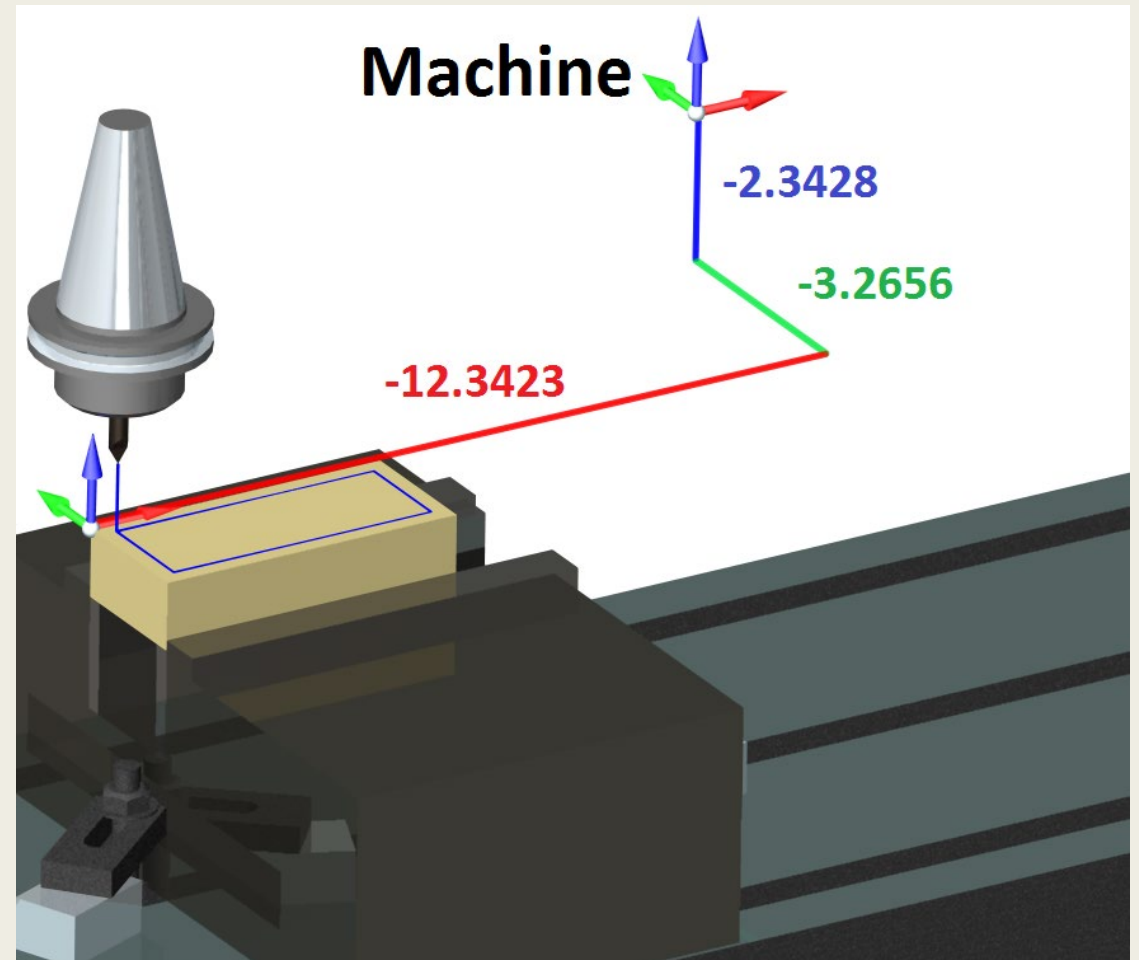# WORK OFFSETS

Chapter 18

# Review

- Type A, B, and C offset tables

- G40, G41, and G42

- Three important rules

- Common errors

# Work Offsets

- Uses the offset to prevent having to program around machine zero

- Also known as work coordinate system, work zero, part zero, or work offset

- Has 6 basic program zeros but many more may be possible



Machine

-2.3428

-3.2656

-12.3423

# Work Offset Codes

- Typical offset codes
  - *G54, G55, G56, G57, G58, and G59*

- Additional offsets could be
  - *G54.1 P1 to 48*
  - *G54 P1*
  - *Other G codes as described by particular machine*

