

CUTTER COMPENSATION

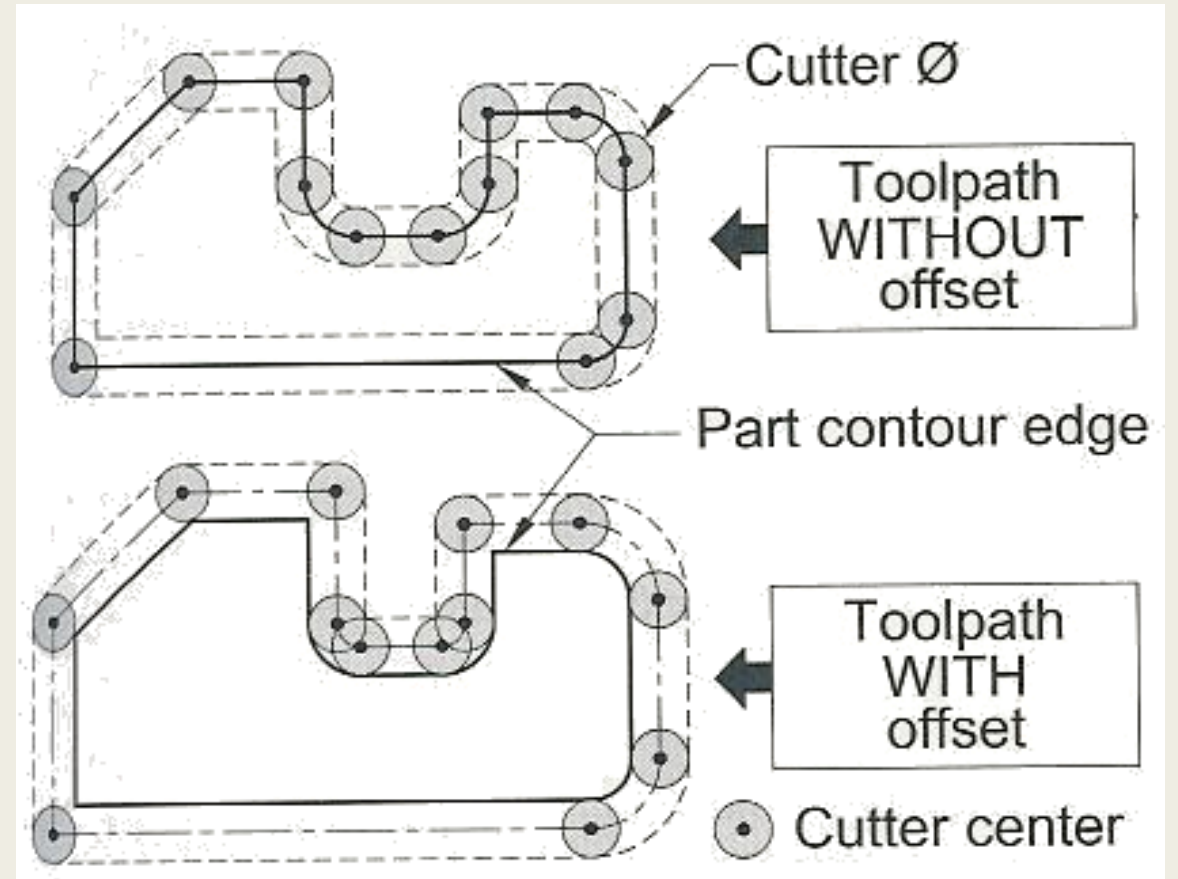
Chapter 30

Review

- TLO
 - *Type*
 - *Codes*
 - *Safety*
 - *Different Machines*

Cutter Compensation

- Allows the programming to the edge of a part
- Will automatically offset cutter to edge of part based on diameter of tool
- Similar to tool length offset

