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Sn	Topic	Mark
1	Drawing Instruments and their Uses, Sheet Layout, Types of Lines, Lettering and Dimensioning	20
2	Geometrical Figures, Special Curves, Free Hand Sketching and Scales	25
3	Orthographic Projection, Projection of Solids, Sections, Conventions and Section of Solids	20
4	Hatching Techniques in Sectional View, Assembly View and Development of Surfaces	20
5	Isometric Projection and Oblique Projection	10

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Sn	Topic	Mark
6	Screw Threads, Bolts, Nuts, Washers, Screws, Locking Devices and Foundation Bolts	30
7	Rivets, Riveted Joints, Welded Joints, Weld Symbols, Pipe Joints and Carpentry Joints	25
8	Electrical, Electronics and Network Components, Layout, Circuit and Block Diagram	20
9	Mechanical, Automobile, RAC Components, Layout, Circuit and Block Diagram	20
10	Computer Aided Drafting	10

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RIVETS, RIVETED JOINTS, WELDED JOINTS, WELD SYMBOLS, PIPE JOINTS AND CARPENTRY JOINTS

Rivets: Snap - Ellipsoid - Pan - Conical - Counter Sunk (Flat / Rounded) - Steeple Head.
Riveted Joints: Lap Joint – Single Riveted -Double Riveted (Chain) - Double Riveted (Zig - Zag) Lap Joint - Butt Joint - Single Riveted (Single Strap) - Single Riveted (Double Strap) Butt Joint - Double Riveted (Single Strap/Double Strap) (Chain/ (Zig - Zag)) Butt Joint

Welded Joint & Symbols: Butt Joint: Square Butt - Bevel Groove – V/J/U (Single/Double) - Flare V Groove Weld. Corner Joint: Fillet - Spot -Square Groove Or Butt – V / U /J Groove - Bevel Groove – Flare V Groove – Edge - Corner Flange Weld – T Joint: Fillet - Plug - Slot - Bevel Groove - J Groove – Flare Bevel Groove - Melt Through Weld. Lap Joint: Fillet Weld - Bevel - J Groove - Plug - Slot - Spot - Flare Bevel Groove Weld. Edge Joint: Square Groove or Butt - Bevel Groove - V / J / U Groove Weld - Edge Flange Weld - Corner Flange Weld.

Pipe Joints: Screwed pipe - Welded pipe - Flanged pipe(Integral / Screwed)- Glued pipe or Cemented - Soldered pipe joint - Pipe Fittings - Coupler- Reducer coupler- 90° elbow - 90° Reducer elbow - 90° bend - Return bend - Tee - Reducer Tee - Cross - Close Nipple - Short Nipple - Short Nipple with Hexagonal grip - Hose nipple - Male plug - Female plug - Screwed Union – Flange - Piping Layout - Single line isometric layout - Double line isometric layout - Single line Orthographic layout - Double line Orthographic layout.

Carpentry Joints: Mortise and Tennon – Butt – Dove Tail –Tongue and Groove – Dowel – Mitre - Half Lap - Spline – Lap – Bridle Joint.

