

K-01: Grind Surfaces

SAFETY FIRST

- Follow all Caterpillar facility safety standards when performing this task.
- Be aware of rotating equipment and unexpected machine movement.

EQUIPMENT

- internal grinder
- set up equipment as required to complete the job
- measuring devices (dial indicator)
- work head Allen wrench

RESOURCES

- dimensional print
- Machinist's Handbook

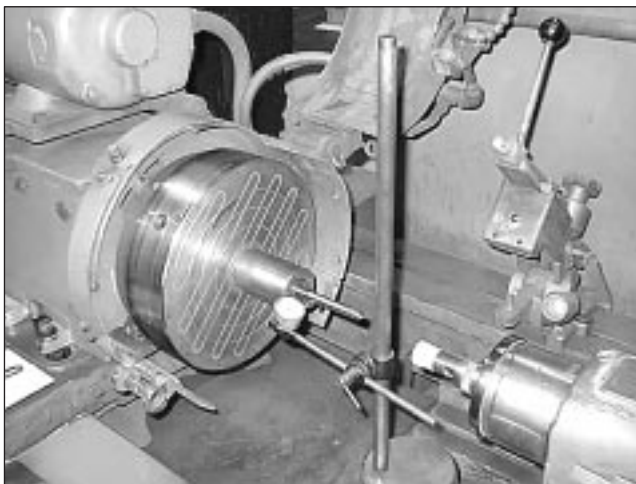


Grind Surfaces

1. Determine job requirements.

- Read the print to decide how you are going to run the job (i.e., chuck, magnetic parallel, etc.).

2. Indicate the piece part.

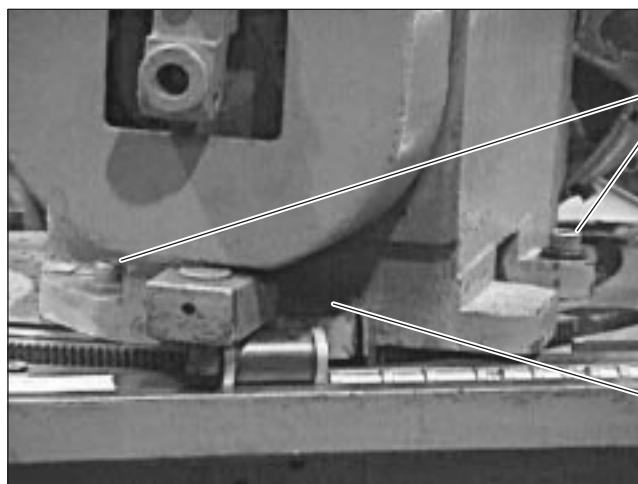


Indicate the Part

- Periodically indicate the part to verify concentricity.
- Grind the part until measurements match the part requirements.

3. Set the work head.

- Use the work head Allen wrench tool to set the work head.



Loosen Allen
Head Screws

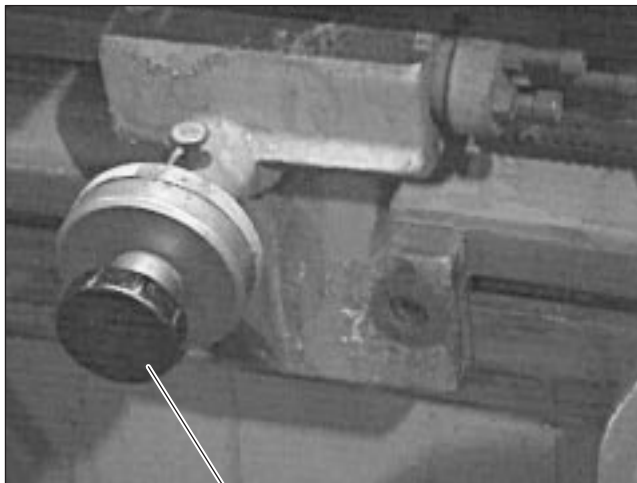
Turn Here to
Move Work Head

Set the Work Head Angle

- Ask a qualified Toolmaker to help you adjust the work head according to the requirements. The machine has a handbook of dimensions to help you set the angular setting device.
- Turn or rotate the work head past zero and work your way back until the angular setting device is within specifications. If there are no angular requirements, verify that the work head is square with the axis of the machine.
- Dress the wheel according to print specifications.

Note: Additional dressing is necessary if a radius surface is required.

