

# Appendix B

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## AutoCAD Commands

Command	Description and Options
3D	Draws a 3D polygon entities with surfaces. Options: B - Draws a 3D box, C - Draws a wire frame having a cone shape, DI - Draws a 3D dish shaped (lower half of a sphere) polygon mesh by specifying the center and then the diameter or radius, DO - Draws the 3D upper half of the spherical polygon mesh by specifying the center and then the diameter or radius, M - Draws a polygon mesh by specifying the corners and the M and N sizes, P - Draws a 3D tetrahedron or a pyramid by specifying the relevant number of base points and the apex point or the top points, S - Draws a spherical polygon mesh by specifying the center and then the diameter or radius, T - Draws a polygon mesh having a toroidal shape. It is drawn by specifying the center and then the diameter or the radius, W - Draws a polygon wire frame having the shape of a wedge. It is drawn by specifying a corner, height, length, and width.
3DARRAY	Draws a 3D rectangular or polar array. Options: R - Rectangular 3D array, P - Polar array
3DCLIP	Starts the interactive 3D viewing and opens the <b>Adjust Clipping Planes</b> window.
3DCORBIT	Starts the interactive 3D viewing and enables you to set the drawing objects in the 3D view into continuous motion.
3DDISTANCE	Simulates the effect of moving the camera closer or farther to the drawing objects.
3DFACE	Draws a 3D surface with three or four sides. Options: First point, I- Invisible.
3DMESH	Draws a polygon mesh by specifying the size of M and N and the location of the vertices.
3DORBIT	Controls the interactive viewing of 3D objects in the drawing area.
3DPAN	Allows you to drag the view horizontally, vertically or diagonally.

**3DPOLY** Draws a 3D polyline having segments of a straight line. Options:

Point - Draws the 3D polyline to the specified point, C - Closes the 3D polyline by joining the last point with the first point, U - Deletes the last segment.

**3DSIN** Displays a dialog box that allows you to import the specified objects in a 3D Studio file.

**3DSOUT** Displays a dialog box that exports the AutoCAD objects with surface characteristics to a 3D studio file.

**3DSWIVEL** Simulates the effects of turning the camera on a tripod.

**3DZOOM** Allows you to zoom in and out on the view.

**ABOUT** Displays AutoCAD version and serial numbers and other information.

**ACISIN** Imports an ASCII ACIS file into the AutoCAD drawing.

**ACISOUT** AutoCAD exports the selected 3D solid objects to an ASCII ACIS file.

**ADCCLOSE** Closes the AutoCAD Design Center.

**ADCENTER** Starts and displays AutoCAD Design Center.

**ADCNAVIGATE** Directs the Desktop in AutoCAD DesignCenter.

**ALIGN** Allows specified objects to align with other 2D or 3D objects by moving and rotating them.

**AMECONVERT** Changes the regions and solids of AME to region and solids of AutoCAD.

**APERTURE** Controls the size of the object

snap target box.

**APPLOAD** Displays a dialog box that loads certain applications such as AutoLISP, ADS, and ARX at startup.

**ARC** Draws an arc of any size. The default method is to specify two endpoints and a point along the arc. Options:

A - Included angle, C - Center point, D - Starting direction, E - Endpoint, L - Length of chord, R - Radius.

**AREA** Computes the area and perimeter of different objects and of a region formed by specifying a sequence of points. Options:

A - Add mode, F - First point (Area by specifying points), O - Area of the object, S - Subtract mode.

**ARRAY** Creates specified number of copies of a selected object using the **Array** dialog box. Dialog box tabs:

Rectangular array, Polar Array.

**ARX** Loads, unloads, and provides information about ARX applications.

**Assist** This command is used to invoke the active assistance. This is a dynamic help mode that will automatically display the help related to the active command or dialog box when you move over it.

**ATTDEF** Creates an attribute definition (characteristics of an attribute). Options:

I - Invisible mode: Attribute remains invisible, C - Constant mode: Constant value of attribute, V - Verify mode: Verifies attribute value is correct, P - Preset mode: Default value to attribute.

**ATTDISP** Controls the visibility of the attribute globally. Options:

ON - Attributes made visible, OFF - Attributes made invisible, N - Current visibility kept.

**ATTEDIT** Edits attributes within a block or blocks. Options:

Y - Yes (one attribute at a time), N - No (all attributes at a time).

**ATTEXT** Attribute information is extracted from the drawing. Options:

C - CDF: Comma-Delimited File, D - DXF: Drawing Interchange File, S - SDF: Space-Delimited File, O - Drawing objects.

**ATTREDEF** An existing block is redefined and its attributes are updated.

**ATTSYNC** This command updates all the block insertions with the current values of the attributes.

**AUDIT** Identifies errors in a drawing. Options:

Y - Corrects the errors, N - Informs about the error without correcting it

**BACKGROUND** Creates a background for your scene.

**BASE** Sets the point of origin for inserting a drawing into another drawing.

**BATTMAN** This command displays the **Block Attribute Manager** used to edit and manage the block attributes in the current drawing.

**BHATCH** A specified enclosed area is filled with an associative hatch pattern through a dialog box. Previewing a hatch and adjusting the boundary is also possible. Options:

I - Internal point, P - Properties, S - Select, R - Remove islands, A - Advanced.

**'BLIPMODE** Controls the appearance of marker blip that is displayed on the screen when a point is picked. Options:

ON - Marker blip displayed, OFF - Marker blip not displayed.

**BLOCK** Creates a compound object as a block

definition from a set of entities. Options:

? - Lists names of previously defined blocks.

**BLOCKICON** Generates preview images for the blocks created in Release 14 or earlier.

**BMPOUT** Creates a bitmap image of the drawing and saves the screen to a file having a .bmp extension.

**BOUNDARY** Creates a polyline or region of a boundary that defines an enclosed area. Options:

A - Advanced Options.

**BOX** Creates a solid box that is 3D in nature with its base parallel to the XY plane. Options:

C - Corner of box, CE - Center of box.

**BREAK** Removes specified portions of an object or splits the object. Options:

F - Respecifies first point.

**BROWSER** Launches the default Web browser defined in the registry of the system.

**CAL** Calculates expressions that can be mathematical as well as geometrical.

**CAMERA** Sets a different camera location and target locations.

**CHAMFER** Connects two nonparallel objects with a beveled line. Options:

A - Chamfer distance is set using angle and distance, D - Sets chamfer distance, P - Chamfers entire polyline, T - Controls the trimming of the edges to chamfer line endpoints, M - Trim method.

