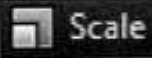


SCALE

The **SCALE** command is used to make objects larger or smaller proportionately. You may scale using a scale factor or a reference length. You must also specify a base point. The base point is a stationary point from which the objects scale.

1. Select the SCALE command using one of the following:

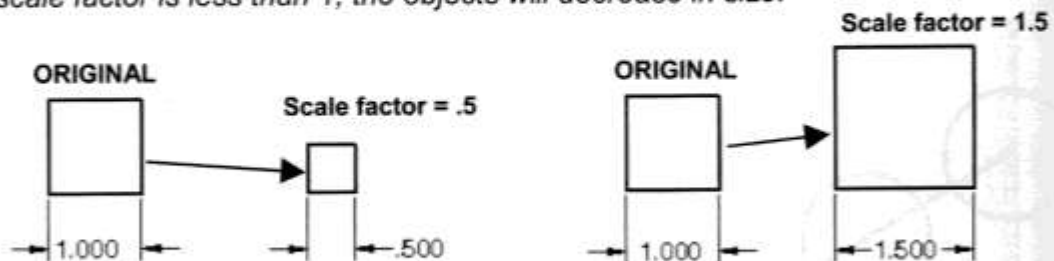
Ribbon = Home tab / Modify panel /  Scale
 or
Keyboard = SCALE <enter>

SCALE FACTOR

Command: `_scale`

2. Select objects: **select the object(s) to be scaled**
3. Select objects: **select more object(s) or <enter> to stop**
4. Specify base point: **select the stationary point on the object**
5. Specify scale factor or [Copy/Reference]: **type the scale factor <enter>**

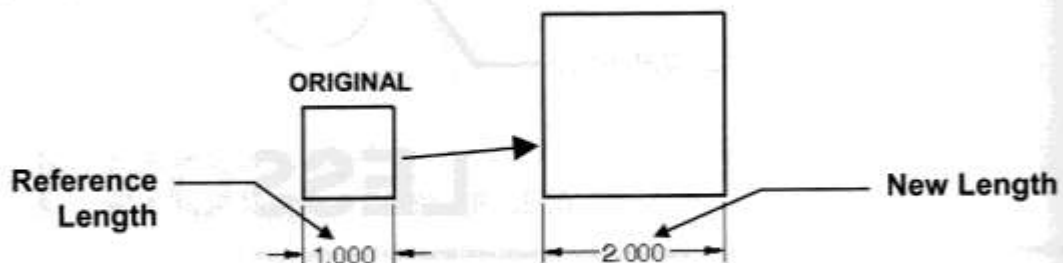
*If the scale factor is greater than 1, the objects will increase in size.
 If the scale factor is less than 1, the objects will decrease in size.*



REFERENCE option

Command: `_scale`

2. Select objects: **select the object(s) to be scaled**
3. Select objects: **select more object(s) or <enter> to stop**
4. Specify base point: **select the stationary point on the object**
5. Specify scale factor or [Copy/Reference]: **select Reference**
6. Specify reference length <1>: **specify a reference length**
7. Specify new length: **specify the new length**



COPY option - creates a duplicate of the selected object. The duplicate is directly on top of the original. The duplicate will be scaled. The Original remains the same.

STRETCH

The **STRETCH** command allows you to stretch or compress object(s). Unlike the Scale command, you can alter an objects proportion with the Stretch command. In other words, you may increase the length without changing the width and vice versa.

Stretch is a very valuable tool. Take some time to really understand this command. It will save you hours when making corrections to drawings.

When selecting the object(s) you must use a **CROSSING** window.

Objects that are crossed, will **stretch**.

Objects that are totally enclosed, will **move**.

