Weld Joint Geometry and Welding Symbols

Basic Weld Joints

Welding Technology

LEE CO. ATC

Graphics compliments of AWS

Submitted by Craig Herald
Welding Instructor
Lee County Area Technology Center

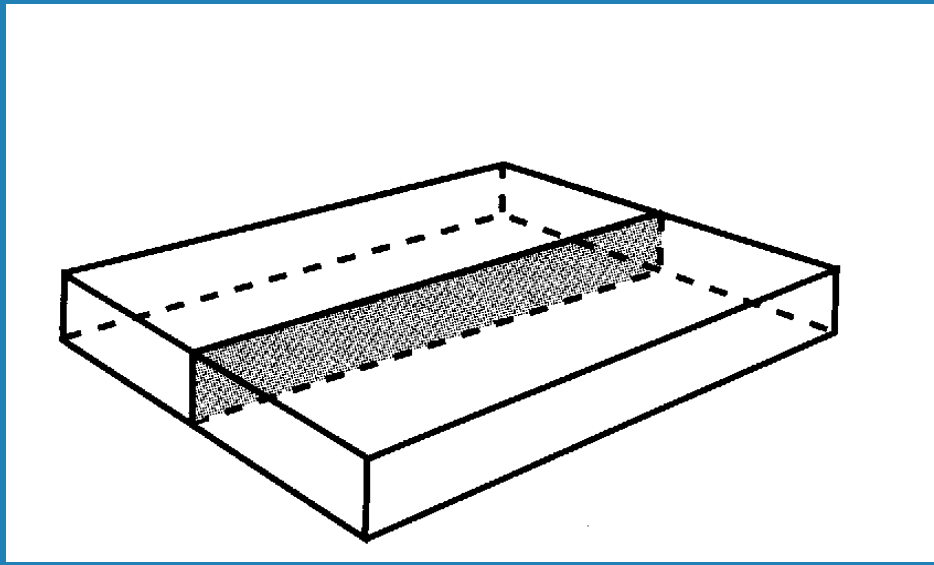
To the AWS Welding Educator's
Electronic File Library
www.aws.org/Educators

Graphics provided compliments of
the American Welding Society
Education Department

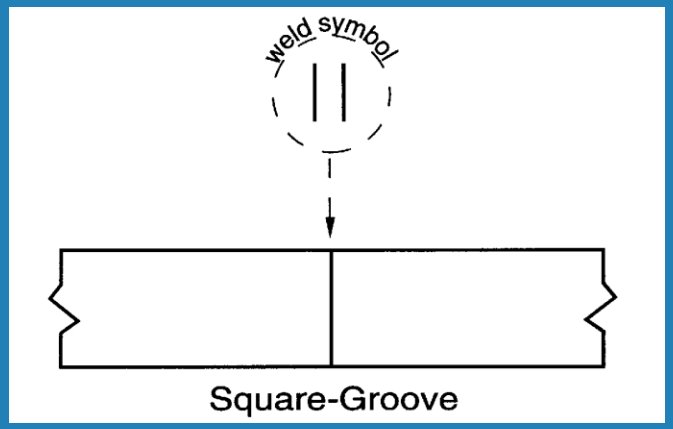
Five Basic Welded Joints

Butt Joint

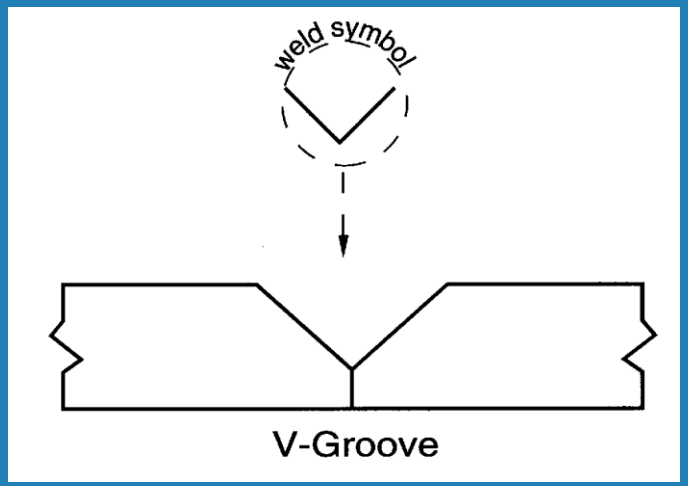
Butt joint- a joint between two members aligned approximately in the same plane



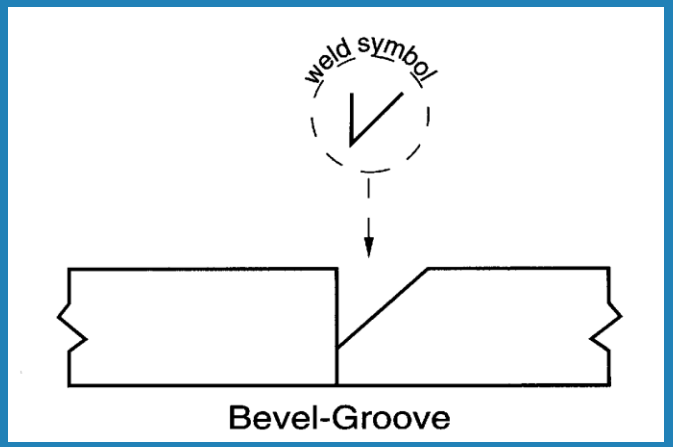
Different Edge Shapes and Symbols for some Butt-Joints



