EXTRUSION EQUIPMENT

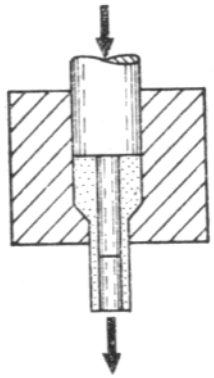
I) Hydraulic Press

Types based on direction of ram travel:

i) Vertical Press and ii) Horizontal Press

i) Vertical Press (3 MN to 20 MN)

The ram acts vertically on the billet and squeezes it through the die.



Advantages:

i) Easier alignment between the press ram and tools.

ii) Hence closer control on tolerances is possible.

iii) High rates of production.

iv) Requires less floor space.

v) Produces uniform cooling of billet in container. Hence symmetrically uniform deformation of metal occurs.

Limitations:

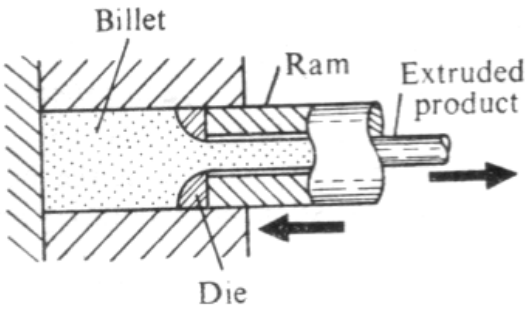
i) This requires more head room to accommodate vertical motion of ram

ii) Floor pits are needed to accommodate long extrusions.

Applications: Thin walled tubing where uniform wall thickness and concentricity are required.

II) Horizontal Press (15 MN to 50 MN)

Ram moves horizontally and extrudes metal.



Advantages:

i) The head room required is less compared to vertical press.

Limitations:

i) Alignment between press ram and tools is difficult.
ii) The bottom of the billet is more in contact with the container wall and hence it is cooled faster compared to the top of the billet. Therefore deformation is non uniform.
iii) To overcome above difficulty, the container walls are internally heated to avoid differential cooling of the billet.

Ram speed:

Higher ram speeds are required for high temperature extrusion to prevent heat loss to container walls.

Ram speeds of 0.4n/s to 0.6m/s are used to extrude refractory metals.

Source : http://elearningatria.files.wordpress.com/2013/10/mp3_unit6_extrusion_final.pdf