

Theory of Dimensioning

In general, the description of shape and size together gives complete information for producing the object represented.

The dimensions put on the drawing are those required for the proper functioning of the part after assembly.

In dimensioning two vital rules will be followed:

1. Each feature is dimensioned and positioned only once.
2. Each feature is dimensioned and positioned where its shape shows.

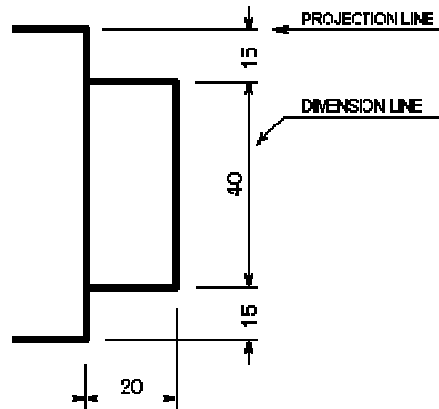
Ölçülendirme Kuralları

- Teknik resim çizimlerinde gerekli ölçülerin verilmesinde dikkat edilecek ölçülendirme kuralları şunlardır:
- Parçayı anlamak için gerekli olan bütün ölçüler, toleranslar, yüzey işleme işaretleri vb. resim üzerinde bulunmalıdır.
- Bir ölçü, resim üzerinde bir defadan fazla konulmamalıdır.
- Ölçü, parçanın en anlaşılabilir görünüşü üzerinde verilmelidir.
- Kesikli çizgi ile ifade edilen elemanlara ölçülendirme yapılmamalıdır.
- Bütün ölçüler [mm] cinsinden verilmelidir. Başka bir birim kullanılacaksa resim üzerinde belirtilmelidir. Aksi durumda mm ibaresi kullanılmamalıdır.
- Mümkün olduğunca standart boyutlar kullanılmalıdır.
- İmalat sırasında kendiliğinden oluşan yerlere ölçü verilmemelidir.
- Bir ölçü, diğer ölçüler yardımıyla elde edilmesine veya resim üzerinden ölçülerek bulunmasına gerek kalmamalıdır.

Dimensioning

A dimensioned drawing should provide all the information necessary for a finished product or part to be manufactured.

The general convention is to dimension in mm's.

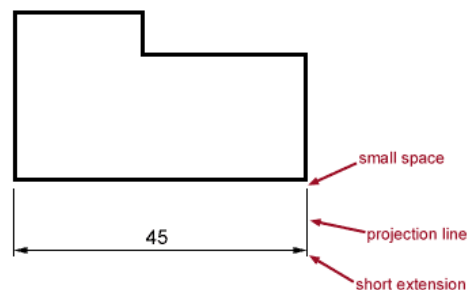


Dimensioning

Dimensions are always drawn using continuous thin lines.

Two projection lines indicate where the dimension starts and finishes.

Projection lines do not touch the object and are drawn perpendicular to the element you are dimensioning.

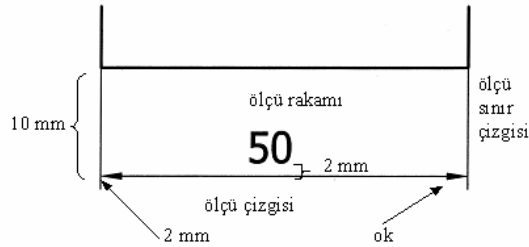


Ölçüler

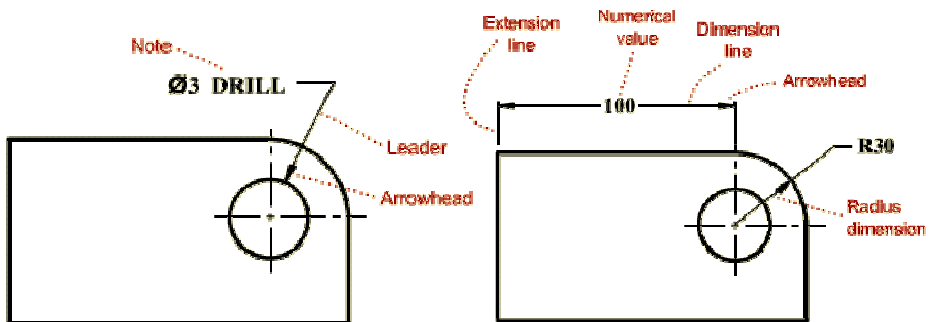
Herhangi bir ölçünün belirtilmesi için, ölçü çizgisi ölçü sınır çizgisi ve ölçü rakamı olmak üzere üç ana eleman ve oklar bulunmaktadır.

