

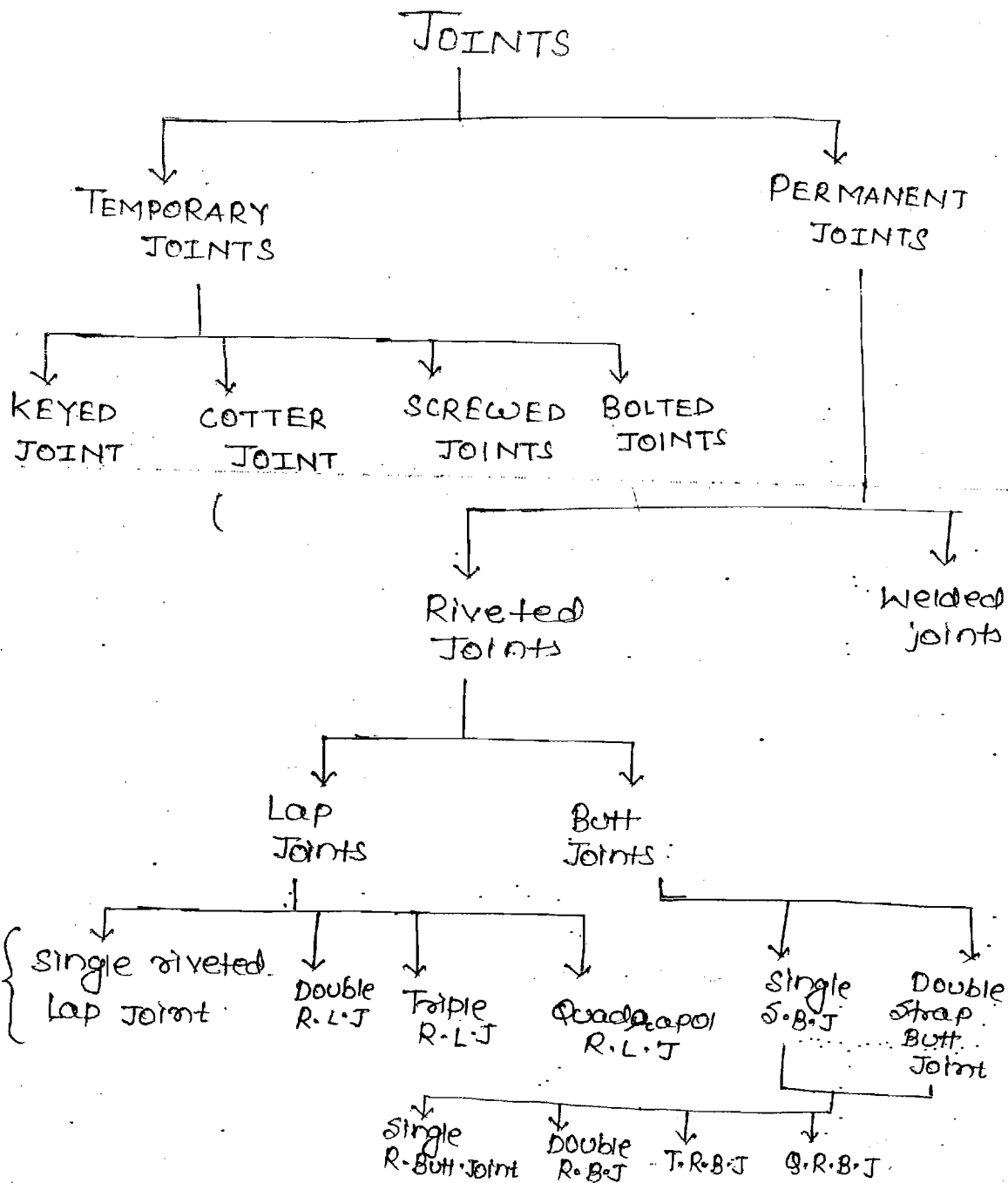
# Design of Machine Elements

## (a) MACHINE DESIGN (M.D)

### Text Books

- (1) M/C DESIGN — R.L NORTON
  - (2) D.M.E — M.F SPOTTS
  - (3) M/C DESIGN — V.B BHADARI
  - (4) M/C DESIGN — N.C PANDYA & C.S SHAH
- PEARSON  
EDITION
- T.M.H
- CHAROTAR  
PUBLICATION

