

Alphabet of Lines

Introduction to Drafting and Design

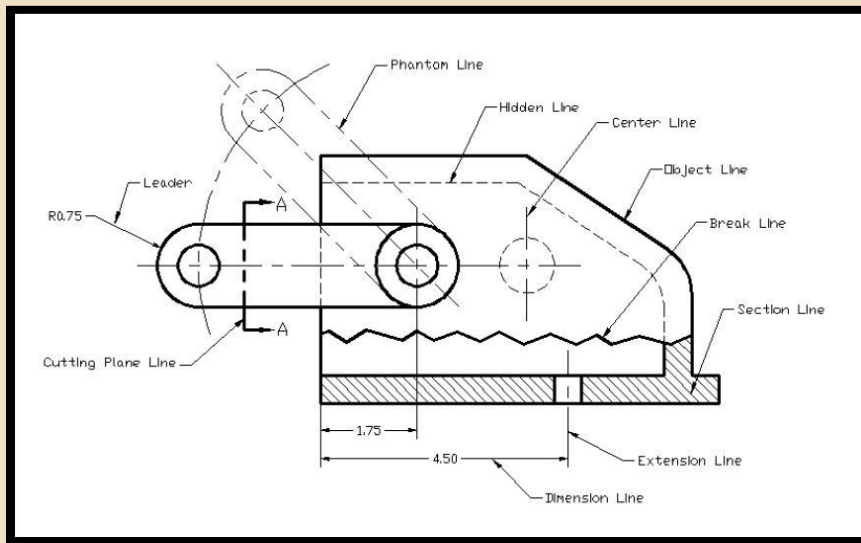


What is the Alphabet of Lines?

- Developed by the American Society of Mechanical Engineers (ASME).
- The Alphabet of Lines is used to make a drawing neater and clearer to understand.
- Different lines represent different aspects of a drawing.



So what are these lines?



- Construction Lines
- Visible/Object Lines
- Hidden Lines
- Center Lines
- Dimension Lines
- Extension Lines
- Phantom Lines
- Long Break Lines
- Short Break Lines
- Cutting-plane Lines
- Section Lines
- Chain Lines
- Leaders
- Symmetry Lines
- Border Lines

Construction Lines

- Used to initially lay out a drawings.
 - Used for guidelines for lettering.
 - Drawn very light and thin so that they are barely visible.
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Visible/Object Lines

- Used to represent the visible edges of an object.
 - Should be the most prominent on the drawing.
 - Drawn thick and dark.
 - These are thicker than construction lines.
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Hidden Lines

- Used to represent edges, surfaces or corners of an object hidden from view.
 - Drawn as thin, dark dashed lines.
 - Spacing can vary slightly.
 - Only the most important hidden parts are shown on the drawing to keep the drawings from becoming cluttered.
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Center Lines

- Used to show the center of circles and arcs.
- Drawn as thin lines.
- Drawn using two long dashes and a shorter dash.
- To show the center of a round object, two centerlines are used so that the short dashes cross in the center.



Dimension Lines

- Used for dimensioning and notes.
- Drawn as thin lines.
- Drawn with arrowheads on each end and placed between extension lines.
- The dimension is lettered above the dimension line approximately half way between the two extension lines.



Extension Lines

- Used to extend dimensions from the related objects.
 - Drawn as thin lines.
 - Drawn with a short space between the object and line.
 - Extend about 3 mm beyond the dimension line.
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Phantom Lines

- Used to show objects that are not hidden but they are simply not in view.
- Also used to indicate alternate positions of moving parts, lines of motion, adjacent parts and repetitive details.
- Drawn as thin, dark lines.



Long Break Lines

- Used to indicate parts of the object has been removed.
- Used when it is desirable to shorten the view of a long part.
- Long break lines are drawn thin with freehand “zigzags”.



Short Break Lines

- Used to indicate parts of the object has been removed.
- Used when it is desirable to shorten the view of a long part.
- Short break lines are drawn thick and with freehand wavy lines.



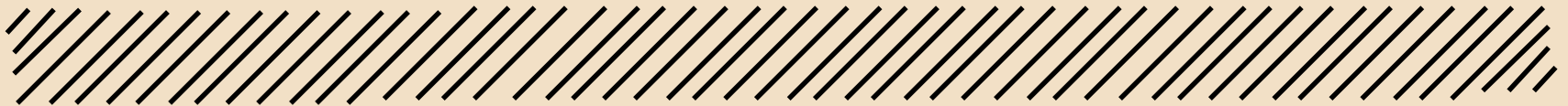
Cutting-plane Lines

- Used to indicate the plane through which a cut was made.
- A cutting plane line is usually a heavy line with long dashes with arrowheads at both ends of the line.
- The arrowheads point to the surface to be viewed.