Square-Groove



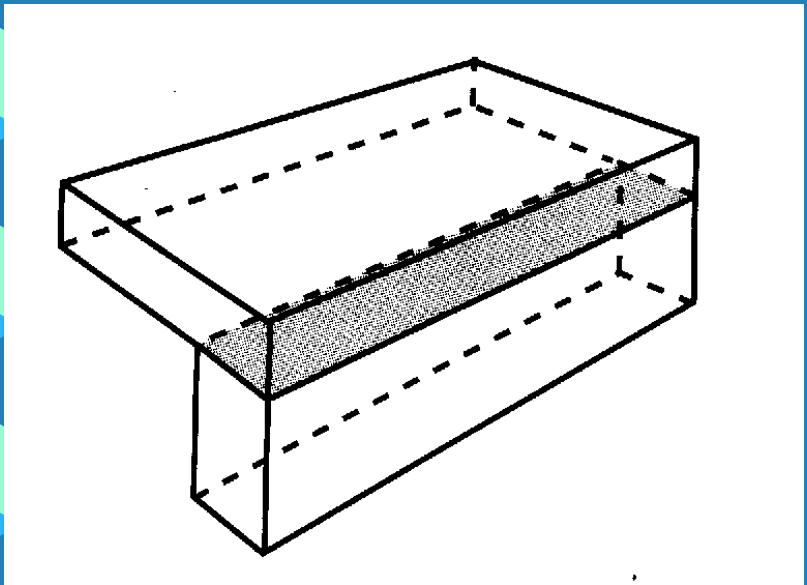
V-Groove



Bevel-Groove

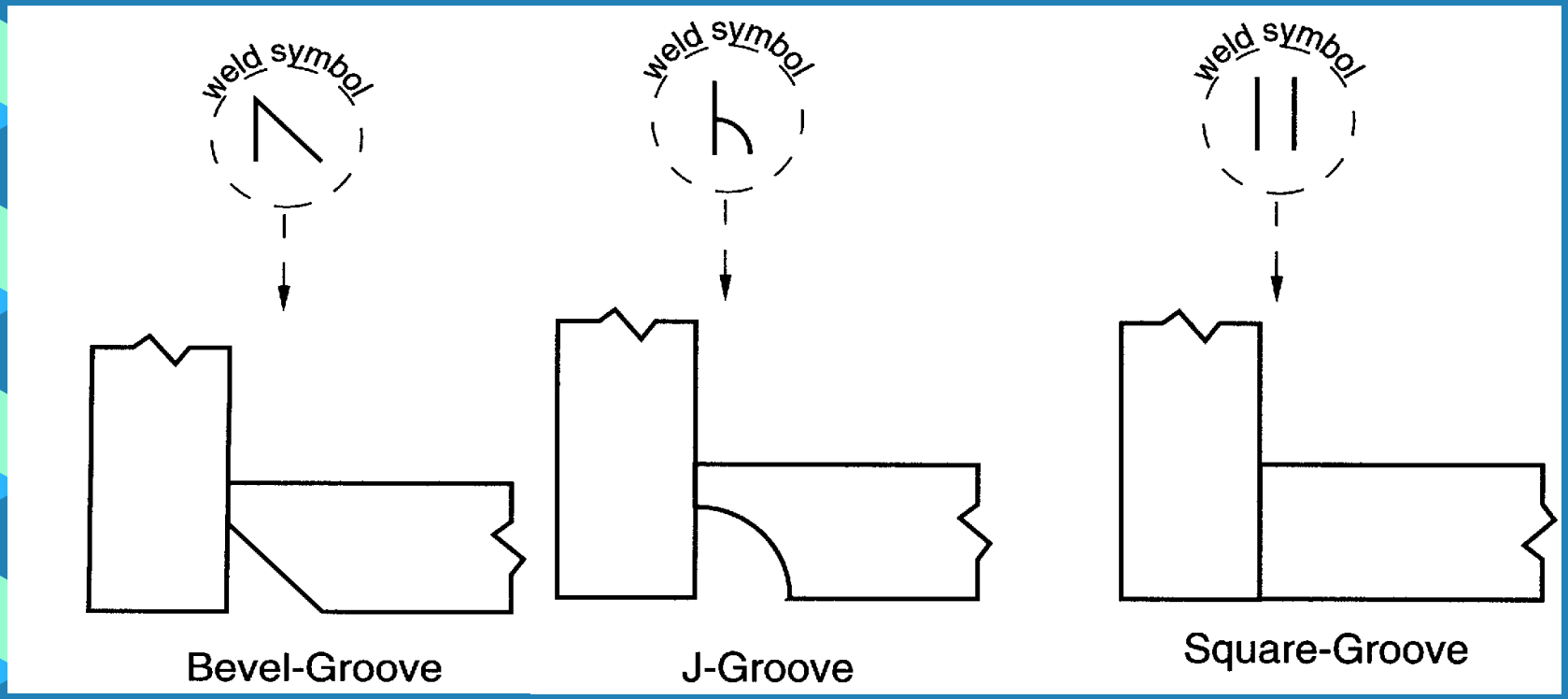
Five Basic Welded Joints

Corner Joint



Corner joint - a joint between two members located at right angles to each other

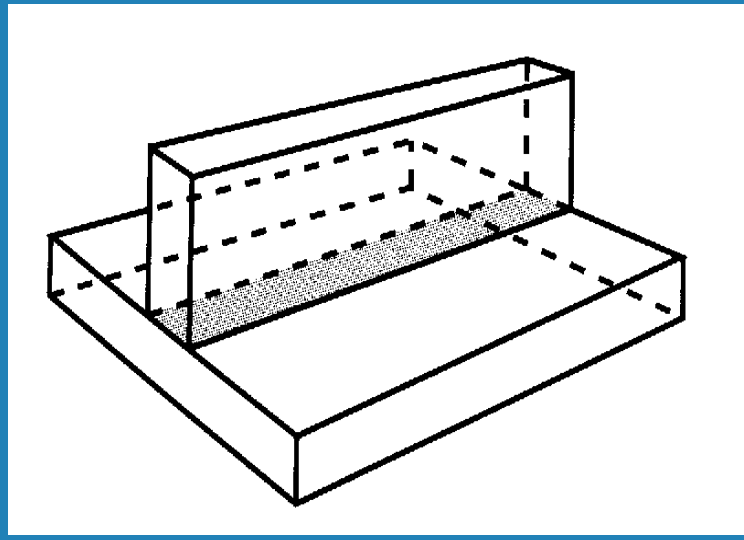
Some Different Edge Shapes and Symbols for Corner Joints



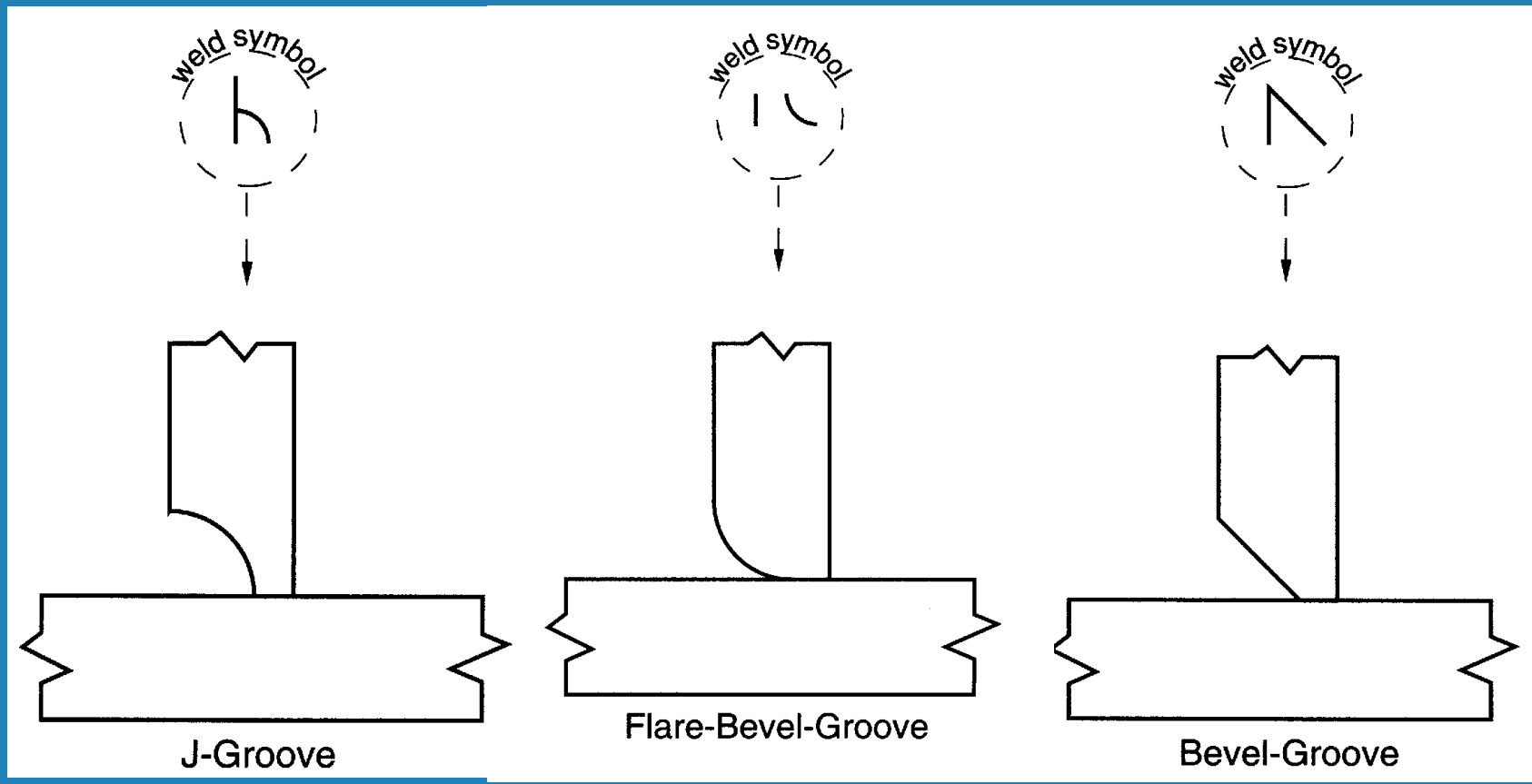
Five Basic Welded Joints

T-Joint

T- joint - a joint between two members located approximately at right angles to each other in the form of a T

