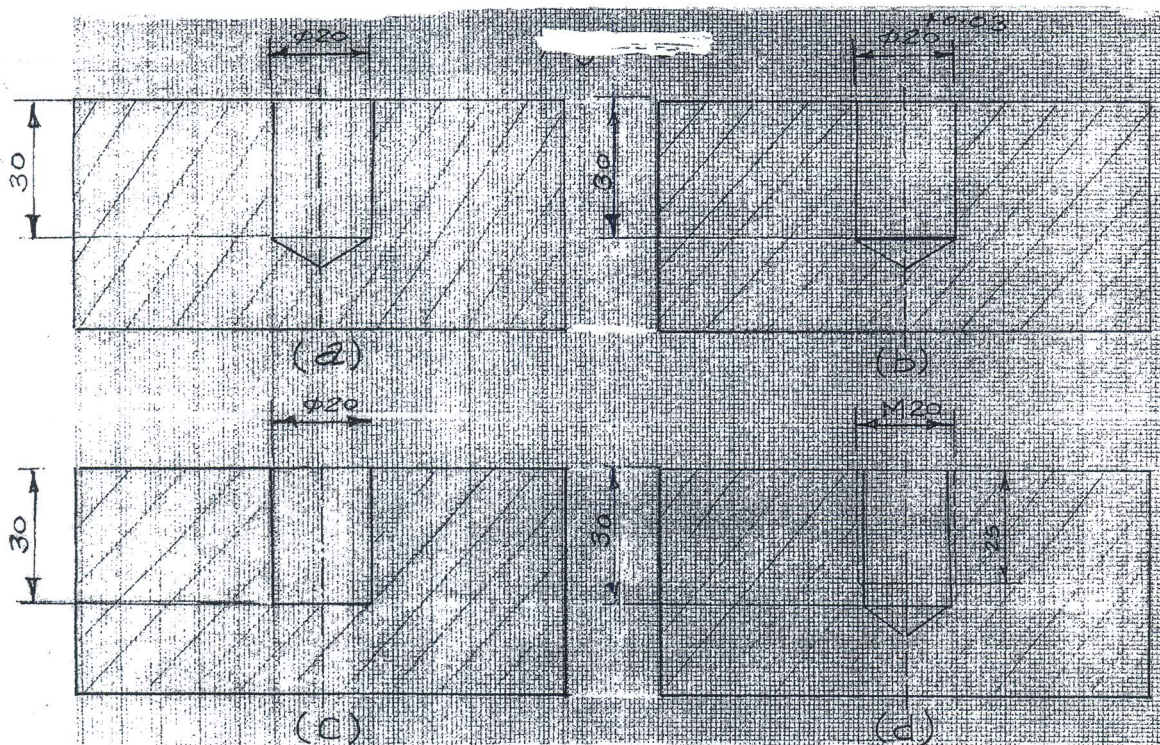


Drilling

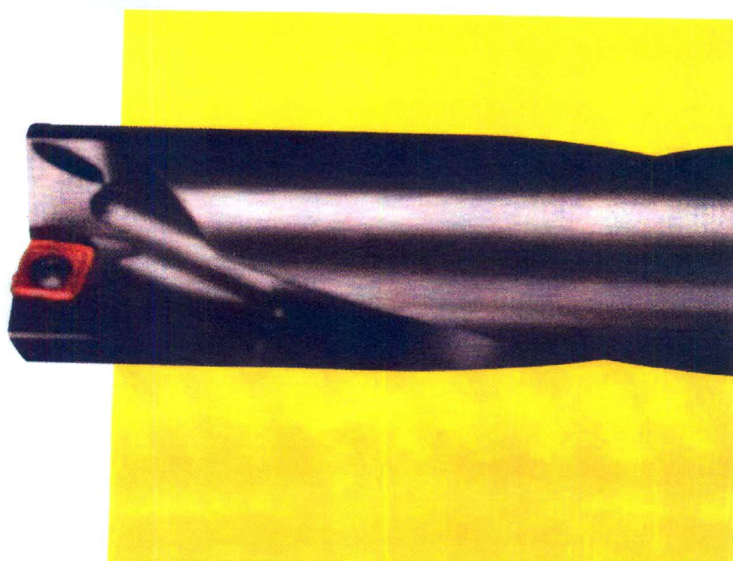