1. Select the STRETCH command using one of the following:

Ribbon = Home tab / Modify panel /



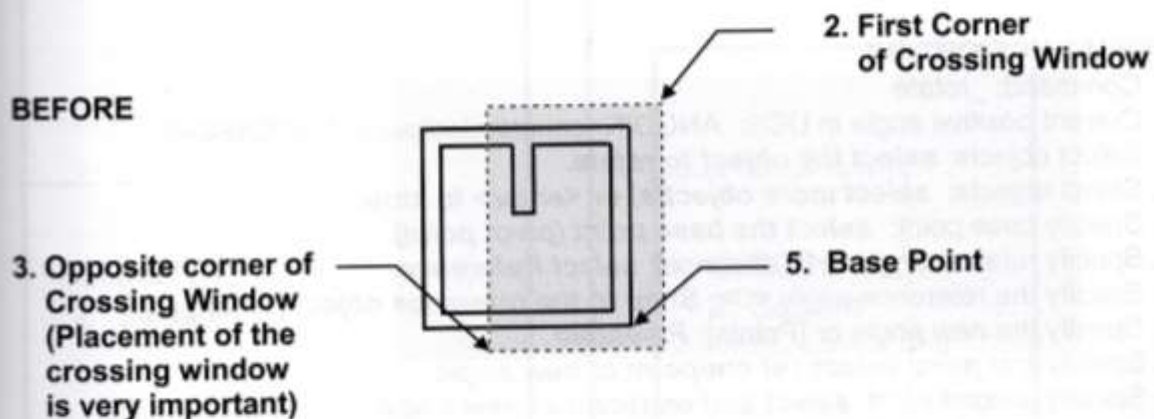
or

Keyboard = S <enter>

Command: `_stretch`

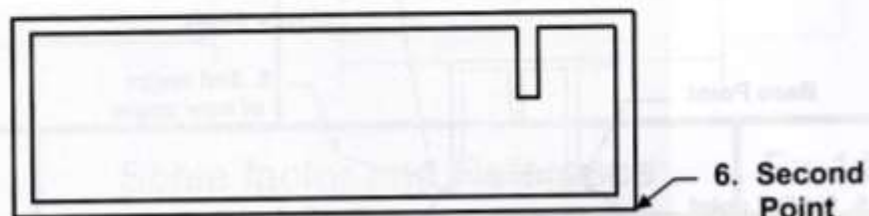
2. Select objects to stretch by crossing-window or crossing-polygon...
Select objects: **select the first corner of the crossing window**
3. Specify opposite corner: **specify the opposite corner of the crossing window**
4. Select objects: **<enter>**
5. Specify base point or [Displacement] <Displacement>:
select a base point (where it stretches from)
6. Specify second point or <use first point as displacement>:
type coordinates or place location with cursor

BEFORE



AFTER

(Notice which objects stretched and which objects moved)




ROTATE

The **ROTATE** command is used to rotate objects around a Base Point. (pivot point)
After selecting the objects and the base point, you will enter the rotation angle from its current rotation angle or select a reference angle followed by the new angle.

A **Positive** rotation angle revolves the objects **Counter- Clockwise**.
A **Negative** rotation angle revolves the objects **Clockwise**.

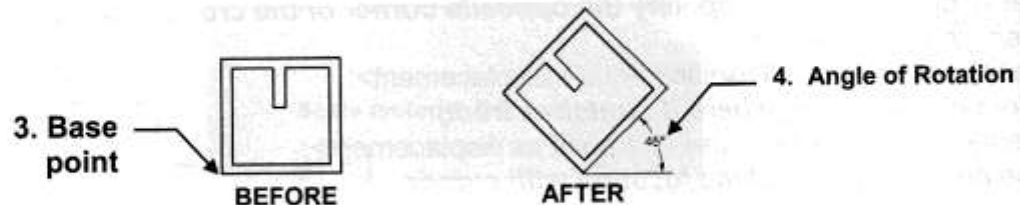
Select the ROTATE command using one of the following:

Ribbon = Home tab / Modify panel /  Rotate
or
Keyboard = RO <enter>

ROTATION ANGLE OPTION

Command: `_rotate`

1. Current positive angle in UCS: `ANGDIR=counterclockwise ANGBASE=0`
Select objects: **select the object to rotate.**
2. Select objects: **select more object(s) or <enter> to stop.**
3. Specify base point: **select the base point (pivot point).**
4. Specify rotation angle or [Copy/Reference]<0>: **type the angle of rotation.**



REFERENCE OPTION

Command: `_rotate`

1. Current positive angle in UCS: `ANGDIR=counterclockwise ANGBASE=0`
Select objects: **select the object to rotate.**
2. Select objects: **select more object(s) or <enter> to stop.**
3. Specify base point: **select the base point (pivot point).**
4. Specify rotation angle or [Reference]: **select Reference.**
5. Specify the reference angle <0>: **Snap to the reference object (1) and (2).**
6. Specify the new angle or [Points]: **P <enter>.**
7. Specify first point: **select 1st endpoint of new angle**
8. Specify second point: **select 2nd endpoint of new angle**