**CHANGE** Alters the properties of selected objects. Options:

C - Change point - Changes lines, circles, Text, Attribute Definitions, Blocks, P - Changes properties like Color, Elev, LAYER, LType, Thickness.

**CHECKSTANDARDS** This command is used to check for any violations of the standard by the standards configured in the current drawing. The **Check Standards** dialog box is displayed when you invoke this command.

**CHPROP** Alters the drawing properties of selected objects. Options:

C - Changes color, LA - Changes layer, LT - Changes linetype, S - Changes linetype scale factor, LW - Changes lineweight, T - Changes thickness, PL - Changes the plotstyle of the selected objects.

**CIRCLE** Draws a circle using any of the four methods available. Options:

C - Circle drawn on the basis of center point and diameter or radius, 3P - Drawn on the basis of 3 points on circumference, 2P - Drawn on the basis of 2 endpoints of the diameter, TTR - Circle drawn tangent to two objects with a specified radius.

**CLOSE** Closes the current drawing if no change has occurred since last save or will prompt you to save the drawing.

**CLOSEALL** This command is used to close all the drawings that are open. If the files have some unsaved data then u will be prompted to specify whether or not you want to save the changes in the drawings.

**COLOR** Sets color for subsequent objects drawn. Options:

value - Sets color by number (1-255), name - Sets color by name, Byblock - The current color setting is inherited by the block at the time of insertion, Bylayer - Objects inherit the color of the layer in which they are drawn.

**COMPILE** Shape files and PostScript font files are compiled.

**CONE** Draws a 3D solid cone. Options:

Center - Cone having circular base, E - Cone having elliptical base.

**CONVERT** This command is used to convert a polyline or a hatch pattern created in a AutoCAD Release 13 or earlier release into the AutoCAD 2002 polyline or hatch pattern.

**CONVERTCTB** This command is used to convert a color-dependent plot style table into a named plot style table.

**CONVERTPSTYLES** This command is used to convert the current drawing into a color-dependent plot style or into a named plot style.

**COPY** Draws a copy of the selected object leaving the original object intact. The default method is to specify the base point. Options:

M - Multiple copies of object in single **COPY** command.

**COPYBASE** Copies the drawing objects with a specified base point.

**COPYCLIP** Copies the selected objects to the Clipboard.

**COPYHIST** Copies the text in the command line history to the Clipboard.

**COPYLINK** Copies the current view to the Clipboard to link with other OLE applications.

**CUTCLIP** Copies objects to the Clipboard but erases them from the drawing.

**CYLINDER** Draws a 3D solid cylinder. Options:

Center - Specifies the center of the circular base, E - Forms an elliptical base.

**DBCLOSE** Closes the **dbConnect Manager**.

**DBLCLKEDIT** This command is used to set

the double-clicking option. When you double-click on the entities then either the properties window is displayed or the related editor or dialog box is displayed. This is because of the reason that this value is set to ON. It set to **OFF** then there is no response upon double-clicking on the objects.

**DBCONNECT** Provides an AutoCAD interface to external database tables by starting **dbConnect Manager**.

**DBLIST** Lists all the database information for each object in the drawing.

**DDEDIT** Displays a dialog box that allows the user to edit text and attribute definitions.

**DDPTYPE** Displays a dialog box that sets the point style and also the size of the point object.

**DDVPOINT** Controls the direction of 3D views through a dialog box.

**DELAY** The execution of the next command is postponed for a specified time duration. In other words a specified pause is provided within the script.

**DIM** and **DIM1** Dimensioning mode is invoked and permits the use of dimension subcommands from AutoCAD's previous releases.

**DIMALIGNED** Creates a linear dimension aligned to the specified points or object.

**DIMANGULAR** Creates an angular dimension.

**DIMBASELINE** Starts drawing from the baseline of the previous dimension. The new dimension can be linear, angular, or ordinate.

**DIMCENTER** Draws center mark or center lines in circles and arcs.

**DIMCONTINUE** Starts drawing a new dimension from the second extension line of the previous or selected dimension. The new dimension can be a linear, angular, or ordinate dimension.

**DIMDIAMETER** Draws diameter dimensions for different circles and arcs.

**DIMDISASSOCIATE** This command is used to disassociate the true associative dimensions from the objects to which they are associated.

**DIMEDIT** Edits dimension text and extension lines. Options:

H - Dimension text moved back to default position, N - Dimension text is replaced, R - Dimension text is rotated, O - Extension lines placed at obliquing angle.

**DIMLINEAR** Draws linear dimensions.

**DIMORDINATE** Creates ordinate dimensions.

**DIMOVERRIDE** The settings of the dimensioning system variables concerning the dimension object are overridden. The current dimension style is not affected.

**DIMRADIUS** Draws radial dimensions for different circles and arcs.

**DIMREASSOCIATE** This command is used to convert a dimension into a true associative dimension by associating them to the selected objects.

**DIMREGEN** This command is used to update the true associative dimensions.

**DIMSTYLE** New dimension styles are created and the existing ones are modified. Options:

R - Dimensioning system variable setting changed, S - Current settings of dimensioning variables saved, ST - Current values of dimensioning variables displayed, V - Dimensioning variable set-

ting of a style is listed, A - Selected dimension objects are updated, ? - Named dimension styles are listed.

**DIMTEDIT** Dimension text is moved and rotated. Options:

A - Angle of dimension text changed, H - Dimension text moved to default position, C - Dimension text center justified, L - Dimension text left justified, R - Dimension text right justified.

**DIST** Distance and angle between two points is measured.

**DIVIDE** Places blocks or points as markers at equal distance along the length or perimeter of an entity, thus dividing it into a specified number of equal parts. Options:

B - Places blocks as markers.

**DONUT** Draws wide polyline with specified inside and outside diameters, thus forming a ring.

**DRAGMODE** Controls the dragging feature for appropriate commands. Options:

ON - Permits dragging, OFF - Ignores dragging, A - Permits dragging wherever possible.

**DRAWORDER** Changes the display order of images and other objects.

**DSETTINGS** Specifies the settings for Snap mode, grid, polar, and object snap tracking.

**DSVIEWER** Displays the Aerial View window.

**DVIEW** Parallel projection or perspective views are defined. Options:

CA - Sets camera position by rotating about the target, TA - Sets target position by rotating about the camera, D - Camera to target distance is set, PO - Locates target and camera points, PA - Pans image, Z -

Zooms In/Out, TW - Tilts view around line of sight, CL - The view is clipped in front and back, H - Hidden lines removed on selected objects, OFF - Perspective viewing turned off, U - Last DVIEW operation reversed.