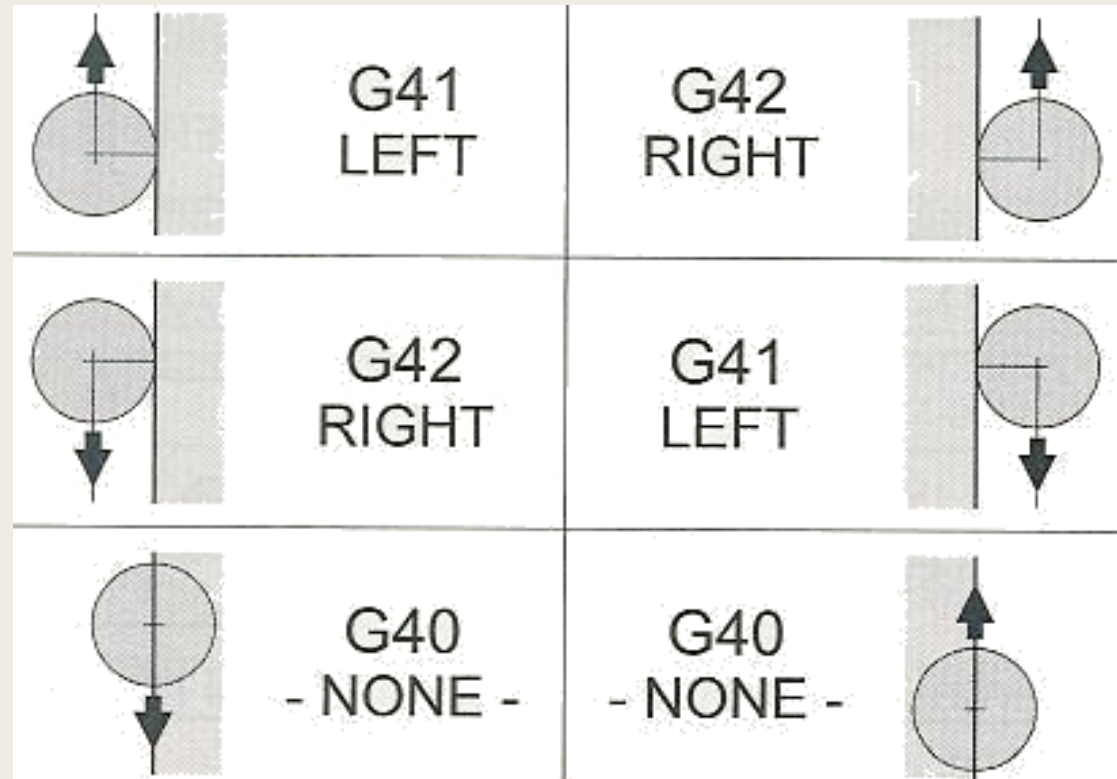


Offset Types

- Types A and B were VERY limiting due to a tie in the information for offsets
 - *One offset would control both H/D inputs (and/or)*
- Type C is more flexible – the tool radius and height are separated
 - *Corresponds to tool number*