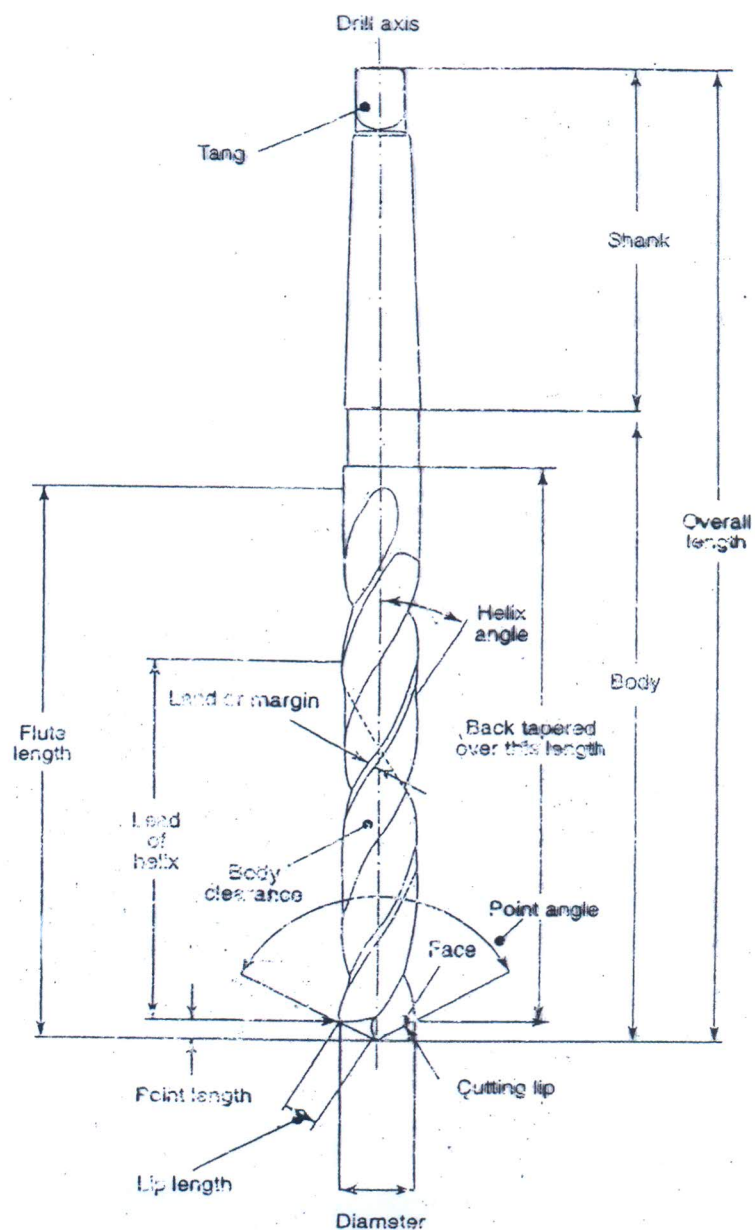
Construction of Radial Drilling Machine