**DWGPROMPS** Sets and displays all the properties of the current drawing.

**DXBIN** Specially coded binary files are imported into a drawing.

**EATTEDIT** This command is used to display the **Enhanced Attribute Editor** for editing the block attributes. You can change the block attributes, values, position, justification and so on using this editor.

**EATTEXT** This command is used to extract the block attributes and copy them into a file. This command has an advantage that you do not need a template file for extracting the attributes if you are using this command. When you invoke this command, the **Attribute Extraction Wizard** is displayed that guides you through the step by step procedure of extracting the attributes.

**EDGE** The visibility of 3D sides is altered. By default the selected edge is hidden. Options:  
D - Display mode invisible edges are highlighted.

**EDGESURF** A 3D polygon mesh is created with four adjoining edges that define a Coons surface patch.

**ELEV** The elevation and extrusion thickness is set for the new objects.

**ELLIPSE** Draws ellipses or elliptical arcs using different options. Specifying the axis endpoint is the default method. Options:

A - Draws elliptical arc, C - Specifies the center point of the ellipse, I - Draws isometric circle in current isometric plane.

**ENDTODAY** This command is used to close the **AutoCAD 2002 Today** window.

**ETRANSMIT** This command is used to electronically transmit a drawing file. The resultant file can be converted into an EXE file, a zip file or can be copied into a folder.

**ERASE** Erases the selected objects from the drawing.

**EXPLODE** Compound objects (blocks, dimensions, polylines, 3D solids, regions, polygon meshes, multilines) are broken into their constituent parts.

**EXPORT** Objects are saved to other file formats via a dialog box.

**EXTEND** Lengthens a selected entity to meet another entity. Options:

P - Specifies projection mode like UCS and View, E - Controls the extension to implied or actual edge, U - Latest extension is undone.

**EXTRUDE** Solids are created by extruding 2D entities along a selected path. By default, height of extrusion is to be specified which extrudes the object along the positive Z axis. Options:

P - Extrusion path is selected.

**FILL** Controls whether multilines, traces, solids, or wide polylines are filled or not filled. Options:

ON - Fill mode is enabled, OFF - Fill mode is disabled.

**FILLET** The edges of two specified lines, arcs, or circles are filleted by construction of an arc of specified radius. The default method is to specify the two objects. Options:

P - Entire polyline is filleted, R - The radius of the fillet arc is specified, T - Controls the trimming of the edges to fillet arc endpoints.

**FILTER** Creates a list of properties on the basis of which the objects are selected.

**FIND** Finds, replaces, selects, or zooms to specified text through a dialog box.

**FOG** Provides visual clues for the apparent distance of objects.

**GRAPHSCR** Flips to the graphics window from the text window.

**GRID** A grid of dots at specified spacing is displayed. Options:

Grid spacing(X) - Grid set to specified value, ON - Grid turned on at current spacing, OFF - Grid turned off, S - Grid spacing set to current Snap interval, A - Grid set to different spacing in X and Y.

**GROUP** Creates and changes object selection groups, which are sets of objects having specific names. Options:

? - Lists names and descriptions of all the group, O - Changes the numerical order of objects in the group, A - Adds objects to the group, R - Remove objects from the group, E - Explodes the group into its component objects, REN - Assigns a new name to an existing group, S - Specifies whether a group is selectable, C - Creates a new group.

**HATCH** A specified area is filled with a selected pattern. Options:

? - Lists the hatch patterns in acad.pat file, name - A pattern name as defined in acad.pat file is specified, U - User-defined hatch pattern is specified. U can be followed by a comma and a hatch style, S - Specifies a solid fill.

**HATCHEDIT** Edits a hatch block through a dialog box. It sets the pattern type and properties and then applies it to a block. Options:

D - Removes the associative quality from

an associative hatch, S - Changes the hatch style type, P - Specifies new hatch properties.

**HELP(F1)** Displays help for a specific command and also lists the commands and data entry options.

**HIDE** Regenerating of a 3D object is performed with the removal of hidden lines.

**HYPERLINK** Attaches a hyperlink to a graphical object or modifies an existing hyperlink through a dialog box.

**HYPERLINKOPTIONS** Controls the visibility of the hyperlink cursor and the display of hyperlink tooltips. Options:

Y - Shows the hyperlink cursor and tooltip,  
N - Does not display.

**ID** The UCS coordinates of a specified point are displayed.

**IMAGE** Inserts images into an AutoCAD drawing file.

**IMAGEADJUST** Controls the brightness, contrast, and fade values of the selected image.

**IMAGEATTACH** Attaches a new image object and definition.

**IMAGECLIP** Creates new clipping boundaries for single image objects.

**IMAGEFRAME** Controls the display of image frame on the screen. Options:

On - Displays image frames, Off - Hides image frames.

**IMAGEQUALITY** Controls the display quality of images. Options:

H - Produces high quality display, D - Produces low quality display.

**IMPORT** Imports the different file formats

into an AutoCAD drawing via a dialog box.

**INSERT** Places a previously defined named block or drawing into the current drawing.

**INSERTOBJ** Inserts a previously linked or embedded object.

**INTERFERE** Highlights all of the interfering solids and then creates new solids from the intersections of the interfering pairs of solids.

**INTERSECT** A new composite solid is created from the intersecting region of two or more solids.

**ISOPLANE** An isometric plane is selected to be the current plane for an orthogonal drawing. Options:

L - Left-hand plane, T - Top plane,  
R - Right-hand plane.

**JUSTIFYTEXT** This command is used to change the justification point of the existing text. However, this command does not change the location of the text.

**LAYER** Creates layers and sets different properties for the specified layers. Options:

? - Lists defined layers, M - Creates a layer and makes it the current layer, S - Makes a specified already existing layer current, N - Creates one or more new layers, ON - Turns on the specified layers, OFF - Turns off the specified layers, C - Sets the color of the specified layer, L - Sets the linetype of the specified layer, LW - Changes the lineweight, P - Controls whether visible layers are plotted, PS - Sets the plot style assigned to a layer, F - Makes a layer invisible by freezing it, T - The frozen layer is thawed, LO - Locks layers, thus prevents editing on them, U - Unlocks specified locked layers.

**LAYERP** This command is similar to the undo command but is valid for only the layers. This



command undoes the changes made using the **last LAYERS** command. However, this command has some limitations. This command can not undo the renaming of layers, the deletion of layers or the creation of new layers.

**LAYERPMODE** This command is used to control whether or not the changes made to the layers are tracked or not. If set to **ON**, the changes made to the layers are tracked otherwise they are not tracked.