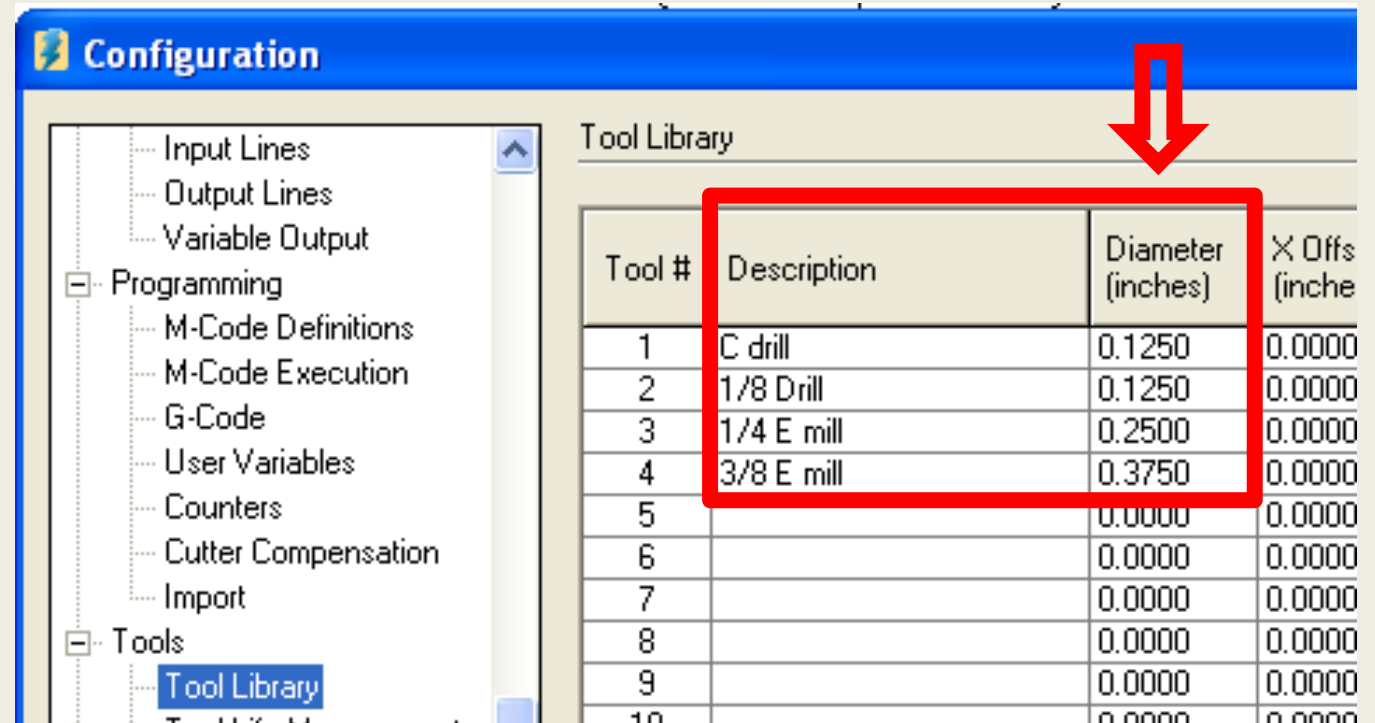
Cutter Comp. G Commands

- G40 – Cancel Cutter Comp.
- G41 – Left Cutter Comp.
- G42 – Right Cutter Comp.



Cutter Comp. D Offset

- Offsets based on the D word
- Based on Tool Library



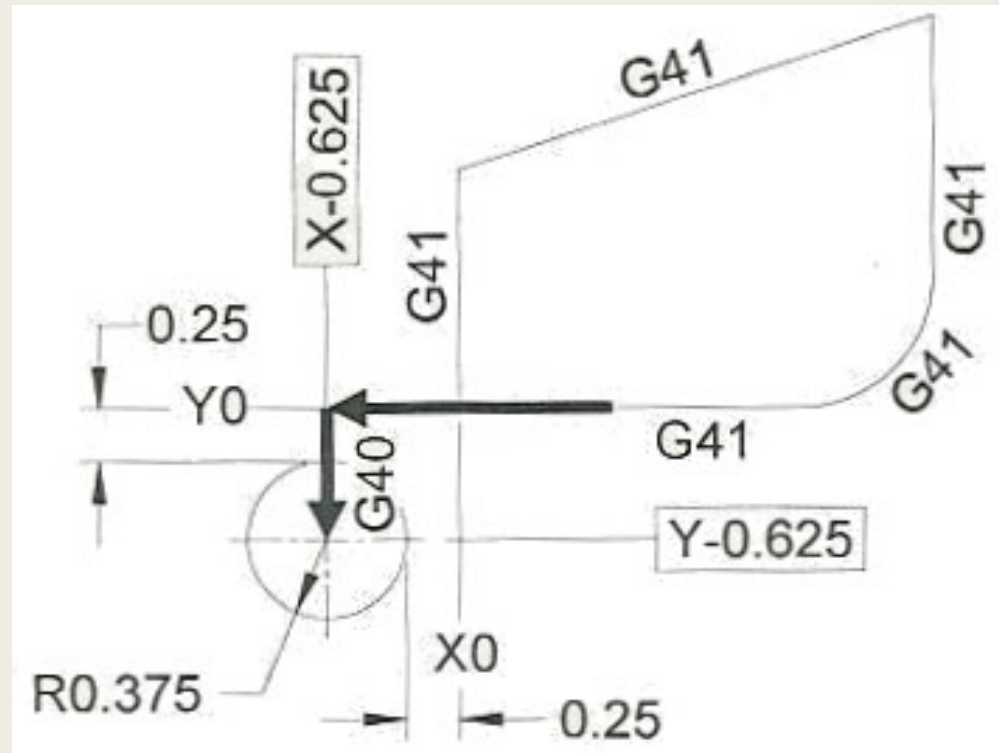
Tool #	Description	Diameter (inches)	X Offs (inches)
1	C drill	0.1250	0.0000
2	1/8 Drill	0.1250	0.0000
3	1/4 E mill	0.2500	0.0000
4	3/8 E mill	0.3750	0.0000
5		0.0000	0.0000
6		0.0000	0.0000
7		0.0000	0.0000
8		0.0000	0.0000
9		0.0000	0.0000
10		0.0000	0.0000

