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Sectional Views
PURPOSES OF SECTIONAL VIEWS

- Clarify the views by
  - reducing or eliminating the hidden lines.
  - revealing the cross sectional’s shape.

- Facilitate the dimensioning.

Let us see an example.
EXAMPLE : Advantage of using a sectional view
Cutting plane is a plane that *imaginarily cuts* the object to reveal the internal features.
Cutting plane line is an edge view of the cutting plane.

Indicate the path of the cutting plane.
CUTTING PLANE LINETYPE

JIS & ISO standard

Thick line (HB)  Thin line (3H)  Thick line (HB)

Viewing direction
Section lines or cross-hatch lines are used to indicate the surfaces that are cut by the cutting plane.

Drawn with 3H pencil.
The section lines are different for each of material’s type.

For practical purpose, the cast iron symbol is used most often for any materials.
SECTION LINING PRACTICE

The spaces between lines may vary from 3 mm for small sections to 8 mm for large sections, (use 5 mm).

COMMON MISTAKE
It **should not** be drawn parallel or perpendicular to contour of the view.
KINDS OF SECTIONS

1. Full section
2. Offset section
3. Half section
4. Broken-out section (Located section)
5. Revolved section (Aligned section)
6. Removed section (Detailed section)
The view is made by passing the *straight* cutting plane *completely through* the part.
The view is made by passing the bent cutting plane completely through the part.

Do not show the edge views of the cutting plane.
Hidden lines are *normally omitted* from section views.
HALF SECTION VIEW

The view is made by passing the cutting plane *halfway* through an object and remove a *quarter* of it.
HALF SECTION VIEW

- A **center line** is used to separate the sectioned half from the unsectioned half of the view.
- **Hidden line** is omitted in unsection half of the view.
The view is made by passing the cutting plane normal to the viewing direction and removing the portion of an object in front of it.
A **break line** is used to separate the sectioned portion from the unsectioned portion of the view.

Break line is a thin continuous line (3H) and is drawn freehand.

There is *no* cutting plane line.
EXAMPLE: Comparison among several section techniques
Revolved sections show cross-sectional features of a part.

No need for additional orthographic views.

This section is especially helpful when a cross-section varies.
Basic concept
REVOLVED SECTION VIEW

Basic concept
Step 1

a. Assign position of cutting plane.

b. Draw axis of rotation in front view.
Steps in construction

Given

Step 2

a. Transfer the depth dimension to the front view.
**Steps in construction**

**Given**

**Step 3**

a. Draw the revolved section.

b. Add section lines.
Steps in construction

Given

REVOLVED SECTION VIEW

FINAL PICTURE
Placement of revolved section

1. Superimposed to orthographic view.

2. Break from orthographic view.
Example:
Situation that removed section is preferred.

REMOVED SECTION VIEW

Poor

Preferred

Too messy!!
REMOVED SECTION VIEW

SECTION A – A

SECTION B – B
Dimensioning in Section View
In most cases, dimensioning of the section views follows the typical rules of dimensioning.

**GOOD**

**POOR**
DIMENSIONING

POOR

GOOD
For a half-section view, use dimension line with only one arrowhead that points to the position inside the sectioned portion.
END