AutoCAD 2012

Customization Guide

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Basic Customization 1

Your dealer can offer you independently developed applications that can further tailor AutoCAD to your needs.

Overview of Customization

AutoCAD can be customized in simple ways. For example, you can change the directory structure or create a custom title block to use on a layout. If you want to change the interface further, you can edit the CUIx file and use DIESEL statements to create custom commands.

You can also use a number of powerful application programming interfaces (APIs) to add to and modify AutoCAD to suit your needs.

The list that follows is arranged from least to most complex:

- **Organize files.** You can organize program, support, and drawing files. For example, you can make a separate folder for each project that includes only the support files that project needs.
- **Customize Tool Palettes.** You can create a tool by dragging objects from your drawing onto a tool palette. You can create a tool palette by right-clicking on the Tool Palettes title bar and selecting New Palette. For information about customizing tool palettes, see “Customize Tool Palettes” in the *User's Guid*e.
- **Create custom drawing templates (DWTs).** You can create custom drawing templates to use when creating a new drawing. Drawing templates are used to store the layers, blocks, and styles that you might use across all your drawings.
- **Create custom publishing templates.** Use templates to define common parameters when you publish a drawing using the Publish to Web wizard.

- **Run external programs and utilities from within AutoCAD.** You can, for example, copy a disk or delete a file from within AutoCAD by adding the appropriate external command to the program parameters (PGP) file, acad.pgp.
- **Define command aliases.** You can define simple abbreviations, or aliases, for frequently used commands from within AutoCAD by adding the command to the PGP file *acad.pgp*. For example, you might want to start the **BLOCK** command by entering **b**.
- **Create custom linetypes, hatch patterns, shapes, and text fonts.** You can create linetypes, hatch patterns, shapes, and text fonts that conform to your company standards and working methods.
- **Customize the user interface.** The CUIx file controls many aspects of the user interface, including the behavior of your pointing device buttons and the functionality and appearance of pull-down, tablet, and image tile menus, toolbars, and accelerator keys. You can edit or create a CUIx file to add commands or combine commands and assign them to a menu, toolbar, or other location.
- **Customize the status line.** You can use the DIESEL string expression language and the MODEMACRO system variable to provide additional information at the status line, such as the date and time, system variable settings, or retrievable information using AutoLISP®.
- **Automate repetitive tasks by writing scripts.** A script is an ASCII text file containing commands that are processed like a batch file when you run the script. For example, if a set of drawings needs to be plotted a certain way, you can write a script that opens each drawing, hides and displays various layers, and issues PLOT commands.

  You can use scripts with slides to create automated presentations like those used at trade shows. A slide is a “snapshot” of the drawing area that cannot be edited. Slides can also be used in image tile menus and dialog boxes.
- **Record action macros.** Action macros are files that contain a series of commands and command options that allow you to perform repetitive tasks. Action macros are created using the Action recorder and are similar in concept to script files. Unlike some of the other methods of customizing AutoCAD, you do not need to learn a special syntax or programming language to record action macros.

In addition to the methods described in the *Customization Guide*, there are application programming interfaces (APIs) available for customizing AutoCAD.

Introduction to Programming Interfaces on page 425 briefly describes these APIs and provides cross-references to more information.

See also:

- "Organize Program and Support Files"
- "Toolbars"
- "Customize a Publish to Web Template"
- "Create Command Aliases"
- "Custom Linetypes"
- "Custom Hatch Patterns"
- "User Interface Customization"
- "DIESEL"
- "Customize the Status Line"
- "Introduction to Programming Interfaces"
- "Slides and Command ScriptsCommand Scripts"

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

CUSTOMIZE

Customizes tool palettes and tool palette groups.

REDEFINE

Restores AutoCAD internal commands overridden by UNDEFINE.

UNDEFINE

Allows an application-defined command to override an internal command.

System Variables

TOOLTIPS

Controls the display of tooltips on the ribbon, toolbars, and other user interface elements.

Organize Program and Support Files

You can change the default directory structure for the program and support files to suit your needs.

Overview of File Organization

See also:

- Overview of AutoLISP Automatic Loading on page 436
- “Specify Search Paths and File Locations” in the *User's Guide*

AutoCAD uses support files for purposes such as storing customization definitions, loading AutoLISP and ObjectARX applications, and describing text fonts.

AutoCAD® uses support files for purposes such as storing customization definitions and describing text fonts.

The default directory structure for the AutoCAD program and support files is designed to efficiently organize those files into logical groups. If this organization does not suit your needs, you can change it. However, some applications look for certain files in specific locations, and you should verify that your modifications do not conflict with the requirements of those applications. Without the full path, including drive and directory, AutoCAD can locate only those files that are found in the library search path.

NOTE The location of the *support* folder changed in AutoCAD 2004.

The location of local customizable files is stored in the LOCALROOTPREFIX system variable. The location of roamable customizable files is stored in the ROAMABLEROOTPREFIX system variable. If a network supports roaming, customizable files in the user's roaming profile are available on the machine the user is logged onto.

The following LISP script creates the CUSTFILES command, which launches Windows® Explorer in the correct folder.

```
(defun c:custfiles ()
  (command "shell"
    (strcat "explorer \"" (getvar "roamablerootprefix") "\"")
  )
  (princ)
)
```

Library Search Path

The library search path specifies where the program searches for files when you do not specify a full path name, as follows:

- Current directory. (This is typically determined by the “Start In” setting in your shortcut icon.)
- Directory that contains the current drawing file.
- Directories listed in the search path specified on the Files tab in OPTIONS. (See Specify Search Paths and File Locations in the *User's Guide*.)
- Directory that contains the AutoCAD program files.

Depending on the current environment, two or more directories may be the same.

If a file is not in this search path, you must specify both its path name and file name before AutoCAD can find it. For example, if you want to insert the *part5.dwg* drawing into your current drawing and it is not in the library search path, you must specify its full path name, as shown here:

Command: **insert**
Enter block name or [?]: **/files2/olddwgs/part5**

If the drawing exists in that location, AutoCAD prompts you to finish the INSERT command in the usual manner.

Directory Structure

AutoCAD uses tree-structured directories and subdirectories. It is recommended that you keep supplemental files (such as AutoLISP applications and customization files) separate from the AutoCAD program and support files. This makes it easier to track possible conflicts and to upgrade each application without affecting the others.

The default location for AutoCAD is in the *Program Files* folder. You can create a new directory on the same level (for example, */AcadApps)* and store your custom AutoLISP and VBA macros, customization files, and other third-party applications in subdirectories on the next level. If you want to maintain multiple drawing directories (for separate job files), you can create a directory such as */AcadJobs* with subdirectories for each job.

Command Search Procedure

When you enter a command, AutoCAD goes through a series of steps to evaluate the validity of the command name. A command can be a built-in command or system variable, an external command or alias defined in the acad.pgp file, or a user-defined AutoLISP command. Commands can also be defined by ObjectARX applications or a device driver command. You can enter a command on the command prompt or choose a command from the appropriate menu. Commands can also be entered from a script file or by an AutoLISP or ObjectARX application.