# RIVETED JOINT

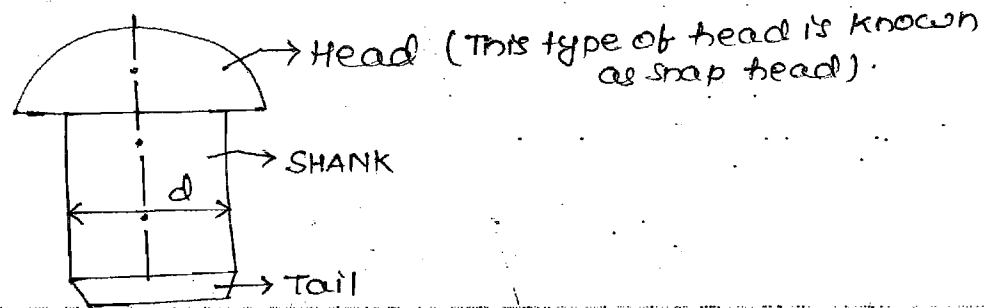


- key is used to join the two shaft and for power transmission (temporary fastener) from shaft to pully.
- Cotter is used to transmit axial compressive or tensile load and also used to join two rods (coaxial Drive rod).

## Application of Rivet Joints

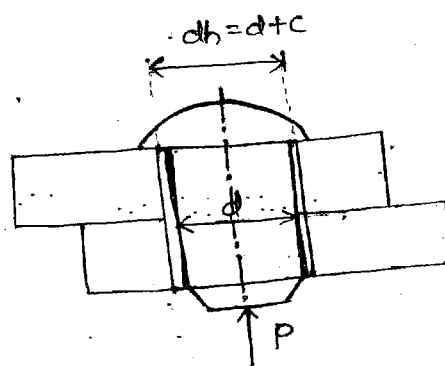
- Machine body <sup>Building</sup> applications
- Structural applications, sheet metal joints  
↓  
Bridges, roof construction.
- Pressure vessel application.

## RIVETS SPECIFICATION



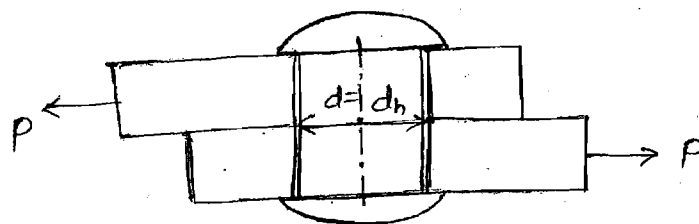
- |                          |
|--------------------------|
| (1) Rivet (or) shank dia |
| (2) Type of head         |

- Rivet head [refer from M. drawing Book for P.S.U & ES].
- Rivet hole is slightly larger than the Rivet dia.



If both dia of hole & given then,

In the design of rivet  $\rightarrow d$   
In the design of plate  $\rightarrow d_h$ .



Single riveted Lap joint

In the design of the rivet, rivet or shank dia should be taken into consideration.

In the design of plates, hole dia. ( $d_h$ )

$$d_h = d + C$$

Should be taken into consideration, where,

$C \rightarrow$  clearance b/w the dia. of hole and dia. of rivet.