Ölçülendirmenin bütün elemanları B tipi çizgiyle ve 0,25 kalem ile çizilir.

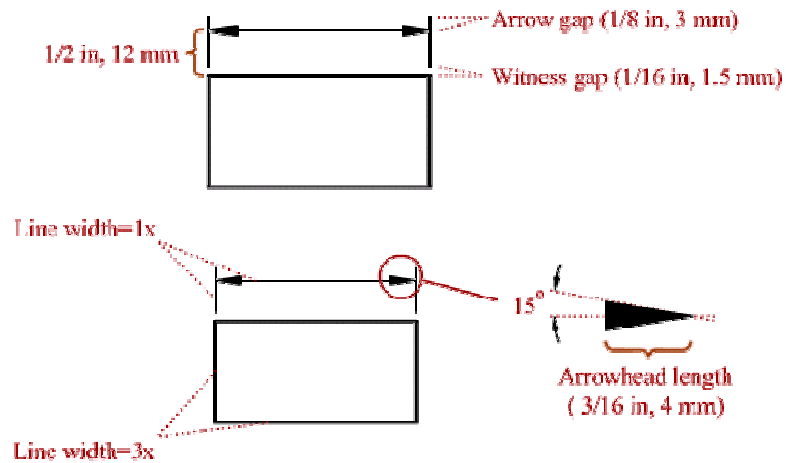
Yazı yüksekliği ise 3,5 mm alınır.



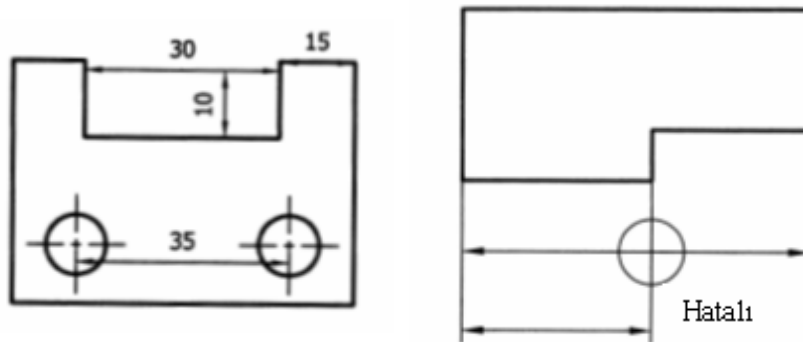
Techniques & Convention



Techniques & Convention

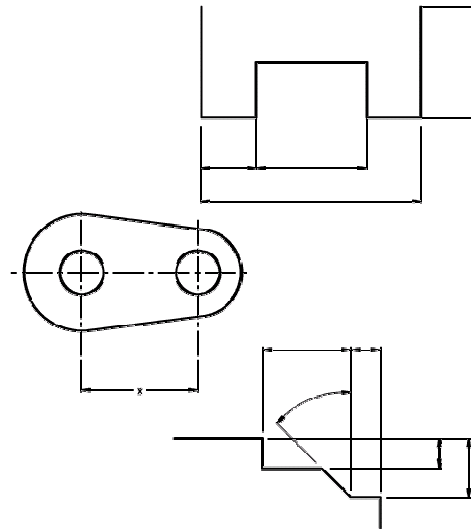


Techniques & Convention



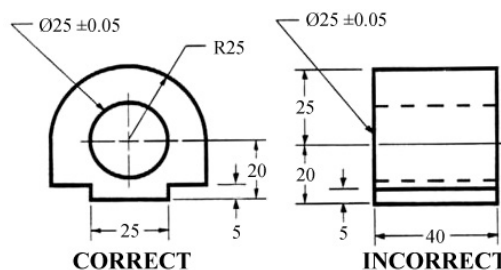
Dimension Placement

- Dimensions should be applied to one view.
- Dimension outside the view are preferred.
- Dimensions may also terminate at center lines or visible outlines of the view.
- Usually the outline of the view becomes the terminal for arrowheads