The following list describes the search order AutoCAD uses to validate a command name.

1. If the input is a null response (Spacebar or Enter), AutoCAD uses the name of the last command issued.

   HELP is the default.

2. AutoCAD checks the command name against the list of built-in commands. If the command is in the list and is not preceded by a period (.), AutoCAD then checks the command against a list of undefined commands. If the command is undefined, the search continues. Otherwise, the command is run, unless another reason prevents it from doing so. Running it transparently or in Perspective mode might be impossible.

3. AutoCAD checks the command name against the names of commands defined by a device driver, and then by those defined by the display driver.

4. AutoCAD checks the command name against the external commands defined in the program parameters file *(acad.pgp)*. If the command name corresponds to a defined external command, that command runs, and the search is complete.

5. AutoCAD checks the command name against the list of commands defined by AutoLISP or ObjectARX applications. At this point, an autoloaded command is loaded.

6. AutoCAD checks the command name against the list of system variables. If the command name is in the list, AutoCAD executes the SETVAR command, using the input as the variable name.
7. If the command name corresponds to a command alias defined in the program parameters file, AutoCAD uses the expanded command name and continues the search, starting a new search against the list of built-in commands.
8. If all the preceding steps fail, the search terminates with a warning message about illegal command names.

Quick Reference

Commands

OPTIONS

Customizes the program settings.

System Variables

LOCALROOTPREFIX

Stores the full path to the root folder where local customizable files were installed.

ROAMABLEROOTPREFIX

Stores the full path to the root folder where roamable customizable files were installed.

Multiple Configurations

See also:

- "Customize Startup" in the *User's Guide*

If you use more than one pointing device or use different plotters, you can set up more than one configuration file to make it easy to switch between devices.

When you configure AutoCAD for a pointing device and plotter drivers, the information you supply is recorded in a configuration file.

The default location of the *acad2012.cfg* configuration file is listed in the Options dialog box, Files tab, under Help and Miscellaneous File Names, but you can specify an alternative path or file name.

Typically, only a single configuration is necessary, but you may need multiple configurations. For example, if you use a mouse for most of your work but occasionally require a large digitizing tablet, you can set up your system to handle multiple configurations rather than reconfiguring each time you change a device.

The configuration file stores the values of many AutoCAD system variables and the configuration options defined in the Options dialog box. If you want different settings for these system variables and operating parameters, you can save those values to different configuration files. For a list of the system variables and where they are stored, see System Variables in the *Command Reference*.

To take advantage of multiple configurations, you must set up AutoCAD to use different configuration files. Use the **/c** switch to specify alternative configuration files at startup.

Quick Reference

Commands

OPTIONS

Customizes the program settings.

Multiple Drawing Folders

Keeping your drawing and other associated files in separate directories makes it easier to perform basic file maintenance.

Keeping your drawing files and other associated files in separate directories makes it easier to perform basic file maintenance. The scenario described in this topic is based on the sample directory structure described in Overview of File Organization on page 4, but you can expand or alter it to meet your needs.

You can set up the */AcadJobs* directory to contain your drawing subdirectories. The drawing subdirectories can contain other subdirectories that hold related support files for a particular drawing type or job. The */AcadJobs/Job1/Support* directory can contain blocks and AutoLISP files specific to the drawing files in */AcadJobs/Job1*. Specifying **support** (with no path prefix) in the Support path adds the *support* directory within the current directory to the Support path.

Notice that if you use the Options dialog box to specify a directory, AutoCAD creates a *hard-coded* path to that directory. To use the *relative* naming convention previously described, you must specify the Support path with the **/s** switch on the command line. See “Customize Startup” in the *User's Guide*.

To make sure that the required drawing directory is the current directory when you start AutoCAD, and that all files and subdirectories in that directory are easily accessible, you can create a program icon or a Start menu item that specifies the correct working directory for each job. This functionality works only if you set the AutoCAD system variable REMEMBERFOLDERS to 0.

You can use a batch program to create new job directories automatically. The following batch program verifies that a specified directory exists, sets that directory to be current, and then runs AutoCAD.

```
@echo off
C:
if exist \AcadJobs\Jobs\%1 goto RUNACAD
echo.
echo *** Creating \AcadJobs\Jobs\%1
echo *** Press Ctrl+C to cancel.
echo.
pause
mkdir \AcadJobs\Jobs\%1
:RUNACAD
cd \AcadJobs\Jobs\%1
start “C:\Program Files\Autodesk\AutoCAD 2012\acad.exe”
```

Using an ASCII text editor (such as Notepad), save the batch program to a file named *acad.bat*. Be sure to change the drive and directory names to match those on your system.

Place this file in a directory that is on your system search path (for example, *C:\winnt*). You can run this batch program using the Run command on the Start menu or by double-clicking the file in Explorer. If you saved the file as *acad.bat*, use the following syntax:

acad <u>jobname</u>

where *jobname* is the name of the job directory to make current.

Quick Reference

System Variables

CMDECHO

Controls whether prompts and input are echoed during the AutoLISP command function.

Locate Customized Files

Beginning with AutoCAD 2004, the location of some of your customized files has changed. The reasons for the file location changes include the following:

- **Limited user rights on a workstation**. You can run AutoCAD as a limited user. This means that you no longer need power user or Administrator permissions to run AutoCAD once it is installed.
- **Local profiles**. Local profiles are used to log on a computer and they store settings and files that are not available when roaming. Some files, such as materials and drawing templates are stored under your local profile because of their size, they do not follow you from computer to computer.
- **Roaming profiles**. Roaming profiles allow you to log on to any computer within a network and retain your user settings. Some files, such as your personal settings and documents, follow you from computer to computer. If roaming profiles are allowed on your network, your “roamable” files are located in the *\Application Data\Autodesk\<Product Version>* folder, and your “nonroamable” files are located in the *\Local Settings\Application Data\Autodesk\<Product Version>* folder.

NOTE In some operating systems, the folders that are located under your profile are hidden by default. To display these files, you may need to change your display settings. On the Start menu, click Control Panel ➤ Folder Options. In the Folder Options dialog box, on the View tab, click Show Hidden Files and Folders.

Locate Data Link Files

Beginning with the 2004 products, the default location of your data link files has changed. For information about the default location of these files, see Locate Customized Files on page 10.

To locate your data link files

1 Do one of the following:
   - (Windows XP) Click Start menu ➤ Programs ➤ Autodesk ➤ *<AutoCAD>* ➤ *<AutoCAD>*.
   - (Windows Vista) Click Start menu ➤ All Programs ➤ Autodesk ➤ *<AutoCAD>* ➤ *<AutoCAD>*.

2 Click application menu ➤ Options.

3 In the Options dialog box, Files tab, click the plus sign (+) to the left of Data Sources Location.

4 Under Data Sources Location, click the path name to view the location of your data link files.

NOTE The changes you make do not take effect until you restart the program.