**LAYOUT** Creates a new layout and renames, copies, saves, or deletes an existing layout. Options:

C - Copies a layout, D - Deletes a layout, N - Creates a new layout tab, T - Creates a new template, R - Renames a layout, SA - Saves a layout, S - Makes a layout current, ? - Lists all the available layouts.

**LAYOUTWIZARD** Starts the Layout wizard to designate page and plot settings for a new layout.

**LAYTRANS** This command is used to translate the selected layer into a layer of the specified standard.

**LEADER** Creates a line segment with an arrowhead that connects the text to a feature. The leader is created from a specified point to another point depending upon the options. Options:

A - Annotation is inserted at the end of leader line, F - Controls the type of leader (Spline, Straight, Arrow), U - The last vertex point is removed.

**LENGTHEN** Alters the length of specified entities and the included angle of arcs. Options:

DE - Lengthens the object by a specified incremental distance, P - Alters the length by a specified percentage of its total length, T - Alters the length by specified

total absolute length, DY - The object is lengthened to where its endpoint is dragged.

**LIGHT** Controls the lighting effects in the model space via a dialog box. It creates, modifies, deletes the lights and controls the color system in a drawing. It manages different lights (Point light, Distant light, Spotlight) through a series of dialog boxes.

**LIMITS** Sets the drawing boundaries (and WCS grid extents) for the current space. Options:

Lower - Specifies 2 points-lower left corner and the left-upper right corner, ON - Limits checking is enabled, OFF - Limits checking is disabled.

**LINE** Draws straight line segments of any length by specifying the endpoints. Options:

ENTER - Continues from end of previous line or arc, U - Removes the most recent segment, C - Closes polygon.

**LINETYPE** Defines line characteristics, loads linetypes and sets them for new entities. It also creates new linetype definitions to a library file. Options:

? - Lists linetypes in a file, C - Creates new linetype definition, L - Loads an already existing linetype definition, Sets linetype for new entities, S - Set the current linetype.

**LIST** Lists database information (type, layer, X,Y,Z position, thickness, and so on) about the specified entity.

**LOAD** Loads the shapes from the shape file to be used by the **SHAPE** command.

**LOGFILEOFF** The log file already opened is closed by this command.

**LOGFILEON** The subsequent contents of the text window are recorded into the log file.

**LSEdit** Lets you edit a landscape object.

**LSLib** Lets you maintain libraries of landscape objects.

**LSNew** Lets you add realistic landscape items, such as trees and bushes, to your drawing.

**LTSCALE** Sets the global scale factor of the linetype so as to alter the relative length of dashes and dots.

**LWeight** Sets the current lineweight, lineweight display options, and lineweight units.

**MASSPROP** Calculates and lists the mass characteristics of 2D and 3D objects. The properties displayed are Area, Perimeter, Bounding box, Centroid. For Coplanar regions, additional properties displayed are Moments of Inertia, Products of Inertia, Radii of Gyration, and Principal Moments. The properties displayed for solids are Mass, Volume, and the properties of the Coplanar region.

**MATCHPROP** Copies the properties from one object to one or more objects.

**MATLib** Displays a dialog box that lists all the predefined materials (material list) and lists the materials in the selected library (library list). It also imports and exports materials between those two lists.

**MEASURE** Places blocks or points as markers at measured intervals along the length or perimeter of an entity. Options:

B - Places blocks as markers.

**MEETNow** This is an internet related feature of AutoCAD that allows you to give access of your AutoCAD session to the other users connected through the internet. You can share the drawing, chat with them or send them files using this feature of AutoCAD.

**MENU** Loads a customized menu file into the menu area. The menu file contains the command strings and menu syntax.

**MENULOAD** Displays a dialog box that loads and permits you to add partial menu files to an already present base menu file.

**MENUUNLOAD** Displays the same dialog box as in the case of the **MENULOAD** command that can also be used to unload the partial menu files.

**MINsert** Places multiple copies of a previously drawn named block or drawing into the current drawing in a rectangular array. Options:

? - Lists the defined block definitions, ~ - Displays a dialog box.

**MIRROR** Reflects objects so as to create their mirror images about a specified line.

**MIRROR3D** Reflects objects so as to create their mirror images about a specified plane. Options:

3points - 3points specify the mirroring plane, O - The plane of a planar object specifies the mirroring plane, L - The previous mirroring plane is taken as the present one, Z - The point on the plane and another point on the Z axis (normal) of the plane specifies the mirroring plane, V - A point on the viewing plane specifies the mirroring plane, XY/YZ/ZX - The mirroring plane is aligned to any one of the standard planes.

**MLEdit** Displays a dialog box that controls intersection between multiple parallel lines and edits them. Different types of cross, tee, corner joints, and vertices can be created between multilines via the dialog box. It is also possible to cut and weld segments of a single multiline.

**MLINE** Draws multiple parallel lines between

two points. Options:

J - Justification- How multiline is drawn between two points, S - Scale- Sets the width of the multiline, ST - Sets the multiline style.

**MLSTYLE** Displays a dialog box that creates a multiline style, makes a specific style current, saves, adds a style to the current list, re-names a style, adds a description to a style, and loads a style from the library file. It also controls the element properties (number, offset, color, linetype) and the multiline properties (start and end caps, angle, background color).

**MODEL** Switches from a layout tab to the Model tab and makes it current.

**MOVE** Moves objects from one location to another by specifying a displacement.

**MSLIDE** Creates a slide file from the current display.

**MSPACE** Switches to model space in a floating viewport from paper space.

**MTEXT** Creates paragraph text within a specified text boundary. Displays a dialog box where you can specify the different options for the multiline text.

**MULTIPLE** Causes the repetition of the next command until it is cancelled.

**MVIEW** Creates viewports and controls the number and layout of paper space viewports. You specify diagonal corners of new viewport as the default option. Options:

ON - Viewport is turned on, OFF - Viewport is turned off, H - Hideplot- Hidden lines removed during plotting, F - Fit- Single viewport created that fills the display area completely, L - Locks the selected viewport, O - Specifies a closed polygon to convert it into viewport, P -

Creates an irregularly shaped viewport using specified points,

2 - The specified area is divided into two viewports either horizontally or vertically, 3 - The specified area is divided into 3 viewports, 4 - The specified area is divided into 4 viewports, R - Restore - Viewport configurations changed into individual viewports.

