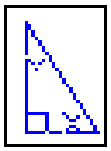
Chapter 5
User Coordinate System

UCSICON 5.1

The UCS icon represents the orientation of the UCS axes and the location of the current UCS origin. It also represents the current viewing direction relative to the UCS XY plane.

Mspace UCSICON *Pspace UCSICON*



1. **Choose** View, Display, UCS Icon, On/Off.

   or

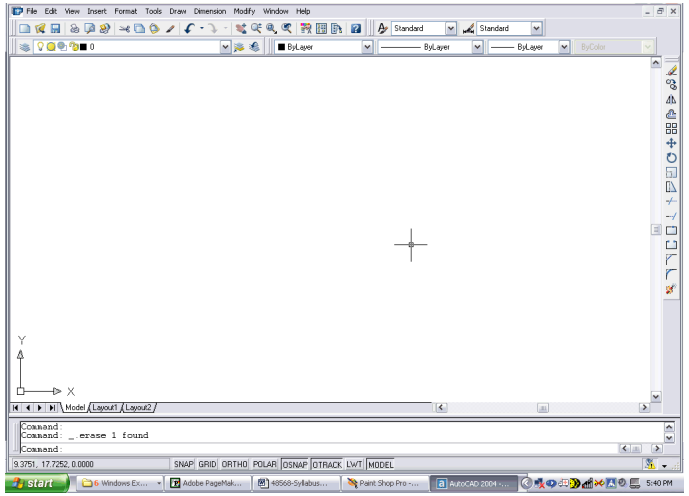
2. **Type** UCSICON at the command prompt.

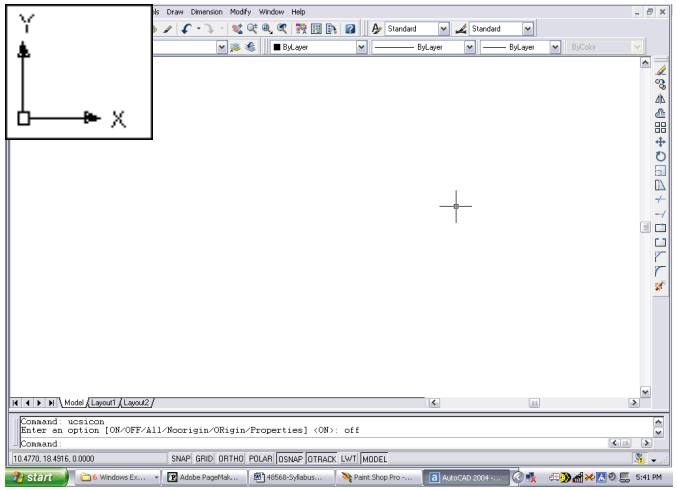
   Command: **ucsicon**

   Enter an option [ON/OFF/All/Noorigin/ORigin] <ON>:

ON	Displays the UCS icon.
OFF	Turns off the display of the UCSICON.
All	Affects the display of the UCSICON in all viewports.
Noorigin	Always displays the UCS at the lower left corner.
ORigin	Shows the UCS at the 0,0,0 origin of the current UCS.

UCS icon turned ON





UCS Overview 5.2

Manages user coordinate systems. The user coordinate system provides an alternate movable coordinate system for coordinate entry, planes of operation, and viewing. Most AutoCAD geometric editing commands are dependent on the location and orientation of the UCS.

1. **Type** UCS at the command prompt.