Locate Plot Style Files

Beginning with the AutoCAD 2004, the default location of your plot style files has changed. For information about the default location of these files, see Locate Customized Files on page 10.

To locate your plot style files

1 Do one of the following:
   - (Windows XP) Click Start menu ➤ Programs ➤ Autodesk ➤ *<AutoCAD>* ➤ *<AutoCAD>*.
   - (Windows Vista) Click Start menu ➤ All Programs ➤ Autodesk ➤ *<AutoCAD>* ➤ *<AutoCAD>*.

2 Click application menu ➤ Options.

3 In the Options dialog box, Files tab, click the plus sign (+) to the left of Printer Support File Path.

4 Click the plus sign (+) to the left of the Plot Style Table Search Path file.

5 Under Plot Style Table Search Path, click the path name to view the location of your plot style files.

NOTE You can also locate your plot style files by entering **stylesmanager** on the AutoCAD command line.

Locate Plotter Files

Beginning with AutoCAD 2004, the default location of your plotter files has changed. For information about the default location of these files, see Locate Customized Files on page 10.

To locate your plotter files

1 Do one of the following:

- (Windows XP) Click Start menu ➤ Programs ➤ Autodesk ➤ *<AutoCAD>* ➤ *<AutoCAD>*.
- (Windows Vista) Click Start menu ➤ All Programs ➤ Autodesk ➤ *<AutoCAD>* ➤ *<AutoCAD>*.

2 Click application menu ➤ Options.

3 In the Options dialog box, Files tab, click the plus sign (+) to the left of Printer Support File Path.

4 Click the plus sign (+) to the left of Printer Configuration Search Path.

5 Under Printer Configuration Search Path, click the path name to view the location of your plotter files.

NOTE You can also locate your plotter files by entering **plottermanager** on the AutoCAD command line.

Locate the PMP File

Beginning with AutoCAD 2004, the default location of your PMP file has changed. For information about the default location of this file, see Locate Customized Files on page 10.

To locate your PMP file

1 Do one of the following:

- (Windows XP) Click Start menu ➤ Programs ➤ Autodesk ➤ *<AutoCAD>* ➤ *<AutoCAD>*.

- (Windows Vista) Click Start menu ➤ All Programs ➤ Autodesk ➤ *<AutoCAD>* ➤ *<AutoCAD>*.

2 Click application menu ➤ Options.

3 In the Options dialog box, Files tab, click the plus sign (+) to the left of Printer Support File Path.

4 Under Printer Description File Search Path, click the path name to view the location of your PMP file.

Locate Support Files

Beginning with AutoCAD 2004, the default location for some of your support files has changed. For information about the default location of these files, see Locate Customized Files on page 10.

Support files include the following:

- Configuration file (*acad*.cfg)*
- Customization file (*acad.cuix*)
- Custom icon files
- Help and miscellaneous files
- Font mapping file (*acad.fmp*)
- Alternate font file (*simplex.shx*)
- Support path files (*acad.dcl, acad.lin, acad.mnl, acad.pat, acad.pgp, acad.psf, acad.unt, acadiso.lin, acadiso.pat, ase.dcl, base.dcl, doshelp.dcl, gdt.shx, inches.pss*, and *mm.pss*)

To find the default location of the configuration file

1 Do one of the following:

- (Windows XP) Click Start menu ➤ Programs ➤ Autodesk ➤ *<AutoCAD>* ➤ *<AutoCAD>*.
- (Windows Vista) Click Start menu ➤ All Programs ➤ Autodesk ➤ *<AutoCAD>* ➤ *<AutoCAD>*.

2 Click application menu ➤ Options.

3 In the Options dialog box, Files tab, click the plus sign (+) to the left of Help and Miscellaneous File Names.

4 Click the plus sign (+) to the left of Configuration File.

5 Under Configuration File, click the path name to view the location of your configuration file.

To find the default location of the customization files

1 Do one of the following:

- (Windows XP) Click Start menu ➤ Programs ➤ Autodesk ➤ <*AutoCAD*> ➤ <*AutoCAD*>.
- (Windows Vista) Click Start menu ➤ All Programs ➤ Autodesk ➤ <*AutoCAD*> ➤ <*AutoCAD*>.

2 Click application menu ➤ Options.

3 In the Options dialog box, Files tab, click the plus sign (+) to the left of Customization Files.

4 Click the plus sign (+) to the left of Main Customization File.

5 Under Main Customization File, click the path name to view the location of your main customization file.

6 Click the plus sign (+) to the left of Enterprise Customization File.

7 Under Enterprise Customization File, click the path name to view the location of your enterprise customization files.

NOTE By default, the path to an enterprise customization file is empty until you define the file. For more information about defining a customization file, see "Customize the User Interface" in the *Customization Guide*.

To find the default location of the custom icon files

1 Do one of the following:

- (Windows XP) Click Start menu ➤ Programs ➤ Autodesk ➤ <*AutoCAD*> ➤ <*AutoCAD*>.
- (Windows Vista) Click Start menu ➤ All Programs ➤ Autodesk ➤ <*AutoCAD*> ➤ <*AutoCAD*>.

2. Click application menu ➤ Options.
3. In the Options dialog box, Files tab, click the plus sign (+) to the left of Customization Files.
4. Under Custom Icon Location, click the path name to view the location for the custom button image files used with your customization files.

To find the default location of the Help and miscellaneous files

1. Do one of the following:
   - (Windows XP) Click Start menu ➤ Programs ➤ Autodesk ➤ *<AutoCAD>* ➤ *<AutoCAD>*.
   - (Windows Vista) Click Start menu ➤ All Programs ➤ Autodesk ➤ *<AutoCAD>* ➤ *<AutoCAD>*.
2. Click application menu ➤ Options.
3. In the Options dialog box, Files tab, click the plus sign (+) to the left of Help and Miscellaneous File Names to expand the list.
4. Click the plus sign (+) to the left of the file you want to locate, and then click the path name to view the location of the files.

To find the default location of the font mapping file

1. Do one of the following:
   - (Windows XP) Click Start menu ➤ Programs ➤ Autodesk ➤ *<AutoCAD>* ➤ *<AutoCAD>*.
   - (Windows Vista) Click Start menu ➤ All Programs ➤ Autodesk ➤ *<AutoCAD>* ➤ *<AutoCAD>*.
2. Click application menu ➤ Options.
3. In the Options dialog box, Files tab, click the plus sign (+) to the left of Text Editor, Dictionary, and Font File Names.
4. Click the plus sign (+) to the left of Font Mapping File.
5. Under Font Mapping File, click the path name to view the location of your font mapping file.

To find the default location of the alternate font file

1. Do one of the following:
   - (Windows XP) Click Start menu ➤ Programs ➤ Autodesk ➤ *<AutoCAD>* ➤ *<AutoCAD>*.
   - (Windows Vista) Click Start menu ➤ All Programs ➤ Autodesk ➤ *<AutoCAD>* ➤ *<AutoCAD>*.
2. Click application menu ➤ Options.
3. In the Options dialog box, Files tab, click the plus sign (+) to the left of Text Editor, Dictionary, and Font File Names.
4. Click the plus sign (+) to the left of Alternate Font File.
5. Under Alternate Font File, click the path name to view the location of your alternate font file.