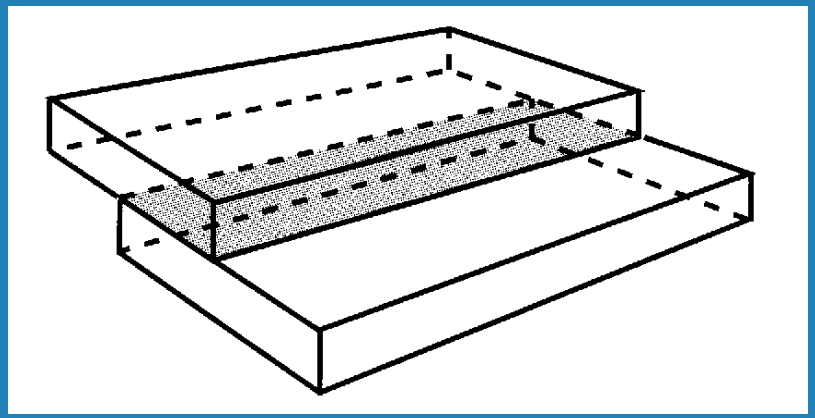


Some Different Edge Shapes and Symbols for T-Joint



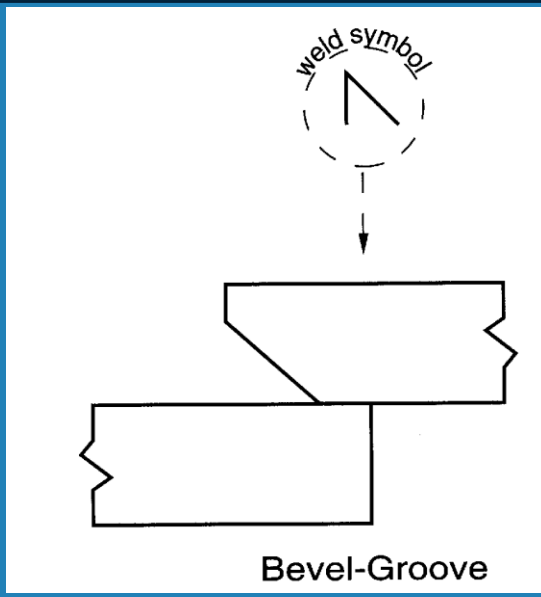
Five Basic Welded Joints

Lap Joint

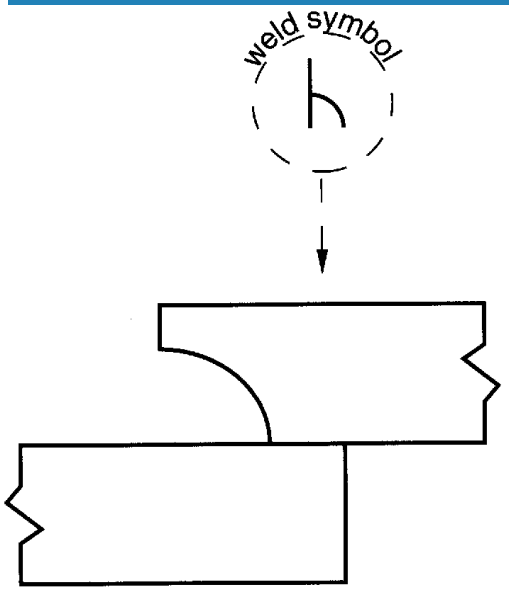


Lap Joint- a joint between two overlapping members

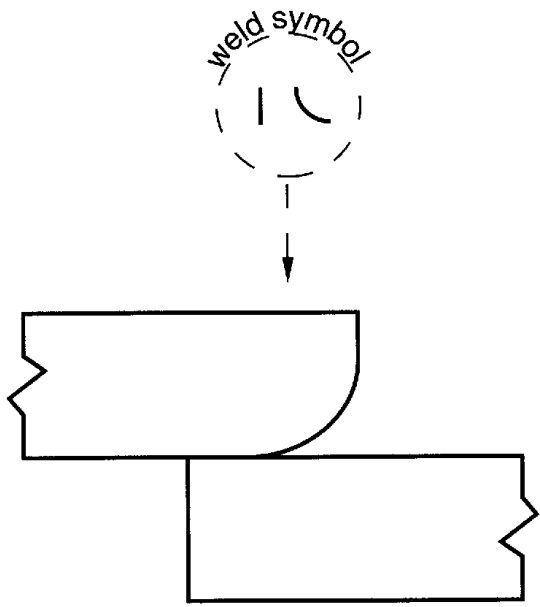
Some Different Edge Shapes and Symbols for Lap Joints



Bevel-Groove



J-Groove

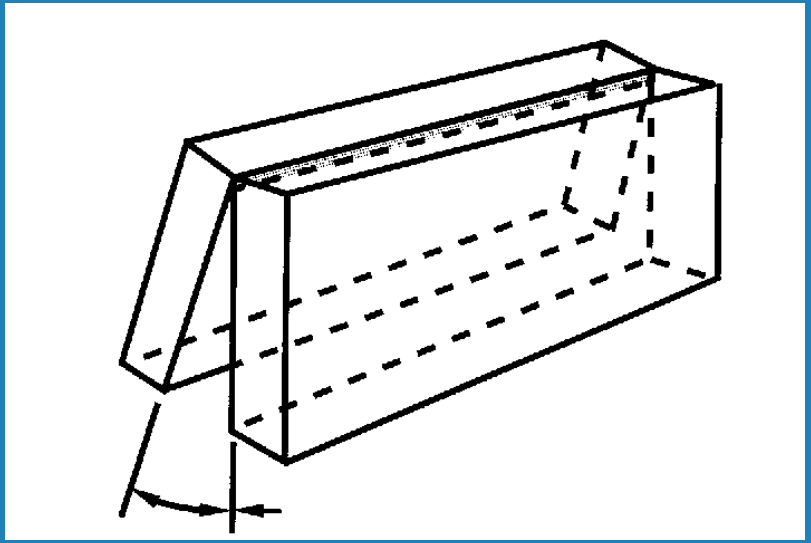


Flare-Bevel-Groove

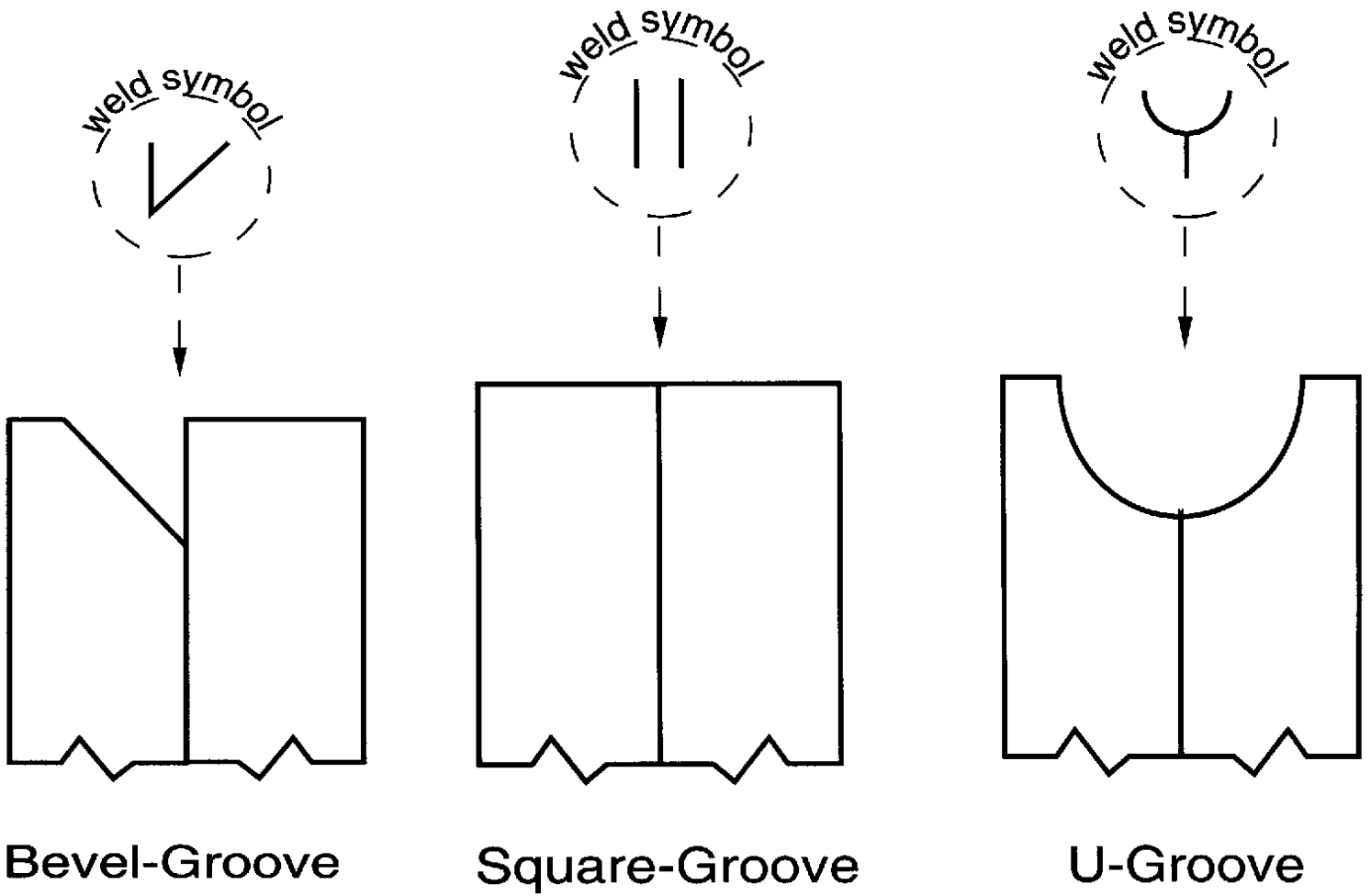
Five Basic Welded Joints

Edge Joint

Edge joint- a joint between the edges of two or more parallel or nearly parallel members



