

Lathe - Turning Work Between Centers

Course 324: Lathe—Turning Work Between Centers

Takes the trainee through a series of operations on the lathe to make a student project (a plug gauge). Covers lathe setup, rough turning procedures, finish turning, and chamfering. Next covers shouldering, knurling, and notching operations. Finishes with external thread cutting and maker tapers.

TPC Training is accredited by IACET to offer **0.5 CEU** for this program.



Lesson 1: Lathe Setup and Workpiece Preparation

Topics

Checking the Lathe; The Workpiece; Selecting the Work Mounting Method; Setting Up the Lathe; Installing the Faceplate; Installing the Lathe Dog; Live and Dead Centers; Alternate Methods for Holding the Workpiece; Facing the Workpiece Ends; Test Running; Tool Selection; Mounting the Facing Tool; Speed and Feed Selection; Facing the End; Facing the Opposite End

Objectives

- Describe how to select a work mounting method.
- Install a faceplate and lathe dog in a lathe.
- Select and mount a cutting tool for facing the ends of a workpiece.
- Explain how the optimum speed and feed are selected.
- Face the ends of the workpiece.

Lesson 2: Rough and Finish Turning

Topics

Rough Turning Between Centers; Selecting the Cutting Tool; Aligning the Cutting Tool With the Work; Spindle Speed Selection; Selecting the Feed; Taking Trial Cuts; Setting Final Feed; Rough Turning; Finish Turning; Selecting the Finishing Cutter; Taking a Trial Finishing Cut; Setting Final Controls; Taking the Finishing Cut; Chamfering

Objectives

- Align the cutting tool with the workpiece.
- Take a trial cut on the workpiece.
- Rough turn the workpiece.
- Finish turn the workpiece.
- Chamfer edges of the workpiece.

Lesson 3: Shouldering, Knurling, and Notching

Topics

Laying Off Shoulders; Caliper Method; Scriber Method; Parting Tool Method; Setting the Parting Tool; Laying Off With the Parting Tool; Turning Filleted Shoulders; Turning Larger Fillets; Turning Square Shoulders; Turning With a Shouldering Tool; Turning With a Parting Tool and Round-Nosed Cutter; Notching; Knurling; Knurling Tools; Polishing Between Centers; Filing Between Centers

Objectives

- Describe how to lay off shoulders using the caliper, scriber, and parting tool methods.
- Turn a filleted shoulder on the workpiece.
- Explain how to notch a workpiece with a parting tool.
- Knurl the workpiece.
- Perform a polishing and filing operation between centers.

Lesson 4: Cutting External Threads

Topics

Project Description; Preparing and Mounting the Workpiece; Lathe Thread Cutting Parts; Lead Screw; Split Nuts; Screw Thread Features; Thread Cutting Tools; Setting the Compound Rest; Thread Cutting Stop; Using the Thread Dial Indicator; Cutting the Thread; Setting Thread Cutting Speed; Determining Total Depth of Cut; The Trial Cut

Objectives

- Prepare and mount the workpiece.
- Describe screw thread features.
- Explain in detail how threads are cut on a lathe.
- Set the thread cutting speed and use the thread dial indicator.
- Determine the total depth of cut and take a trial and finish cut on the workpiece.

Lesson 5: Turning Tapers Between Centers

Topics

Standard Tapers; Taper Calculation; Laying Off the Workpiece; Tailstock Setover Method; Taper Attachment Method; Taper Turning Using the Compound Rest; Machining the Tapers; Turning the Short Taper Using the Dial Test; Indicator and Vernier Bevel Protractor; Making the Taper

Objectives

- Designate standard types of tapers as well as calculate special tapers.
- Explain how to turn a taper using the tailstock setover method.
- Describe how to turn a taper using a taper attachment.
- Turn a taper using the compound rest method.
- Tell how to use the dial test indicator and vernier bevel protractor for close tolerances.