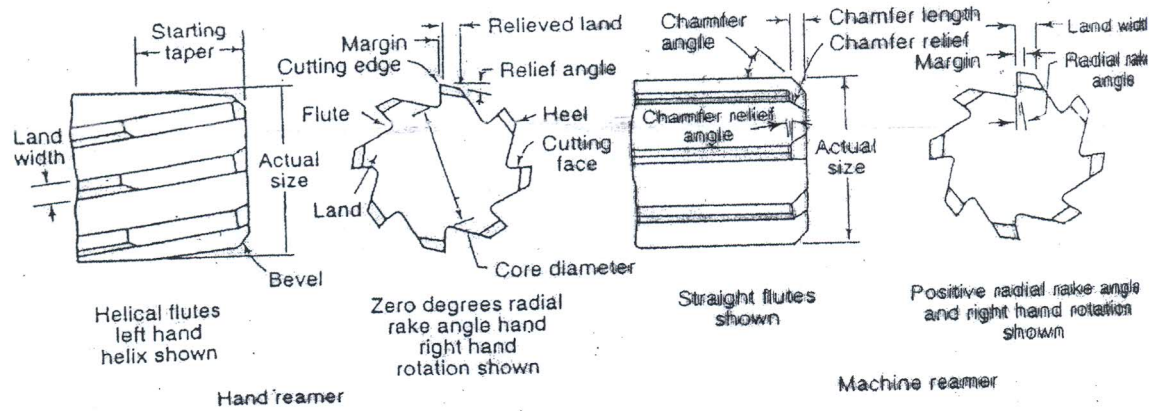
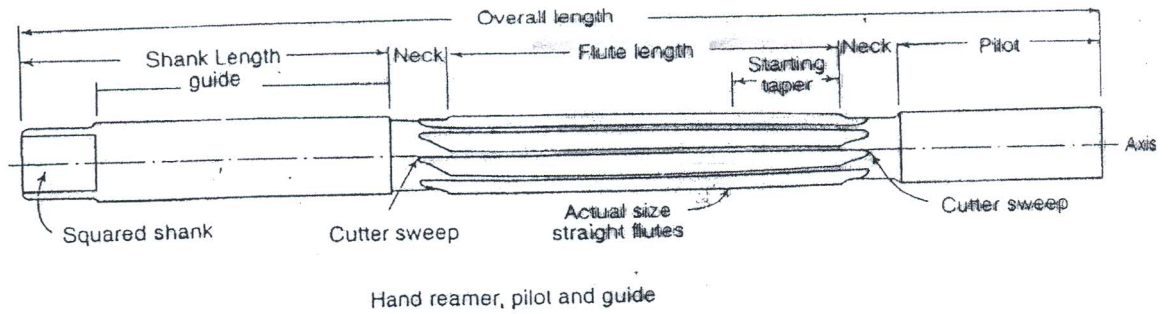
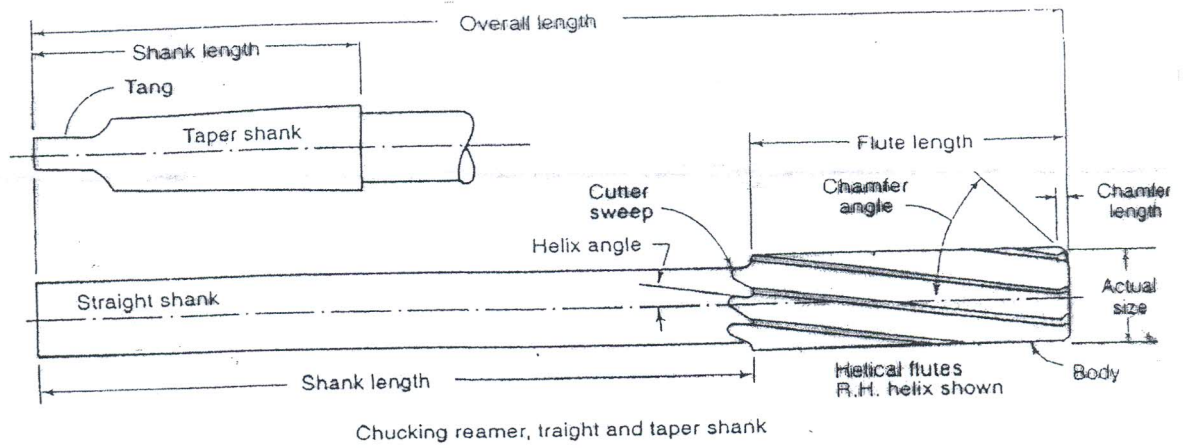
- What are the differences between drilling and boring?
- What are the differences between tapping and threading?
- Compare between the tools required to machine the work pieces in the below figures



