

L-02

TOOLMAKER TRAINING

TRAINER'S GUIDE

Duty L: External Grinder

L-02: Grind Surfaces

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Instructions To The Trainer

1. The Learner will contact you when ready to practice grinding the surface of a workpiece (part).
2. Be prepared to demonstrate the steps for this task.
3. Ask the Learner to contact the Evaluator when ready for the Skill Check.



Skill Objective

Given a part set up in an external grinding machine, the print of the part, and the process sheet for the job, check specifications, prepare the grinder, and grind the part.

Task Standards

1. The part must be ground to the finish, dimensions, and tolerances specified in the print and process sheet.
2. There must be no damage to the external grinder.
3. All safety requirements must be demonstrated.

What You Will Need

This section contains the safety information, tools, and resources you will need before grinding surfaces.

SAFETY FIRST

DON'T TAKE
CHANCES

- Follow all Caterpillar facility safety standards when performing this task.
- The grinding wheel is extremely hazardous. Touching a spinning wheel, even lightly, instantly removes flesh. If the wheel is defective, it may explode and cause extensive damage to the machine and severe injury to personnel.
- Be aware of the turning part, and the automatic movements of the table and grinding head.



- external grinder, equipped with wheel and coolant
- part (workpiece to be ground)
- fixtures and/or tooling to adapt the part to the external grinder
- dressing stone or other wheel dressing equipment
- measuring instruments to check the dimensions of the ground part
- piece of wood
- marking tool
- Allen wrenches
- sine bar
- gage bar



- print specifying part finish, dimensions, and tolerances.
- process sheet specifying how the part should be made
- external grinder documentation
- conversion charts



Practice Set-Up

The Learner may perform the following practice to help prepare for the Skill Check. Set up the practice for the Learner. Assist the Learner during the practice, if necessary; answer any questions concerning the task; and be prepared to demonstrate the task to the Learner. Make sure the Learner follows safe work practices while practicing the task.

Practice 1:

Provide a print or drawing of a specific groove on a workpiece (part). Dimensions should specify the groove position on the part, and the groove depth, width, and inside radius on both corners. Set up the the grinding machine with the part described in the print. Make sure an appropriate grinding wheel is available, along with the equipment to dress it for grinding the specified groove. Remind the Learner of the required safety procedures to be demonstrated when using an external grinding machine.

Practice Objective 1:

The finished groove width, depth, and corner radii must be as specified, and the groove must be correctly located on the part. The Learner must demonstrate all required safety procedures when grinding the groove.

Practice 2:

Provide a print or drawing of a specific OD and taper on a workpiece (part). Dimensions should specify the diameter of the OD, the point where the taper starts, and the taper in thousandths or ten-thousandths per inch. Set up the the grinding machine with the part described in the print. Make sure an appropriate grinding wheel is available. Remind the Learner of the required safety procedures to be demonstrated when using an external grinding machine.

Practice Objective 2:

The OD, taper, and taper-start location must be as specified. The Learner must demonstrate all required safety procedures when grinding the OD and taper.

Next Step

Allow the Learner to continue practicing and developing skills needed to demonstrate the task. The Learner should ask the Evaluator to schedule a Skill Check when ready to demonstrate the task unaided and meet all the task standards and safe work practices.