To find the default location of the support path files

1. Do one of the following:
   - (Windows XP) Click Start menu ➤ Programs ➤ Autodesk ➤ *<AutoCAD>* ➤ *<AutoCAD>*.
   - (Windows Vista) Click Start menu ➤ All Programs ➤ Autodesk ➤ *<AutoCAD>* ➤ *<AutoCAD>*.
2. Click application menu ➤ Options.
3. In the Options dialog box, Files tab, click the plus sign (+) to the left of Support File Search Path.
4. Under Support File Search Path, click a path name to view the location of your support files.

Locate Drawing Template Files

Beginning with AutoCAD 2004, the default location of your drawing template files has changed. For information about the default location of these files, see Locate Customized Files on page 10.

To locate your drawing template files

1. Do one of the following:
   - (Windows XP) Click Start menu ➤ Programs ➤ Autodesk ➤ *<AutoCAD>* ➤ *<AutoCAD>*.
   - (Windows Vista) Click Start menu ➤ All Programs ➤ Autodesk ➤ *<AutoCAD>* ➤ *<AutoCAD>*.
2. Click application menu ➤ Options.
3. In the Options dialog box, Files tab, click the plus sign (+) to the left of Template Settings.
4. Under Template Settings, click the plus sign (+) to the left of Drawing Template File Location.
5. Under Drawing Template File Location, click the path name to view the location of your drawing template files.

Locate Texture Files

Beginning with AutoCAD 2004, the default location of your texture files has changed. For information about the default location of these files, see Locate Customized Files on page 10.

To locate your texture files

1. Do one of the following:
   - (Windows XP) Click Start menu ➤ Programs ➤ Autodesk ➤ *<AutoCAD>* ➤ *<AutoCAD>*.
   - (Windows Vista) Click Start menu ➤ All Programs ➤ Autodesk ➤ *<AutoCAD>* ➤ *<AutoCAD>*.
2. Click application menu ➤ Options.
3. In the Options dialog box, Files tab, click the plus sign (+) to the left of Texture Maps Search Path.
4. Under Texture Maps Search Path, click the path name to view the location of your texture files.

Customize a Publish to Web Template

You can create customized templates to use in the Publish to Web wizard by modifying one of the Publish to Web template (PWT) files provided. Use any HTML editor or text editor.

To create a custom template, add or modify any of the following elements:

- Images
- Text
- Hyperlinks
- Color
- Title
- Video, animation, and so on

There are four default Publish to Web templates that you can customize:

- **Array of Thumbnails.** Creates a web page containing an array of thumbnail images.
- **Array Plus Summary.** Creates a web page containing an array of thumbnail images and summary information about each image.
- **List of Drawings.** Creates a web page containing a list of drawings and an image frame.
- **List Plus Summary.** Creates a web page containing a list of drawings, an image frame, and summary information about a selected image.

NOTE You must be familiar with HTML syntax to customize the Publish to Web templates.

You can make changes or additions to the look and feel of a template, but you cannot change the arrangement of images within it. For example, in the *Array of Thumbnails* template, the images are presented across the page in rows. You cannot alter the presentation of the images, but you can wrap text and graphics around the table of images.

WARNING To ensure that you do not overwrite the default Publish to Web template files, back up those files before you make any changes to them.

To create quick access to the Publish to Web templates

1. Click Tools menu ➤ Options.
2. In the Options dialog box, Files tab, click the plus sign (+) next to Template Settings. Then click the plus sign next to Drawing Template File Location.
3. Move the cursor to the path name that is displayed and click inside it, and press F2, and press CTRL+C to copy it.
4. Click OK or Cancel to close the Options dialog box.
5. Click File menu ➤ Open.
6. In the Select File dialog box, right-click an empty area in the vertical panel on the left side, and click Add on the shortcut menu.
7. Enter a name in the Item name box (for example, **Templates**).
8. Press CTRL+V to paste the path into the Item Path box, and click OK.

   You can now access the Template folders by clicking the button in the left panel of the Select File dialog box.

To customize a Publish to Web template

1. Browse to the Publish to Web template folder, click File menu ➤ Open.

   See To create quick access to the Publish to Web templates on page 19.
2. Double-click the *PTWTemplates* folder to open it. The following folders are displayed. Each contains a Publish to Web template and preview images (BMP) that you see when you run the Publish to Web wizard.
   - *Template1*. Contains the *Array of Thumbnails* template and a preview image
   - *Template2*. Contains the *Array Plus Summary* template, a preview image, and HTML frames
   - *Template3*. Contains the *List of Drawings* template, a preview image, and HTML frames
   - *Template4*. Contains the *List Plus Summary* template, a preview image, and HTML frames
3. Right-click the folder you want to use, and click Copy.
4. Press ALT+2, right-click the *PTWTemplates* folder, and click Paste.

5 Reopen the *PTWTemplates* folder, and right-click the new folder and rename it.

6 Right-click the new folder and click Open to display its contents.

7 Rename the Publish to Web template (PWT) file with an *.htm* or *.html* file extension.

8 Open the template file in an HTML editor or a text editor.

The template file contains comments that help you determine which areas of the code you can modify to create your new web page.

9 Review the comments and make changes to the parts of the template you want to customize.

10 Save the template with a *.pwt* file extension. Make sure you save the file to the template folder you created in step 3.

NOTE Each template folder can contain only one PWT file. If you create a new PWT file, make sure you delete any other PWT files that exist in the same folder.

When you run the Publish to Web wizard, the new template is displayed in the list of templates.

Quick Reference

Commands

PUBLISHTOWEB

Creates HTML pages that include images of selected drawings.

Define Custom Commands

You can define external commands that run from within AutoCAD. You can also create command aliases for AutoCAD commands in the acad.pgp file, an ASCII text file that stores command definitions.

Define External Commands

External commands start other programs or utilities while AutoCAD is running.

While AutoCAD is running, you can invoke other programs or utilities, such as the following:

- Windows system commands and utilities, such as **start**, **type**, **dir**, or **copy**
- Applications such as text editors or word processors
- Database managers, spreadsheets, and communications programs
- User-supplied programs, such as batch files or VBA macros

When you enter an external command, AutoCAD looks for the command in acad.pgp. The first section of acad.pgp defines external commands. You can add command definitions by editing acad.pgp in an ASCII text editor. In addition to command aliases in acad.pgp, you will also find comment lines which are preceded by a semicolon (;). Comment lines allow you to add textual information to acad.pgp, such as when or who revised the file last.

NOTE Before you edit acad.pgp, create a backup file so that you can restore it later, if necessary.

