THREAD CUTTING OPERATION ON LATHE MACHINE
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- INTRODUCTION

- COMMON OPERATIONS
  - THREAD CUTTING
    - EXTERNAL THREAD CUTTING
    - INTERNAL THREAD CUTTING
  - BORING
THREAD CUTTING OPERATION ON LATHE MACHINE

- INTRODUCTION
- A MACHINE TOOL IS A POWER DRIVEN APPARATUS
- DESIGNED TO PERFORM METAL CUTTING BY VARIOUS TYPES OF CUTTING TOOLS
- MOSTLY THE MACHINED SURFACES ARE REQUIRED TO BE CYLINDRICAL OR FLAT
- THE WORK OF MACHINE TOOLS IN GENERAL IS CONCERNED WITH PRODUCING ONE OR BOTH
THREAD CUTTING OPERATION ON LATHE MACHINE

- INTRODUCTION
- THE LATHE IS A MACHINE TOOL
- REMOVES THE METAL FROM A PIECE OF WORK TO GIVE THE REQUIRED SHAPE AND SIZE.
- BY HOLDING THE WORK SECURELY AND RIGIDLY ON THE MACHINE AND THEN TURNING IT AGAINST CUTTING TOOL
- REMOVE METAL FROM THE WORK IN THE FORM OF CHIPS
THREAD CUTTING OPERATION ON LATHE MACHINE

- COMMON OPERATIONS

- THREAD CUTTING - A THREAD IS A UNIFORM HELICAL GROOVE CUT INSIDE OF A CYLINDRICAL WORKPIECE, OR ON THE OUTSIDE OF A TUBE OR SHAFT

- BORING - ALSO CALLED INTERNAL TURNING, IS USED TO INCREASE THE INSIDE DIAMETER OF A HOLE. THE ORIGINAL HOLE IS MADE WITH A DRILL, OR IT MAY BE A CORED HOLE IN A CASTING
THREAD CUTTING OPERATION ON LATHE MACHINE

- THREAD CUTTING
- MOST IMPORTANT OPERATIONS
- PRINCIPLE OF THREAD CUTTING IS TO PRODUCE A HELICAL GROOVE ON A CYLINDRICAL OR CONICAL SURFACE
- BY FEEDING TOOL LONGITUDINALLY WHEN JOB IS REVOLVED BETWEEN CENTRES OR BY A CHUCK
- LONGITUDINAL FEED SHOULD BE EQUAL TO THE PITCH OF THE THREAD TO BE CUT PER REVOLUTION OF THE WORKPIECE
- LEAD SCREW THROUGH SADDLE RECEIVES TRAVERSING MOTION, HAS A DEFINITE PITCH
EXTERNAL THREAD CUTTING

First step is to remove the excess material from the workpiece to make its diameter equal to the major diameter of thread.

Change gears of correct size are fitted to the end of the bed between the spindle and the lead screw.

Shape or form of the thread depends on the shape of the cutting tool to be used.
THREAD CUTTING OPERATION ON LATHE MACHINE

- EXTERNAL THREAD CUTTING
  - In a metric thread, the included angle of the cutting edge should be ground exactly 60°
  - Top of the tool nose should be set at the centre of the workpiece
  - Angle gauge is usually used against the turned surface
  - Speed of the spindle is reduced by one half to one-fourth of the speed required for turning
EXTERNAL THREAD CUTTING

- HALF-NUT IS THEN ENGAGED
- DEPTH OF CUT, WHICH USUALLY VARIES FROM 0.05 TO 0.2 MM
- TOOL HAS PRODUCED A HELICAL GROOVE UPTO THE END OF THE WORK, QUICKLY WITHDRAWN BY THE USE OF THE CROSS SLIDE
- HALF NUT DISENGAGED, AND THE TOOL IS BROUGHT BACK TO THE STARTING POSITION TO GIVE A FRESH CUT
EXTERNAL THREAD CUTTING

- BEFORE RE-ENGAGING THE HALF NUT, IT IS NECESSARY TO ENSURE THAT THE TOOL WILL FOLLOW THE SAME PATH IT HAS TRAVERSED IN THE PREVIOUS CUT, OTHERWISE THE JOB WILL BE SPOILED.

- SEVERAL CUTS ARE NECESSARY BEFORE THE FULL DEPTH OF THREAD IS REACHED.
THREAD CUTTING OPERATION ON LATHE MACHINE

INTERNAL THREAD CUTTING

- PRINCIPLE OF CUTTING INTERNAL THREADS IS SIMILAR TO THAT OF AN EXTERNAL THREAD
- ONLY DIFFERENCE BEING IN THE TOOL USED
- SIMILAR TO A BORING TOOL WITH CUTTING EDGES GROUND TO THE SHAPE CONFORMING TO THE TYPE OF THREAD TO BE CUT
THREAD CUTTING OPERATION ON LATHE MACHINE

- INTERNAL THREAD CUTTING
  - HOLE IS FIRST BORED TO THE ROOT DIAMETER OF THE THREAD.
  - TOOL IS FIXED ON THE TOOL POST OR ON THE BORING BAR AFTER SETTING IT AT RIGHT ANGLES TO THE LATHE AXIS, USING A THREAD GAUGE/ANGLE GAUGE.
  - DEPTH OF CUT IS GIVEN BY THE COMPOUND SLIDE AND THE THREAD IS FINISHED IN THE USUAL
THREAD CUTTING OPERATION ON LATHE MACHINE

- BORING
  - OPERATION OF ENLARGING AND TRUING A HOLE PRODUCED BY DRILLING, PUNCHING, CASTING OR FORGING
  - CAN’T ORIGINATE A HOLE
  - SIMILAR TO THE EXTERNAL TURNING OPERATION
  - CAN BE PERFORMED IN A LATHE
THREAD CUTTING OPERATION ON LATHE MACHINE

- COUNTER BORING
  - OPERATION OF ENLARGING A HOLE THROUGH A CERTAIN DISTANCE FROM ONE END INSTEAD OF ENLARGING THE WHOLE DRILLED SURFACE
  - SIMILAR TO A SHOULDER TURNING OPERATION IN EXTERNAL TURNING
THREAD CUTTING OPERATION ON
LATHE MACHINE

 TAPER BORING

 THE PRINCIPLE OF TURNING A TAPER HOLE IS SIMILAR TO THE EXTERNAL TAPER TURNING OPERATION

 ACCOMPLISHED BY ROTATING THE WORK ON A CHUCK AND FEEDING THE TOOL AT AN ANGLE TO THE AXIS OF ROTATION OF THE WORK PIECE
THANK YOU

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