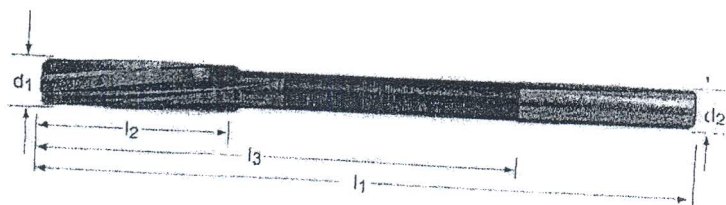
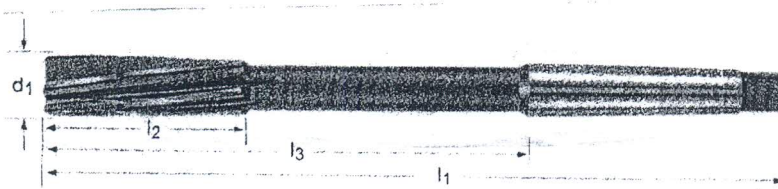
Drilling Tool



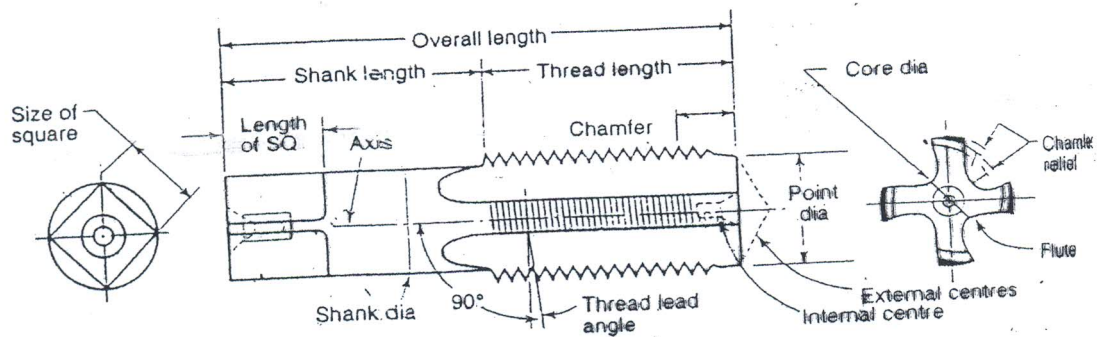
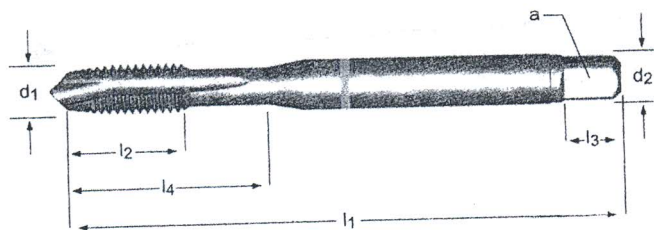
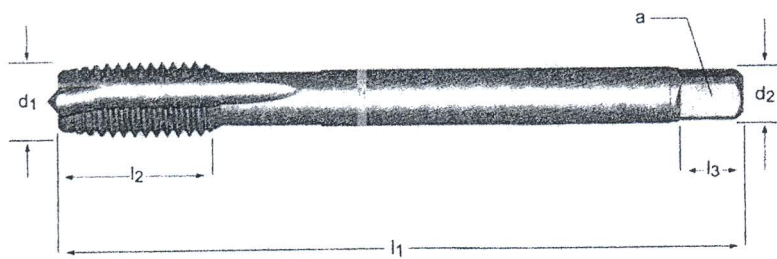
Reamers



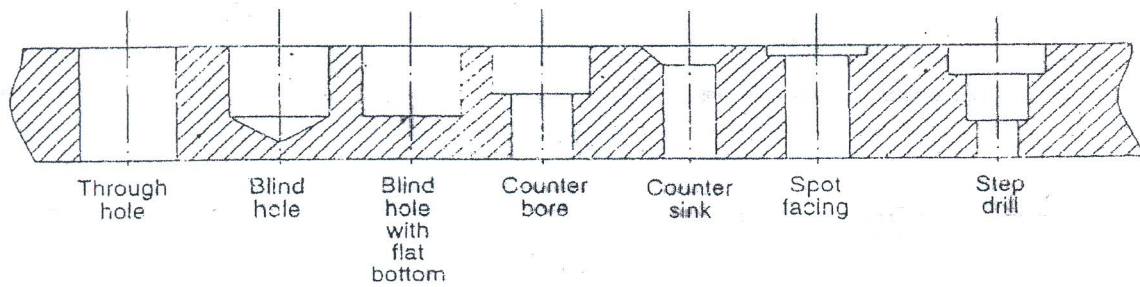
Typical geometry of a reamer and its nomenclature



