

**FUNDAMENTAL MANUFACTURING PROCESSES**

Turning & The Lathe

SCENE 1.

**FMP RVW**, CGS: Review  
white text, centered on background  
**FMP01B**, motion background

SCENE 2.

**TU07A, FTD021, 01:05:55:00-01:07:31:00**  
turning operation, edit at multiple  
points  
**TU07B, FTD004, 04:14:26:00-04:14:38:00**  
zoom out, boring of turned part

**NARRATION (VO) :**

IN TURNING, A WORKPIECE IS ROTATED ABOUT  
ITS LONGITUDINAL AXIS, WHILE SINGLE-POINT  
CUTTING TOOLS ARE FED INTO THE WORKPIECE,  
SHEARING OFF UNWANTED MATERIAL AS IT  
TURNS. THIS CREATES A PART OF DESIRED  
DIMENSIONS AND SHAPE THAT IS SYMMETRICAL  
AROUND ITS TURNING AXIS. TURNING CAN ALSO  
BE PERFORMED ON THE EXPOSED END OF THE  
PART AND IT'S INTERNAL SURFACES.

SCENE 3.

**TU17A, FMP014, 15:13:38:00-15:13:50:00**  
spindle  
**TU17B**, CGS: Spindle  
**TU17C**, CGS: arrow  
**TU17D, FMP014, 15:13:18:00-15:13:32:00**  
headstock  
**TU17E**, CGS: Headstock  
**TU27B, FMP014, 15:01:15:00-15:01:33:00**  
static, carriage, cross slide and  
compound rest  
**TU27C**, CGS: Carriage  
**TU27D**, CGS: Cross Slide  
**TU27E**, CGS: Compound Rest  
**TU30B, FMP014, 15:10:08:00-15:10:26:00**  
c.u. tool post being secured  
**TU30C**, CGS: Tool Post  
**TU30D, FMP014, 15:02:55:00-15:03:10:00**  
zoom in, drill mounted in tailstock  
**TU30E**, CGS: Tailstock  
**TU16A, FMP013, 13:07:52:00-13:08:31:00**  
workpiece in chuck, starting to spin

**NARRATION (VO) :**

THE BASIC PARTS OF THE LATHE ARE THE  
SPINDLE...,  
HEADSTOCK...,  
CARRIAGE...,  
CROSS SLIDE...,  
COMPOUND REST...,  
TOOL POST...,  
TAILSTOCK...,  
AND A WORKHOLDING DEVICE.

SCENE 4.

**TU33A, SME2519, 02:21:20:00-02:21:56:00**  
engine lathe, turning work  
**TU37A, FTD101, 11:44:52:00-11:45:25:00**  
zoom out, 2 axis single turret turning  
**TU38A, FMP016, 16:05:53:00-16:06:10:00**  
two-turret, four-axis cnc lathe  
**TU40B, FMP009, 09:42:27:00-09:42:40:00**  
zoom in, milling on lathe  
**TU41A, FMP009, 09:32:37:00-09:33:14:00**  
wide, lathe with sub-spindle, multiple  
**TU42A, FMP007, 07:32:43:00-07:32:53:00**  
pan of twin-opposed spindle machine  
**TU45A, SME3453, 21:12:05:00-21:13:02:00**  
swiss machine used for machining plastic  
part  
**TU46B, FMP016, 17:12:54:00-17:13:22:00**  
zoom in, vertical turret lathe operation  
**TU44A, FMP005, 05:25:20:00-05:25:54:00**  
zoom out, multi-spindle automatic

**NARRATION (VO) :**

LATHE TYPES IN COMMON USE INCLUDE MANUAL  
ENGINE LATHES...,  
TWO-AXIS, SINGLE-TURRET COMPUTER NUMERICAL  
CONTROL, OR 'CNC' LATHES...,  
TWO-TURRET, FOUR-AXIS 'CNC' LATHES...,  
TURN-MILL LATHES...,  
SUB-SPINDLE 'CNC' LATHES...,  
TWIN-SPINDLE TYPE 'CNC' LATHES...,  
SWISS-TYPE 'CNC' LATHES...,  
VERTICAL LATHES...,  
AND SINGLE AND MULTI-SPINDLE AUTOMATIC  
LATHES.

SCENE 5.

