

## G-04: Climb Mill Piece

### SAFETY FIRST

- Follow all Caterpillar facility safety standards when performing this task.
- Be aware of spinning and thrusting spindle and sudden movement by the work head.

### EQUIPMENT

- indicators (1/10000= .0001)
- telescoping gage
- Jo blocks (gage blocks)
- micrometers (inside/outside/depth)

### RESOURCES

- manufacturer's manuals
- Machinery Handbook (for cutters, feeds, and speeds)
- print

### Climb Mill Piece (DevLieg)

#### 1. Verify the piece setup.

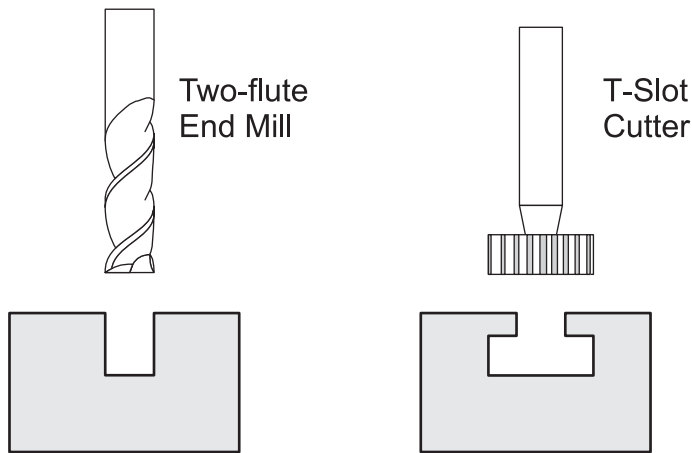
- Check that the piece is secure and is set up to perform the milling.
- Verify that the piece is located.
- Be prepared to change the setup for different milling operations.

#### 2. Select the cutter.

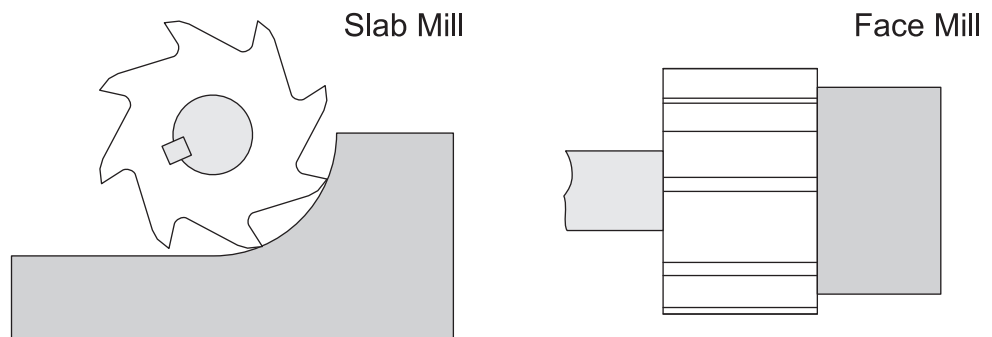
- Determine which type and size cutter is required to meet the part requirements on the print.



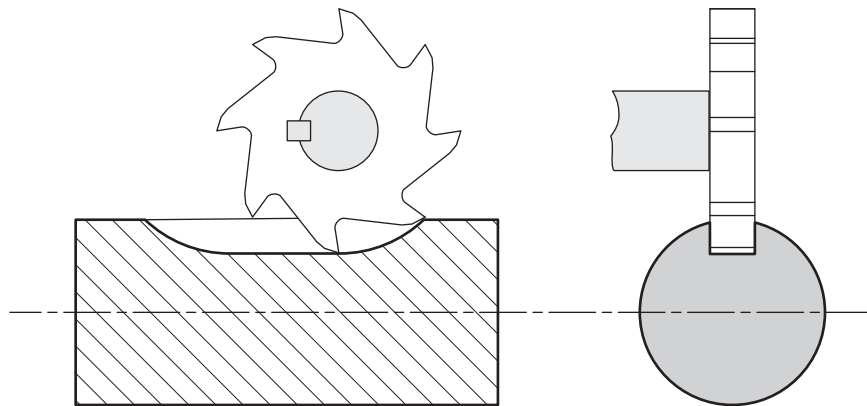
- **T-slot:** Use a two-flute end mill to cut the straight slot. Use a t-slot cutter to mill the t-slot.



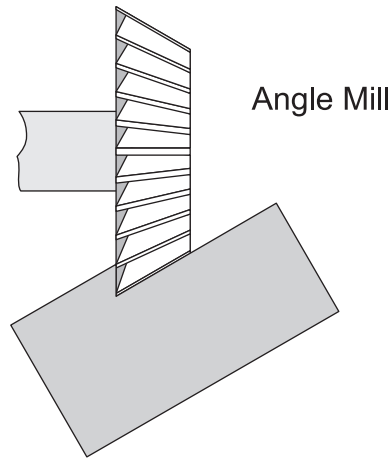
- Use the appropriate cutter to **face mill** or **slab mill** the piece.



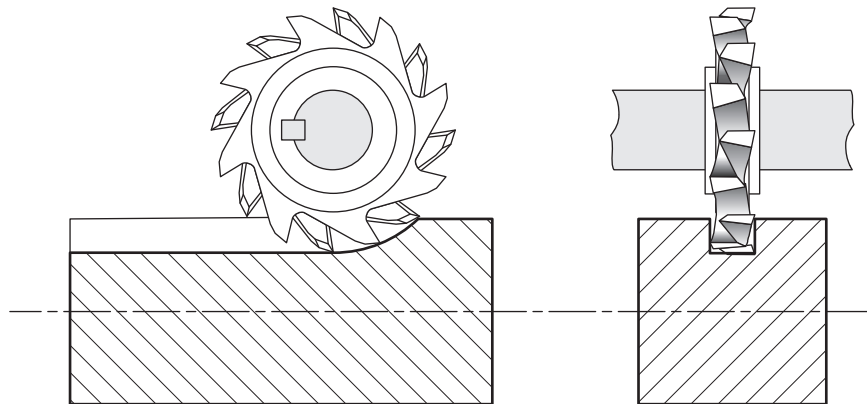
- **Keyway:** Use a Woodruff keyseat cutter for cutting keyways in shafts.



