

# NCyclopedia

## Multimedia software for teaching CNC technology

CNC machining is all about motion, and impossible to learn or teach through text books and blackboard. There is no ready packaged teaching material, and there is a huge gap between what is taught and what is required in industry. NCyclopedia is a CNC training software that bridges this gap. It speeds up teaching, improves understanding and retention of topics.

### What you can do with NCyclo

NCyclo Mill and NCyclo Turn enable you to teach or self-learn CNC machining technology in a highly effective manner through videos, animations, diagrams and explanations. They have content from real life machines, tools and machining situations manufacturing shop floors and machine tool builders. Videos and animations are designed specially for training. They cover the complete range of topics in CNC machining.

- Machine construction, Machining operations, Cutting tools
- Cutting parameters, Work holding, CNC programming

### Who can benefit from NCyclopedia

NCyclopedia can be used as a powerful training tool by faculty in a classroom, or for self-learning. Designed for use by:

- Engineering colleges, Polytechnics, Industrial Training Institutes
- In-house training centers of manufacturing industries
- Owners of CNC machining job shops
- CNC machine builders, to train customers
- Cutting tool manufacturers, to train customers

## Screen shots

**Macromedia Flash Player 8**

File View Control Help

CADEM  
**NCyclo Turn**

Notes | Search | About | Exit

Chapters Machine construction / Mechanicals / Ball screws

**Ball screws**

A ball screw converts the rotary motion of motors to linear motion. It is similar to a leadscrew, but has no sliding contact between the screw and nut. The threads in the screw and nut have a semi-circular cross section, and have balls rolling in them. Since rolling friction is much lower than sliding friction, ball screws typically have 90% mechanical efficiency as against 50 % for the usual lead screws with Acme threads. Because of this the power requirement of the axis motor is reduced, and a smaller motor can be used.

The threads on ball screws are ground, to improve their accuracy. The nuts have a special arrangement for recirculating the balls continuously. ball screws are far more expensive than lead screws.

The screw is attached to the bed between the guideways, and rotates in bearings at either end. The nut is attached to the carriage.

**Ball screw motion** ▶

**Ball screws of various sizes**

**Cut section**

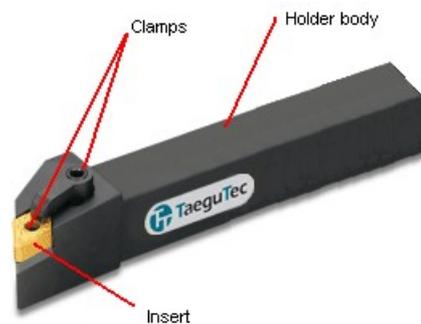
**Mechanicals**

- ✓ Bed
- Guideways
- ✓ Ball screws
- LM Guides
- Spindle
- Chuck
- Tool changer - turret type
- Tool changer - gang type
- Steady rest
- Tailstock

**Now Playing: Ball screw motion**  
Mechanism of recirculation of balls inside the screw.

00:00 / 00:08 1x

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CADEM NCyclo Mill

Notes | Search | About | Exit

Chapters ▾ Machine operations / Side slot milling / Operation

- Introduction
- Machine construction
- Machining operations**
  - Cutting Tools
  - Cutting Parameters
  - Tool holders
  - Work holding
  - Programming
- Face milling
- Side milling
- Pocket milling
- Chamfer milling
- Groove milling
- Side slot milling
- T-slot milling
- Spot facing
- Helical boring
- Thread milling
- Cylindrical interpolation
- Center drilling
- Drilling
- Peck drilling
- Deep drilling
- Rough boring
- Finish boring
- Combination hole drilling
- Countersinking
- Counterboring
- Back spotfacing
- Tapping
- Reaming

Slot milling ▶

on the side of a part, along a contour.

s - roughing, bottom finishing and side finishing. a roughing tool is used for rough milling, with a nce is removed by a separate finishing tool in a

Side finish Side finish

Slot width

bottom allowance

Side slot milling

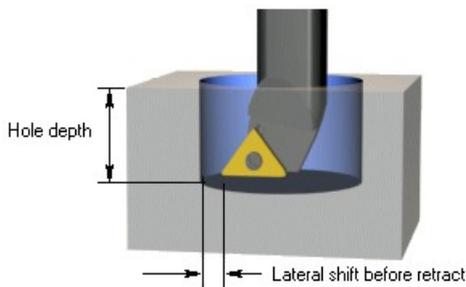
- ✓ Operation
- Tool path

**Now Playing: Slot milling**  
Side slot milling on a circular boss

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## Matches CNC education syllabi

NCyclo suits CNC training software requirement for ITI, CGSC NOS, Diploma and BE.

### NCVT ITI

ITI syllabus for the trades Turner, Machinist, and Operator Advanced Machine Tool  
NCyclo CNC training software matches the specification "Multimedia teachware / courseware for CNC technology".

CITS syllabus requirement for machining-related related trades  
NCyclo CNC training software matches this CITS syllabus requirement "Multimedia teach ware/ courseware for CNC technology".

Together, CADEM Ncyclo, seeNC and doNC match the software specifications in the ITI syllabus for the trades Turner, Machinist, and Operator Advanced Machine Tool: "Multimedia teachware / courseware for CNC technology and interactive CNC part programming software for turning & milling with virtual machine operation and simulation using popular operation control system such as Fanuc, Siemens, etc."

### CGSC NOS

NCyclo CNC training software suits the syllabus requirement for the following Qualification packs:

Operator – Vertical Machining Centre CSC/ Q 0116

CNC Operator Turning CSC/ Q 0115

CNC programmer CSC/ Q 0401

CNC Setter cum operator – Turning CSC/ Q 0120

CNC Setter cum Operator – Vertical Machining Centre –CSC/ Q0123