**TU19C, SME2518, 01:04:56:00-01:05:10:00**  
part placed in three-jaw chuck  
**TU20C, SME2645, 04:06:11:00-04:06:16:00**  
square collet, part placed in it  
**TU22A, SME2644, 03:25:59:00-03:26:15:00**  
mandrel expanding to hold part, turning  
**TU23A, SME2520, 05:05:35:00-05:05:48:00**  
long shaft being turned  
**TU26B, SME2650, 01:01:41:00-01:01:53:00**  
c.u. face driver, part secured to it  
**TU52A, FTD003, 03:40:35:00-03:40:57:00**  
non-cylindrical shape being turned

**NARRATION (VO) :**

WORKHOLDING ARRANGEMENTS ON LATHES INCLUDE  
VARIOUS CHUCKS...,  
COLLETS...,  
MANDRELS...,  
BETWEEN CENTERS...,  
FACE DRIVERS...,  
AND SPECIALLY DESIGNED CHUCKS OR FIXTURES.

SCENE 6.

**TU56A, FMP013, 14:03:45:00-14:04:31:00**  
toolholding turret rotating tools, edit  
at multiple points  
**TU57A, SME3453, 21:11:29:00-21:11:49:00**  
ganged tools on a small lathe, machining  
plastic  
**TU40A, FMP004, 04:32:20:00-04:32:42:00**  
zoom in, turning then milling on lathe

**NARRATION (VO) :**

TOOL ARRANGEMENTS ON PRODUCTION LATHES  
INCLUDE ONE OR MORE TURRETS...,  
GANG TOOLS...,  
AND MULTITASKING ARRANGEMENTS THAT INCLUDE  
STANDARD SINGLE-POINT TOOLS, AND DRIVEN,

'LIVE' TOOLS.

SCENE 7.

**TU60A**, CGS: Straight Turning  
**TU60B**, **FTD012**, **11:11:17:00-11:11:38:00**  
zoom out, chipbreaking turning operation  
**TU61A**, CGS: Taper Turning  
**TU61B**, **FMP014**, **14:23:18:00-14:23:37:00**  
taper turning operation  
**TU62A**, CGS: Contour Turning  
**TU62B**, **FTD021**, **01:03:25:00-01:03:50:00**  
zoom out, contouring  
**TU63A**, CGS: Forming  
**TU63B**, **FMP005**, **05:30:20:00-05:30:54:00**  
zoom in, multi-spindle automatic  
**TU64A**, CGS: Chamfering  
**TU64B**, **FMP013**, **13:19:10:00-13:19:23:00**  
chamfering of workpiece  
**TU65A**, CGS: Grooving  
**TU65B**, **FTD021**, **01:02:43:00-01:03:04:00**  
plunge grooving operation  
**TU66A**, CGS: Thread Chasing  
**TU66B**, **SME2537**, **01:19:08:00-01:19:19:00**  
thread chasing operation  
**TU67A**, CGS: Facing  
**TU67B**, **SME3984**, **11:05:51:00-11:06:21:00**  
facing operation  
**TU68A**, CGS: Holemaking  
**TU70A**, **FMP013**, **13:16:58:00-13:17:14:00**  
drill advanced into workpiece  
**TU71A**, CGS: Reaming  
**TU71B**, **FMP013**, **13:18:03:00-13:18:20:00**  
reaming of drilled hole  
**TU72A**, CGS: Boring  
**TU72B**, **FTD004**, **04:07:23:00-04:07:49:00**  
zoom out, boring operation on lathe  
**TU73A**, CGS: Tapping  
**TU73B**, **SME2631**, **01:19:00:00-01:19:17:00**  
zoom in, tapping on the lathe  
**TU74A**, CGS: Parting Off  
**TU74B**, **FMP007**, **07:13:20:00-07:13:35:00**  
parting off operation  
**TU75A**, CGS: Picking Off  
**TU75B**, **FTD012**, **12:30:25:00-12:31:17:00**  
picking off of part, edit at multiple  
points

**NARRATION (VO):**

THE BASIC OPERATIONS IN TURNING INCLUDE:  
STRAIGHT TURNING...,  
TAPER TURNING...,  
CONTOUR TURNING...,  
FORMING...,  
CHAMFERING...,  
GROOVING...,  
THREAD CHASING...,  
FACING...,  
HOLEMAKING...,  
REAMING...,  
BORING...,  
TAPPING...,  
PARTING OFF...,  
AND PICKING OFF.

SCENE 8.

**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):**

PROCESS VARIABLES IN TURNING INCLUDE:  
CUTTING SPEED,  
FEED RATE,

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AND DEPTH OF CUT.

--- FADE TO BLACK ---

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