   Command: **ucs**

   Enter an option [New/Move/orthoGraphic/Prev/Restore/ Save/Del/Apply/?/World] <World>:

2. **Choose** One of the following UCS options:

   New Defines a new coordinate system by one of six methods: **Origin, Z Axis, 3 Point, Object, Face, View X, Y, Z**

   - **Origin** Defines a new UCS by shifting the origin of the current UCS, leaving the direction of the X,Y, and Z axes unchanged.
   - **ZAxis** Allows you to define a new origin.
   - **3 Point** Specifies a UCS by its origin and a point on the positive X and Y axes.
   - **Object** Lets you define a new coordinate s ystem by pointing at an entity (except a 3D polyline, polygon mesh, or viewport entity).
   - **Face** Aligns the UCS to the selected face of a solid object.
   - **View** Establishes a new coordinate system whose XY plane is perpen dicular to your viewing direction (i.e. parallel to your screen).
   - **X/Y/Z** Rotates the ucs around a specified axis

- **Move** Redefines a UCS by shifting the origin or changing the Z-depth of the current UCS, leaving the orientation of its XY plane un changed.
- **OrthoGraphic** Specifies one of the six orthographic UCSs provided with AutoCAD. These UCS settings are typically used when viewing & editing 3D models **[Top/Bottom/Front/Back/Left/Right]**
- **Previous** Restores the previously saved UCS.
- **Restore** Restores a saved UCS.
- **Save** Names and saves a UCS.
- **Delete** Removes a saved UCS definition.
- **World** Restores the World Coordinate System.
- **?** Lists the defined UCSs in the current drawing.

UCS Toolbar

UCSII Toolbar

World UCS 5.3

1. **Type** UCS at the command prompt.

   Command: **ucs**

   Current ucs name: *NO NAME*

   Enter an option [New/Move/orthoGraphic/Prev/Restore/ Save/Del/Apply/?/World] <World> **(press enter)**

   World Returns the UCS back to the original World UCS.

   NOTE: This is the UCS you should use when creating Wblocks and inserting Wblocks. It is the only UCS guaranteed to be the same in all AutoCAD drawings.

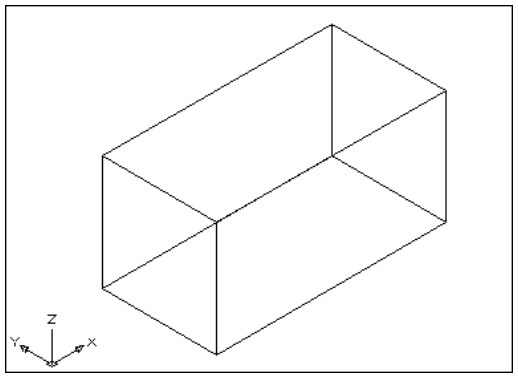
Tip: To enter coordinates relative to the WCS

- Precede coordinate values with an asterisk (*).

  Entering @*2,0,0 specifies a point two units in the X direction of the last point entered relative to the WCS.

  Entering @2,0,0 specifies a point two units in the X direction of the last point entered relative to the UCS.

  In practice, most coordinates are entered relative to the UCS rather than the WCS.



3 Point UCS 5.4

1. **Type** UCS at the command prompt.

   Command: **ucs**

   Enter an option [New/Move/orthoGraphic/Prev/Restore/ Save/Del/Apply/?/World] <World>: **n**

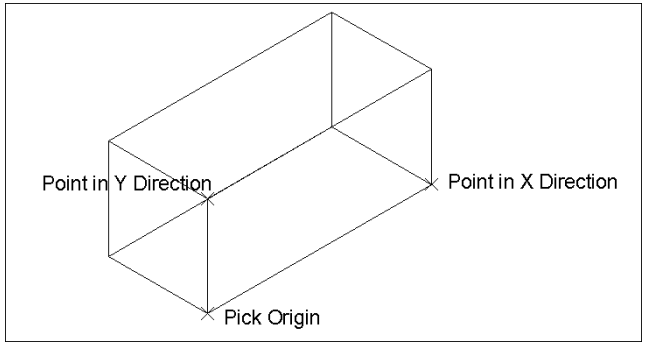
   Specify origin of new UCS or [ZAxis/3point/OBject/ Face/View/X/Y/Z] <0,0,0>: **3**