When you define an external command, you specify a command name to be used at the command prompt and an executable command string that is passed to the operating system. Each line in the external commands section has five comma-delimited fields, as follows:

```
command,[executable/shell request],bit flag[,[*]prompt[,re
turn_code]]
```

command The command that is entered at the command prompt. If the name is an internal AutoCAD command name, it is ignored. The name is not case-sensitive.

executable/shell request The constant string sent to the operating system when you enter a command name. It can be any command that you can execute at the operating-system prompt. The string can include switches or parameters. The case-sensitivity of this string depends on the application you are running.

bit flags A required bitcoded parameter. Add these integer values in any combination to achieve the result you want.

0 Start the application and wait for it to finish.

1 Don't wait for the application to finish.

2 Run the application in Minimized mode.

4 Run the application “hidden.”

8 Put the argument string in quotes.

Bit values 2 and 4 are mutually exclusive; if both are specified only the 2 bit is used. Using value 2 or 4 without value 1 should be avoided, because AutoCAD becomes unavailable until the application has completed.

Bit value 8 allows commands like **del** to work properly with file names that have embedded spaces. This eliminates the possibility of passing a space-delimited list of file names to these commands. If you prefer multiple file support, do not use the bit value 8.

prompt An optional field. It specifies the prompt to display on the AutoCAD command line or for the dynamic input tooltip. The response to this prompt is appended to the string supplied in the executable field. If the first character of the prompt field is an asterisk (*), the response can contain spaces and the user must press Enter to terminate it. Otherwise, the response is terminated by either Spacebar or Enter. If no prompt is specified, no input is requested; however, you must add a comma if a return code is to be supplied or if you want the prompt to have a trailing space.

return_code An optional bitcoded parameter. You can add these integer values together in any combination to achieve the result you want. For example, if values *1* and *2* are required, you use *3* as the return code. The values are defined as follows (codes 0 and 4 are meaningless in a windowed environment and are therefore not included):

1 Loads a DXB file. AutoCAD loads the DXB file named *$cmd.dxb* into the drawing after the command is terminated. After the DXB file is loaded, the *$cmd.dxb* file is deleted. This action produces the same result as the DXBIN command.

2 Constructs a block definition from a DXB file. AutoCAD creates a block definition from the DXB file named *$cmd.dxb*. The response to the prompt field is used as the block name. This name must be a valid block name that does not currently exist in the drawing; therefore, this mode cannot redefine a previously defined block. After AutoCAD loads the DXB file, the *$cmd.dxb* file is deleted. The default name for the INSERT command is set to the newly defined block.

The file can also contain comment lines preceded by a semicolon (;).

Windows System Commands

The **start** and **cmd** Windows system commands are very useful when defining external commands. If you specify an executable string that does not use the **start** or **cmd** command, AutoCAD is unavailable until that window is closed.

The **start** command starts a separate window and runs a specified program or command. If **start** is used without any parameters, it opens a new command prompt window. The **start** command has many command line switches that affect the display of the new window. To launch a Windows application, use **start** without any switches. The **start** command is also very useful for starting a document that is associated with an application. For example, you can use **start** to directly open a document created with a word processor or an HTML file.

The **cmd** command opens a command prompt window that acts as a shell of AutoCAD. This window must be closed before control returns to the AutoCAD command prompt. Two command line switches, **/c** and **/k**, are useful for external commands. The **/c** switch carries out the specified command and then stops (the window closes). The **/k** switch carries out the specified command and then continues (the window remains open). When using the **/k** switch, you must close the command window (with the **exit** command).

In general, use **start** to start a new window or application that is to be a separate process from AutoCAD. Use **cmd** to run a batch file or command script that does not create a separate window, or to create a window that must be closed before control is passed back to AutoCAD. For more information about these commands and switches, see your Windows system command documentation.

Custom-Defined Commands

The following example defines three new commands: RUN, LISTSET, and DXB2BLK.

```
RUN, cmd /c,0,*Batch file to run: ,
LISTSET,cmd /k SET,0
DXB2BLK,cmd /c DXBCOPY,0,DXB file: ,2
```

The RUN command runs a batch file or command script. The **cmd** command followed by the **/c** switch opens a command window, runs the batch file, and then closes.

The LISTSET command displays the current DOS environment variable settings. Because this example uses **cmd /k** rather than **start**, the command window must be closed before returning to AutoCAD. If you want this window to remain active, use **start /realtime**. For more information about these commands and switches, see your Windows system command documentation.

The DXB2BLK command creates a block definition from the specified DXB file. The DXB file converts all objects into lines. One beneficial by-product of this procedure is that it provides a simple method for exploding text objects into lines.

DXB2BLK passes the specified DXB file name to the *dxbcopy* batch file, which copies that file name to the file name *$cmd.dxb*. AutoCAD then creates a block from the specified DXB file. The name provided to the DXB file prompt is used as the new block name. To create the *dxbcopy.cmd* file, enter the following at the Windows Command Prompt:

```
echo copy %1.dxb $cmd.dxb > dxbcopy.cmd
```

This creates the *dxbcopy.cmd* file in the current directory. Move this file to a directory that is in your DOS path, or explicitly specify the file's location in the acad.pgp file. For example, if the *dxbcopy.cmd* file is in *D:\cad*, enter the following in the external commands section of your *acad.pgp* file.

```
DXB2BLK, cmd /c D:\CAD\DXBCOPY,0,DXB file: ,2
```

To create a DXB file, choose AutoCAD DXB File Format as the current printer, and then plot to a file. For more information about configuring printers, see Set Up Plotters and Printers in the *Driver & Peripheral Guide*.

To open the program parameters file (acad.pgp)

■ Click Tools ➤ Customize ➤ Edit Program Parameters (acad.pgp).

Quick Reference

Commands

REINIT

Reinitializes the digitizer, digitizer input/output port, and program parameters file.

System Variables

RE-INIT

Reinitializes the digitizer, digitizer port, and acad.pgp file.

Create Command Aliases

A command alias is an abbreviation that you enter at the command prompt instead of entering the entire command name.

For example, you can enter **c** instead of **circle** to start the CIRCLE command. An alias is not the same as a keyboard shortcut, which is a combination of keystrokes, such as CTRL+S for SAVE.

An alias can be defined for any AutoCAD command, device driver command, or external command. The second section of the acad.pgp file defines command aliases. You can change existing aliases or add new ones by editing acad.pgp in an ASCII text editor (such as Notepad). In addition to command aliases in acad.pgp, you will also find comment lines which are preceded by a semicolon (;). Comment lines allow you to add textual information to acad.pgp, such as when or who revised the file last.

NOTE Before you edit *acad.pgp*, create a backup so that you can restore it later, if necessary.

To define a command alias, add a line to the command alias section of the *acad.pgp* file using the following syntax:

```
abbreviation,*command
```

where `abbreviation` is the command alias that you enter at the command prompt and `command` is the command being abbreviated. You must enter an asterisk (*) before the command name to identify the line as a command alias definition.

If you can enter a command transparently, you can also enter its alias transparently. When you enter the command alias, the full command name is displayed at the command prompt and the command is executed.

You can create command aliases that include the special hyphen (-) prefix, such as those listed here, that accesses the version of a command that displays command prompts instead of a dialog box.

```
BH, *-BHATCH
BD, *-BOUNDARY
```

NOTE You cannot use command aliases in command scripts. Using command aliases in customization files is not recommended.

