## THREAD MEASURING WIRE FORMULAS

## Best Size Wires

* Wires which touch the thread at the pitch diameter are known as "Best Size" Wires. Such wires are used because the measurements of pitch diameter are least affected by errors that may be present in the angle of the thread. The diameter of the measuring wires is represented by the letter G .

| The approximate formula for <br> Best Size Wires is: | $\mathrm{G}=\frac{\text { secant a }}{2 \mathrm{n}}$ |
| :--- | :---: |
| For $60^{\circ}$ threads Best Size Wires | $\mathrm{G}=\frac{.57735}{n}$ or .57735 p |
| For $55^{\circ}$ threads Best Size Wires | $\mathrm{G}=\frac{.56369}{n}$ or .56369 p |
| For $53^{\circ}-8$ threads Best Size Wires | $\mathrm{G}=.55902 \mathrm{p}$ |
| For $471 / 2^{\circ}$ threads Best Size Wires | $\mathrm{G}=.54626 \mathrm{p}$ |
| For $40^{\circ}$ threads Best Size Wires | $\mathrm{G}=\frac{.53208}{n}$ or .532089 p |
| For $29^{\circ}$ threads Best Size Wires | $\mathrm{G}=\frac{.51645}{n}$ or .51645 p |

## Unsymmetrical Threads

| $E=M+\frac{1}{n(\tan a 1+\tan a 2)}-G\left(1+\operatorname{cosec} \frac{a_{1}+a_{2}}{2} 2 \cos \frac{a_{1}-a_{2}}{2} 2\right)$ |
| :--- |
| $G=\frac{\tan \frac{\left(a_{1}+a_{2}\right) \sec a_{1}}{2}}{n(\tan a 1+\tan a 2)} \quad$ Where $a_{2}{ }_{2}=a_{1}=$ Small Angle Angle |
| For Modified Buttress $45^{\circ}$ and $7^{\circ} \quad G=\frac{.54147}{n}$ |
| On $29^{\circ}$ and $40^{\circ}$ worm threads, the addendum above the pitch diameter is $\frac{.3183}{n}$ |
| The thread depth of $\frac{6866}{n}$ provides a clearance of $\frac{50}{n}$ at the bottom of the thread. |

## Symbols for Basic Dimensions and Wire Measurement

Major Diameter = D
Corresponding Radius $=\mathrm{d}$
Pitch Diameter $=\mathrm{E}$
Corresponding Radius $=\mathrm{e}$
Minor Diameter = K
Corresponding Radius $=\mathrm{k}$
Angle of thread = A
One half angle of thread =a
Number of turns per inch $=\mathrm{N}$
Number of threads per inch $=\mathrm{n}$
Lead $\mathrm{L}=1 / \mathrm{N}$
pitch $p=1 / n$
Helix Angle = s
Tangent of helix angle
$\mathrm{S}=\mathrm{L} / 3.14159 \mathrm{xE}$

Width or basic flat at top,
crest or root $=\mathrm{F}$
Depth of Basic truncation $=\mathrm{f}$
Depth of Sharp V thread = H
Depth of American Nation or unified thread form = h
Length of engagement $=Q$
Included angle of taper $=Y$
One half included angle of taper $=y$
Measurement over wires - MOW $=\mathrm{M}$
Wire Diameter = G
Corresponding radius $=\mathrm{g}$