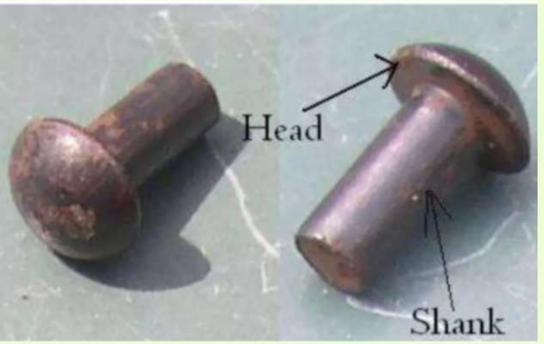
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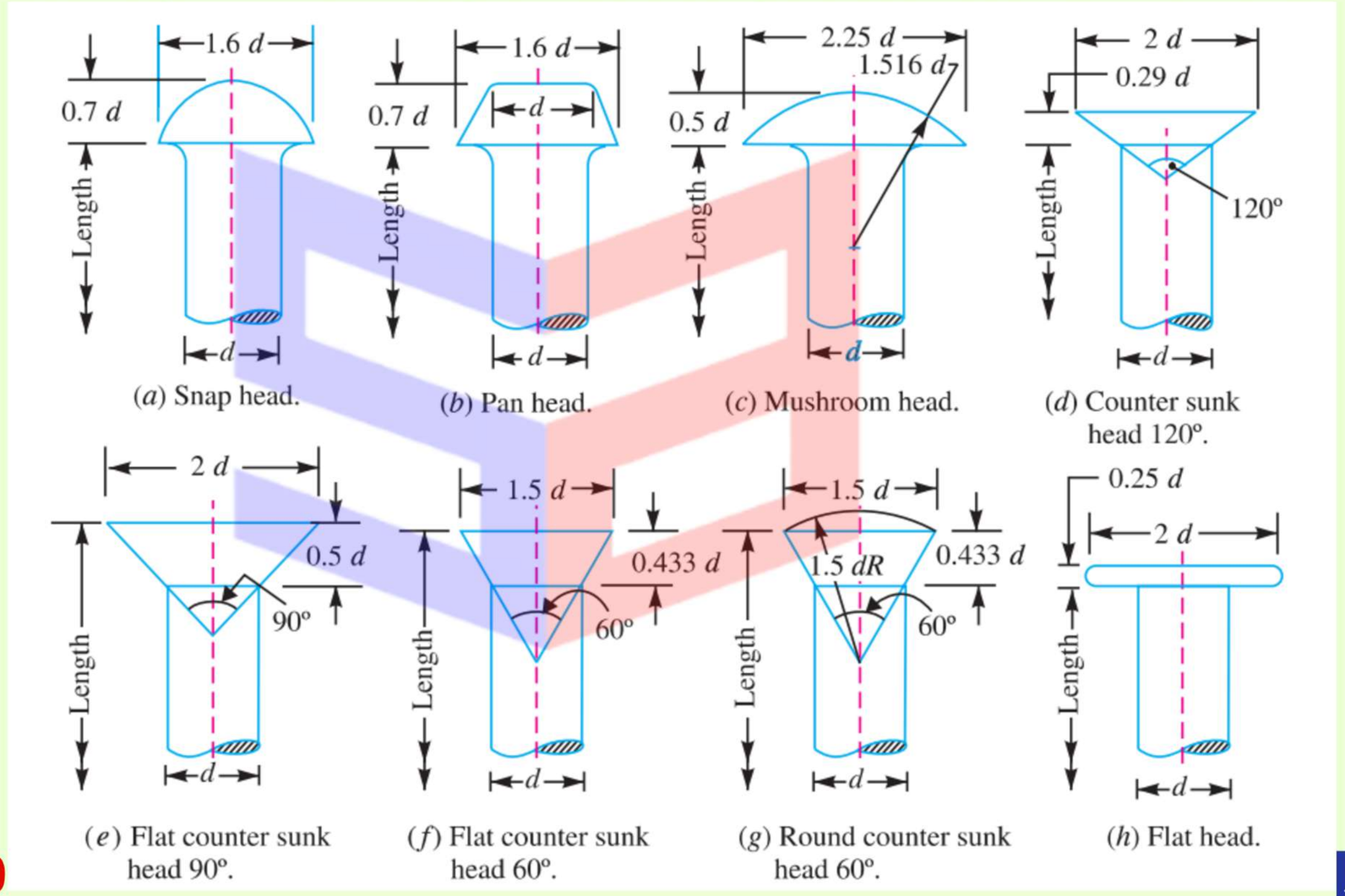
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UNIT- 7: RIVETS, RIVETED JOINTS, WELDED JOINTS, WELD SYMBOLS, PIPE JOINTS AND CARPENTRY JOINTS





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UNIT- 7: RIVETS, RIVETED JOINTS, WELDED JOINTS, WELD SYMBOLS, PIPE JOINTS AND CARPENTRY JOINTS

Important terms used in riveted joints:

- Few parameters, which are required to specify arrangement rivets in a riveted joint are as follows:

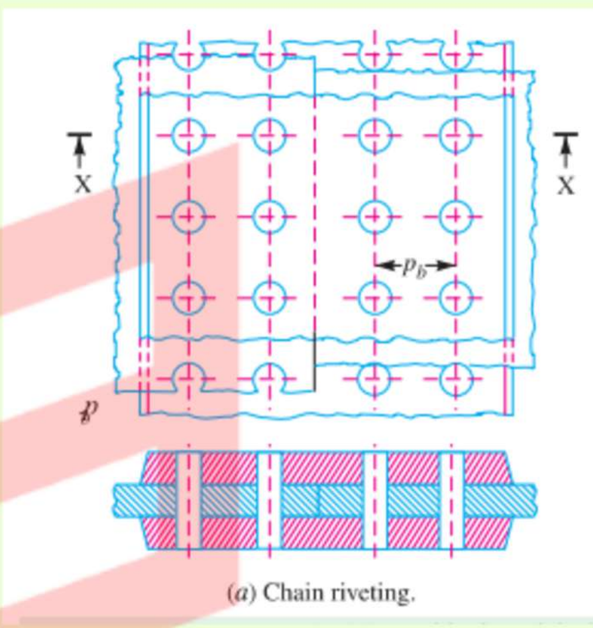
Pitch: It is the distance between the centers of the adjacent rivets in the same row. It is denoted by 'p' and usually taken as $3d$, where d is the rivet diameter.

Row Pitch: It is the distance between two adjacent rows of rivets. It is denoted by 'p_r' and is given by, $p_r = 0.8p$, for chain riveting $p_r = 0.6p$, for Zig-zag riveting.

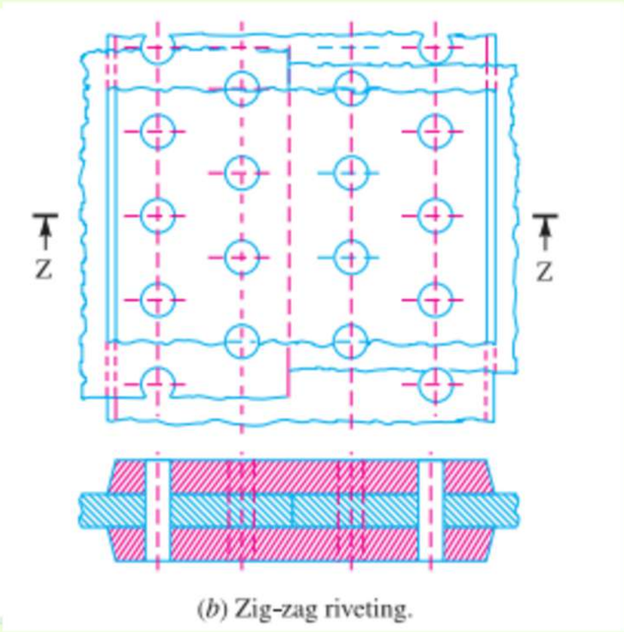
Diagonal pitch: This term is usually associated with zig-zag riveting and is denoted by 'p_d'. It is the distance between the centre of a rivet in a row to the next rivet in the adjacent row.

Margin or marginal pitch: It is the distance from the edge of the plate to the centre of the nearest rivet. It is usually taken as $1.5d$, where d is the rivet diameter. It is denoted by 'm'.

Back Pitch: This is the shortest distance between two successive rows in a multiple riveted joint. (usual symbol p_t or p_b)



(a) Chain riveting.



(b) Zig-zag riveting.

