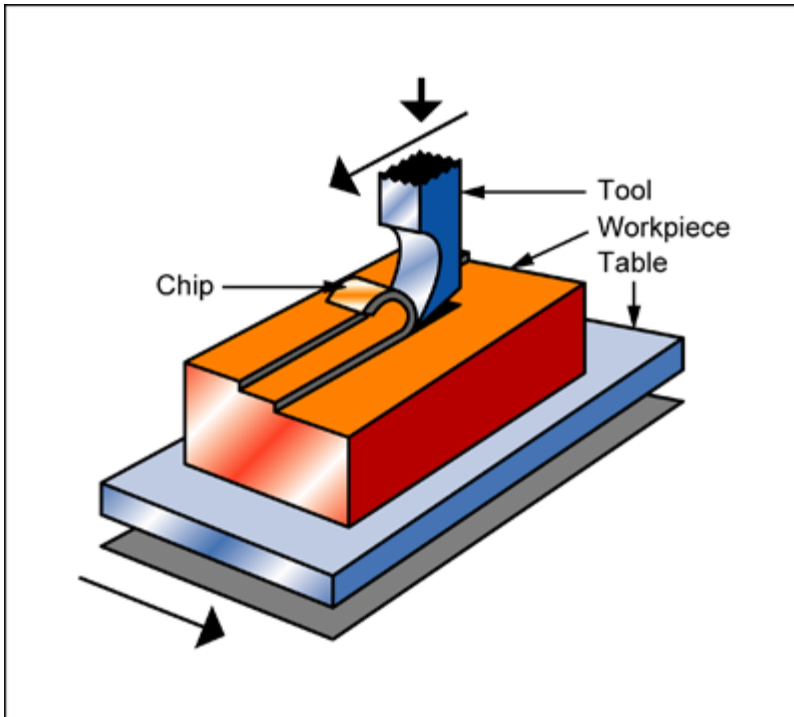## Description

Process schematic

Figure caption

Shaping and planing.

The process

PLANING is a machining process for removing metal from surfaces in horizontal, vertical, or angular planes. In this process, the workpiece is reciprocated in a linear motion against one or more single-point tools. Although planing is most widely used for producing flat surfaces on large workpieces, the process can also be used to produce contours and a variety of irregular shapes, such as deep slots, helical grooves , and internal guide surfaces. SHAPING AND SLOTTING are machining processes that remove metal from surfaces with a single-point tool mounted on a reciprocating ram.

Material compatibility

Metals - ferrous	✔
Metals - non-ferrous	✔
Natural materials	✔
Polymers - thermoplastics	✔

Shape

Circular prismatic	✔
Non-circular prismatic	✔
Solid 3-D	✔

Economic compatibility

Relative tooling cost	low
Relative equipment cost	medium

Labor intensity	medium		
Economic batch size (units)	1	-	100

Physical and quality attributes

Mass range	0.022	-	220	lb
Range of section thickness	394	-	1.97e4	mil
Tolerance	0.394	-	19.7	mil
Roughness	0.0157	-	0.984	mil
Surface roughness (A=v. smooth)	B			

Process characteristics

Machining processes	✔
Discrete	✔
Prototyping	✔

Supporting information

Design guidelines

Planing and shaping can be used with most metals, provided their hardness is below Rockwell 46

Typical uses

Planing and shaping compete with milling as tools for creating flat machined surfaces, and surfaces with prismatic features.

The economics

It is often possible to produce one or two parts on a planer in less time than is required merely to set up for machining by an alternative method; therefore, planing is often used for machining parts to meet production emergencies.

The environment

Lubricants and cutting fluids can pose an environmental problem. Special precautions are essential when machining toxic materials such as beryllium.

Links

MaterialUniverse
Reference