If you edit *acad.pgp* while AutoCAD is running, enter **reinit** to use the revised file. You can also restart AutoCAD to automatically reload the file.

Quick Reference

Commands

REINIT

Reinitializes the digitizer, digitizer input/output port, and program parameters file.

System Variables

RE-INIT

Reinitializes the digitizer, digitizer port, and acad.pgp file.

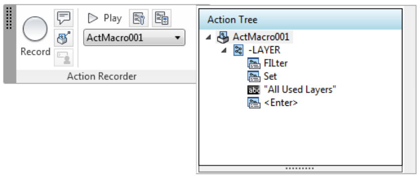
Record and Modify Action Macros

Action macros can be used to automate repetitive tasks by recording a series of commands and any values entered.

Overview of Action Macros

You use the Action Recorder to record an action macro. After an action macro is recorded, you save the recorded commands and input to an action macro, which has the file extension ACTM.

The Action Recorder is a panel on the ribbon and contains the tools to record, play back, and modify an action macro. You can also set the preferences for the Action Recorder from the Action Recorder Preferences dialog box. During the playback, editing, or recording of an action macro, you can expand the Action Recorder panel to access the individual actions of the current action macro from the Action tree.



In the Action tree, you can modify and delete the action nodes of an action macro. Action nodes represent the recorded commands or input values of an action macro. You can also specify base points, insert user messages, and pause for user input for a value node during playback. A value node in an action macro represents the input that was provided at a sub-prompt of a command during recording. Value nodes can contain acquired points, text strings, numbers, keywords, or other values that might be entered when recording a command.

See also:

- Play Back an Action Macro

To change the preferences for the Action Recorder

1. On the ribbon, click Manage tab ➤ Action Recorder panel ➤ Preference.
2. In the Action Recorder Preferences dialog box, do the following:
   - Select Expand on Playback to have the Action Recorder panel expand when an action macro is played back.
   - Select Expand on Recording to have the Action Recorder panel expand when an action macro is being recorded.
   - Select Prompt for Action Macro Name to have the Action Macro dialog box displayed when the recording of an action macro is stopped. If not checked, the default name is used to save the recorded action macro.
3. Click OK.

Quick Reference

Commands

ACTRECORD

Starts the Action Recorder.

ACTSTOP

Stops the Action Recorder and provides the option of saving the recorded actions to an action macro file.

ACTUSERINPUT

Pauses for user input in an action macro.

ACTUSERMESSAGE

Inserts a user message into an action macro.

ACTBASEPOINT

Inserts a base point in an action macro.

OPTIONS

Customizes the program settings.

RIBBON

Opens the ribbon window.

System Variables

ACTPATH

Specifies the additional paths to use when locating available action macros for playback.

ACTRECORDERSTATE

Specifies the current state of the Action Recorder.

ACTRECPATH

Specifies the path used to store new action macros.

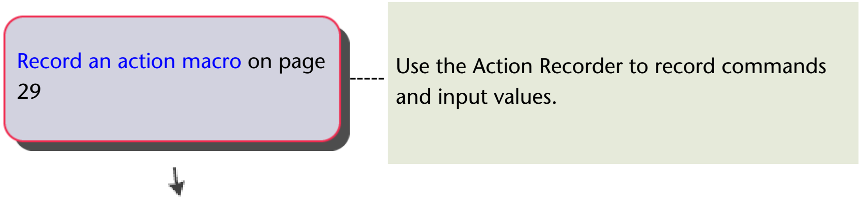
ACTUI

Controls the behavior of the Action Recorder panel when recording and playing back macros.

Work with the Action Recorder

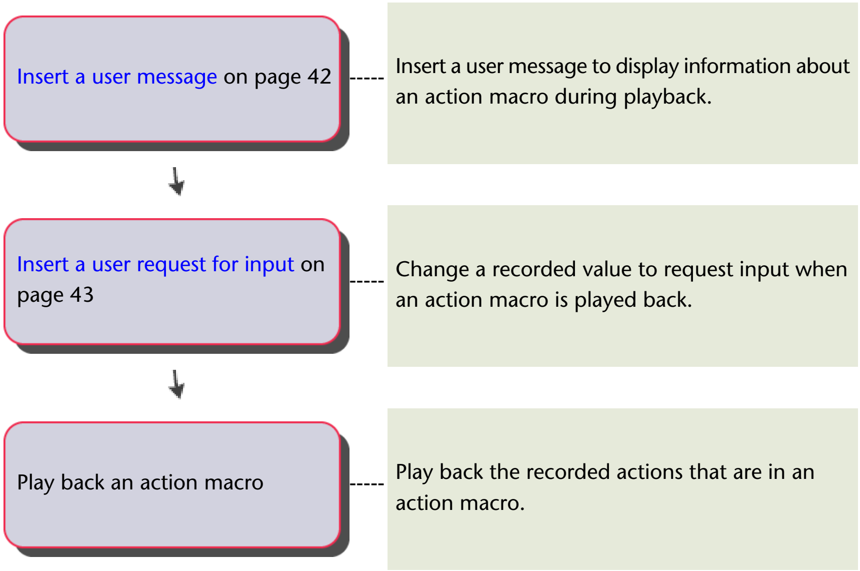
With the Action Recorder, you can create action macros that can be used to automate repetitive tasks.

While recording actions, commands and input values are captured and displayed in the Action tree. After recording is stopped, you can save the captured commands and input to an action macro file which can later be played back. Once an action macro is saved, you can specify base points, insert user messages, or change the behavior of the recorded input values to pause for a new input value during playback. You can also manage the recorded action files with Manage Action Macros.



Record an action macro on page 29

Use the Action Recorder to record commands and input values.



Insert a user message on page 42

Insert a user message to display information about an action macro during playback.

Insert a user request for input on page 43

Change a recorded value to request input when an action macro is played back.

Play back an action macro

Play back the recorded actions that are in an action macro.

Record an Action Macro

The Action Recorder can record most of the commands that can be used from the command line and from the user interface elements that you are already familiar with.

Record an Action Macro with the Action Recorder

You use the Action Recorder to record commands and input values for an action macro.

While recording an action macro, the Red Recording Circle icon is displayed near the crosshairs to indicate that the Action Recorder is active and that commands and input are being recorded.

While recording, commands and input that is entered at the command line are recorded with the exception of commands that open or close drawing files. If a dialog box is displayed while recording an action macro, only the display of the dialog box is recorded and not the changes made to the dialog box. It is recommended that you do not use dialog boxes when recording an action macro. Use the command line version of the command instead. For example, use the -HATCH command instead of the HATCH command, which displays the Hatch and Gradient dialog box.

Once you are done recording an action macro, you then have the option to save or discard the recorded action macro. If you save the action macro, you must specify a name and optionally, a description and the playback settings for the action macro. The playback settings control if the view prior to the playback of the action macro is restored when a request for user input is made or when playback is complete.