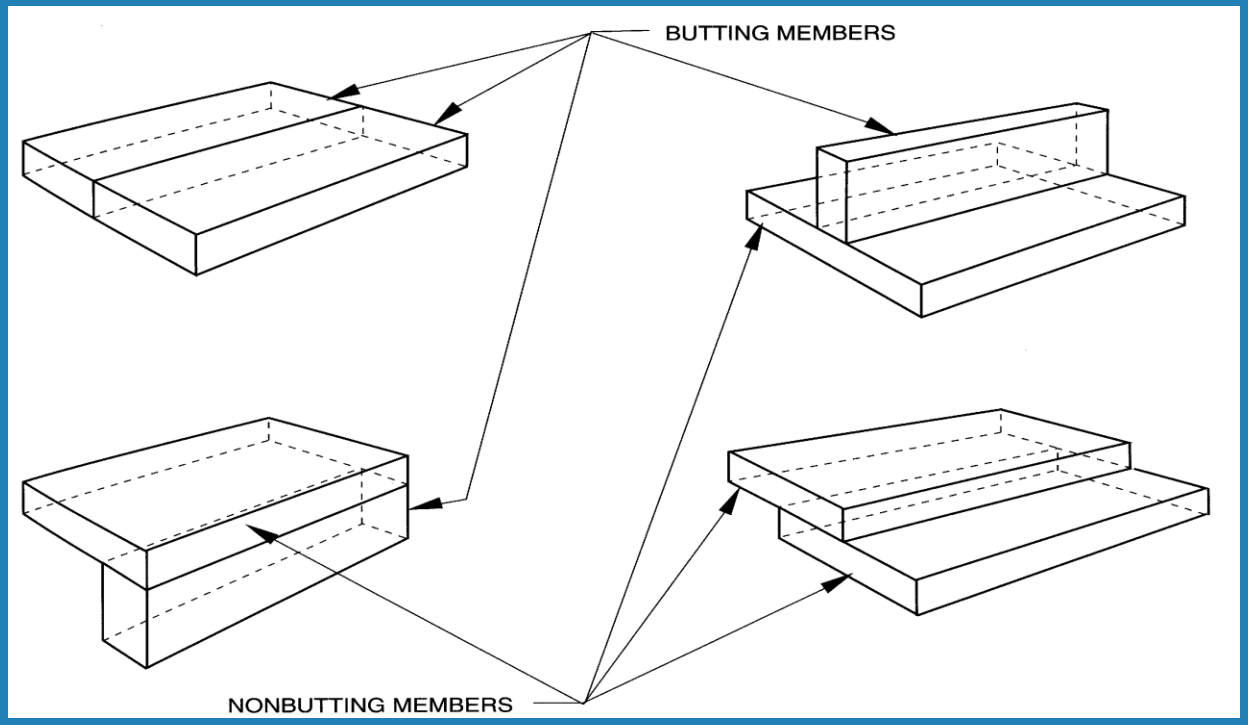
Some Different Edge Shapes and Symbols for Edge Joints



Proper terminology is needed in everyday job communication

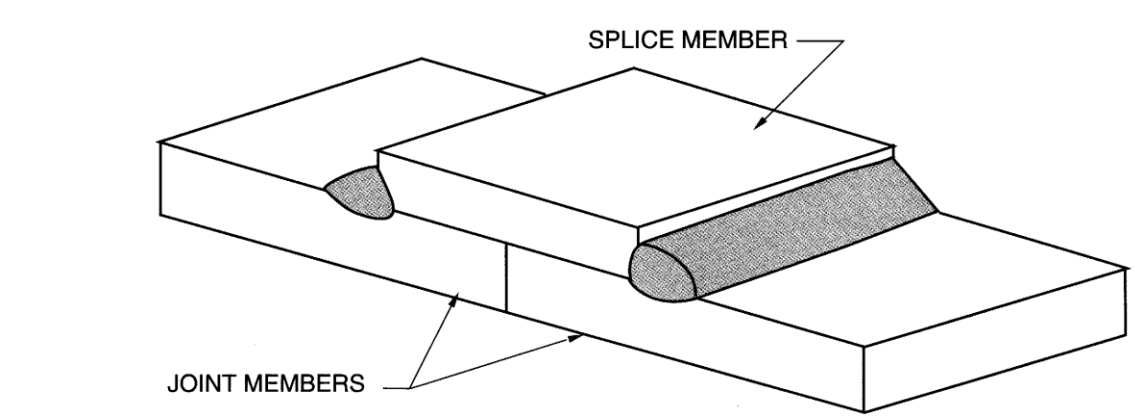
- ***Joint design*** identifies, "the shape , dimensions, and configuration of the joint
- The individual workpieces of a joint are called ***members***.
- Three types members nonbutting member, butting member , and splice member

A *butting member* is "a joint member that is prevented, by the other member from movement in one direction perpendicular to its thickness dimension"

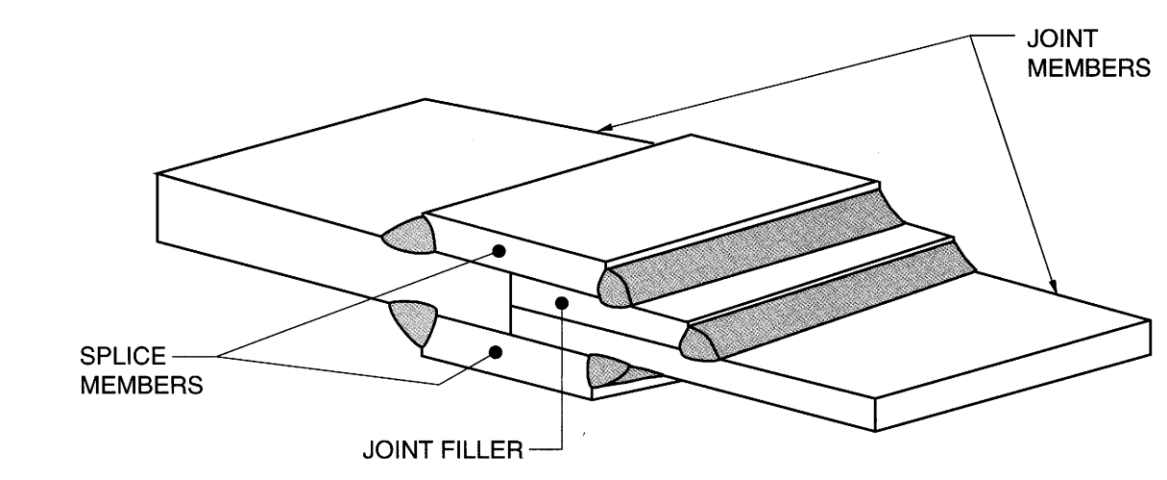


A *nonbutting member* is "a joint member that is free to move in any direction perpendicular to its thickness dimension

