



# VARIABLE THREAD GAGES (TRI-ROLL SYSTEM)

Zero System Variable Gages are available for external and internal thread applications. The external thread application are covered by the segment and Tri-Roll units and the internal applications by the ITC unit.



Available with digital read out and RS232 outputs.

SELECTING GAGE ROLLS			
 ROLL NO. 1	 ROLL NO. 2	 ROLL NO. 3	<b>Full Profile-Functional Diameter Size</b> Full ribbed rolls for functional sizes coarser than 48 T.P.I (For 48 T.P.I)
<b>TYPE 3</b>			
 ROLL NO. 1	 ROLL NO. 2	 ROLL NO. 3	<b>Cone &amp; Vee Single Element Pitch Diameter</b> Two ribs ("vee type") on lower rolls (1 and 3) One rib ("cone type") on upper roll (2) Flank contact limited to .1 pitch.
<b>TYPE 4</b>			
 ROLL NO. 1	 ROLL NO. 2	 ROLL NO. 3	<b>"Best Wire" Size Radius Single Element Pitch Diameter</b> Single ribs only with "Best Wire" size radius for any given pitch (T.P.I)
<b>TYPE 5</b>			
 ROLL NO. 1	 ROLL NO. 2	 ROLL NO. 3	<b>Plain Rolls Thread Major Diameter and Plain Cylindrical Parts.</b> Straight cylindrical rolls for checking diameter and out of roundness.
<b>TYPE 6</b>			
 ROLL NO. 1	 ROLL NO. 2	 ROLL NO. 3	<b>Minor Diameter</b> (55° included angle) Two full profile "vee" rolls (1 and 3) and one full profile cone roll (2)
<b>TYPE 7</b>			
 ROLL NO. 1	 ROLL NO. 2	 ROLL NO. 3	<b>Lead/Flank Angle</b> Two full profile "vee rolls (1 and 3) with outside flanks relieved. and one full profile cone roll (2)
<b>TYPE 8</b>			

- **Precision**

Rigid construction and constant gage pressure guarantee consistent and precise readings.

- **Qualitative Readings**

The Tri-Roll not only indicates whether a threaded part is within assigned limits, it also shows the exact position of the pitch diameter within a tolerance range. In addition, the Tri-Roll will check size and out of roundness of plain cylindrical parts.

- **Repeatability**

Fixed mounting of the lower rolls assures a solid support for the work piece. Only the upper roll actuates the indicator, thereby providing repeatable readings.

- **Easy to Set**

No adjustment required on the lower rolls means that no adjustment is required when changing from one thread size to another.

- **Wide Gaging Range**

Both the ITC and the Tri-Roll are able to inspect a wide range of parts with a single frame.

- **Adaptability**

The variable thread system can be used to measure plain diameters and can be used with the "Zero Spindle" gage system.

### Economical with Long Work Life

The variable thread gage system provides longer life of the tooling and thus reduces cost.

### FUNCTIONAL FLANK ANGLE VARIATION



- By mounting multiple gaging frames on the same base and using functional elements on one frame and using pitch diameter elements on the other frame differential gaging can be made easy by making quick machine adjustments before bad product is produced.

### VARIABLE GAGES FOR LARGE THREADS



GSG offers the "C" frame comparator hand held gage for measuring threads above 3.375" and up to 12.00"



# VARIABLE THREAD GAGES

## Product Acceptability

### SYSTEM 21

System 21 provides for interchangeable assembly with respect to functional size only. Functional size must be measured at the maximum material limit within the length of standard gaging elements. The characteristic known as NO GO functional diameter must also be verified. This can be accomplished by using fixed limit gaging or variable gaging with functional elements.

### SYSTEM 21A (FOR METRIC THREADS IN ACCORDANCE WITH ANSI B1.18M)

System 21A provides for interchangeable assembly with functional size verified at the maximum material limit using standard length gaging elements. This can be accomplished using fixed limit gaging or variable gaging with functional elements. System 21A also states that the minimum material limit (minimum pitch diameter) must be verified by inspecting two thread flank locations over the length of the thread. This can be accomplished by using variable gaging or thread roll snap gages with pitch diameter elements.

### SYSTEM 22

System 22 provides for the interchangeable assembly with functional size verified at the maximum material limit using standard length gaging elements. This can be accomplished using fixed limit gaging or variable gaging with functional diameter elements. System 22 also states that the minimum material limit (minimum pitch diameter) must be verified over the full length of the thread. This can be accomplished using variable gaging with pitch diameter elements.

### SYSTEM 23

System 23 provides for interchangeable assembly with functional size verified at the maximum material limit using standard length gaging elements and minimum material limit (minimum pitch diameter) must be verified over the full length of the thread. The gaging requirements for SYSTEM 22 would also apply here but in SYSTEM 23 other thread characteristics such as lead, flank angles, taper and roundness must have to be independently verified. Only thread characteristics, which are specified, will have to be inspected for SYSTEM 23 compliance.

#### STC COMPARATOR



##### Precision

Ball slide construction and constant gaging pressure assure precise reading through linear travel of the ball slide.

##### Definitive

Helical path seating and 60% peripheral contact provide functional size position within the pitch diameter tolerance assigned.

##### Gaging Range

Single frame covers a size range of #10 through 3/4".

##### Versatile

Segments are easily changed with positive mounting pin alignment.

##### Economical

Reduced gaging time compared to Go/NoGo gages .

#### ITC COMPARATOR



##### Precision

Rigid construction and constant gaging pressure assure precise readings.

##### Definitive

The ITC reads the actual size of the pitch diameter showing its position in relation to the pitch diameter tolerance assigned.

##### Gaging Range

Single frame covers a size range of #10 through 2 1/2" , Larger frames are available up to 8"

##### Versatile

The positive alignment feature of the frame allows segments to be easily changed with positive mounting pin alignment.

##### Economical

Reduced gaging time compared to Go/NoGo gages .