   Specify new origin point <0,0,0>: **pick origin**

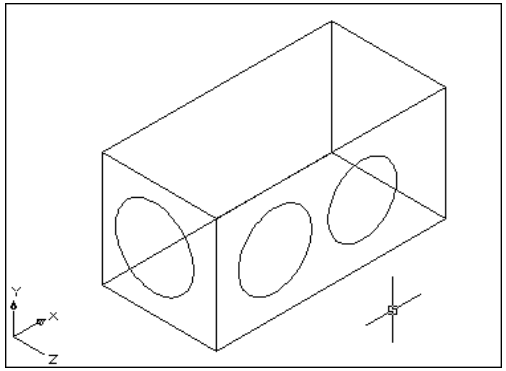
   Specify point on positive portion of X-axis <3.53,7.73,0.00>:

   Specify point on positive-Y portion of the UCS XY plane <2.53,8.73,0.00>:

Setting the UCS with the 3 Point Method



UCS modified



Plan View and UCS 5.5

1. **Type** PLAN at the command prompt.

   Command: **plan**

UCS View 5.6

1. **Type** UCS at the command prompt.

   Command: **ucs**

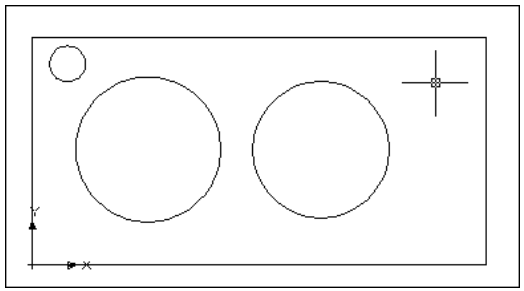
   Current ucs name: *NO NAME*

   Enter an option [New/Move/orthoGraphic/Prev/Restore/ Save/Del/Apply/?/World] <World>: **n**

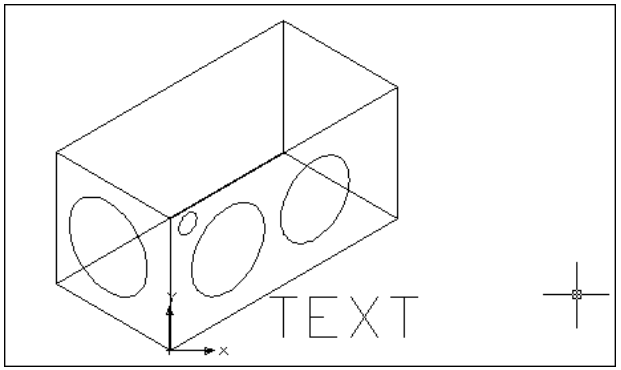
   Specify origin of new UCS or [ZAxis/3point/OBject/ Face/View/X/Y/Z] <0,0,0>: vOrigin/ZAxis/3point/ OBject/View/X/Y/Z/Prev/Restore/Save/Del/?/<World>:**V**

   View Establishes a new coordinate system whose XY plane is perpendicular to your viewing direction (i.e. parallel to your screen).

Plan View of Current UCS



UCS parallel to the View Instead of the Object



UCS Object 5.7

1. **Type** UCS at the command prompt.

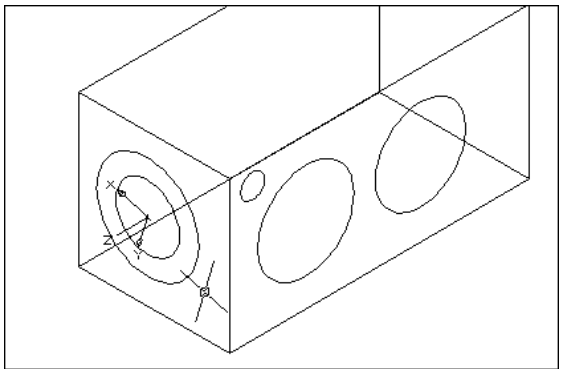
   Command: **ucs**

   Current ucs name: *NO NAME*

   Enter an option [New/Move/orthoGraphic/Prev/Restore/ Save/Del/Apply/?/World] <World>: **n**

   Specify origin of new UCS or [ZAxis/3point/OBject/ Face/View/X/Y/Z] <0,0,0>: vOrigin/ZAxis/3point/ OBject/View/X/Y/Z/Prev/Restore/Save/Del/?/ <World>:**OB**

   Object Defines a new coordinate system based on a selected 3D object. The new UCS has the same extrusion direction (positive Z axis) as that of the selected object.