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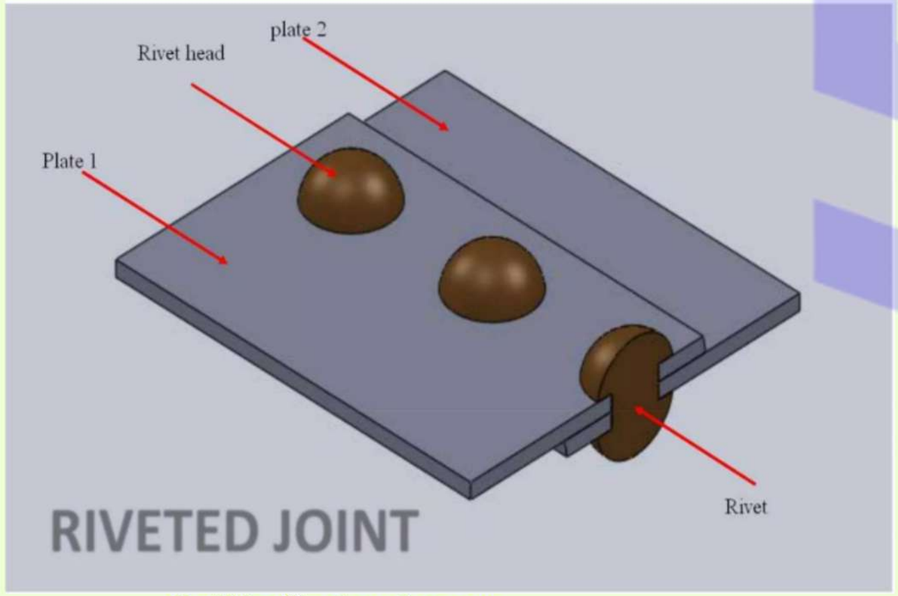
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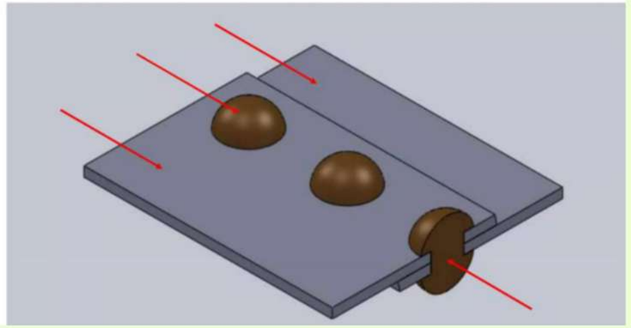
Types of riveted joints and joint efficiency:

- Riveted joints are mainly of two types

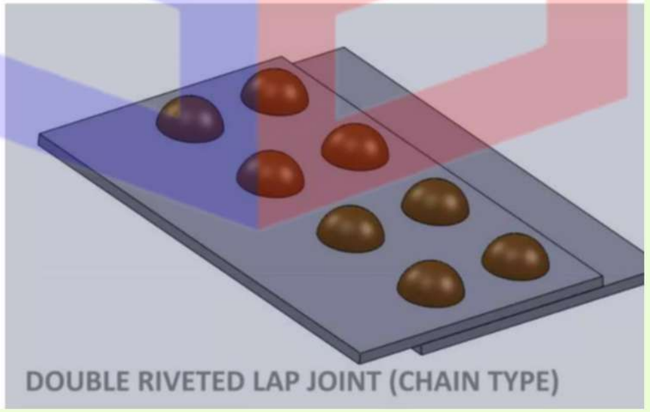
1. Lap joints
2. Butt joints



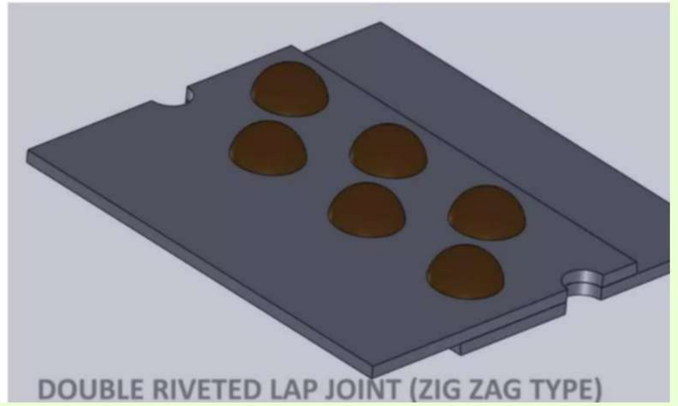
Single Riveted Lap joint:



Double Riveted chain Lap joint:



Double Riveted Zig-Zag Lap joint:



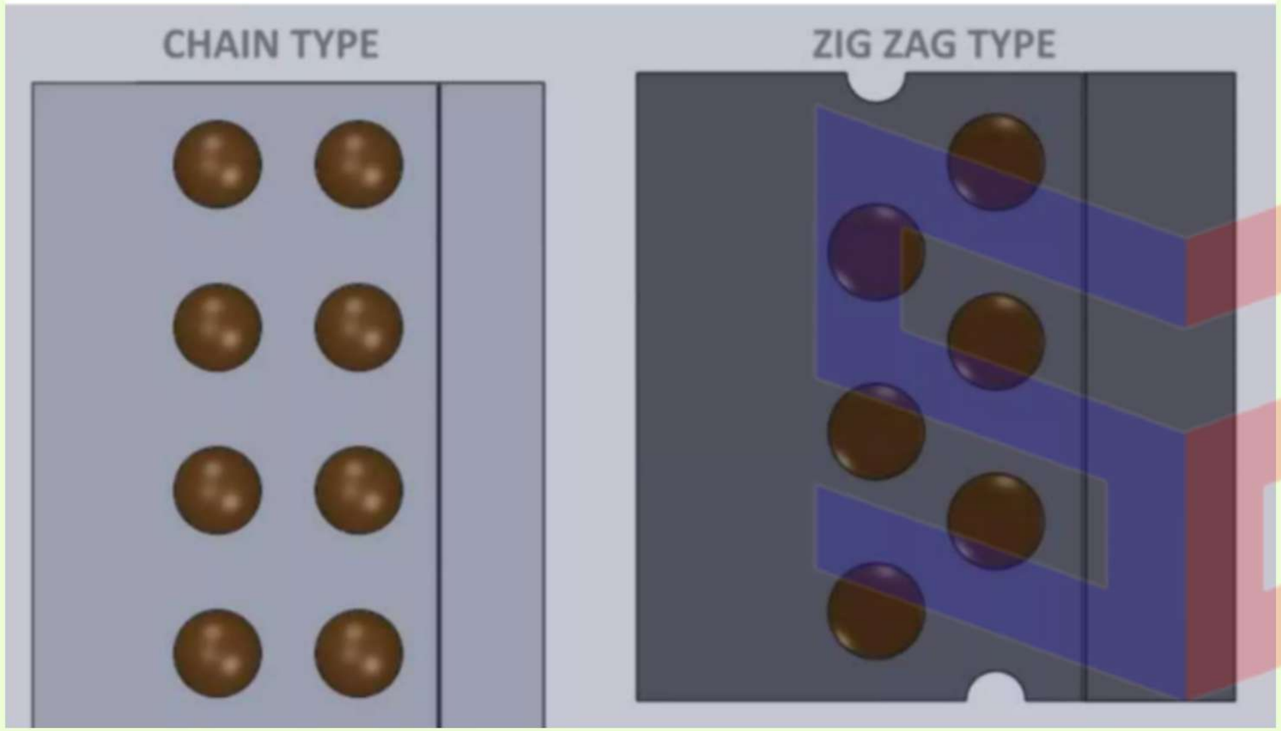
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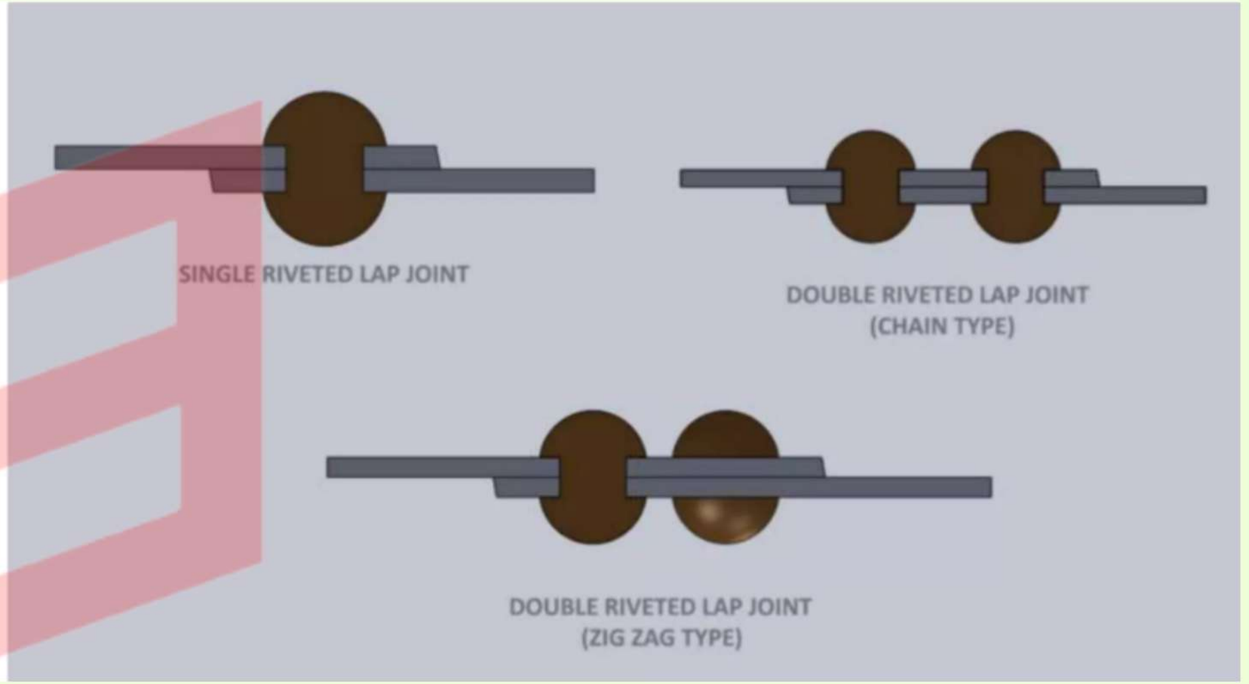
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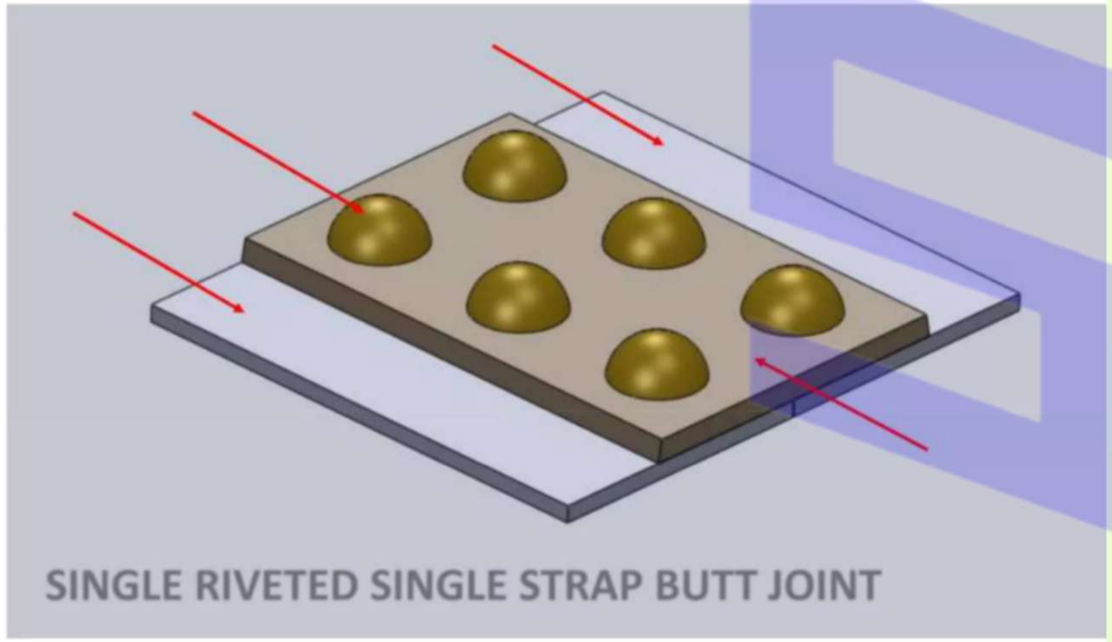