A *splice member* is " the work piece that spans the joint in a spliced joint



Single-spliced butt joint



Double-spliced butt joint with joint filler

Welding Defects

UNDERCUT

POROSITY

INCOMPLETE FUSION

OVERLAP

UNDERFILL

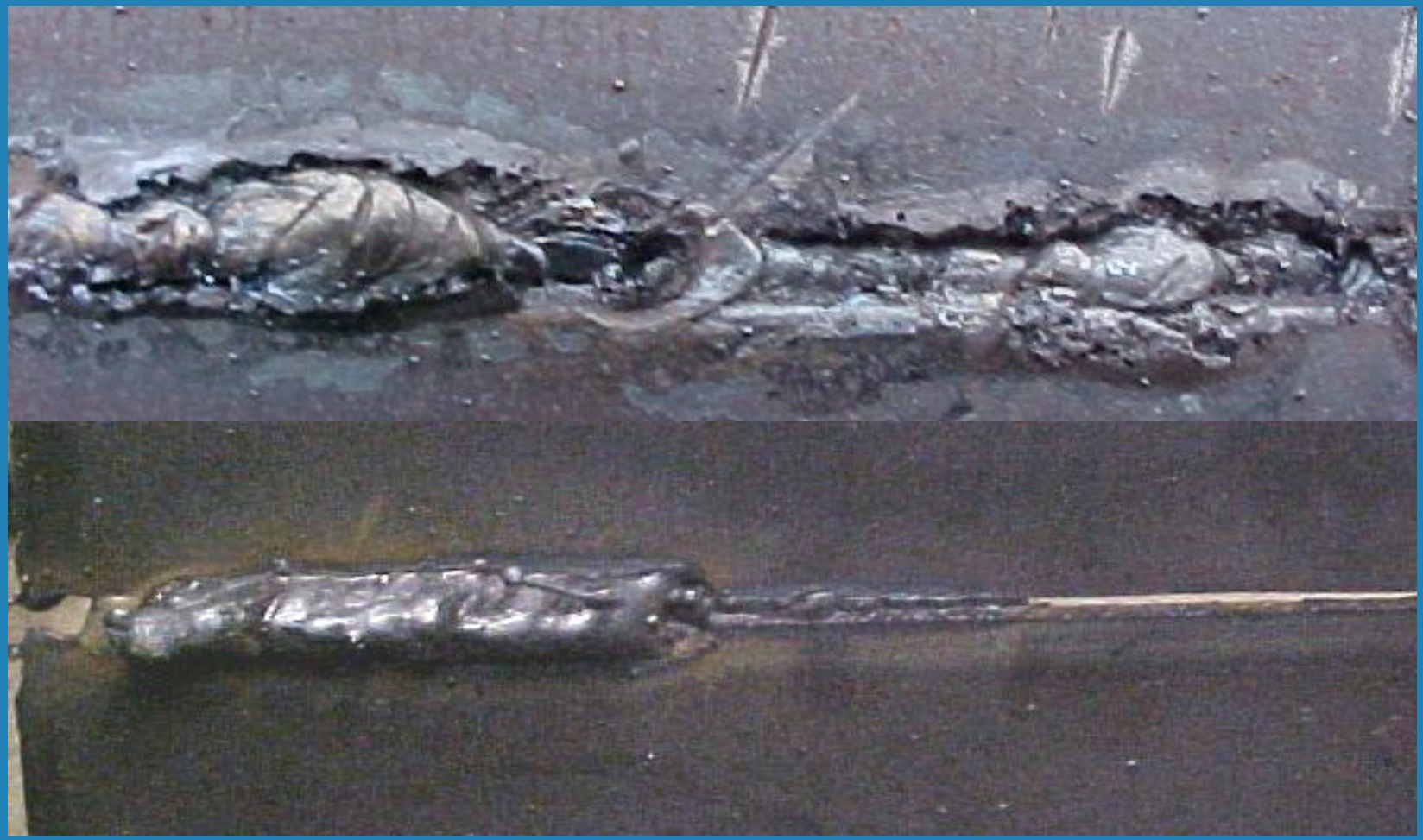
SPATTER

EXCESSIVE CONVEXITY

EXCESSIVE CONCAVITY

EXCESSIVE WELD REINFORCEMENT

INCOMPLETE PENETRATION & EXCESSIVE PENETRATION



UNACCEPTABLE WELD PROFILES

Welding Symbols

•Reference Line

Reference Line (Required element)

Always Horizontal

Arrow Line

Reference Line (Required element)

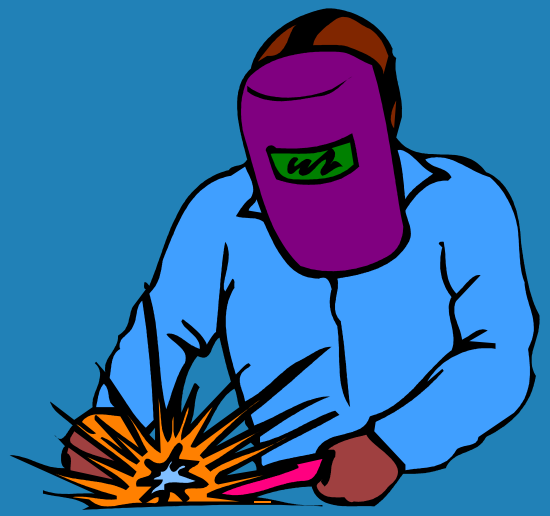
Arrow

Tail

Reference Line (Required element)

Arrow

Tail



Reference Line must always be horizontal,

Arrow points to the line or lines on drawing which clearly identify the proposed joint or weld area.

Reference Line (Required element)

Arrow

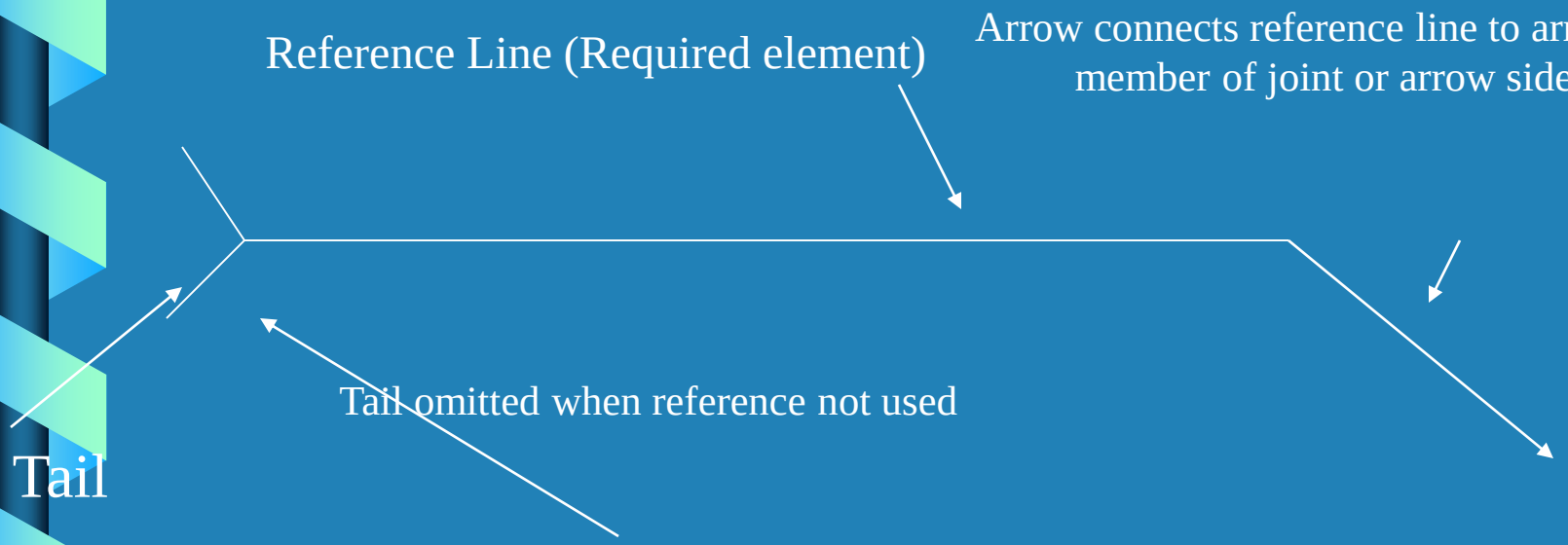
Tail

The tail of the welding symbol is used to indicate the welding or cutting processes, as well as the welding specification, procedures, or the supplementary information to be used in making the weld.

Reference Line must always be horizontal,

Arrow points to the line or lines on drawing which clearly identify the proposed joint or weld area.

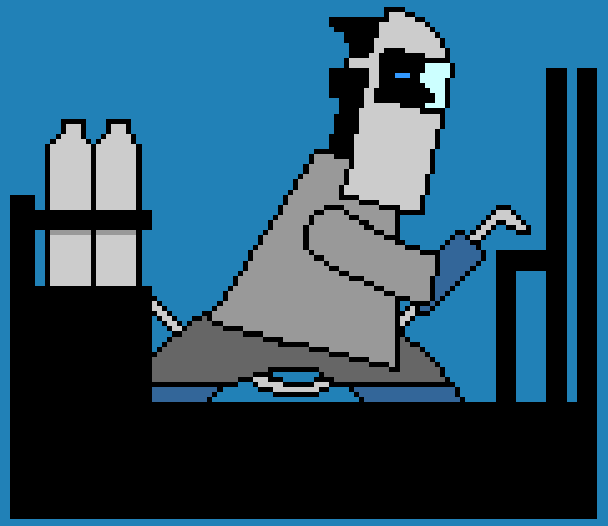
Basic components of a WELDING SYMBOL



The tail of the welding symbol is used to indicate the welding or cutting processes, as well as the welding specification, procedures, or the supplementary information to be used in making the weld.

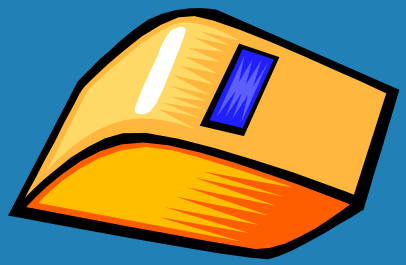
All the way Around

A circle at the tangent of the arrow and the reference line means welding to be all around.



Field Weld Symbol

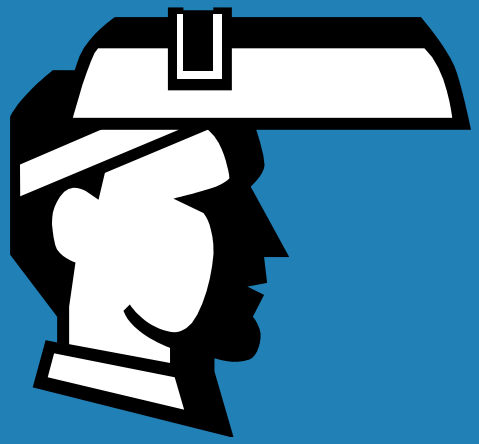
A flag at the tangent of the reference line and arrow means Field Weld.