**MVSETUP** The specifications of a drawing are set. Depending upon the system variable **TILEMODE**, the working of **MVSETUP** is different. When **TILEMODE** is On, drawing scale factor, units type, and paper size is set and lastly a bounding box is drawn. When **TILEMODE** is Off a set of floating viewports is created. Options (**TILEMODE** Off):

A - Aligns the view in a viewport with another viewport. The view can be panned in a specified direction, aligned horizontally, vertically, or rotated, C - The viewport can be created, S - Sets the scale factor of objects in the viewport, O - Options - The layer can be set, reset limits, set units, Xref attach, T - Creates a title block and drawing border, U - Reverses the previous operation

**NEW** Displays a dialog box that creates a new drawing.

**OFFSET** Creates offset curves, concentric circles, and parallel lines at a specified distance from the original object. Options:

value - Specify the offset distance, T - Through- The offset object passes through the specified point.

**OLELINKS** Updates, changes, and cancels existing OLE links.

**OLESCALE** Displays the OLE Properties through a dialog box.

**OOPS** Restores those entities that have been erased by the last **ERASE** command.

**OPEN** Displays a dialog box through which an existing drawing can be opened. The dialog box also displays the directory, files, preview, name of the file, and the pattern.

**OPTIONS** Customizes the AutoCAD settings through a dialog box.

**ORTHO** The movement of the cursor is restrained to only vertical or horizontal directions and aligned with the grid. Options:

- ON - Constrains cursor movement, OFF
- Does not constrain cursor movement.

**OSNAP** Specifies a point at an exact location on an object by setting the Object Snap modes. Options:

END - Closest endpoint of arc (arcs and lines include polyline segments), elliptical arc, ray, mline, line and closest corner of trace, solid, 3D face, MID - Midpoint of arc, elliptical arc, spline, ellipse, ray, solid, xline, mline, or line, INT - Intersection of line, arc, spline, elliptical arc, ellipse, ray, xline, mline, or circle, EXT - Snaps to the extension point of an object, APP - Apparent or extended (projected) intersection (which may not actually intersect in 3D space) of line, arc, spline, elliptical arc, ellipse, ray, xline, mline, or circle, CEN - Center of arc, elliptical arc, ellipse, or circle, QUA - Quadrant point of arc, elliptical arc, ellipse, solid, or circle, PER - Point perpendicular to arc, elliptical arc, ellipse, spline, ray, xline, mline, line, solid, or arc, TAN - Tangent to arc, elliptical arc, ellipse, or circle, NOD - Point object, INS - Insertion point of text, block, shape, or attribute, NEA - Nearest point of arc, elliptical arc, ellipse, spline, ray, xline, mline, line, circle, or point, QUI - First snap point, NON - Turns Object Snap mode off.

**PAGESETUP** Specifies the layout page, paper size, plotting device, and settings for each new layout through a dialog box.

**PAN** Moves the drawing display by a specified displacement.

**PARTIALLOAD** Loads additional geometry into a partially opened drawing.

**PARTIALOPEN** Loads additional geometry from a selected view or layer into a drawing.

**PASTEBLOCK** Pastes a copied block in a new drawing.

**PASTECLIP** Inserts data from the Clipboard.

**PASTEORIG** Pastes a copied object in the new drawing using the geometric coordinates of the original drawing.

**PASTESPEC** Inserts data from the Clipboard and controls the format of the data.

**PCINWIZARD** Starts a wizard to import PCP and PC2 configuration file plot settings in current layout or model tab.

**PEDIT** Editing of 2D polyline, 3D polyline, or 3D mesh. Options:

2D polyline C - Closes polyline segment, O - Closing segment removed, J - Joins to polyline, W - Specifies uniform width, E - Edits the vertices. The first vertex is marked by placing an X. Editing includes moving the X to next or previous vertex, adding a new vertex, setting the first vertex for break, moving the vertex, regenerating, straightening and attaching a tangent direction to the current vertex, F - Fits arc curves smoothly to the polyline, replacing each line segment with a pair of arcs, S - Vertices are used as a frame for spline curve, L - Linetype generation in a continuous pattern, U - Reverses the previous operation, 3D polyline C - Closes polyline segment, O - Closing segment removed, E - Edits the vertices. Same suboptions as in 2D Edit except the

tangent suboption,

S - Vertices are used as a frame for spline curve, D - Removes a spline curve to its control frame, U - reverses the previous option, X - Exits **PEDIT**. 3D polygon mesh E - Edits vertices. The first vertex is marked by placing an X. Editing includes moving the X to next or previous vertex, moving the X marker to the next vertex or the previous vertex in the N direction, moving the marker to the next or previous vertex in the M direction, regenerating the mesh, S - Fits a smooth surface, D - The control point polygon mesh is restored, Mclose - M-direction polylines are closed, Mopen - M-direction polylines are opened, Nclose - N-direction polylines are closed, Nopen - N-direction polylines are opened, U - Reverses editing operations as far back as the beginning of the **PEDIT** session.

**PFACE** A 3D polyface mesh is created vertex by vertex.

**PLAN** Allows you to view the drawing from plan view of a User Coordinate System. Options:

C - Plan view of the current UCS, U - Plan view of the specified UCS, W - Plan view of the World Coordinate System.

**PLINE** Draws 2D polylines. The default is to draw a polyline between two specified points. Options:

A - Arc mode- Arc segments can be added to polyline. The arc segment starts from the endpoint of the previous polyline segment and can be drawn by specifying the endpoint of the arc, the included angle, center of the arc, starting direction of the arc, halfwidth of the arc, radius of the arc, Width. You can also close the polyline with the arc segment, or reverse the previous operation or you can shift to the Line mode, C - Closes the polyline, H - Sets the halfwidth, L - Draws polyline of speci-

fied length, U - Last polyline segment is removed, W - The width of the next segment is specified.

**PLOT** Displays a dialog box that allows you to plot the drawing to the plotting device or file. Through a series of dialog boxes you can set the different parameters, device information, drawing extents and limits, plot size, paper size, orientation, plot scale, rotation, and origin. You can also plot a view or a specific portion of the drawing and also preview the plot.

**PLOTSTAMP** This command is used to add additional text to the printed drawings. This additional text is called stamp and is not displayed in the plot preview.

**PLOTSTYLE** Sets the current plot style for new drawing objects, or the assigned plot style for selected objects through a dialog box.

**PLOTTERMANAGER** Opens the **Plotter Manager** and enables you to launch Add-a-plotter wizard and Plotter Configuration Editor.

**POINT** Draws a point object at a specified location.

**POLYGON** Draws a polygon (closed polyline object) having specified number of sides. Options:

C - Specifies the center of polygon. Suboptions:

I - Inscribed in the circle, C - Circumscribed about the circle.