When the Action Recorder is set to check for inconsistencies, it compares the settings of the drawing environment when the action macro was recorded against the current settings of the drawing environment. For example, the Action Recorder checks the value of the INSUNITS system variable in the current drawing against the value that was used when the action macro was recorded. If an inconsistency is found, you are given the option to continue playing back the action macro or to stop playback. If you continue playing back the action macro, the action macro might produce unexpected results.

Use Action Macros while Recording

You can play back an action macro while you are recording an action macro; you can combine multiple action macros together to create a new action macro. To use an existing action macro while recording another action macro, the action macro that you want to play back needs to be present in one of the paths defined by the system variables ACTPATH or ACTRECPATH. If the action macro is in one of the defined paths, enter the name of the action macro at the Command prompt to play it back.

Use Custom Commands and Routines with Action Macros

When recording commands and input, you can use the standard commands that come with AutoCAD and other custom commands that you might already use. The custom commands that you can use is not limited to just commands defined with AutoLISP or ObjectARX, but also includes commands defined with .NET and macros defined with VBA.

Before playing back an action macro that contains references to custom commands and macros, the original programs that define the commands and macros must be loaded into AutoCAD in order for the action macro to be played back correctly. To make sure the custom commands are available when an action macro is played back, you can use one or more of the following.

- **Startup Suite** - The Start Up Suite in the Load/Unload Applications dialog box can be used to load files that contain custom commands.

- **ACAD.lsp or ACADDOC.lsp File** - The *acad.lsp* or *acaddoc.lsp* file can be used to automatically load files that contain custom commands.

- **Menu AutoLISP (MNL) File** - A MNL file can be used to load files that contain custom commands specific to a CUIx file.

- **Customization User Interface (CUIx) File** - AutoLISP files that define custom commands can be associated to a CUIx file by adding them to the LISP node in the CUI Editor.

- **Script Files** - A script file can be used to load AutoLISP, ObjectARX, VBA, or .NET files. To record the running of a script file, set FILEDIA to 0 before using the SCRIPT command.

Store Recorded Action Macros

When you stop the recording of an action macro, you have the option to save the recorded action macro. If you save the recorded action macro, the command name specified for the action macro is also used as the file name of the action macro. The saved action macro is stored in the folder defined by the ACTRECPATH system variable. You can access the folder in the Options dialog box.

To start recording an action macro

1. On the ribbon, click Manage tab ➤ Action Recorder panel ➤ Record.

   ○

2. Use the commands and provide the input that is needed to complete the task that you want to automate.

To stop the recording of an action macro

1. On the ribbon, click Manage tab ➤ Action Recorder panel ➤ Stop.

   □

2. In the Action Macro dialog box, enter a name in the Action Macro Command Name text box.

3. Optionally, do the following:
   - Enter a description for the action macro in the Description text box.
   - Under Restore Pre-playback View, select When Pausing for User Input to restore the view prior to the playback of the action macro.

   - Under Restore Pre-playback View, select Once Playback Finishes to restore the view prior to the playback of the action macro.
   - Select Check for Inconsistencies when Playback Begins to have the Action Recorder validate the action macro before playback.

4. Click OK.

To cancel the recording of an action macro

1. On the ribbon, click Manage tab ➤ Action Recorder panel ➤ Stop.
2. In the Action Macro dialog box, click Cancel.

To copy an action macro to create a new action macro

1. On the ribbon, click Manage tab ➤ Action Recorder panel. Click the down arrow next to the Action Macro list.
2. In the Action Macro list, select the action macro you want to copy.
3. Expand the Action Recorder panel.
4. In the Action tree, right-click the top node and click Copy.
5. In the Action Macro dialog box, enter a name in the Action Macro Name text box.
6. Optionally, do the following:
   - Enter a command name for the action macro in the Action Macro Command Name text box.
   - Enter a description for the action macro in the Description text box.
   - Under Restore Pre-playback View, select When Pausing for User Input to restore the view prior to the playback of the action macro.
   - Under Restore Pre-playback View, select Once Playback Finishes to restore the view prior to the playback of the action macro.
   - Select Check for Inconsistencies when Playback Begins to have the Action Recorder validate the action macro before playback.
7. Click OK.

To change the location used to save a recorded action macro

1. On the application menu, click Options.
2. In the Options dialog box, Files tab, in the list of nodes, click the plus sign (+) next to Action Recorder Settings.
3. Click the plus sign (+) next to Actions Recording File Locations, and specify a folder path.
4. Click OK.

Quick Reference

Commands

ACTRECORD

Starts the Action Recorder.

ACTSTOP

Stops the Action Recorder and provides the option of saving the recorded actions to an action macro file.

OPTIONS

Customizes the program settings.

RIBBON

Opens the ribbon window.

System Variables

ACTPATH

Specifies the additional paths to use when locating available action macros for playback.

ACTRECORDERSTATE

Specifies the current state of the Action Recorder.

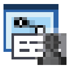
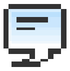
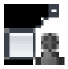
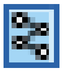
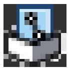
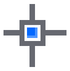
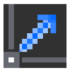
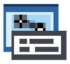
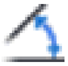
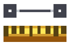
ACTRECPATH

Specifies the path used to store new action macros.

Action Node Icons

When an action macro is being recorded or is current, each action in the action macro file is represented by a node in the Action tree.

To help determine the type of action or input used during the recording of an action macro, icons are displayed next to each one of the nodes on the Action tree. The following table explains what each of the different action nodes represent and the icon that is displayed next to them in the Action tree.

Icon	Action Node Name	Description
	Pause for User Input	Designates that a pause for input will be made for the action during playback.
	User Text Message	A user message will be displayed for this action during playback.
	Insert Base Point	A request to specify a base point will be made for the action during playback.
	Command	Node that contains all recorded input for a command.
	Action Macro	Top level node that contains all the actions associated with the current action macro.
	Absolute Coordinate Point	An absolute coordinate value based on the point acquired during recording.
	Relative Coordinate Point	A relative coordinate value based on the previous coordinate value in the action macro.
	Prompt Interaction/Keyword	A prompt/keyword interaction. This action node cannot be changed to request user input.
	Angle	An angle value.
	Distance	A distance value.

Icon	Action Node Name	Description
3,1	Real (Double)	A real or double number value.
123	Integer	An integer number value.
ab	String	A text string value.
	Scale Factor	A scaling percentage value.
	Color	A color value.
	Selection Results	The final selection set that is used by a command. It contains a node for each sub-selection.
	Macro-created object Selection	A selection that contains only the objects that have been created within the current action macro.
	Use Pick First Selection	The existing selection will be replaced by the objects selected before the start of the playback for the action macro.
	Request User Input (Selection)	A request for a new selection.
	Properties Palettes	Indicates that a change was made with the Properties palette or Quick Properties panel.
	Property	Property change made with the Properties palette or Quick Properties panel.
	Object Filtering	A selection with an object filter applied via either the Properties palette or the Quick

Icon	Action Node Name	Description
		Properties panel. Indicates which object filter type was used.
	Modal Dialog	A node that contains the recorded dialog box that will be displayed during playback.
	View Change (Observation Change)	A view change occurred that was not explicitly made by a command or coordinate change.
	UCS Change	UCS change that was not explicitly made by a command or coordinate change.