Dimension Placement

- Dimensions should be placed on the view that shows the distance in its true length.
- Dimension lines should be placed, in general 10 mm away from the outlines of the view.
- Parallel dimension lines should be placed uniformly.

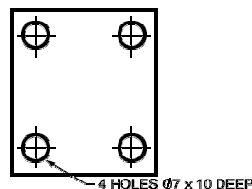


Dimension Placement

- Values should be midway (autocentered) between the arrow heads, except when a centerline interferes.
- Dimensions arranged in continuous form are preferred upon readability.
- Place a longer dimension line outside a shorter one.
- Dimensions should never be crowded.
- Center lines are used to indicate the symmetry, they should be considered as part of dimensioning.

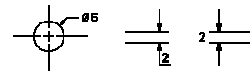
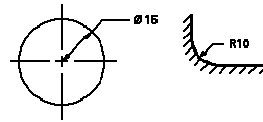
Dimension Placement

- All notes must be read horizontally.
- Never use a center line, a line of a view, or an extension line as a dimension line.
- Never allow outline of any kind to pass through a dimension line.
- Avoid dimensioning to dashed lines if possible.

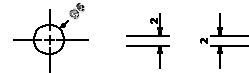
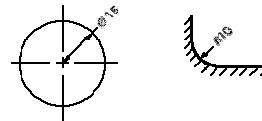


Dimensioning Methods

- **Unidirectional**
The dimensions are written horizontally.
- **Aligned**
The dimensions are written parallel to their dimension line. Aligned dimensions should always be readable from the **bottom** or the **right** of the drawing.



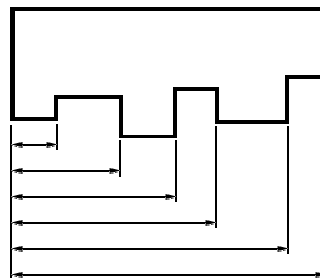
Unidirectional



Aligned

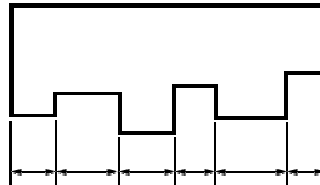
Parallel Dimensioning

Parallel dimensioning consists of several dimensions originating from one projection line.



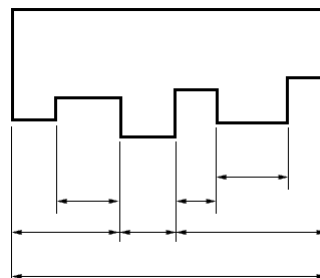
Chain Dimensioning

Chains of dimension should only be used if the function of the object won't be affected by the accumulation of the tolerances.



Combined Dimensions

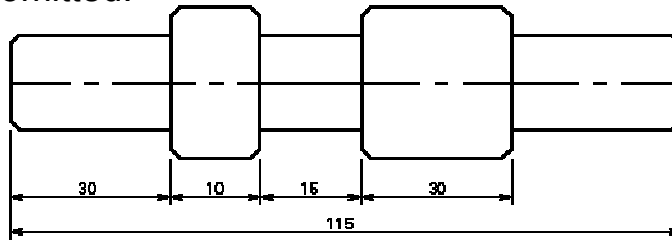
A combined dimension uses both chain and parallel dimensioning.



Overall Dimensions

When several dimensions make up an overall length, the overall dimension can be shown outside these component dimensions.