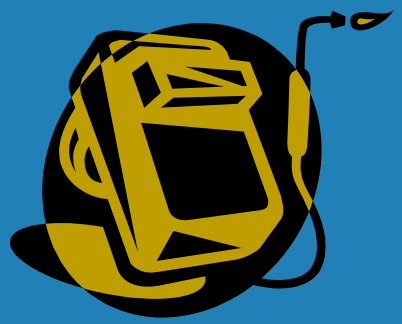
Weld Symbol Terminology

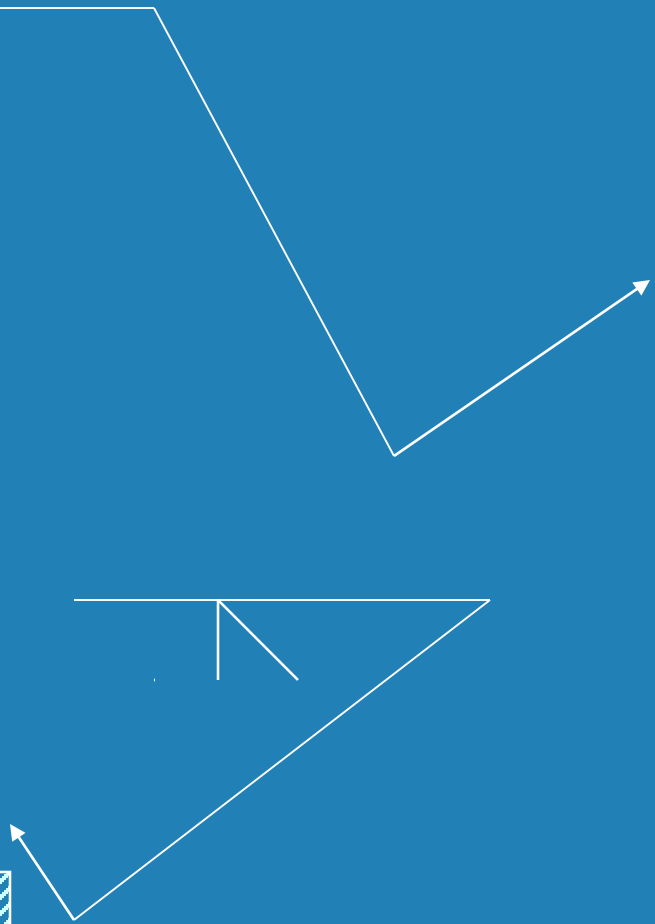
OTHER SIDE

ARROW SIDE



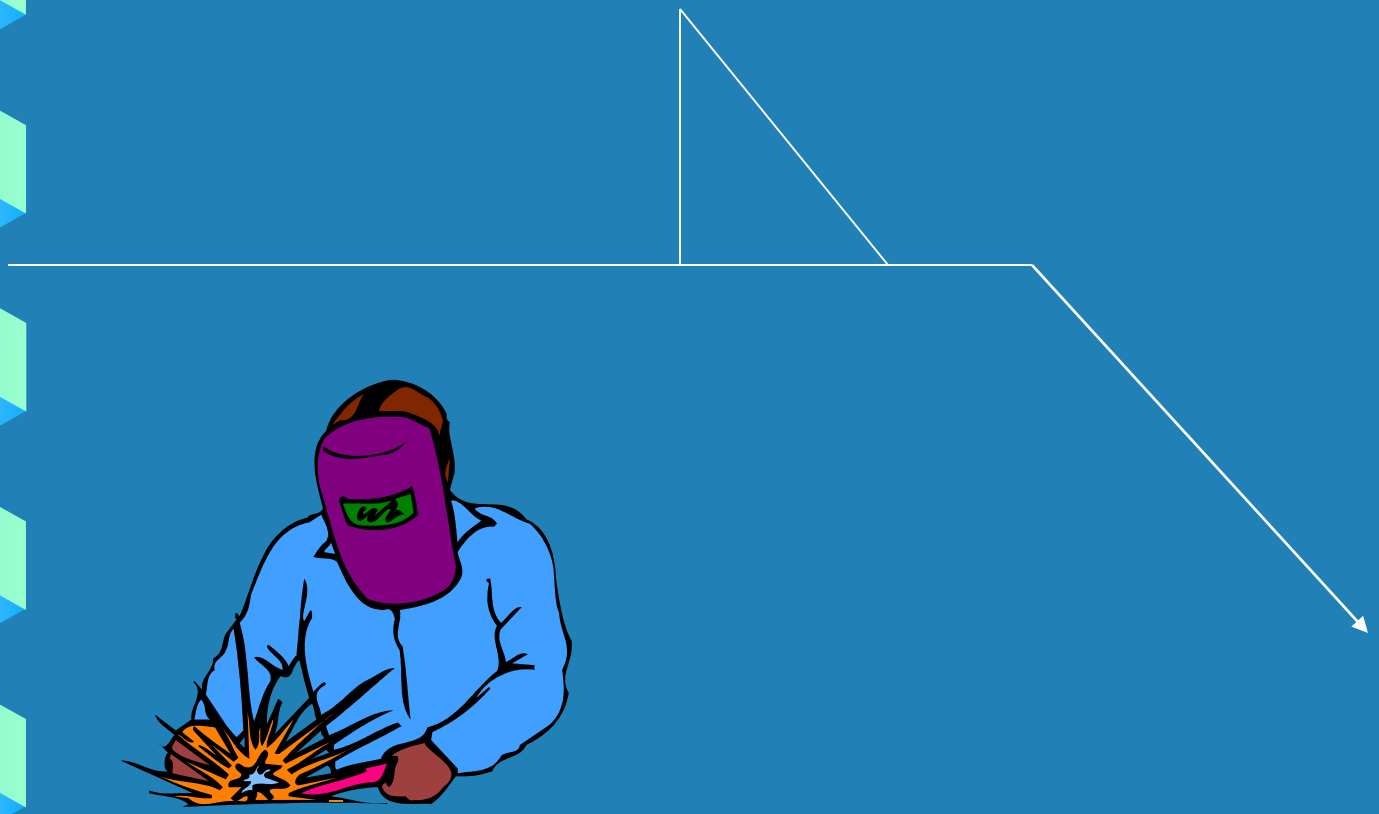
Break in arrow means arrow side must be side that beveling or other preparation required.



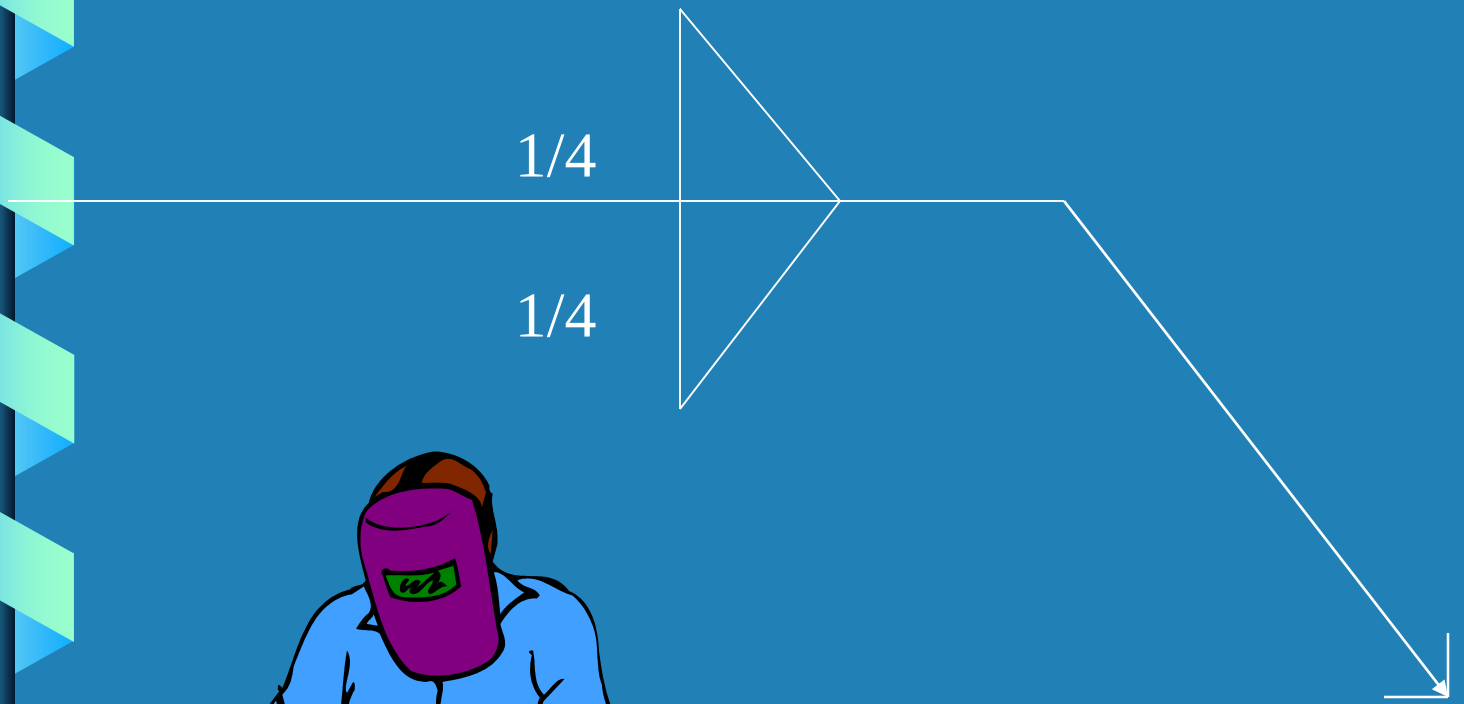


Fillet Weld (Arrow Side Only)