### Terminology

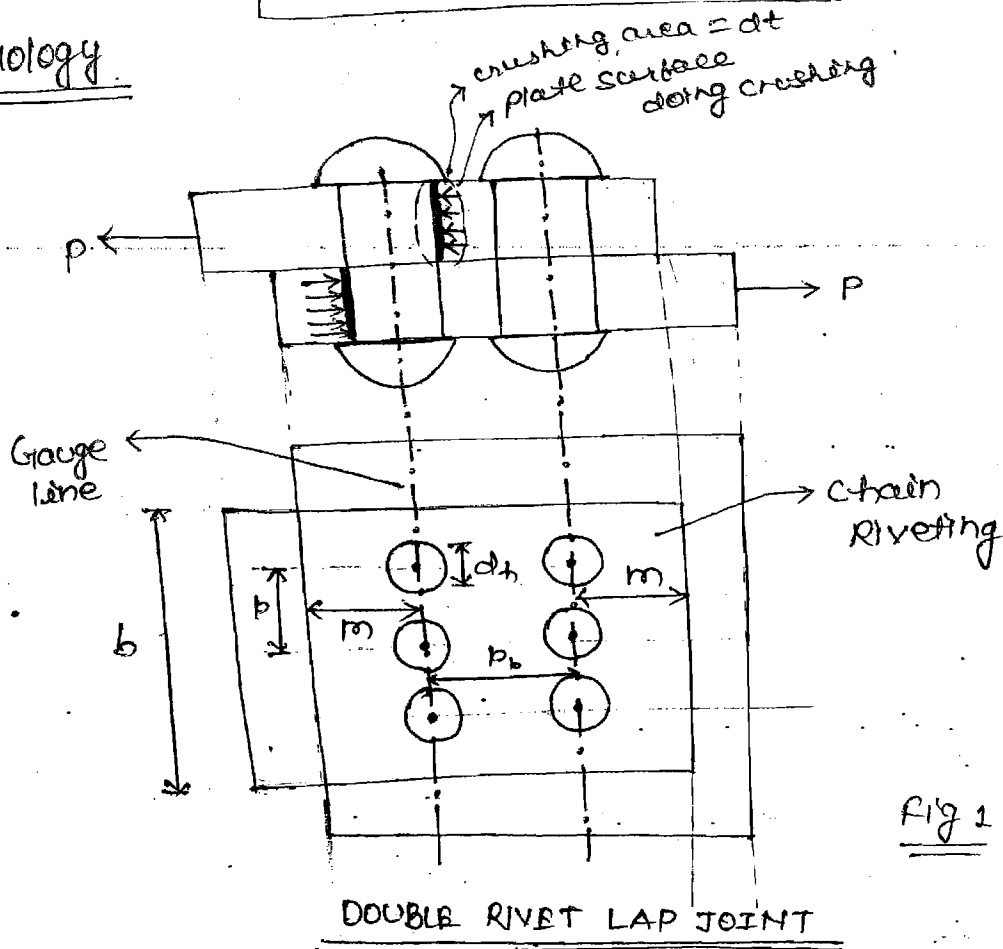


Fig 1

#### Pitch ( $p$ )

Distance measured along a gauge line b/w the centres of adjacent rivets.

#### Back pitch ( $p_b$ )

Distance b/w adjacent rows of rivet or adjacent gauge

#### Gauge line

An imaginary line passing through centre of the rivet

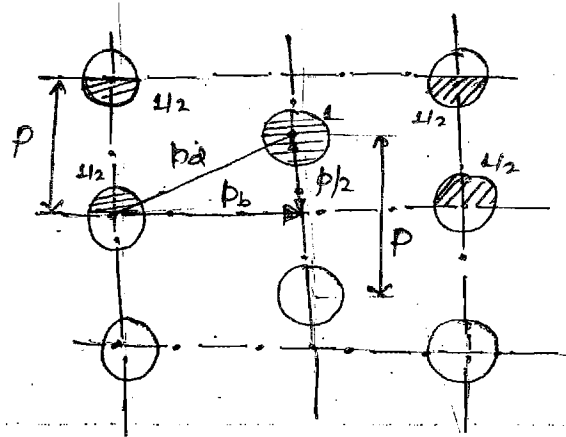
#### Margin ( $m$ ) $\rightarrow$ parallel to edge of the rivet

Distance of gauge line to the nearest edge of the plate

chain rivets

If the centres of the rivets or rivets in the adjacent gauge lines are placed exactly opposite to each other it is known as chain rivets.

zig-zag rivets



No. of rivet  
per pitch length  
 $\frac{1}{2} \times 4 + 1$   
 $= 3$

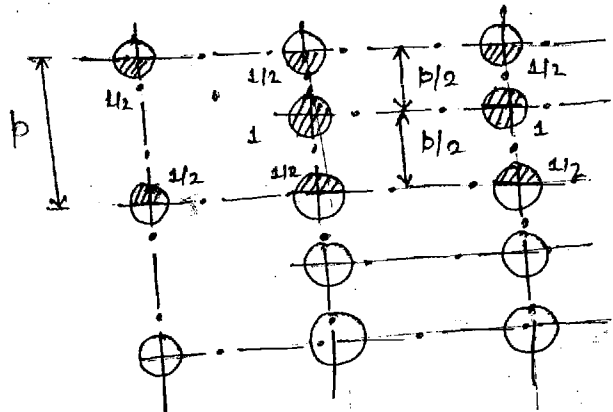
If the rivets in adjacent gauge line placed diagonally opposite to each other.

Diagonal pitch (pd)

Distance b/w centres of adjacent rivets in the gauge line.

$$p_d = \sqrt{p_b^2 + \left(\frac{p}{2}\right)^2}$$

chain riveting with unequal pitches



$n = \frac{1}{2} \times 6 + 2$   
 $= 5$

$$p_r = p_b/2$$