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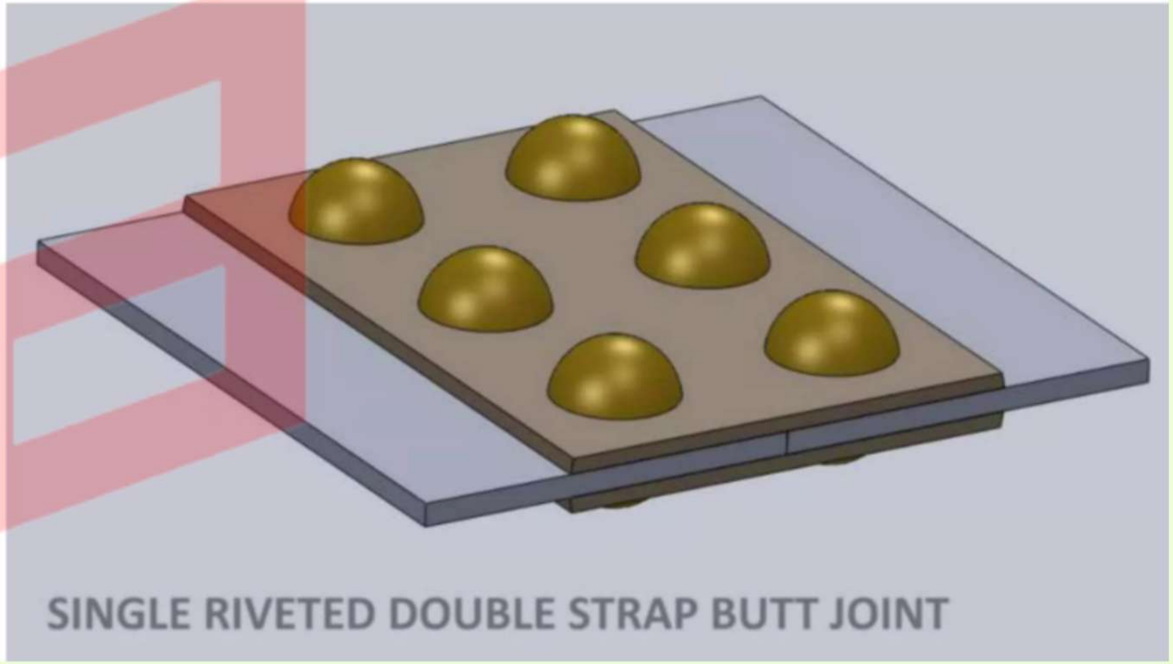
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Single Riveted single strap Butt joint:



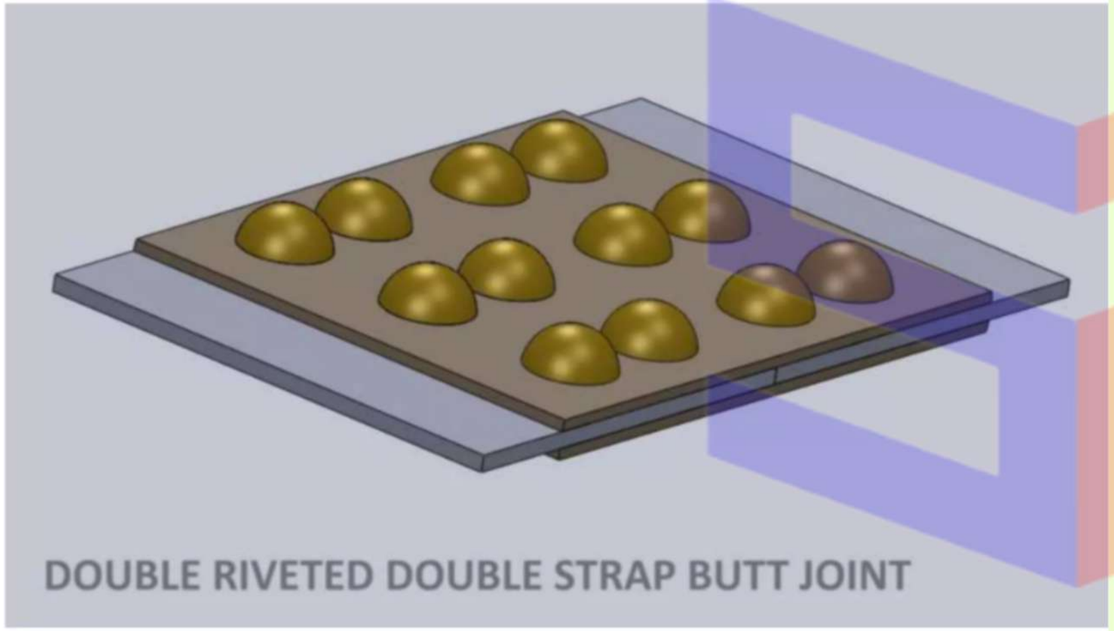
Single Riveted double strap Butt joint:



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Double Riveted double strap Butt joint:



Unwin formula $= 6.04\sqrt{t}$

(When measurement in mm)

$= 1.91\sqrt{t}$

(when measurement in cm)

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The material commonly used for rivets is:

ரிவெட்டுகளுக்கு பொதுவாக பயன்படும் பொருள் எது?

a) Cast iron / ஊட்டிய இரும்பு

b) Mild steel / மென்மையான எஃகு

c) Bronze / வெண்கலம்

d) Brass / பித்தளை

✅ Answer: b) Mild steel / மென்மையான எஃகு

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Rivets are specified by:

ரிவெட்டுகள் எதை கொண்டு குறிப்பிடப்படுகின்றன?

a) Length / நீளம்

b) Diameter / விட்டம்

c) Head type / தலை வகை

d) Diameter and length / விட்டம் மற்றும் நீளம்

✅ **Answer: d) Diameter and length / விட்டம் மற்றும் நீளம்**

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Which is a type of riveted joint?

கீழ்கண்டவைகளில் எது ரிவெட் கூட்டு வகை?

a) Butt joint / பட்ட் கூட்டு

b) Groove joint / கூர்வு கூட்டு

c) Socket joint / சாக்கெட் கூட்டு

d) Dovetail joint / டவ்டெயில் கூட்டு

✅ Answer: a) Butt joint / பட்ட் கூட்டு

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Double riveted joints are arranged in:

இரட்டை ரிவெட் கூட்டுகள் எவ்வாறு அமைக்கப்படுகின்றன?

a) Only chain fashion / சின்ன வரிசையில் மட்டுமே

b) Zig-zag or chain fashion / சிக்சாக் அல்லது சின்ன முறையில்

c) Random manner / சீரற்ற முறையில்

d) Parallel rows only / இணை வரிசைகளில் மட்டும்

✅ **Answer: b) Zig-zag or chain fashion / சிக்சாக் அல்லது சின்ன முறையில்**

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Pitch of rivet is:

ரிவெட்டின் பிச்ச் என்பதன் பொருள்:

a) Distance between adjacent rivets / அடுத்தடுத்து உள்ள ரிவெட்டுகளுக்கிடையேயான தூரம்

b) Distance from plate edge / தட்டு விளிம்பிலிருந்து தூரம்

c) Rivet head diameter / ரிவெட் தலை விட்டம்

d) Rivet thickness / ரிவெட் தடிப்பு

✅ **Answer: a) Distance between adjacent rivets**

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Pitch of rivet is:

ரிவெட்டின் பிச்ச் என்பதன் பொருள்:

a) Distance between adjacent rivets / அடுத்தடுத்து உள்ள ரிவெட்டுகளுக்கிடையேயான தூரம்

b) Distance from plate edge / தட்டு விளிம்பிலிருந்து தூரம்

c) Rivet head diameter / ரிவெட் தலை விட்டம்

d) Rivet thickness / ரிவெட் தடிப்பு

✅ **Answer: a) Distance between adjacent rivets**

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Unwin's formula is used to calculate:
அன்வின் சூத்திரம் எதற்குப் பயன்படுகிறது?
a) Thickness of plate / தட்டின் தடிப்பு
b) Pitch of rivet / ரிவெட் பிச்ச்
c) Diameter of rivet / ரிவெட் விட்டம்
d) Head height / தலை உயரம்
✅ Answer: c) Diameter of rivet / ரிவெட் விட்டம்

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Unwin's formula is used to calculate:
அன்வின் சூத்திரம் எதற்குப் பயன்படுகிறது?
a) Thickness of plate / தட்டின் தடிப்பு
b) Pitch of rivet / ரிவெட் பிச்ச்
c) Diameter of rivet / ரிவெட் விட்டம்
d) Head height / தலை உயரம்
✅ Answer: c) Diameter of rivet / ரிவெட் விட்டம்

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