E - Defines one edge of the polygon.

**PREVIEW** Shows how the drawing will look when it is printed or plotted.

**PROPERTIES** Controls properties of a drawing object and displays Properties window.

**PROPERTIESCLOSE** Closes the Properties window.

**PSETUPIN** Imports a user-defined page setup into a new drawing layout.

**PSPACE** Switches from a model space viewport to paper space.

**PUBLISHTOWEB** This command allows you to create a web page that will comprise of the text and specified drawings. You can specify the layouts of the drawings to be included in the web page. When you invoke this command, the **Publish to Web** wizard start that will guide you through the process of creating the web page.

**PURGE** Removes those references from the database that are not being used. Options:

B - Removes unused blocks, D - Removes unused dimstyles, LA - Removes unused layers, LT - Removes unused linetypes, P - Removes unused plotstyle, SH - Removes unused shape files, ST - Removes unused text styles, M - Removes unused mline styles, A - Removes all unused objects.

**QDIM** Quickly creates a dimension on the drawing objects.

**QLEADER** Quickly creates a leader and its annotation.

**QSAVE** Saves and backs up the drawing without asking for a filename.

**QSELECT** Quickly creates selection sets based on filtering criteria.

**QTEXT** Sets the text and the attribute objects to be displayed without drawing the text detail. Options:

ON - Text displayed as a bounding box.  
OFF - Quick text mode off.

**QUIT** Exits AutoCAD without saving.

**RAY** Draws a semi-infinite line used as a con-

struction line.

**RECOVER** Recovers a damaged and corrupted drawing.

**RECTANG** Creates a polyline rectangle by specifying the diagonally opposite corners.

**REDEFINE** Restores an AutoCAD built-in command that has been previously overridden by **UNDEFINE**.

**REDO** The effect of the previous command if it was **UNDO** is reversed.

**REDRAW** Cleans up the current viewport by removing the blip marks and other stray pixels and redrawing missing portions of objects.

**REDRAWALL** Refreshes or cleans up all the viewports.

**REFCLOSE** Saves back or discards changes made during in-place editing of a reference.

**REFEDIT** Selects an external reference for editing.

**REFSET** Adds or removes objects from a working set during in-place editing of a reference.

**REGEN** Regenerates the current viewport.

**REGENALL** Regenerates all the viewports.

**REGENAUTO** Controls automatic regeneration of the drawing. Options:

ON - Permits automatic regeneration.  
OFF - Does not permit automatic regeneration.

**REGION** Region entities (2D enclosed areas) are created from a selection set.

**REINIT** Reinitializes the I/O ports, digitizer, display, or parameters file through a dialog

box.

**RENAME** Alters the name of entities.

Options:

B - Renames block, D - Renames dimstyle, LA - Renames layers, LT - Renames linetype, S - Renames style, U - Renames UCS, VI - Renames view, VP - Renames viewport configuration.

**RENDER** Displays a dialog box that shades a 3D wireframe or solid, so that a realistically shaded image is created. It is possible to render the current scene or just the specified objects. You can also control the color map and the shading of different materials.

**REPLAY** The BMP, TGA, or TIFF images are displayed via a dialog box.

**RESUME** Resumes an interrupted script.

**REVOLVE** By revolving a 2D entity (polygon, closed polyline, circle, ellipse, donuts, and so on), a solid is formed. Options:

point - The axis of revolution is specified by two points, O - The axis of revolution is specified by selecting an existing line or a segment polyline, X - The positive X axis used as the axis direction, Y - The positive Y axis used as the axis direction.

**REVSURF** A polygon mesh is constructed by rotating a curve or profile around a specified axis.

**RMAT** Displays a dialog box that manages the materials used for rendering. A new material can be created or the existing ones can be modified through a series of dialog boxes. It is possible to adjust the value and color of the materials. AutoCAD's color index can also be attached by layers or by using a color wheel.

**RMLIN** This command is used to copy redline markup language in the current drawing for viewing the electronic comments on the

design. The RML insertions are placed on a separate layer called **MARKUP**.

**ROTATE** Rotates specified entities about a base point. Options:

angle - Rotates object through a specified angle, R - Rotates object with respect to the reference angle.

**ROTATE3D** Rotates object about a 3D axis. Options:

2points - The axis of rotation is given by specifying 2 points, A - Axis by object- The axis of rotation is aligned with an object, L - The previous rotation axis is considered, V - The axis of rotation is aligned with the viewing direction, X/Y/Z - The axis of rotation is aligned with any one of the axes (X-axis, Y-axis, Z-axis).

**RPREF** Displays a dialog box that controls the rendering preferences. It controls the color map, the behavior of the **RENDER** command by default, rendering display, and the image output setting. Through a series of subdialog boxes, the type of shading used and 3D solid faces can be controlled. You can also set the color and the aspect ratio of the output file.

**RSCRIPT** Repeats a script continuously.

**RULESURF** Creates a polygon mesh representing a ruled surface between two curves.

**SAVE** A name is requested under which the drawing is saved. If the drawing is already named, then it is saved under the current filename.

**SAVEAS** An unnamed drawing is saved with a filename or the current drawing is renamed.

**SAVEIMG** Displays a dialog box that saves a rendered image to a file. Through the subdialog boxes, image compression for TGA and TIFF formats is possible.

**SCALE** The size of the existing objects is changed. The default is to specify a scale factor. Options:

R - The object is scaled according to the reference length and a new length.

**SCALETEXT** This command is used to change the scale of the existing text. The original location of the text is not changed even after scaling.

**SCENE** Controls different scenes (particular view) in model space. Through a series of dialog boxes all the scenes in the current drawing are listed, new scenes can be added, scene names can be modified, and the lights can be controlled in the scene.

**SCRIPT** Executes a command script.

**SECTION** Creates regions from the intersection of a plane and solids. Options:

3points - Specifying 3 points on sectioning plane, O - Sectioning plane is aligned with the object, Z - Sectioning plane is aligned with the plane's normal direction, V - Sectioning plane is aligned with the viewing plane of current viewport, XY - Sectioning plane aligned with XY plane of UCS, YZ - Sectioning plane aligned with YZ plane of UCS, ZX - Sectioning plane aligned with ZX plane of UCS.

