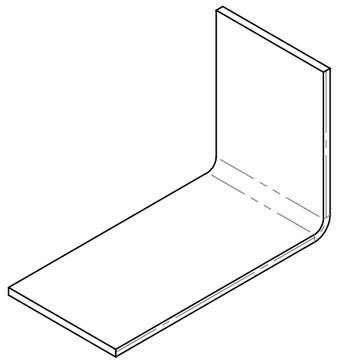
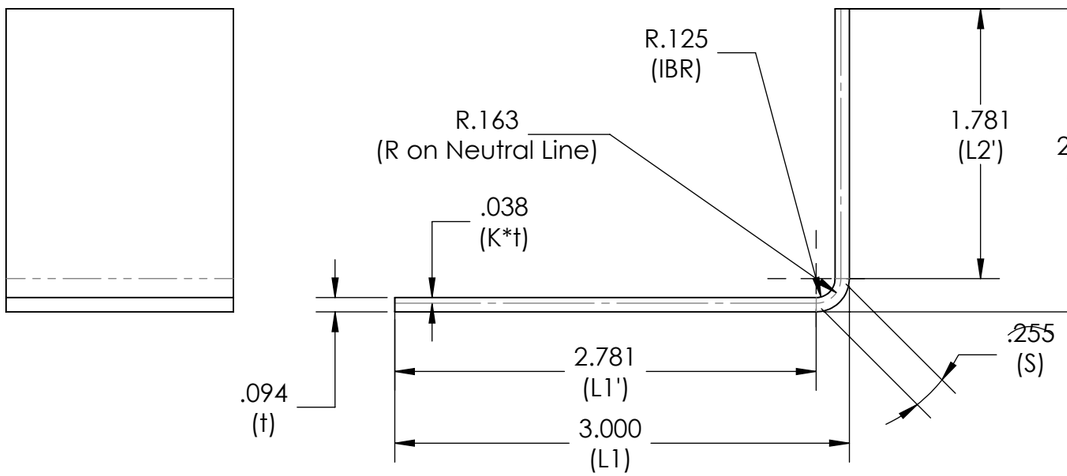
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED





Measured Material Thickness	Bend Radius	Flat Length	Bent Leg #1	Bent Leg #2	K-Factor (Calculated)
0.094	0.0625	4.875	3.03	2.03	0.20
0.092	0.125	4.817	3	2	0.38
0.089	0.144	4.82	3	2	0.43
0.058	0.0625	4.96	3.03	2.03	0.47
0.058	0.125	4.87	3	2	0.44
0.058	0.144	4.875	3	2	0.58
0.030	0.0625	4.99	3.03	2.03	0.36
0.034	0.125	4.91	3	2	0.59
0.032	0.144	4.905	3	2	0.61

Formula in cell F2: =2/PI()/A5*(C5-D5-E5+2*(B5+A5))-B5/A5

Table is populated with dummy values to demonstrate the K-factor calculations.
The values in the white cells should be replaced by your own measurements.

K-Factor is the ratio of the *distance from the inside surface to the neutral axis* to the *material thickness*. In brake bending, the material in the bend is compressed on the inside and stretched on the outside. It is neither stretched nor compressed at the neutral axis.

To determine K-factors for combinations of material thicknesses (t) and inside bend radius (IBR) simply measure the thickness (t) and flat length (Flat) of a suitable piece of material prior to bending; we used pieces of scrap. And then measure the two lengths L1 and L2 after bending the part 90˚. Calculate K-factor as below. Populate a table for the combinations of thicknesses and bend radii and publish it to the sheet metal designers and fabricators.

Equation Development (Note: L1', L2' and S are along neutral axis)
Flat = L1' +S +L2'
L1' = L1 - (IBR + t)
L2' = L2 - (IBR + t)
S = π/2 * (IBR + **K***t)

Solving for K in terms of measured values Flat, t, L1, L2 and known IBR:
K = 2/π/t * (Flat - L1 - L2 + 2*(IBR + t)) - IBR/t

Example shown:
K = 2/π/.094 * (4.817 - 3.0 - 2.0 +2*(.125 + .094)) - .125/.094
Therefore K=.40

CAUTION! *The biggest mistake people make is assuming the material thickness is the nominal gauge value!* **NOPE!** The material thickness (t) is crucial to an accurate K-factor calculation. When we measured the stock thicknesses with a micrometer we were shocked to find that our 10 gauge material actually fell in the range of 11 gauge. We rechecked the thicknesses every six months.

In the example above, if the thickness is measured to be .092" then the K-factor computes to K=.38 instead of .40.

The material thickness is a vital measurement. *Measure* it first!

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES [mm]
TOLERANCES:
X/X : ±0.03125
X.XX : ±0.015
X.XXX : ±0.005
X.XXXX : ±0.0005
ANGULAR : ±0.5°
SURFACE FINISH : 64
BREAK CORNERS TO R.01

MATERIAL - -
MADE FROM STOCK - -
FINISH - -
HEAT TREAT - -
WEIGHT: - -

Configuration: Default

DRAWN	D. Dohogne	2/12/2018
CHECKED	D. Dohogne	2/12/2018
ENG APPR.	D. Dohogne	2/12/2018
MODELED	D. Dohogne	12/3/2010

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TITLE:
K-Factor Development

SIZE	DWG. NO.	REV
B	K-Factor Development	

SCALE: 1:1 DO NOT SCALE DRAWING SHEET 1 OF 1