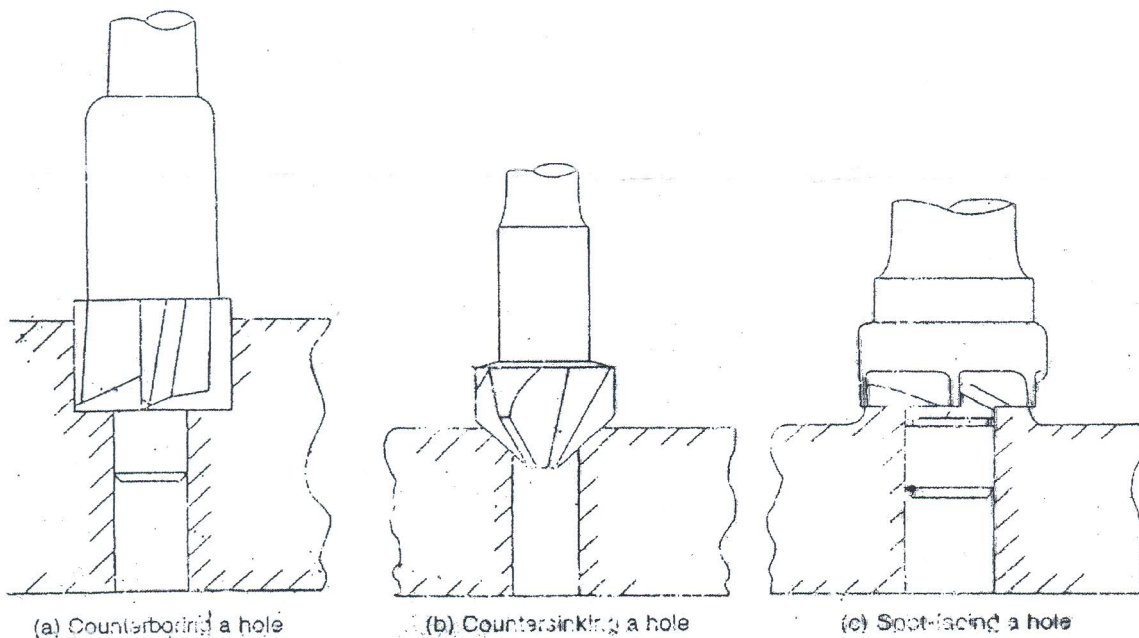
Tap



Types of holes making operation



Various types of holes



Tools used for other hole making operations

Example

A hole of 40 mm diameter and 50 mm depth is to be drilled in a milled steel component. The cutting speed can be taken as 65 m/min and the feed rate as 0.25mm/rev.

Calculate the machining time and the material removal rate.

Solution: Given:

$V=65$ meter/min, $f=0.25$ mm/rev, $D= 40$ mm, $L=50$ mm

Spindle speed $N = 1000 * 65 / \pi * 40 = 517.25$ Rev/min
 $= 520$ Rev/min

Break through distance $A = 40/2 * \tan 59 = 12.02 = 12$ mm

Total length of drill travel $= 50 + 12 + 3 = 65$ mm

Time for drilling the hole $= 65 / 0.25 * 520 = 0.5$ min

Material removal rate $MRR = \pi * D^2 * f * N / 4 = \text{mm}^3/\text{min}$

$MRR = 3.14 * 40 * 40 * 0.25 * 520 / 4 = 163362.82 \text{ mm}^3/\text{min}$

$MRR = 163.363 \text{ Cm}^3/\text{min}$