- 4. Use the facing attachment to set the positive stop for required surfaces on the part.**



Facing Attachment

Setting the Positive Stop

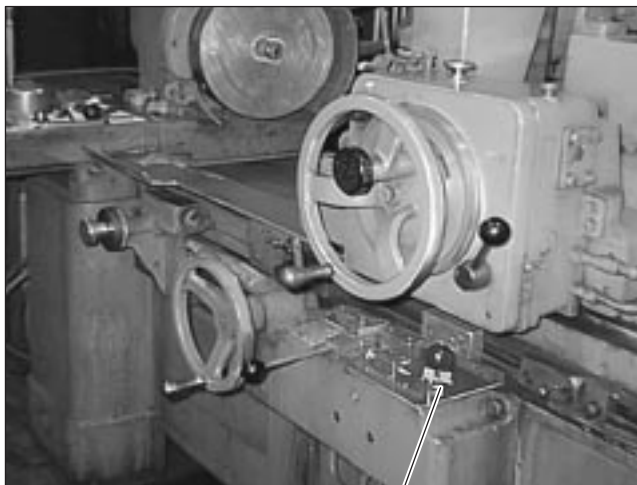
- Loosen the attachment with the Allen wrench and slide it close to the depth requirements on the dimensional print. Tighten down the attachment, fine tune the adjustment with the face feed wheel.
- Back off the wheel head.

- Verify that the diamond is in the storage position before turning on the machine.



Dressing Diamond In Storage Position

- Manually move the wheel to the work head to line the wheel up with the part. The throttle lever must be in neutral and the wheel turned off.



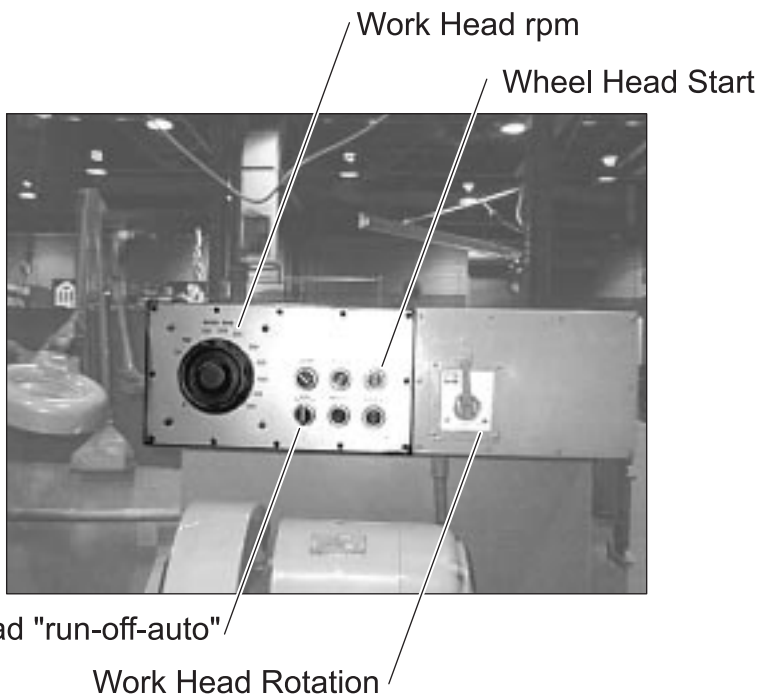
Note: Additional movement of the work head is required to grind an angle or taper according to the print specifications.

- 5. Address the wheel to the part.**

- Verify the diamond is in the storage position.
- Turn on the work head and the wheel head.
- Set the work head rotation and the work rpm according to the part requirements. Set the work head rotation to “F” for and ID and “R” for an OD.

Note: The smaller the diameter, the faster you want it to turn.

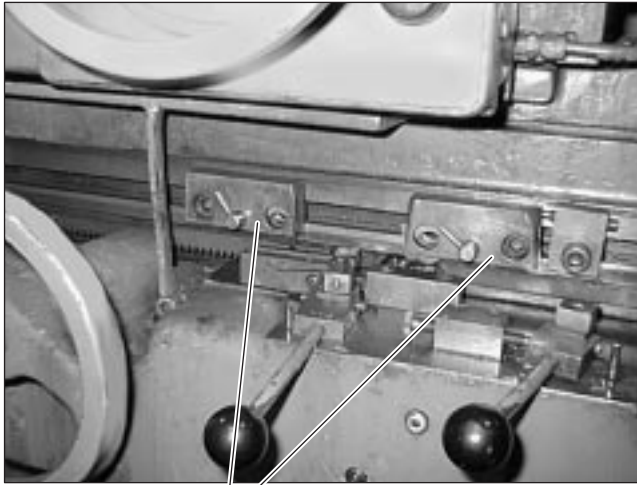
- Check for the amount of grind stock.
- Set the feed wheel slightly past the desired dimension.



