610	.00813	.016	
228.85mm to 311.40mm	.00254	.00508	.00762	.01016	.020	

Fixed limit gages are primarily used to check dimensions and geometries. Plug gages check internal dimensions and ring gages check external dimensions. Inspection is performed by use of GO/NOGO gages that represent the Minimum and Maximum limit of the product part characteristic to ensure assembleability and fit. This method is used for both thread gages and cylindrical plain gages.

GO gages passing through a part assure that the maximum material condition of a part has not been exceeded. NOGO gages not passing through the part assure the dimension has not dropped below the minimum material condition.

Fixed limit gages are highly accurate, easy to use, and economical.

TOLERANCE DIRECTION		
Type of Gage	GO Member	NOGO Member
Thread plug	Plus	Minus
Plain plug	Plus	Minus
Thread ring gage	Minus	Plus
Plain ring gage	Minus	Plus
Thread Setting Plug	Minus	Plus

When ordering gages, the two basic principles are:

1. Do not allow the tolerance of the GO and NOGO gages to consume more than 10% of your product tolerance. The 10% is usually divided equally between the GO and NOGO gages.
2. Higher precision gages will accept slightly more product but with less wear life and greater expense.

PROPER CARE AND USAGE OF GAGES

- Part dimensions to be gaged should be cleaned and burr free to prevent gaging interference.
- Gages should be turned or pushed slowly and gently into or onto the dimension being checked. Forcing gages will result in faulty gaging and the possibility of damaging both the part and gage.
- The effects of thermal expansion should be taken into consideration on both the part and the gage. The temperature of the part and the gage should be the same. 68° F is the ideal temperature at which both part and gage should be at when inspected because gages are calibrated at 68° F. This effectively eliminates any error due to thermal expansion.
- Protecting gages from excessive heat, moisture and corrosive chemicals will extend the life of your gages. After use, gages should be cleaned and recoated with a thin-film rust preventative and stored properly.
- Gages should be periodically inspected and calibrated to assure accuracy. Go member gages tend to wear quicker with normal use. NOGO gages will wear on the ends that receive the greatest usage. Frequency of inspection and calibration should be dependent on such factors as the amount of usage, part and gage material, tolerance, and quality procedures.

HOW TO DETERMINE AND SELECT THE PROPER TOLERANCE FOR YOUR GAGING APPLICATION

The normal rule of practice requires 10% of product tolerance to be divided between the "GO" and "NOGO" gages. For plug gages, a plus tolerance is applied to the GO member and a minus tolerance to the NOGO member. Ring gages receive reverse tolerance direction so that the "GO" member is minus and the "NOGO" is plus tolerance. Applying this practice results in gage tolerance always being included in the part tolerance by up to 10%. This results in the possibility that 10% of good product could fail inspection but that no bad product would ever pass.