Engineering drawing

Semester I/II

Mechanical Engineering Department
Technical University of Gdańsk

Lecture 7

Dimensioning

The purpose of dimensioning is enabling an element to be manufactured correctly and set of components to be correctly assembled.

General principles of dimensioning are as follow:

- dimensioning should be easy to read
- there should be included the minimum number of dimensions to manufacture an element and they can not be described more then once
- dimensions can not cross each other
- an element dimensions should be concentrated on one view or section

Dimensioning

General principles of dimensioning:

- overall dimensions should be given
- the dimensions numbers should be orienteted from a drawing bottom or left hand and situated over dimension line
- dimension arrow heads should touch either a line of the object or a thin projecting line

Technique of dimensioning

Dimension lines are the lines with arrow heads on each end that show the length of dimension. They should be made according to the following instructions:

- draw them as thin lines, much thinner then visible outlines, for contrast proposes;
- make them parallel to the line or length being dimensioned;
- construct an arrowhead at each end;
- do not place them on a line of the view or an extension of such a line.

Technique of dimensioning

Extension lines are the lines that extend from the object to show the limits of a dimension. They should be made according to the following instructions:

- make them the same weight as dimension lines;
- construct them perpendicular to the line being dimensioned
- carry the extension line beyond the dimension line;
- do not cross extension lines unless necessary. If they must cross, they should do without a break;
- do not break the extension line when it crosses a line of the figure;
- in special cases where there is not enough room for perpendicular extension lines, they are occasionally placed at an angle.

Technique of dimensioning

A **leader** is a line that runs from some part of a drawing, indicated by an arrow, to a note which concerns that part of the drawing. They are drawn in accordance with the following rules:

- make them the same weight as dimension lines;
- when they point a line, end them with an arrow;
- when they point to an area, end them with a dot;
- draw a horizontal line on the end of the leader.

An **arrowhead** is placed on both ends of a dimension line and on one end of a leader. The size of th arrows is connected with the sheet. Arrowheads should be drawn as solids.

Lettering

Letters must be large enough to be easily read and carefully made so that they cannot be misinterpreted. The following rules apply:

- notes always write horizontally (this means that they read in the same direction as the title block);
- the size of letters should be connected with the size of the sheet;
- numerals should be placed above the dimension line with appropriate gape;
- the unites of measurement specified by dimensions are millimeters.

Physical location of dimensions

It is important to **place dimensions** on a drawing in such manner that the drawing will be clear and easy to read. The following rules apply:

- dimension lines are spaced;
- the numerals in adjacent dimensions should be staggered to avoid crowding;
- dimensions should db placed outside the views whenever possible. Frequently it is best to put a dimension line inside the view to avoid long extension lines;
- dimensions should be placed between views but closest to the appropriate view;
- do not dimension to invisible lines;

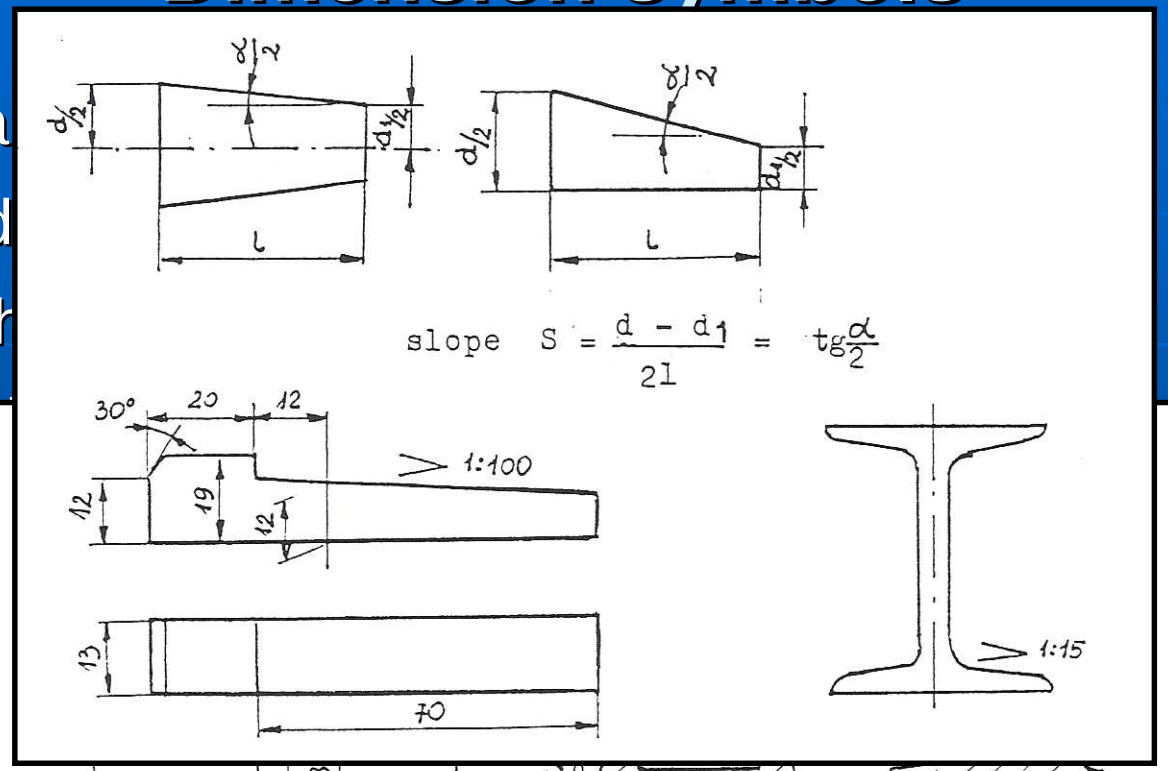
Physical location of dimensions

- when several dimensions are to be placed on the same side of a view, the smallest is placed closest to the view;
- avoid duplicate dimensioning;
- dimensions should be placed on the view that is most descriptive or that shows the contour of the feature being dimensioned.
- in a half sections, it is proper to dimension by the use of dimension line with one arrow only (for rotational parts only).

Dimension symbols

- Ø (dia
- R (rad
- O (sph
- x (thi
- □ (sq
- M, Tr
- taper

Slop
sym



Slopes on shafts in machine drawing are colled tapers.

Dimensioning

1837,0.SLDPRT

1873,0.sldprt

2317,0.SLDPRT

Detal1.SLDPRT

Detal2.SLDPRT

Detal3.SLDPRT