Experiment-6

Aim

To perform job involving turning (Step & Taper), Knurling & Grooving Practices on Lathe machine.

Materials Required

Mild Steel Round Bar (200 mm)

Tools / Equipment Required

i) Centre Lathe machine
ii) Right Hand side cutting tool
iii) V shape cutting tool
iv) Knurling & Grooving tool
v) Tool post spanner
vi) Steel rule
vii) Outside calliper
viii) Surface gouge

Procedure

1. Hold the mild steel job properly in the chuck on lathe machine,
2. Check position of job, should be in the centre of chuck with surface gauge,
3. After switching on the machine, see visually the approx centre of the job.
4. Switch off the machine & mound tool bit in tool post in proper position. should be well tightened and tip of the tool coincide with centre of the job.

5. Tilt the position of the ~~job~~ tool post that the tip bit come about 30-40° with the job.
6. Then feed the tool post towards the job with the help of cross slide till the tip bit reach at centre of job. The process of metal removing is facing.
7. Fix the carriage into position. Now tilt the comp. rest to desired angle. And feed the tool into the job with the help of cross slide, diameter

Angle of taper, $\tan\alpha = \frac{D-d}{2l}$, d = small ~~dist.~~ diameter
D = large diameter
l = length of taper

8. After grooving engage back gear & reduce the speed of spindle and replace the grooving tool bit with knurling tool bit and press it over the surface to be knurled.
9. For threading, engage the ~~feed~~ rod lever & suitable gears in ~~proper~~ way, etc. Now threading tool will be ~~moved~~ with the help of half nut lever.

Result

The various machining operations had performed on lathe machine.

Precautions

1. Use proper feed to tool bit along with app. speed.
2. Adopt always right tool & right mechanism.
3. Threading & knurling should be done on min. Speed along with sufficient cutting fluid / coolant, etc.

Experiment-7

Aim
V-Groove preparation on the shaper.

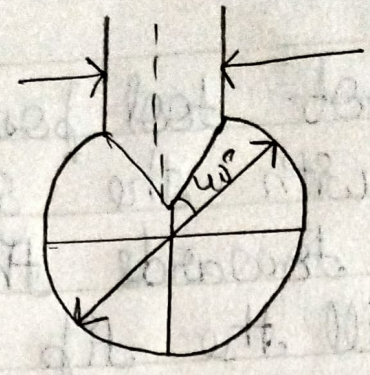
Materials Required
Mild steel round bar (60mm x 40mm)

Tools Required
i) Shaper Machine
ii) V-shape cutting tool
iii) Spanner set
iv) Surface plate and scriber
v) Hammer & centre punch

Procedure
i) Clamp the work piece in the vice & tight it properly.
ii) Then, adjust the stroke of ram, adjustment of stroke is made such that the tool cross the job completely & after that 10-15 mm of clearance should be provided.
iii) Then, give the speed to the tool & feed should be given nominal.

Result
The requ. v-groove has been prepared on the shaper.

Precaution
i) The job should be clamped tightly in the vice.
ii) Don't stand in front of the rod while running.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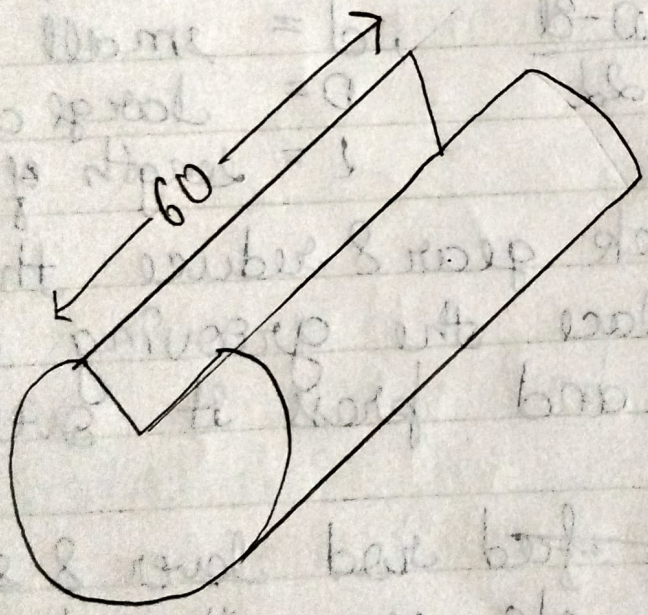
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iii) Tool should be tightly fixed.
iv) Depth of cut should be minimum.
v) Coolant should be supplied continuously during cutting.
vi) Stroke should be adjusted properly.

21/06/22