

double stroke at the beginning of each cutting stroke and is expressed in mm.

→ Depth of cut :- It is the thickness of metal removed in one cut. It is measured by the perpendicular distance b/w machined and unmachined surfaces of the work. It is given in mm.

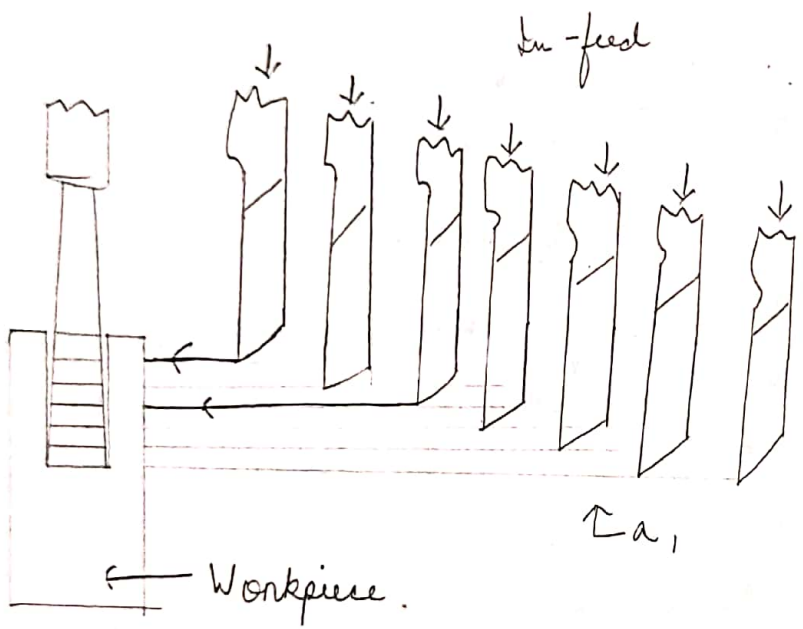


fig :- Shaping

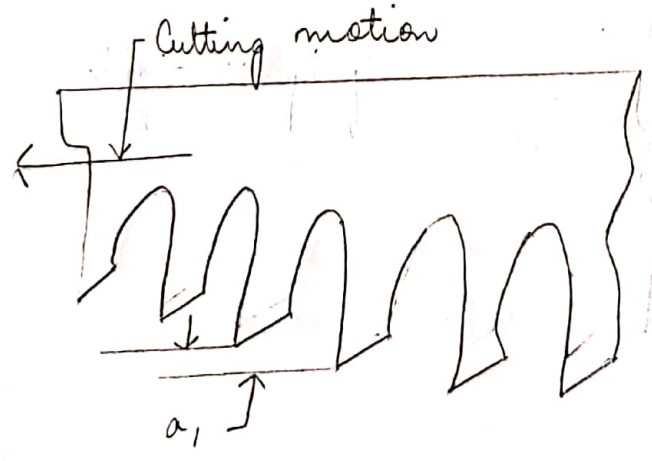


fig :- broaching

Basic Principles of Broaching

Broaching is a machine process for removal of a layer of material of desired width and depth usually in one stroke by a slender rod or bar type cutting having a series of cutting edge with gradually increased protrusion as indicated in Fig. In shaping, attaining full depth require a number of stroke to remove the material in thin layers step-by-step by gradually in-feeding the single tool. Whereas, broaching enables remove the whole material in one stroke only by the gradually rising teeth of the cutter called broach. The amount of tooth rise between the successive teeth of the broach is equivalent to the in feed given in shaping.

Nomenclature of broaching tool

- Both pull and push type broaches are made in the form of slender rods or bars of varying section having along its length one or more rows of cutting teeth with increasing height (and width occasionally). Push type broaches are subjected to compressive load and hence are made shorter in length to avoid buckling.
- Pull end :- for engaging the broach in the machine.
- Neck :- of shorter diameter and length, where the broach is allowed to fail, if at all, under overloading.
- Front pilot :- for initial locating the broach in the hole.

- Roughing and finishing teeth :- for metal removal.
- Finishing and burnishing teeth :- for fine finishing.
- Rear Pilot :- and follower rest or retainer.

There are different types of broaching machines which are broadly classified according to —

- (i) purpose of use
 - Δ general purpose
 - Δ single purpose
 - Δ special purpose
- (ii) nature of work
 - Δ internal broaching
 - Δ external (surface) broaching
- (iii) Configuration
 - Δ horizontal
 - Δ vertical
- (iv) Number of slides or stations
 - Δ single station types
 - Δ multiple station types
 - Δ indexing types
- (v) According to tool/work motion
 - Δ intermittent (one job at a time) type
 - Δ continuous type

Horizontal Broaching Machine :- Horizontal broaching machine typically are the most versatile in application and performance and hence are most widely employed