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
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 longer 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
Alpena Community College TAACCCT Grant

- “Lesson 7” by Andrew Paad, Building Career Pathways in the STEM Cluster: Closing the Skill Gaps in Northeast Michigan, Alpena Community College is licensed under CC BY 4.0. To view a copy of this license, visit https://creativecommons.org/licenses/by/4.0/.

- ACC is sponsored by a $2.5 million grant from the U.S. Department of Labor, Employment & Training Administration TAACCCT Grant #TC-26458-14-60-A-26. It is the policy of Alpena Community College (ACC) to comply with Section 504 of the Rehabilitation Act of 1973, as amended, and with the Americans with Disabilities Act of 1990 (ADA). These acts provide for equal opportunity for students with disabilities in educational activities, programs, and facilities. ACC is committed to affording equal opportunity to persons with disabilities by providing access to its programs, activities, and services.

- This workforce product was funded by a grant awarded by the U.S. Department of Labor’s Employment and Training Administration. The product was created by the grantee and does not necessarily reflect the official position of the U.S. Department of Labor. The U.S. Department of Labor makes no guarantees, warranties, or assurances of any kind, express or implied, with respect to such information, including any information on linked sites and including but not limited to, accuracy of the information or its completeness, timeliness, usefulness, adequacy, continued availability, or ownership.