**SELECT** Creates a selection set of specified group of objects. Options:

AU - Automatic selection, A - Add mode - Objects are added to the selection set, ALL - Selects all objects, BOX - Objects inside or crossing a rectangle are selected, C - Objects are selected that lie inside and crossing an area specified by two points, CP - Those objects are selected that lie inside and crossing the polygon created by specifying points around the objects, F - Those objects are selected that are crossing the specified fence, G - Objects within a group are selected, L - Recently

created object is selected, M - Objects are picked without highlighting them, P - Recent selection set is selected, R - Remove mode - Objects can be removed from the selection set, SI - Selects first object or a set of objects, U - Removes the most recently added object from the selection set, W - Selects those objects that lie completely inside an area specified by two points, WP - Selects those objects that lie completely inside an area specified by picking points around the objects.

**SETUV** Lets you map materials onto geometry.

**SETVAR** Sets the values of the system variables. Options:

? - Lists the variables with their current values.

**SHADEMODE** Displays a shaded picture of the drawing in the current viewport. Options:

2D - Displays the objects using lines and curves to represent the boundaries, 3D - Displays the objects using lines and curves to represent the boundaries, 3D wireframe - Displays the objects using 3D wireframe representation, H - Hides lines representing back faces, F - Shades the objects between the polygon faces, G - Shades the objects and smooths the edges, L - Combines the Flat Shaded and Wireframe options, O - Combines the Gouraud Shaded and Wireframe options.

**SHAPE** Predefined shapes are inserted. Options:

? - Lists the shape names.

**SHELL** Permits the access to the commands in the operating system while in AutoCAD.

**SHOWMAT** Lists the material type and attachment method for a selected object.

**SKETCH** Allows you to draw freehand draw-



ings. Options:

P - Pen- sketching pen raised and lowered,  
X - Reports the number of temporary lines  
drawn and then exits SKETCH Q - Tem-  
porary lines discarded and then exits  
SKETCH R - Temporary lines recorded  
as permanent, E - Removes portion of the  
temporary line, C - Pen lowered for sketch-  
ing, . - Draws a straight line from end-  
point of sketched line to current position  
of pen.

**SLICE** Solid is cut with a plane. Options:

3points - Cutting plane specified by de-  
fining 3 points, O - Cutting plane aligned  
with an object (Circle, ellipse, elliptical arc,  
2D spline, or polyline), Z - Cutting plane  
specified by locating a point on Z-axis, V  
- Cutting plane aligned to the viewing  
plane of the current viewport, XY - Cut-  
ting plane aligned with the XY plane, YZ  
- Cutting plane aligned with the YZ plane,  
ZX - Cutting plane aligned with the ZX  
plane.

**'SNAP** The movement of the cursor is con-  
strained to the snap spacing. Options:

ON - Snap mode is turned on, OFF - Snap  
mode is turned off, A - Sets different X  
and Y spacings, R - Snap grid is rotated,  
S - Sets the style (Standard or Isometric)  
of the snap grid, T - Specifies the snap  
type (Polar or Grid).

**SOLDRAW** Generates profiles and sections  
in viewports created with **SOLVIEW**.

**SOLID** Draws polygons that are solid-filled.

**SOLIDEDIT** Edits faces and edges of 3D solid  
objects.

**SOLPROF** Creates profile images of three-  
dimensional solids.

**SOLVIEW** Creates floating viewports using  
orthographic projection to lay out multi and

sectional view drawings of 3D solid and body  
objects.

**SPACETRANS** This command is used to  
translate the length values in one of the  
working environment (model space or paper  
space) of AutoCAD into the value equivalent  
to it in the other environment.

**SPELL** Allows spellcheck of text objects in a  
drawing. If an ambiguous word is found, then  
the dialog box is displayed that lists the alter-  
natives for the word, or permits you to replace  
the current word with another one, or add the  
word to the dictionary.

**SPHERE** A 3D solid sphere is drawn. Op-  
tions:

R - Radius of the sphere, D - Diameter of  
the sphere.

**SPLINE** Draws smooth spline curves between  
points. Options:

Point - Specify points to define the spline  
curve. Suboptions:

Point - Adds spline curve segments by  
specifying points, C - Spline curve is  
closed, F - Fit, Tolerance - The tolerance  
for fitting is changed, O - 2D or 3D spline-  
fit polylines are changed to splines.

**SPLINEDIT** Allows you to edit a spline en-  
tity. Options:

F - Fit data is edited. Suboptions:

A - Fit points are added, C - An open  
spline is closed, O - A closed spline is  
opened, D - Fit points are removed, M -  
Fit points are moved, P - A spline fit data  
is removed from database, T - Beginning  
and end tangents are edited, L - Toler-  
ance value for spline fit are changed, X -  
Exits fit data option, C - An open spline  
is closed, O - A closed spline is opened,  
M - Move Vertex - The position of the con-  
trol vertices is changed, R - Refines a  
spline by adding control points, or by in-  
creasing its order, or by changing the

weight, E - Spline direction is reversed, U - Reverses the previous operation of SPLINEDIT.

**STANDARDS** This command is used to configure new standards to the current drawing.

**STATS** Displays a dialog box that provides the rendering statistics. It also saves the statistics to a file.

**STATUS** Lists the drawing statistics, modes, and extents.

**STLOUT** Creates a binary or ASCII file and stores the solid in the specified file.

**STRETCH** Stretches lines, arcs, and polylines by moving the endpoints to another specified location, and moves the objects.

**STYLE** Creates new text styles or modifies the existing ones through a dialog box.

**STYLESMANAGER** Displays Plot style Manager dialog box.

**SUBTRACT** Subtracts the area of one set of regions from another and subtracts the volume of one set of solids from another, thus creating a new composite region or solid.

**SYSWINDOWS** Arranges windows and is equivalent to standard Window menu options in Windows applications.

**TABLET** Aligns the tablet with the coordinate system of a paper drawing. Options:

ON - Tablet mode is turned on, OFF - Tablet mode is turned off, CAL - Calibrates the tablet, CFG - Configures tablet menu area and screen pointing area.

**TABSURF** Creates a polygon mesh that represents a tabulated surface formed from a path curve and direction vector.

**TEXT** Writes text using a variety of character patterns. Displays text on screen as it is entered. Options:

Start Point - Specifies a start point for the text object, J - Controls justification of the text, Suboptions:

A - Specifies both text height and text orientation, F - Specifies that text fits within an area, C - Center aligned, M - Horizontally aligned, R - Right justified, TL - Top left, TC - Top centered, TR - Top right, ML - Middle left, MC - Middle centered, MR - Middle right, BL - Bottom left, BC - Bottom centered, BR - Bottom right. S - Specifies the text style, which determines the appearance of the text characters.

