Review

- **G codes**
  - **Format**
    - G00 X1 Y-1 Z1 M03
  - **Modal / NonModal**
    - Group 00 = NonModal
    - NonModal are forgotten in next block
    - **Conflicting codes use the last code**

- **M codes**
  - **Type A (start) and B (end)**
Objective

- Gain working knowledge of tool length offsets
- Understand different types of offsets
- Get a general understanding of when to use specific types of offsets
Tool Length Offset

- Common abbreviation - TLO
- Value that compensates the difference between a programmed length of the tool and its actual length
Tool Length Offset

- Allows programing of code without any knowledge of actual tool length

- Program is made using a Z axis height reference which the machine, WHEN TOLD TO DO SO, will compensate for using stored height values
TLO Common Terminology

- Gauge Line – reference line used for Gauging – typically spindle base
- Table Top – built-in machine table on which the fixtures, vice, parts, etc. are mounted
- These two parts of the machine are parallel planes that make the Z axis
TLO Use

- Must be used / updated when
  - Using more than one tool
  - When tools are changed or sharpened
- Must be programed in G90 absolute mode
- Can be updated with wear offsets

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<th>WEAR</th>
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TLO Commands

- G43 – Positive TLO
- G44 – Negative TLO
- H## - TLO number (tool)
- G49 – TLO cancel
- H00 – TLO cancel
- T00 – TLO cancel
Setup Options

- **On-Machine**
  - Touch the tool to the part
  - Uses a tool touch-off probe

- **Off-Machine**
  - Uses a pre-setter tool to measure or set a height
  - Can be made “in-house” or purchased
Other Input

- Can be set in some machines in code
  - M06 D250 S1500 Z1220 T3

- Or
  - M06 T06
  - G43 H06 Z1

- Or
  - T0606 M06

- Or
  - CAM Programmer can set
Offset Cancel

- G49
- H00
- T00
Homework

- Programming examples on FlashCut
- Complete in lab on computers
Alpena Community College TAACCCT Grant

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