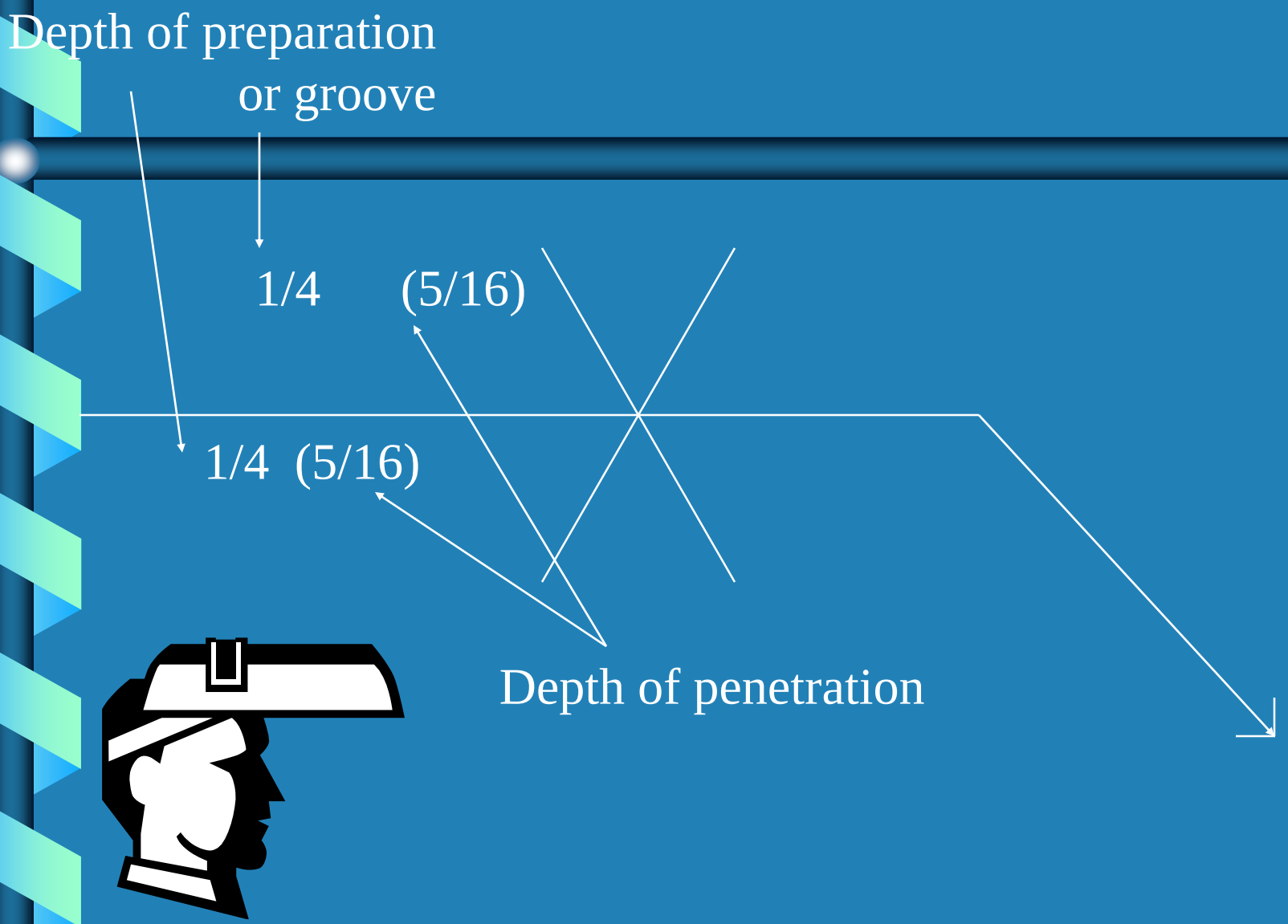
Fillet Weld (Other Side)



Size of Fillet Weld Noted

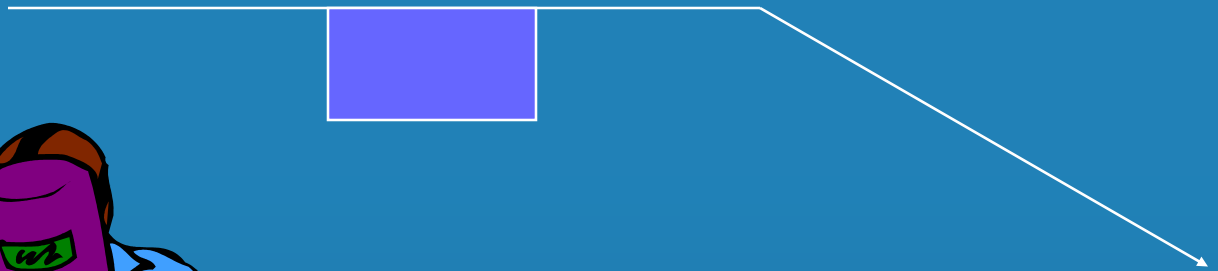


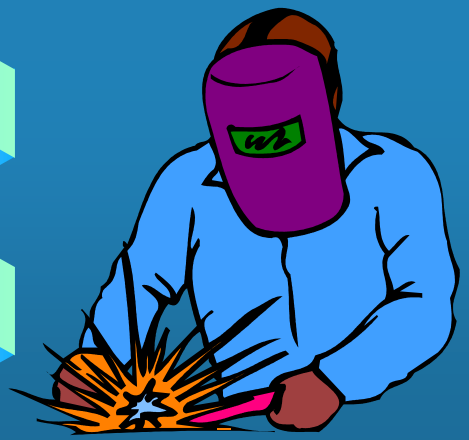
Example of Double Bevel Groove weld



Plug or Slot Weld Symbol

Arrow Side



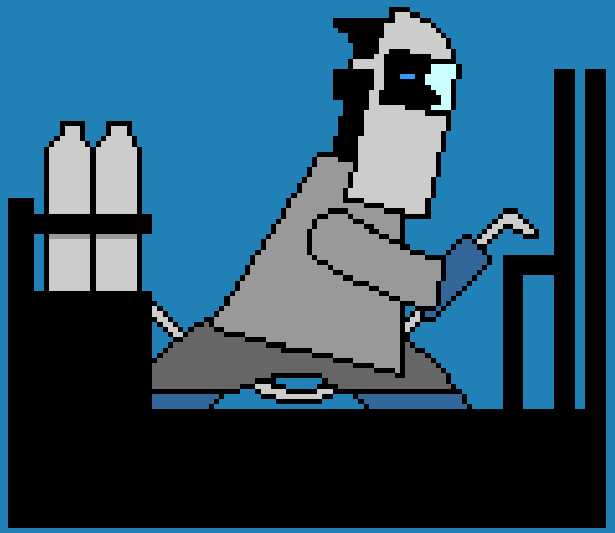


What does this symbol Represent?