# Relationship Between G52, G54, and G92

- G54, G55…. Are work offsets. This allows programming from the part zero

- G52 is complementary to the G54 – an offset of an offset

- G92 is absolute reference and was used in machines predating work offsets

# Use of Offset Codes

- Machine TYPICALY defaults to G54....but not always
  - *For safety always specify work offsets*
- The offset may be common or may need to be reset
  - *Specify in program or in setup sheet*
- If more than one offset is used
  - *Specify in program or in setup sheet*
  - *Ensure there is notes for height differences in work*

# Multi-Offset Horizontal

■ Multiple parts can be placed on horizontal mill, vertical mill, boring mill, and specialized lathes

■ They can be similar parts that can run the same program or be completely different parts
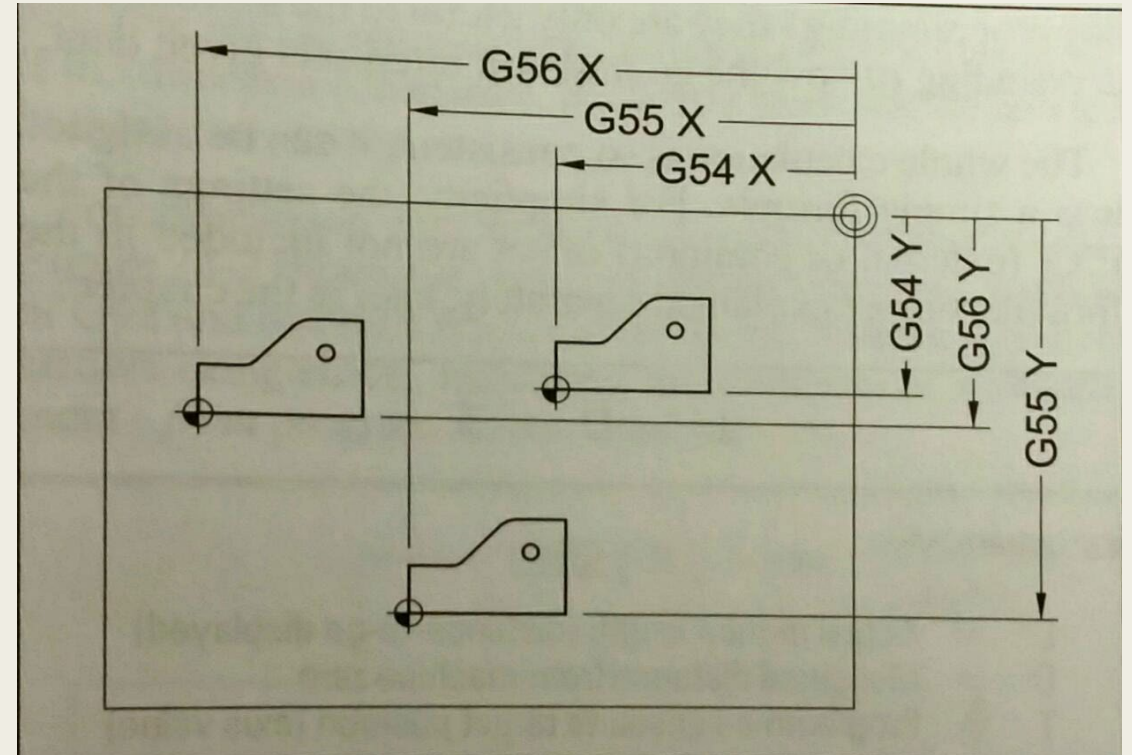
# Multi-Offsets and Z heights