Section Lines

- Used to indicate the surface in the section view imagined to have been cut along the cutting plane line.
- Thin “cross hatching” lines drawn at a 45° angle.



Leaders

- Used to point to notes or dimensions.
- Drawn as thin lines.
- Consist of an arrowhead and angled line connected to a surface.
- Arrowheads touch the object lines while the dot rests on a surface.

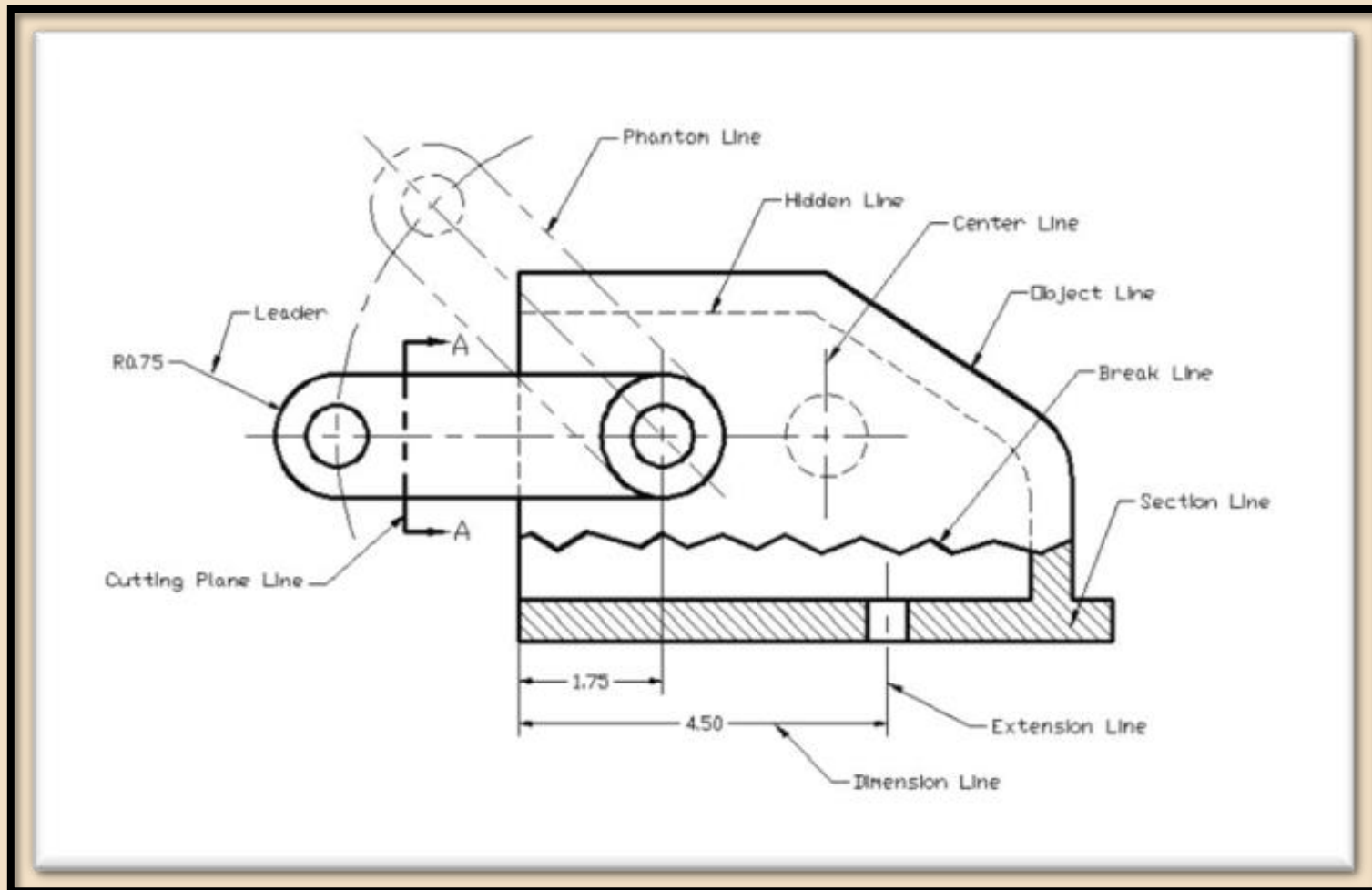


Border Lines

- Used to outline the entire drawing.
 - They are a continuous thick line on the outer rim of the paper.
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Let's look again...



Hierarchy of Lines

- If lines happen to overlap, then there is a hierarchy to which the lines show up.
- The hierarchy of lines is as follows:
 - Object or visible line
 - Hidden line
 - Cutting Plane line
 - Center line
 - Break line
 - Dimension and extension lines
 - Sectioning lines

