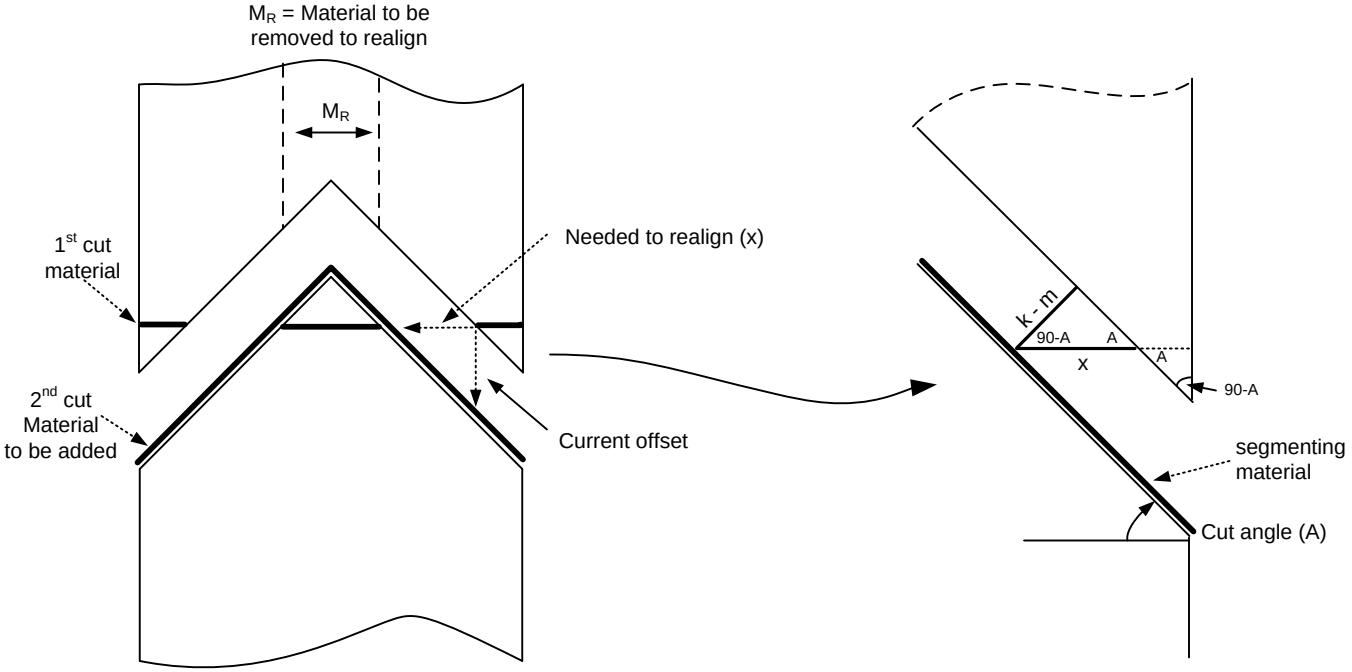
Segmenting Offset Realignment

By Kelly Moore (Krash)

Those of us into segmenting are very familiar with this phenomenon. It comes from making a second V cut through a previously cut and segmented V cut. Since the material removed by the saw blade kerf thickness is greater than the material being introduced, in this case thin aluminum, the first line of material gets offset. Up until now, it was thought that this was a remnant of the operation with no solution but to match your saw kerf to your added material. It is still beautiful and the design can stand on its own, verified by the many pen sales with happy owners. But, if there were a convenient way to realign the segments, it would provide another opportunity to improve our little obsession. Long thought to have no useful value in life, that old high school math can be used to solve this problem. Put on your thinking caps and let's go on a trigonometry field trip!



A = Cut angle
k = kerf
x = needed to realign
m = segmenting material thickness

cos(90-A) = (k-m)/x
X = (k-m)/cos(90-A)

* If A = 45°
X_{45} = (k-m)/cos(90-A)
= (k-m)/cos45 = (k-m)/0.707 = 1.414 x (k-m)

* If A = 30°
X_{30} = (k-m)/cos(90-A)
= (k-m)/cos60 = (k-m)/0.5 = 2 x (k-m)

* If A = 60°
X_{60} = (k-m)/cos(90-A)
= (k-m)/cos30 = (k-m)/0.866 = 1.15 x (k-m)

Material to be removed = M_R

$M_R = 2 \times X_A$

So, the needed vertical cuts are:

For A = 30°, you need 4 (kerf – m) thicknesses.
For A = 60°, you need 2.3 (kerf – m) thicknesses.
For A = 45°, you need 2.8 (kerf – m) thicknesses.

You can see that if your segmenting material (m) is the same thickness as your kerf (k), the formula goes to zero so there is no need to take any material out vertically to align the 1st cut lines.

That wasn't so hard now, was it? 8^}