

# GRT Shop Safety Training 22-23: Mill

## In-Class Handout (Do this during class):

1. Always **deburr**, **clean**, and **qc** a part before turning it in to qc
2. **End mills**, **edge finders**, **tap guides**, **large silver deming bits** and **specific standard drill bits**, and **drill chucks** go directly into the collet
3. Mill operations are typically used to machine **box beam** and **sheet metal**
4. **End mills** are used for facing operations, the process of removing material from an edge of the workpiece
5. **Edge finders** are used with the DRO to create zeros relative to the edges of a part and map locations for other operations
6. Before clamping a part in the vise, use **parallels** if the surface of the part needs to be elevated, and wipe off **metal chips** and **oil** off of the vise, parallels, and your part.
7. Before machining, always apply **oil** to **the cut**, only apply to **the tool** when **tapping**
8. The maximum pass for facing is **.050"/50 thou**
9. Use **conventional** milling for facing and only use **climb** milling on finishing passes/bringing the tool back
10. As you get closer to a desired length, **measure more frequently** and **make smaller passes**
11. When edge finding, offset the measurements by **0.25**, represented by the **radius of the tool**
12. Steps for clean up: **wipe off parts and tools with a clean rag**, **vacuum surrounding area**, **put away parts and tools**
13. Spindle speeds are **1400 rpm** for facing, **consult the chart** for drilling, **1200 rpm** for center drilling, **1000 rpm** for edge finding
14. For Rocky, only change the speed when **the spindle is turned on**
15. Tools for drilling: **Drill chuck**, **center drill**, **correct drill bit size (and steps up if needed)**
16. Tools for tapping: **tap guide**, **tap handle**, **tap**, **oil**
17. The maximum size for drilling (without a pilot) is **1/4"**
18. Before drilling, always **center drill** and **oil**
19. When drilling, always **peck** to prevent large chips from developing
20. When tapping, perform **1/2** turn clockwise, then **1/4** turn counter-clockwise