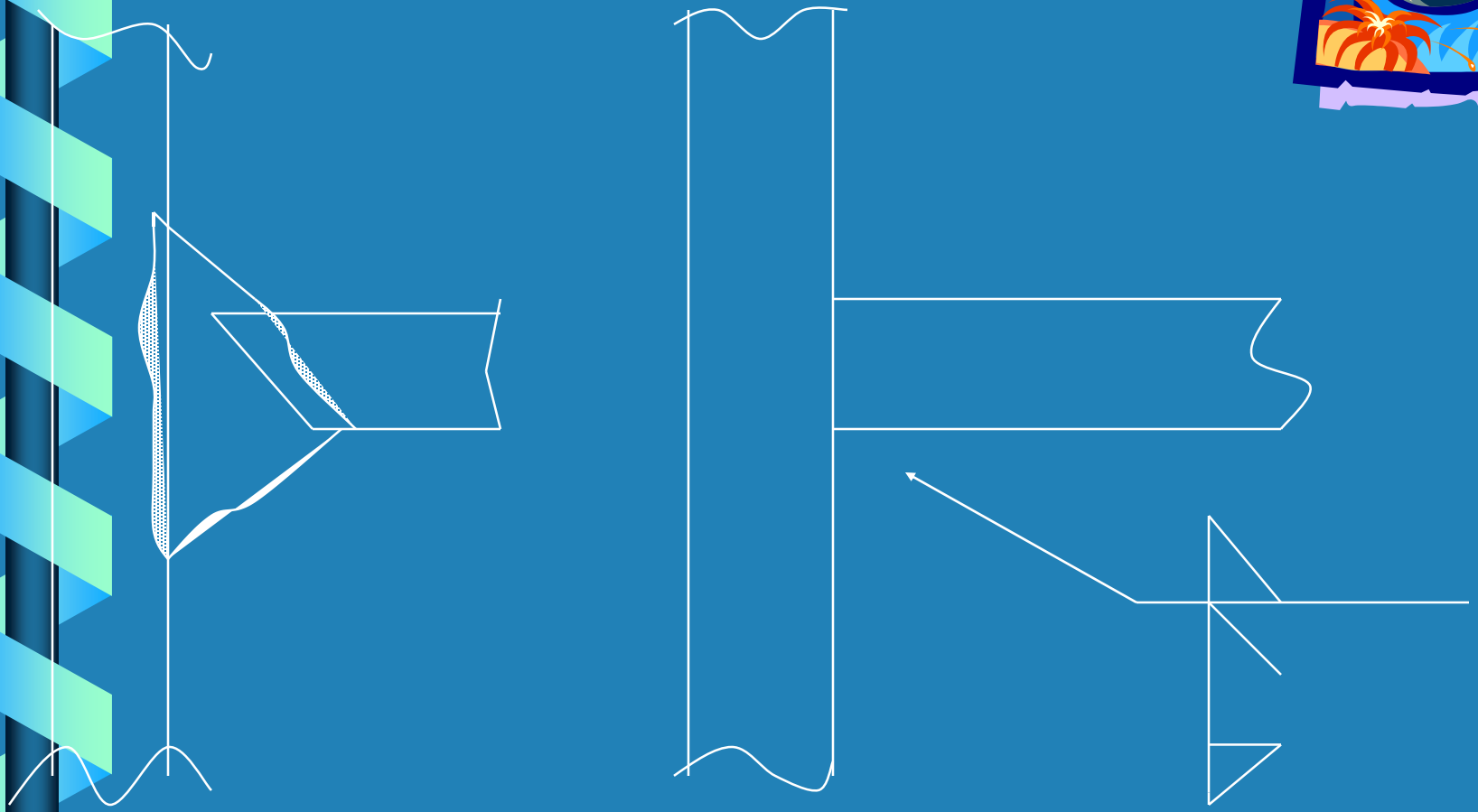
5/16

5/16

Single-Bevel-Groove and Double Fillet Weld Symbol

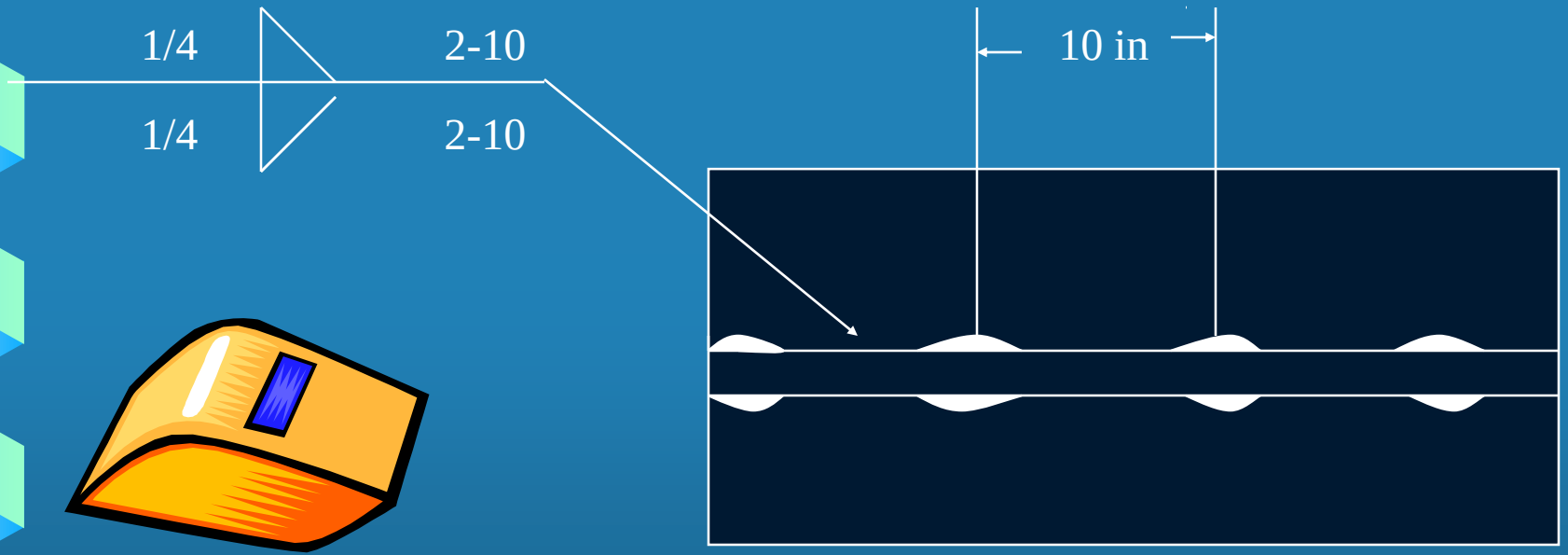


Single-Bevel-Groove and Double Fillet weld Symbols



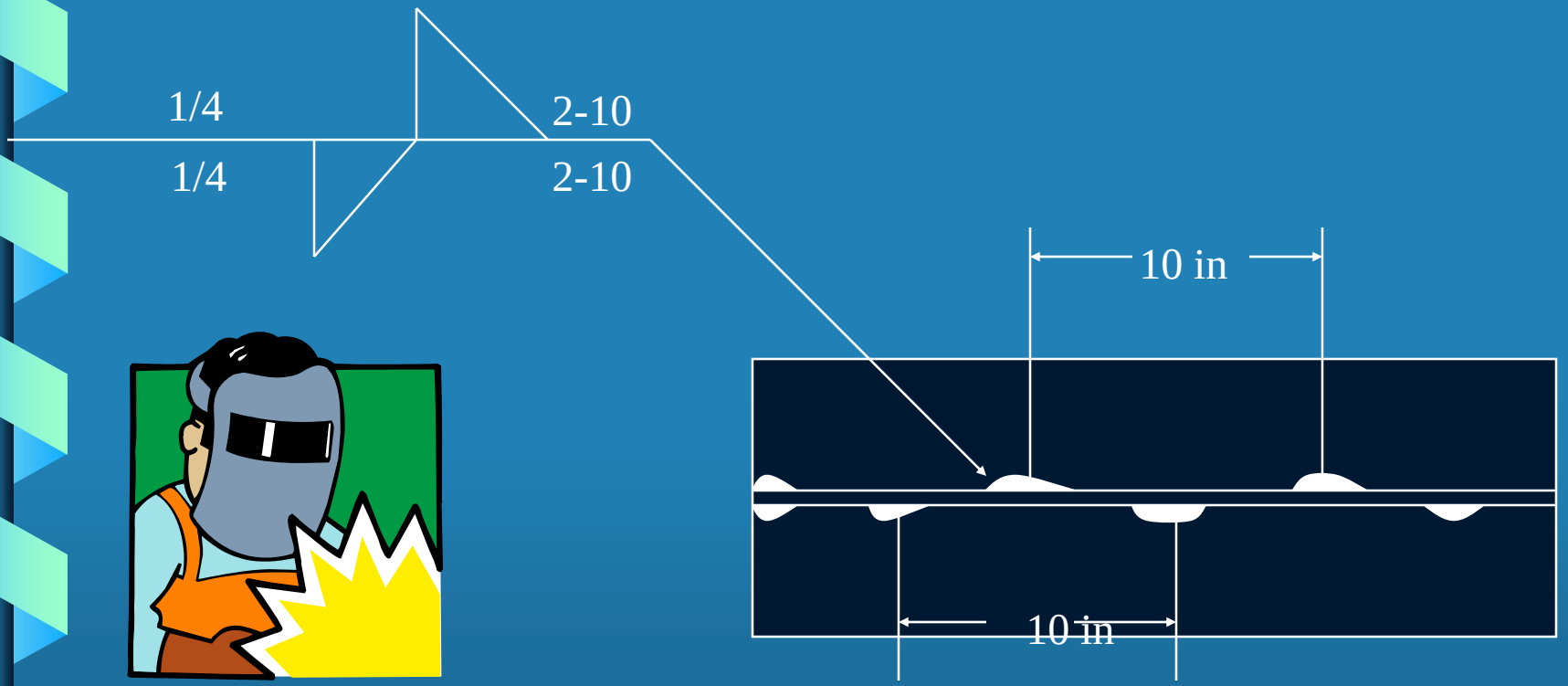
Chain Intermittent Fillet Weld

Weld both sides each end and 10 inches center to center in between



Staggered Intermittent Fillet Weld

Weld ends than 10 inch centers staggered each side



Finish Symbol

Groove weld size

Groove Angle included angle of countersink for plug welds

F

A

Root opening; Depth of filling for plug and slot welds.

R

Depth of bevel

S(E)

L-P

Length of weld

OTHER SIDE

Pitch(Center-to-center spacing) of welds

ARROW SIDE

FIELD WELD

(N)

Number of spot, seam, stud, plug, slot, or projection welds

The End

BY : DEEPAK BILLUR (2928)