- Normally a G54 will not have a Z height

- Other offsets, G55, G56, etc., should have Z heights

- The z heights may be positive or negative, based on the original G54

- This will prevent the remaining offsets from having to be reset
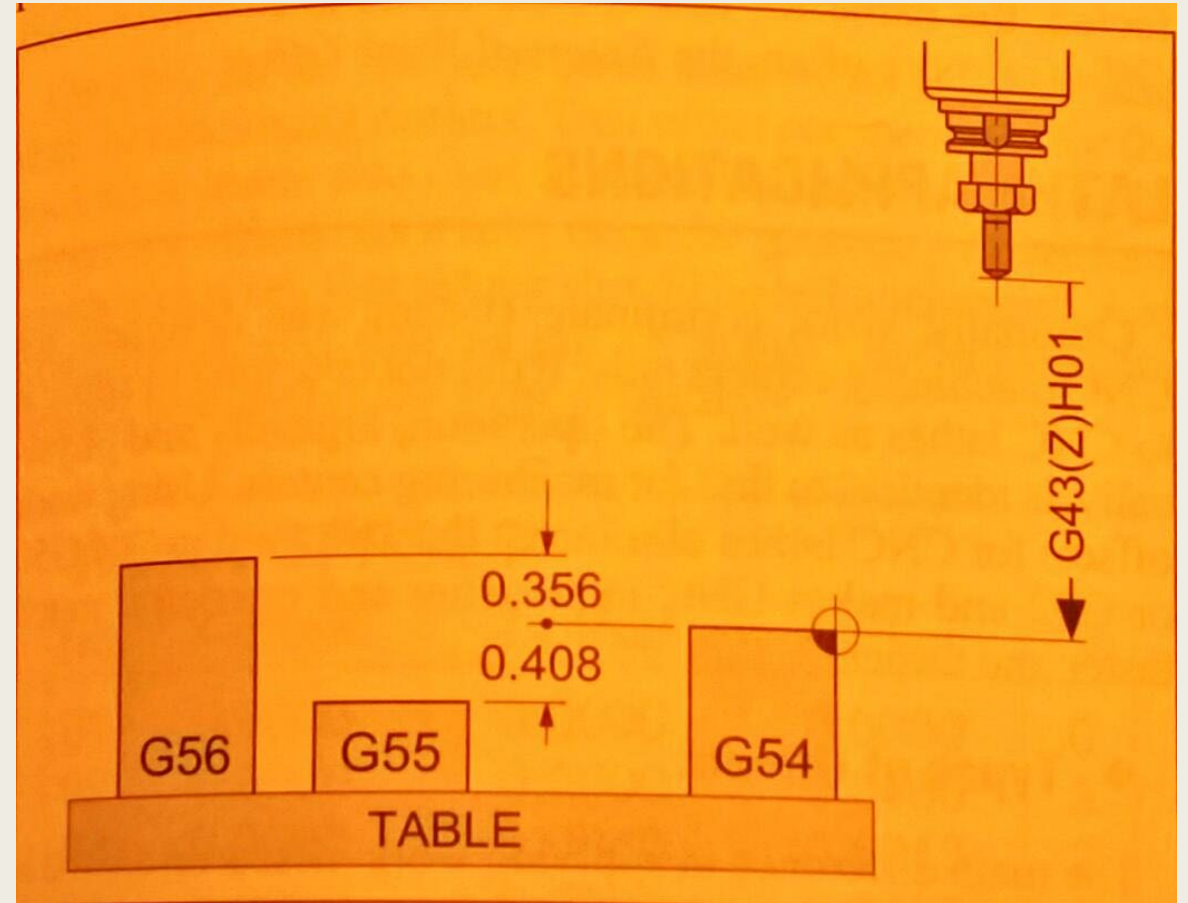
# Important Notes

- When changing between offsets make sure to go to a point to clear all obstructions
  - *If leaving a G54 to a G55 come up high enough to clear then change to G55*
  - *Do not try and move to a G55 while height is at a G45 if the 55 is higher*
  - *Try and set a safe height that will clear all operations*

- When using multi offsets ensure tool changes are away from other work.
  - *If tool changes normally happen in a clear area that is now a G55 area there could be contact*

- Unused offsets could be used for other operations but should not be

# Wear Offsets

- Allow for updating typical tool wear

- If a 3/8 EM was used that was no loger exactly 0.375 in dia., the part would not be made to tolerance

- If a tool was used for a given amount of time it would wear and be a different height.

- Other uses for offset could be for rework, oversized parts, non-typical tools, etc

# Lathe Offsets

- Lathes use offsets similar to machining centers

- Offsets on lathes can also compensate for changing tool tips

- Care must be taken on tool actual measurements vs offset measurements

- Operator must watch and make corrections for different tool types

# Homework

- Programmin examples on FlashCut

- Use lab computers if required

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