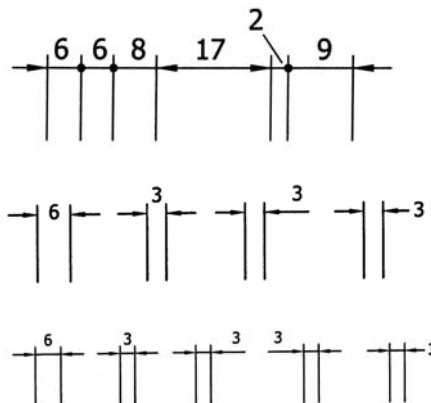
When specifying an overall dimension, one or more non-critical component dimensions must be omitted.



Dimensioning Small Features

When dimensioning small features, placing the dimension arrow between projection lines may create a drawing which is difficult to read.

In order to clarify dimensions on small features any of the above methods can be used.

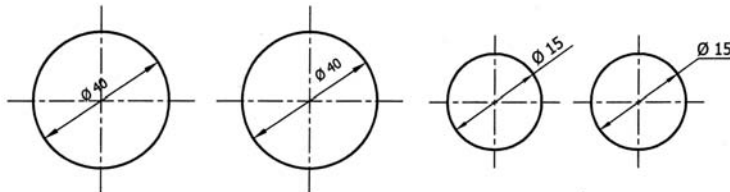
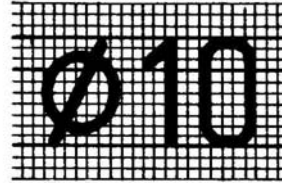


Semboller

Harf veya Sembol	Kullanım yeri	Kullanım örneği
Ø	Silindirik parçaların çap değeri	Ø 30
R	Eğrilerin yarıçap değeri	R 10
□	Kare kesitli parçaların bir kenarı	□ 20
°	Derece cinsinde açı değeri	45°
-	Yay uzunluğu	35
Küre Ø (veya S Ø)	Kürelerin çap değeri	Küre Ø 20 S Ø 30
Küre R (veya S R)	Kürelerin yarıçap değeri	Küre Ø 15 S R 15
AA	Anahtar ağız ölçüsü	AA 50
M	Metrik vidaların ölçüsü	M 12
Tr	Trapez vidaların ölçüsü	Tr 10
Yv	Yuvarlak profilli vida ölçüsü	Yv 5
Ts	Testere profilli vida ölçüsü	Ts 12
t	Yassı parçaların kalınlıkları	t = 5
▽	Eğik parçaların eğim değeri	▽ 1:5
▽	Konik parçaların koniklik değeri	▽ 1:2.5
▽	Konik parçanın sivrilik değeri	▽ 1:10

Dimensioning Circles

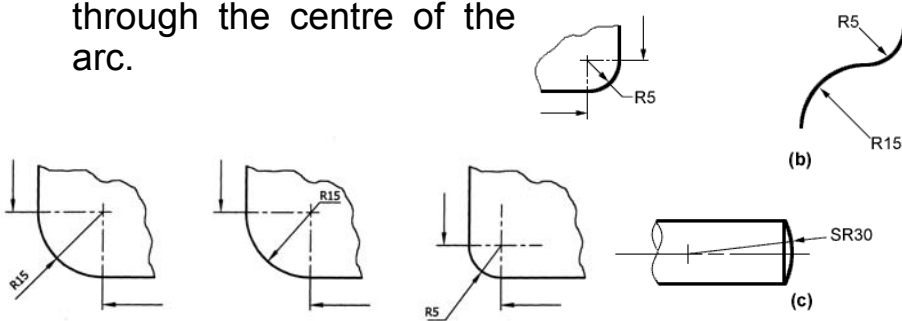
All dimensions of circles are preceded by this symbol; Ø. There are several conventions used for dimensioning circles:



Dimensioning Radii

All radial dimensions are preceded by the capital **R**. All dimension arrows and lines should be drawn perpendicular to the radius so that the line passes through the centre of the arc.