Other New UCS Options 5.8

1. **Type** UCS at the command prompt.

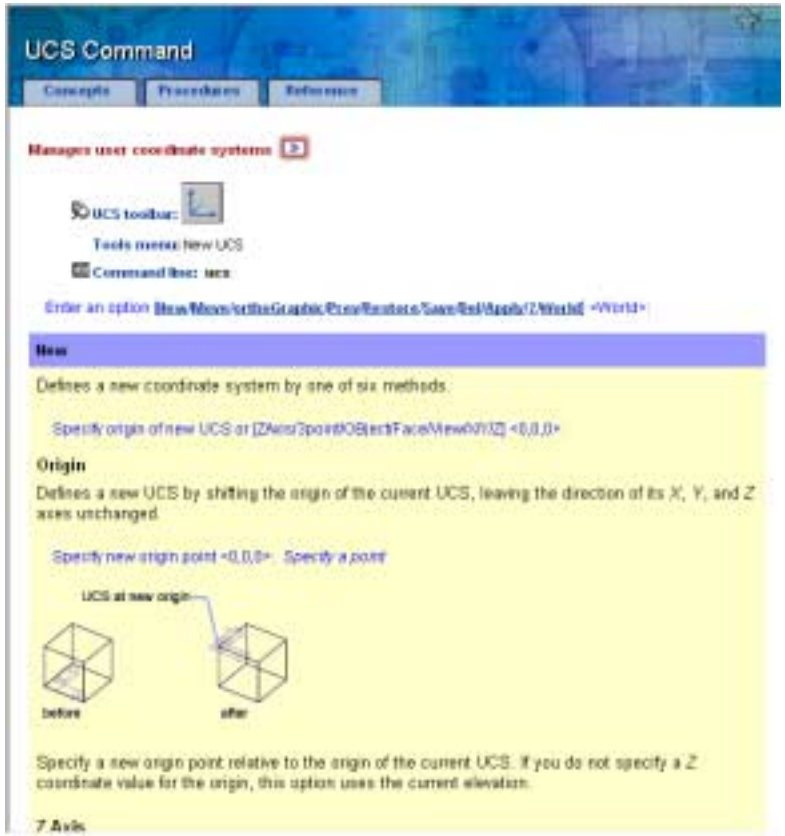
   Command: **ucs**

   Current ucs name: *NO NAME*

   Enter an option [New/Move/orthoGraphic/Prev/Restore/ Save/Del/Apply/?/World] <World>: **n**

   Specify origin of new UCS or [ZAxis/3point/OBject/ Face/View/X/Y/Z] <0,0,0>: vOrigin/ZAxis/3point/ OBject/View/X/Y/Z/Prev/Restore/Save/Del/?/ <World>:

AutoCAD Help Topics for New UCS



Saving the UCS 5.9

1. **Type** UCS at the command prompt.

   Command: **ucs**

   Current ucs name: *NO NAME*

   Enter an option [New/Move/orthoGraphic/Prev/Restore/ Save/Del/Apply/?/World] <World>: **s**

   Enter name to save current UCS or [?]:

Restoring the UCS 5.10

1. **Type** UCS at the command prompt.

   Command: **ucs**

   Current ucs name: *NO NAME*

   Enter an option [New/Move/orthoGraphic/Prev/Re store/Save/Del/Apply/?/World] <World>: **r**

   Enter name of UCS to restore or [?]: 1

UCS Dialog Box 5.11

1. **Type** DDUCS at the command prompt.
   Command: **dducs**

UCS Dialog Box (DDUCS)