Three Important Rules

- Always select start position of the cutter away from the contour , in a clear area
 - *Select a clear point that is AT LEAST half the cutter diameter away from contour*
 - *Move to that point without cutter comp on including X,Y, and Z axis*
- Always apply the cutter radius offset with a tool motion
 - *Then make your X and/or Y axis move with the G41 or G42 call out and D word command on the same line*
- Always end the cutter in a position away from the contour, in a clear area
 - *Select a clear point that is AT LEAST half the cutter diameter away from contour*

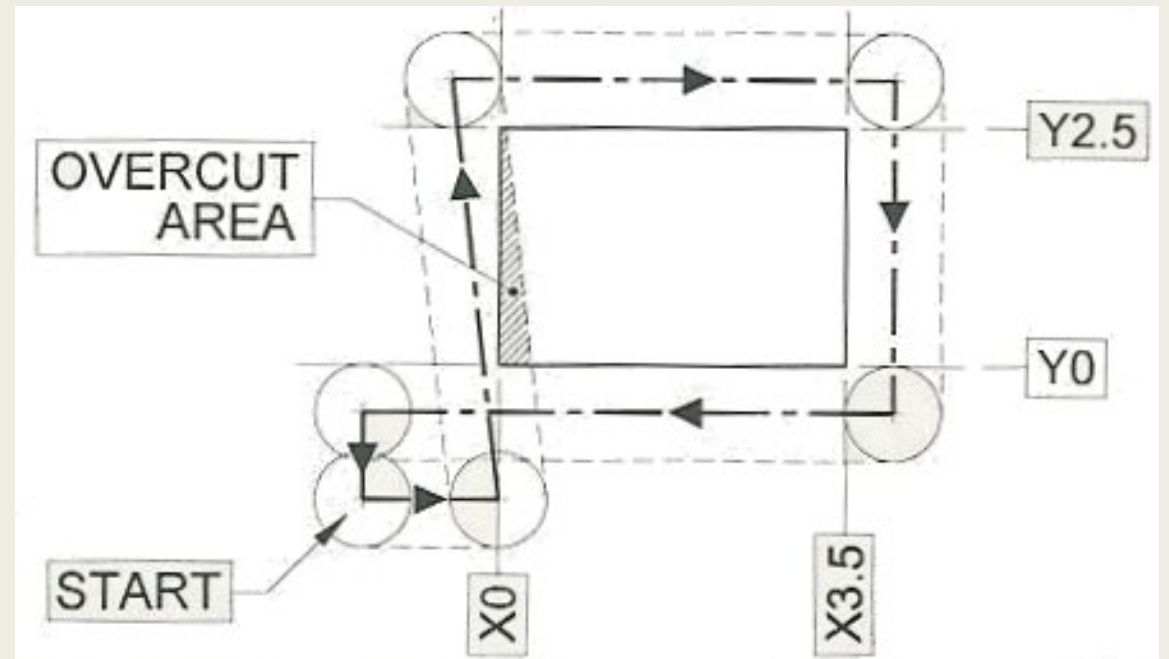
Example – 0.75 Canceling Cutter Comp.

- G01 X-0.625
- G01 G40 Y-0.625



Common Error

- Not adding a linear motion or an offset at least as far as the radius, to the line after cutter comp will result in undesirable cuts



Common Error 2

- Gouging – when the cutter cannot find a solution to remain tangent with the cut
- Must add a radius to program and recut with smaller tool if necessary



Advantages

- No mathematical calculations for tool path
- One program can be used for different cutters
- Tools can be updated without affecting most programs
- Same program can be used for roughing and finishing
- Can be used on inside or outside profiles

Important Restrictions

- Must be followed by a LINEAR movement
- First movement must be a dimension AT LEAST the dim. of the radius
- Do not make the first movement to an inside corner
- Must be turned off (and on) in a linear movement – NEVER circular
- The cutter MUST be able to remain tangent to profile / smaller than the radius being cut to prevent Gouging
- Watch number of Z movements
- Always remove with a G40 prior to removing tool from work

Homework

- Programming examples on FlashCut
- Complete on computers in lab

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