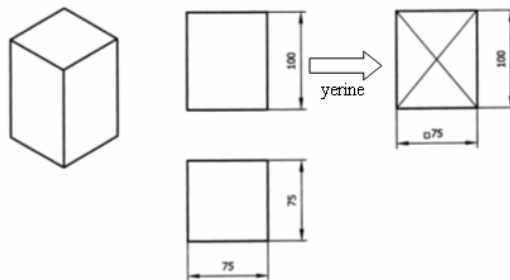
R10



Karelerin ölçülendirilmesi

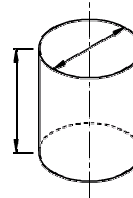
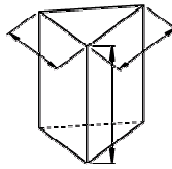
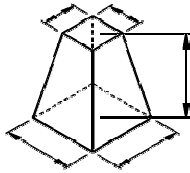
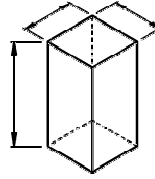
Kare kesitli parçaların ölçülendirilmesinde karenin en ve boy değerleri aynı olduğundan yazılmayarak, bir kenar uzunluğu ve onun önüne kare işareti konur.

□10

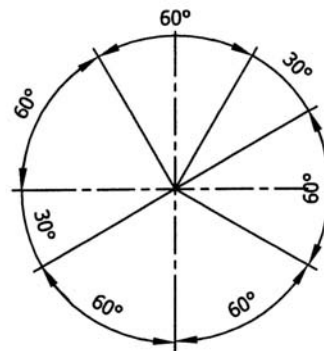
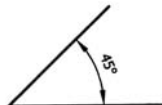
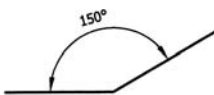
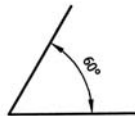
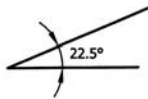


Dimensions of Size

Since every solid has three dimensions, the object must have its height, width and depth.

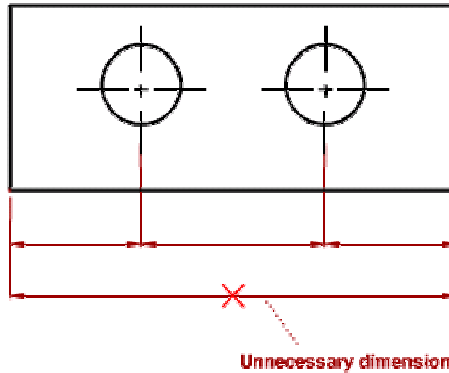


Açıların ölçülendirilmesi



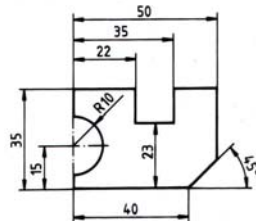
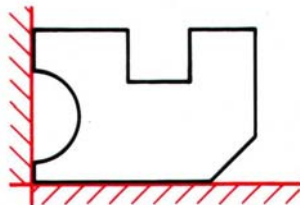
Unnecessary Dimensions

In all cases of selecting dimensions the important consideration is clarity. An unnecessary dimension, other than a duplicate, is a dimension that is not essential to make a part.



