

# NCyclopedia™

Multimedia CNC Teachware



## NCyclo Mill / NCyclo Turn

Software for teaching CNC technology

CNC machining is all about motion. It is impossible to learn or teach it through text books and diagrams. As a result, teaching faculty members spend a lot of time collecting visual material and preparing presentations. These are however inadequate, and there is still a huge gap between what is taught and what is required in industry. NCyclopedia bridges this gap.

### What NCyclopedia does

NCyclopedia teaches CNC milling and turning technology in a highly effective manner through hundreds of videos, animations, diagrams and explanations written in simple, easy to understand language. It covers the complete range of topics in CNC machining technology.

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

I hear, and I forget  
I see, and I remember  
I do, and I understand  
*Confucius*

NCyclopedia has content from real life machines, tools and machining situations from the best shop floors in industry. Videos and animations have been created exclusively for training.

### Who can benefit from NCyclopedia

NCyclopedia is designed to provide foundational competence in CNC milling and turning. It can be used as a self-learning system or as a powerful training tool by faculty in a classroom.

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

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Custom ▾ 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
- LH Guides
- Spindle
- Chuck
- Tool changer - turret type
- Tool changer - gang type
- Steady rest
- Tailstock

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



www / view



**ALIAS NCyclo Mill** Home | Search | About | Exit

Custom ▾ Machine operations / Side slot milling / Operation


### Operation

This operation mills a slot on the side of a part, along a contour.

Milling may be done in a single stage or multiple stages - roughing, bottom finishing and side finishing. Where the dimension and surface finish are important, a roughing tool is used for rough milling, with a 0.5 to 1 mm. finishing allowance left over. This allowance is removed by a separate finishing tool in a single cut.

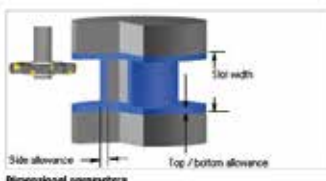
#### Side slot milling

  
Rough

  
Bottom finish

  
Side finish

Processes



Slot width  
Side allowance  
Top / bottom allowance

**Dimensional parameters**

#### Slot milling

**Side slot milling**

- Operation
- Tool path

**Now Playing: Slot milling**  
Side slot milling on a circular bar.



www / view

