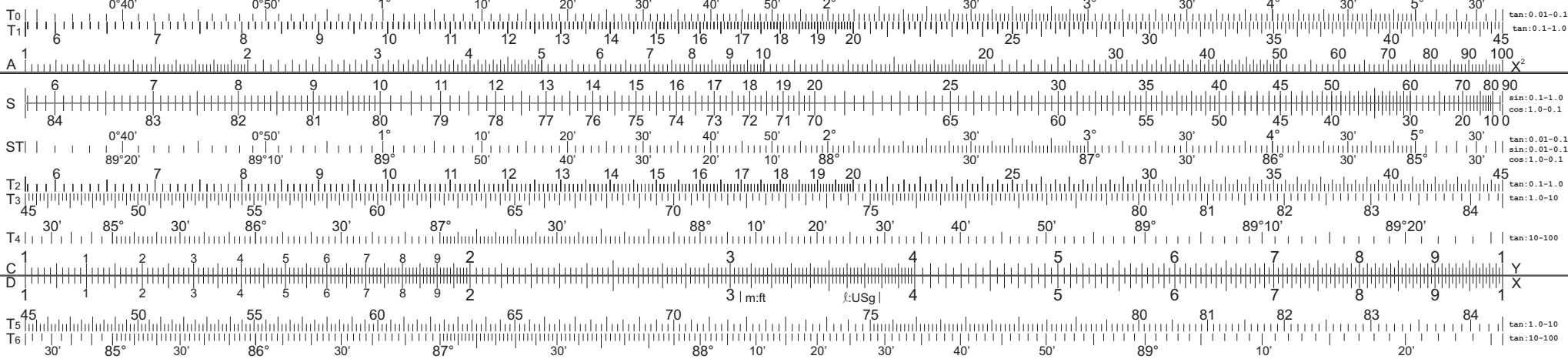


Serial Num: 1

Mark 1 Navigator's Slide Rule

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TACKLING DOWNWIND

Course to Dest. relative to dead downwind = γ
 Course sailed relative to dead downwind = θ
 Distance Factor $DF = \cos(\gamma) / \cos(\theta)$
 Speed on course $\theta = S\theta$
 Speed Factor $SF = S\theta / S\gamma$
 Time Factor $TF = DF / SF$
 Ideal Course = Course with smallest TF

CHART SCALES AND DISTANCE

Nautical Miles Per Inch = Reciprocal of Chart Scale $\div 72,900$

GREAT CIRCLE CALCULATIONS

Meridian Angle (H) = $\frac{\text{---}^\circ}{\text{---}} \frac{\text{E/W}}{\text{N/S}}$
 My Latitude (L) = $\frac{\text{---}^\circ}{\text{---}} \frac{\text{N/S}}{\text{N/S}}$
 Latitude of destination (d) = $\frac{\text{---}^\circ}{\text{---}} \frac{\text{N/S}}{\text{N/S}}$

1. $\tan(d) \div \cos(H) = \tan(W)$
2. Ignore the sign of X (i.e. -60 = 60)
 - If $H < 90^\circ$ then then use [+ W] if d has the same name as L. Use [- W] if d has opposite name as L.
 - If $H > 90^\circ$, use [- W].
 - $(90^\circ - L) \pm W = X$
3. If $X < 90^\circ$, then $X = Y$.
 If $X > 90^\circ$, then $180 - X = Y$

4. $[\cos(W) \div \cos(Y)] * \tan(H) = \tan(Az)$
 $Az = \frac{\text{---}^\circ}{\text{---}} \frac{\text{N/S}}{\text{E/W}}$
 Use N if destination is north of you.
 Use E if destination is east of you.
5. $\cos(Az) * \tan(Y) = \tan(Hc)$
6. $D = (90^\circ - Hc) \times 60$

If doing sight reduction, d = declination of celestial object. L = latitude of AP.

If meridian angle $> 90^\circ$ then...
 Use alternate data input: $180^\circ - MA = H$
 Use alternate Step 2: $(90^\circ - L) - W = X$
 Use alternate Step 6: $D = (90^\circ + Hc) * 60$