- **Angle:** An angle may be cut using angular cutters or by the setting up the piece dependent upon the piece requirements and stock attributes.

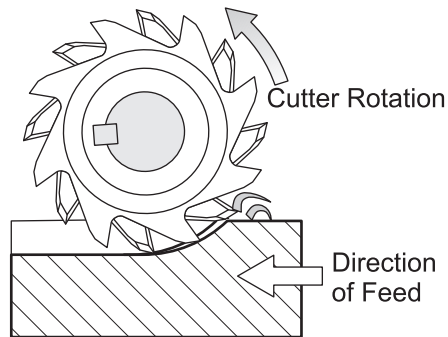


- **Side Mill:** Commonly used, but limited to the width of slot that can be cut with them.

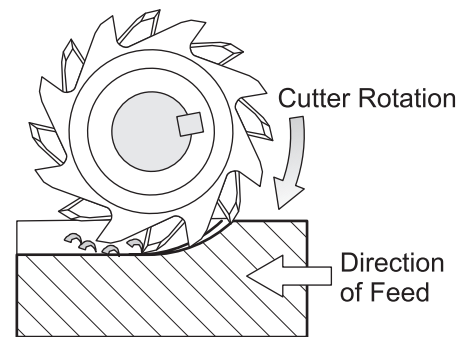


- Use the Machinery Handbook, as needed.
- The conventional and climb mill is shown below.

Conventional Cut

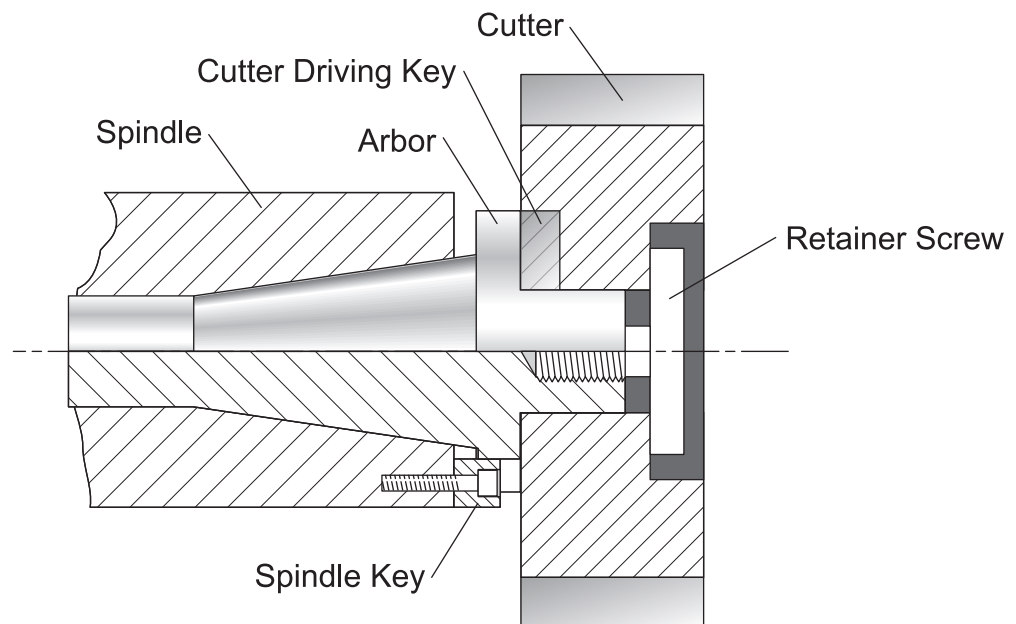


Climb Cut



### 3. Install the cutter.

- Select the needed arbor and install the cutter.



- Install the assembly in the spindle.

### 4. Verify the zero setting on the numerical control.

- Set the zero, if needed.

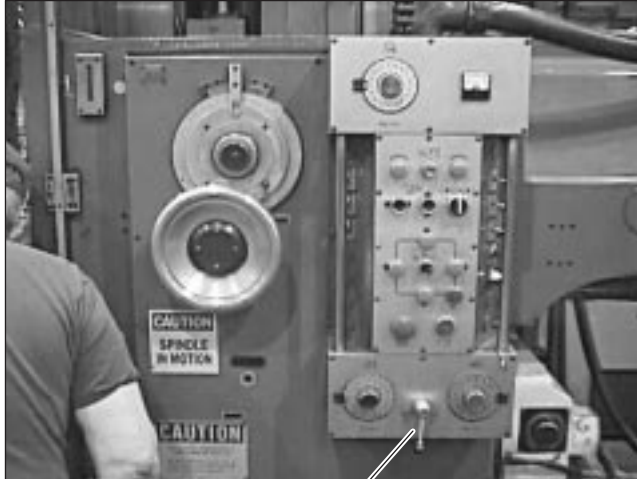
### 5. Set the feeds and speeds.

### 6. Address the cutter to the piece.

- Move the spindle to the home position.

**7. Begin milling the piece.**

- Turn on the spindle on and verify a clockwise (or counterclockwise) rotation, depending on the piece requirements and the cutter being used.



Spindle Control

**8. Adjust speeds and feeds, if necessary.**

- Measure the milling operation as the print requires.