

FUNDAMENTAL MANUFACTURING PROCESSES

Turning & The Lathe

SCENE 1.

TU82A, CGS: Operating Parameters
white text, centered on background
FMP01B, motion background

SCENE 2.

TU83A, **FTD015**, **15:41:29:00-15:42:08:00**
c.u. turning operation starting
finish stock turning
TU83B, CGS: Cutting Speed
Feed Rate
Depth of Cut

NARRATION (VO) :

HOW WELL A TURNING OPERATION IS PERFORMED
DEPENDS, IN PART, ON USING THE RIGHT
OPERATING PARAMETERS. ON A LATHE, THE KEY
OPERATING PARAMETERS ARE:
CUTTING SPEED,
FEED RATE,
AND DEPTH OF CUT.

--- TOUCH BLACK ---

SCENE 3.

TU84A, CGS: Cutting Speed
TU84B, **SME2538**, **03:22:28:00-03:22:53:00**
facing operation
TU84C, **SME2538**, **03:09:13:00-03:09:26:00**
facing operation, 103%
TU84D, **SME2538**, **03:09:23:00-03:09:23:01**
freeze frame for graphic, 103%
TU84E, CGS: quarter circle with lines
representing cut and uncut circumference
and arrows
TU84F, CGS: Speed of Spindle Rotation/
Revolutions per Minute
X
Workpiece Circumference

NARRATION (VO) :

CUTTING SPEED IS THE RATE AT WHICH THE
SURFACE OF THE WORK MOVES PAST THE CUTTING
TOOL. IT IS MEASURED IN SURFACE FEET OR
METERS PER MINUTE. IT IS THE SPEED OF
SPINDLE ROTATION, IN REVOLUTIONS PER
MINUTE, TIMES WORKPIECE CIRCUMFERENCE.
THIS SPEED CHANGES AS THE TOOL PLUNGES
INTO THE PART.

SCENE 4.

TU85A, CGS: Feed Rate
TU85B, **SME2537**, **01:11:41:00-01:12:16:00**
turning part with multiple cutting tools

NARRATION (VO) :

FEED RATE IS THE SPEED AT WHICH THE TOOL
ADVANCES INTO THE PART LONGITUDINALLY. IT

IS MEASURED IN INCHES OR MILLIMETERS PER REVOLUTION. FEED RATE INFLUENCES CHIP THICKNESS AND HOW THE CHIP BREAKS. THE MACHINE, TOOL, PART STRENGTH, AND FINISH REQUIRED ON THE FINAL SURFACE INFLUENCE THE FEED RATE CHOSEN. FINISH CUTS TYPICALLY REQUIRE MUCH SLOWER FEED RATES THAN ROUGHING CUTS.

SCENE 5.

TU86A, CGS: Depth of Cut

TU86B, **FTD007**, **06:17:09:00-06:17:35:00**
turning operation

TU86C, **SME2537**, **01:15:50:00-01:16:06:00**
c.u. turning operation, freeze last frame, dissolve to translucent original to show depth of cut on both sides

NARRATION (VO) :

DEPTH OF CUT IS THE THICKNESS OF THE MATERIAL REMOVED FROM THE WORK SURFACE DURING A TOOL PASS. THUS WHEN TURNING CYLINDRICAL WORK, THE WORKPIECE DIAMETER IS REDUCED BY TWICE THE DEPTH OF CUT; SO IF THE TOOL IS ADVANCED FOR A 4-MILLIMETER DEPTH OF CUT, THE DIAMETER WILL BE REDUCED BY 8 MILLIMETERS.

SCENE 6.

TU87A, **FMP002**, **02:36:10:00-02:36:47:00**
zoom out, turning operation

TU87B, CGS: Machinability of the Work
Material
Material & Geometry of the
Cutting Tool
Angle that the Cutting Tool
Enters the Work
Type of Operation
Power & Condition of the
Lathe

NARRATION (VO) :

OTHER FACTORS INFLUENCING THE TURNING PROCESS INCLUDE:
THE MACHINABILITY OF THE WORK MATERIAL,
THE MATERIAL AND GEOMETRY OF THE CUTTING TOOL,
THE ANGLE THAT THE CUTTING TOOL ENTERS THE WORK,
THE TYPE OF OPERATION,
AND THE POWER AND CONDITION OF THE LATHE.
THESE SHOULD ALL BE TAKEN INTO ACCOUNT

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WHEN SELECTING TURNING SPEEDS AND FEEDS.

--- FADE TO BLACK ---

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