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
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 Cutter Applying Cutter Comp.

- G00 X-.625 Y-.625 Z-.0125
- G01 G41 D01 F15
- X0 ----this move applies cutter comp.
- Y1.125
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 then 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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