Caution: Use extreme caution when moving the wheel into the part. Move the wheel head slowly. The part can detach from the holding device and injure personnel or damage equipment.

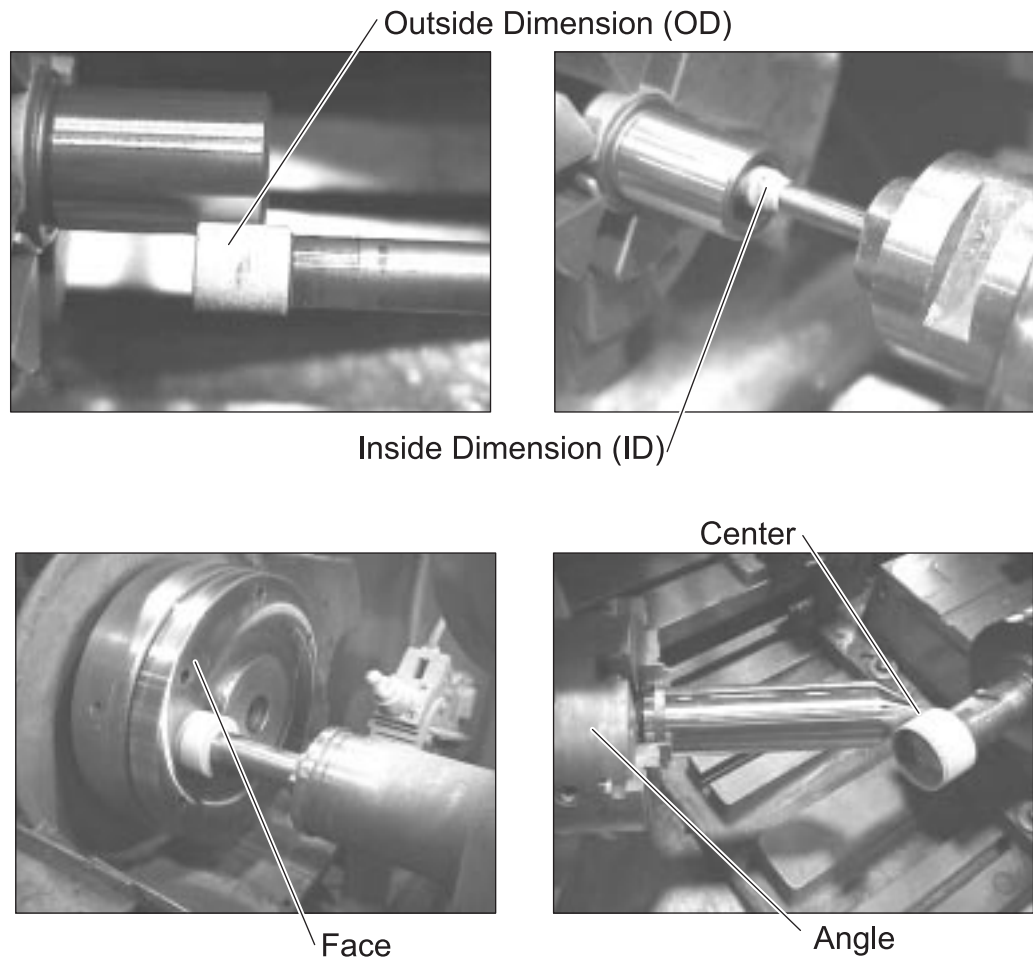
- Move the wheel close to the piece part.
- Slowly move the work head to the grinding wheel. Make contact between the part, stopping at first spark.
- Lock the work head setting in place with the lever below the work head hand wheel.

6. Set the directional dogs, if the part requires traversing.



Directional Dogs

- Set the wheel head to traverse according to the part requirements and the wheel dimensions.

7. Grind the surface.

Note: The machine pick feed can be set automatically using the coarse feed lever and coarse feed lock screw. This task demonstrates manual setting of the pick feed.

- Advance the wheel to the part to remove stock according to the part requirements.
- Redress the wheel as necessary. Depending upon the material you are grinding, you may need to redress the wheel many times (ex: black oxide, A2, or green stock).

Note: As a Toolmaker gains experience grinding surfaces, the work head may be adjusted to compensate for various requirements. Eventually, a “feel” is developed with the grinder.