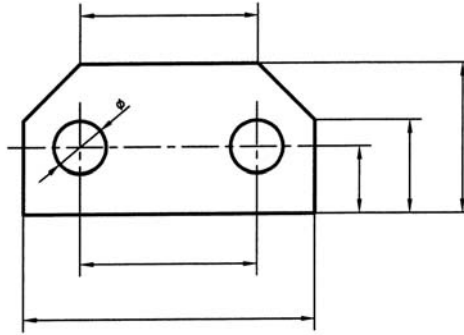
Ölçülendirme yöntemleri

- Kenar-kenar



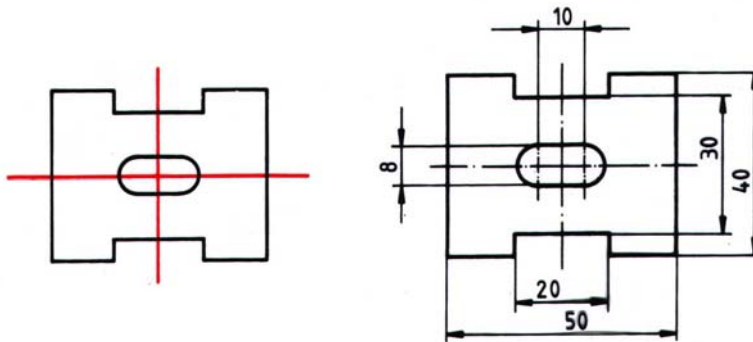
Ölçülendirme yöntemleri

- Kenar – Eksen



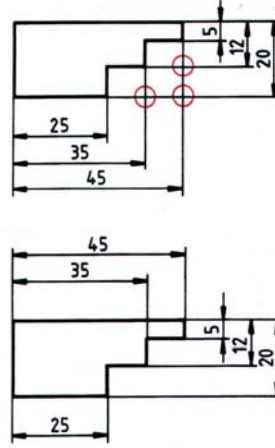
Ölçülendirme yöntemleri

- Eksen – Eksen



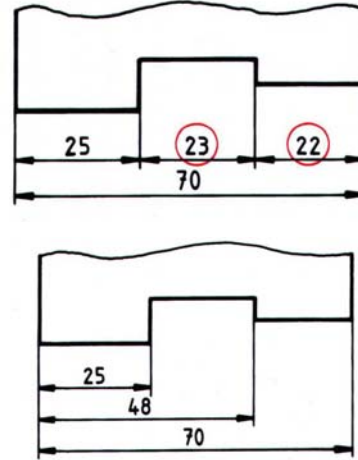
Ölçülendirmede hatalar

- Ölçü çizgileri veya ölçü sınır çizgileri birbirini kesmemelidir.



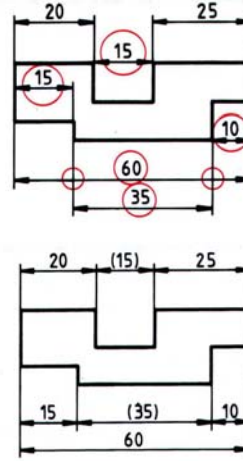
Ölçülendirmede hatalar

- Zincirleme ölçülendirme yerine paralel ölçülendirme tercih edilmelidir.



Ölçülendirmede hatalar

- Ölçü sınır çizgileri verilmeden ölçülendirme yapılmamalıdır.
- Mümkün olduğu kadar ölçü çizgileri aynı hizada bulunmalıdır.
- Zorunluluk olmadıkça parçanın içinden ölçülendirme yapılmamalıdır.
- Ölçü çizgileri veya ölçü sınır çizgileri birbirini kesmemelidir.
- Yardımcı ölçüler iyi tespit edilmeli ve parantez içinde yazılmalıdır.



Tolerancing

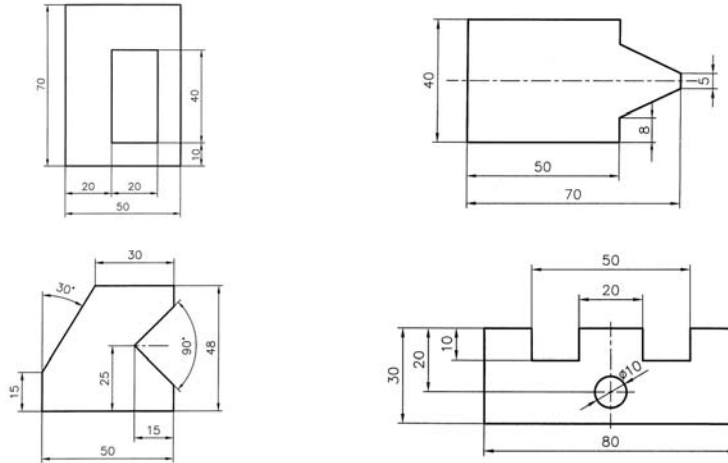
- It is not possible in practice to manufacture products to the exact figures displayed on an engineering drawing.

Each dimension on a drawing must include a tolerance value. This can appear either as:

- a general tolerance value applicable to several dimensions. i.e. a note specifying that the General Tolerance ± 0.5 mm.
- or a tolerance specific to that dimension



Examples



Examples