**TEXTSCR** Flips to the text window from the graphics window.

**TIME** The date and time of drawing creation is displayed. It also displays the time and the date when the current drawing was last updated and controls an elapsed timer. Options:

D - Displays the updated times, O - Elapsed timer is turned on, OFF - Elapsed timer is turned off, R - Resets the user elapsed timer.

**TODAY** This command is used to display the **AutoCAD 2002 Today** window.

**TOLERANCE** Creates and adds geometric tolerances to a drawing through a dialog box.

**TOOLBAR** Displays, hides, and customizes toolbars.

**TORUS** Draws a solid having the shape of a donut. Options:

R - Radius of the tube, D - Diameter of the tube.

**TRACE** Draws filled lines having a specified width.

**TRANSPARENCY** Controls whether background pixels in an image are transparent or opaque.

**TREESTAT** Displays the current spatial index (position of objects in space) of a drawing. The information includes the number of nodes, number of objects, depth of branch, and so forth.

**TRIM** Removes the extra portion of an entity which extends beyond a specified boundary. Options:

P - Sets projection mode, E - Controls trimming of objects until the implied edge, U - Reverses the previous operation of the **TRIM** command, O - Specifies the object to trim.

**U** Reverses the most recent operation.

**UCS** Sets and modifies the user coordinate system. Options:

W - Current UCS set to World Coordinate System, N - New UCS, M - Moves the origin, G - Specifies one of the six orthographic UCSs, P - Restores the previous UCS, R - Restores a saved UCS so that it becomes the current, S - Saves the current UCS to a specified name, D - Removes the specified UCS from the list, A - Applies the current UCS setting, ? - Lists names of user coordinate systems.

**UCSICON** Manages the location and the visibility of the UCS icon. Options:

ON - Coordinate system icon is enabled, OFF - Coordinate system icon is disabled, A - Icon is changed in all active viewports, N - Icon displayed at the lower left corner, OR - Icon displayed at the origin of current coordinate system, P - displays the **UCS Icon** dialog box for controlling the settings related to the UCS icon.

**UCSMAN** Manages defined user coordinate systems through a dialog box.

**UNDEFINE** A built-in AutoCAD command is disabled.

**UNDO** Reverses the effect of commands. Options:

N - The effect of a specified number of previous commands used is reversed, A - The effect of the menu items is reversed by a single U command, C - The **UNDO** command is limited or is turned off, BE - A number of operations are grouped together and are treated as a single operation, E - The group is terminated, M - Mark - A marker is placed in the undo information, B - Back - Undoes all work until the marker is encountered.

**UNION** Combines the area of two or more regions, or the volume of two or more solids to create a composite region or solid.

**UNITS** Sets the coordinate and angle display formats and precision.

**VBAIDE** Displays the Visual Basic Editor.

**VBALOAD** Loads a global VBA project into the current AutoCAD session.

**VBAMAN** Loads, unloads, saves, creates, embeds, and extracts VBA projects.

**VBARUN** Runs a VBA macro applications.

**VBASTMT** Executes a VBA statement on the AutoCAD command line.

**VBAUNLOAD** Unloads a VBA global project.

**VIEW** The graphics display is saved and restored as a view with a specified name through a dialog box.

**VIEWRES** Controls the appearance of objects by setting their resolution in the current viewport.

**VLISP** Displays the Visual LISP interactive development environment (IDE).

**VPCLIP** Clips the specified viewport objects.

**VPLAYER** Controls the visibility of layers in different viewports. Options:

? - Lists the frozen layers in a specified viewport, F - Layers are frozen in current, or all, or specified viewport, T - Layers are thawed in current, or all, or specified viewport, R - Rests the layers default visibility, N - New layers that are frozen in all viewports are created, V - Viewport Visibility Default - Controls thawing and freezing of layers.

**VPOINT** The viewing direction for 3D visualization. Options:

ENTER - Displays compass and axis tripod for controlling viewing direction, V - Specifies a point from which drawing can be viewed, R - New direction using two angles is specified.

**VPORIS** Divides the graphics display into a number of viewports through a dialog box.

**VSLIDE** Displays an existing raster image slide file in the current viewport.

**WBLOCK** Writes a block definition or specified objects to a new disk file through a dialog box.

**WEDGE** Creates a 3D solid in the shape of a wedge having its one of the faces as tapered and sloping. Options:

point - Specifies the first corner of the wedge. Suboptions:

point - Specifies the other corner of the wedge, C - Wedge having sides of equal length, L - Wedge with specified length, width, and height, CE - Creates wedge with specified center point. Suboptions: point - Specifies the other corner of the wedge, C - Creates wedge having all sides

equal, L - Creates wedge with specified length, width, and height.

**WHOHAS** This command displays the information related to the owner of the selected drawing.

**WMFIN** Imports a Windows metafile.

**WMFOPTS** Sets options for WMFIN.

**WMFOUT** Saves objects to a Windows metafile.

**XATTACH** Attaches an external reference to the current drawing.

**XBIND** Adds Xref's dependent symbols to a drawing through a dialog box.

**XCLIP** Defines an xref clipping boundary and sets the front or back clipping planes. Options:

ON - Displays the clipped portion, OFF - Displays all of the geometry of the xref ignoring the clipping boundary, C - Sets the front and back clipping planes, D - Removes a clipping boundary, P - Automatically draws a polyline coincident with the clipping boundary, N - Defines a rectangular or polygonal clipping boundary.

**XLINE** Creates a line of infinite length. Options:

point - Specifies the point through which the xline passes, H - Creates a horizontal xline, V - Creates a vertical xline, A - Creates a xline at an angle, B - Creates an xline through the vertex of two lines so that it bisects the angle between those two lines, O - Creates an xline parallel to another linear object.

**XPLODE** Breaks a compound object into its individual objects. Options:

G - Changes selected objects. Suboptions: E - Explodes the entire compound object,

A - Sets color, linetype, layer of the component entities, C - Sets the color, LA - Sets the layer, LT - Sets the linetype, I - Sets all the properties to that of the original compound object, I - Changes selected objects one by one.

**XREF** Manages external references to a drawing through Xref Manager.

**ZOOM** Changes the display of the entities in the current drawing. Options:

value - Scale(X/XP) - Changes the display by a specified scale factor, Scale X - Zoom relative to current scale, Scale XP - Scale relative to paper space, A - Zooms the entire drawing in current viewport, C - Displays at a specified center point, D - Displays the portion of the drawing with a view box, E - Displays the drawing extents, S - Zooms the display at a specified scale factor, W - Displays an area specified by two corners of the window, Realtime - Using the pointing device, zooms interactively to a logical extent.