Quick Reference

Commands

ACTRECORD

Starts the Action Recorder.

Work with User Interface Elements

Many of the common user interface elements can be used when recording an action macro.

There are some elements that you cannot use. The following user interface elements can be used when recording an action macro:

- Toolbars and Quick Access toolbar
- Pull-down menus and shortcut menus
- Ribbon
- Application menu
- Legacy user interface elements (image tile and tablet menus)
- Application and drawing status bars
- Properties palette and Quick Properties palette
- Tool Palettes window

- DesignCenter

User Interface Elements You Cannot Record

Not all actions preformed with the Properties palette and Quick Properties palette are recorded. The following actions are not recorded:

- Property changes made from a dialog box in the Properties palette or Quick Properties palette.
- Value changes made to the Vertex properties of 3D faces and polylines with the Properties palette or Quick Properties palette.
- Actions that do not execute a command from the status bars.

Not all actions preformed with the status bar are recorded. Only controls that execute commands are recorded. The following buttons are recorded from status bar:

- Quick Properties
- Model and layout
- Quick View Layouts (limited to recording when layouts are switched)
- Pan
- Zoom
- SteeringWheels
- ShowMotion (limited to playing and restoring views)
- Maximize/Minimize Viewport
- Annotation/Viewport Scale
- Synchronize Annotation/Viewport Scale
- Annotation Visibility
- Automatically Add Scales
- Lock UI
- Clean Screen

Not all actions performed in DesignCenter are recorded. The following actions are not recorded:

- Inserting blocks from the DC Online tab.
- All actions from shortcut menus except Attach as Xref and Insert as Block.
- Dragging named objects (such as layers and linetypes).

Quick Reference

Commands

ACTRECORD

Starts the Action Recorder.

Manage and Modify Action Macros

There are several methods for modifying and managing an action macro. You can also edit and change the playback behavior of an action macro.

Manage Action Macros

You can rename, copy, modify, and delete an action macro with the Action Macro Manager or from the Action tree.

Modification and management of action macro file can be handled through the Action Macro Manager and the Action tree.

Manage Files with the Action Tree

The Action tree is displayed when the Action Recorder panel is expanded. The following options are available when you right-click the Action Macro in the Action tree.

- **Rename.** Renames the command and file name of the action macro.
- **Delete.** Removes the action macro file from the Action Macro list and places the file in the Windows Recycle Bin.
- **Copy.** Creates a duplicate copy of the action macro; you specify a new command and file name for the action macro.

- **Properties.** Changes the command name and playback settings for the action macro.

Action nodes that represent commands can be deleted and value nodes can be edited. Action nodes in an action macro are modified through the Action tree, which is displayed when the Action Recorder panel is expanded. The following modify options are available when you right-click an action node in the Action tree:

- **Delete.** Removes an action node from the current action macro.
- **Edit.** Replaces the current value with a new value.

Manage Action Macro Files

The Action Macro Manager dialog box performs basic file management tasks for action macro (ACTM) files. You can modify, rename, delete, and create multiple copies of an action macro file.

TIP You can select and delete a single or multiple copies of action macro files.

To rename an action macro

1. On the ribbon, click Manage tab ➤ Action Recorder panel. Click the down arrow next to the Action Macro list.
2. In the Action Macro list, select the action macro you want to rename.
3. Expand the Action Recorder panel.
4. In the Action tree, right-click the top node and click Rename.
5. In the Action Macro dialog box, in the Action Macro Command Name text box, enter a different name.
6. Click OK.

To delete a previously recorded action macro

1. On the ribbon, click Manage tab ➤ Action Recorder panel. Click the down arrow next to the Action Macro list.
2. In the Action Macro list, select the action macro you want to delete.
3. Expand the Action Recorder panel.
4. In the Action Tree, right-click the top node and click Delete.

5 In the Action Macro - Confirm Deletion dialog box, click Delete.

NOTE When you delete an action macro, the file that the action macro was stored in is also moved to the Windows Recycle Bin until deleted. If you might need the file later, move the file from the *Actions* folder to a different folder.

To copy an action macro

1 On the ribbon, click Manage tab ➤ Action Recorder panel. Click the down arrow next to the Action Macro list.

2 In the Action Macro list, select the action macro you want to copy.

3 Expand the Action Recorder panel.

4 In the Action tree, right-click the top node and click Copy.

5 In the Action Macro dialog box, in the Action Macro Command Name text box, enter a different name and optionally do the following:

- Enter a description for the action macro in the Description text box.
- Under Restore Pre-playback View, select When Pausing For User Input to restore the view prior to the playback of the action macro.
- Under Restore Pre-playback View, select Once Playback Finishes to restore the view prior to the playback of the action macro.
- Select Check for Inconsistencies when Playback Begins to have the Action Recorder validate the action macro before playback.

6 Click OK.

To change the properties of an action macro

1 On the ribbon, click Manage tab ➤ Action Recorder panel. Click the down arrow next to the Action Macro list.

2 In the Action Macro list, select the action macro for which you want to change properties.

3 Expand the Action Recorder panel.

4 In the Action tree, right-click the top node and click Properties.

5 In the Action Macro dialog box, change the properties of the action macro by doing the following:

   - Enter a command name for the action macro in the Action Macro Command Name text box.
   - Enter a description for the action macro in the Description text box.
   - Under Restore Pre-playback View, select When Pausing For User Input to restore the view prior to the playback of the action macro.
   - Under Restore Pre-playback View, select Once Playback Finishes to restore the view prior to the playback of the action macro.
   - Select Check for Inconsistencies when Playback Begins to have the Action Recorder validate the action macro before playback.

6 Click OK.

To delete an action from an action macro

1 On the ribbon, click Manage tab ➤ Action Recorder panel. Click the down arrow next to the Action Macro list.

2 In the Action Macro list, select the action macro from which you want to delete an action.

3 Expand the Action Recorder panel.

4 In the Action tree, right-click an action node and click Delete.

5 In the Action Macro - Confirm Deletion of Item dialog box, click Delete.

NOTE You cannot delete an action while recording an action macro.

To edit a value node in an action macro

1 On the ribbon, click Manage tab ➤ Action Recorder panel. Click the down arrow next to the Action Macro list.

2 In the Action Macro list, select the action macro in which you want to edit a value node.

3 Expand the Action Recorder panel.

4 In the Action tree, right-click a value node and click Edit.

5 Enter the new value and press ENTER.

Quick Reference

Commands

ACTRECORD

Starts the Action Recorder.

RIBBON

Opens the ribbon window.

ACTMANAGER

Manages action macro files.

Insert User Messages

User messages can be inserted into an action macro to provide information about or specific instructions for playing back an action macro.

While recording an action macro, you can insert a user message into an action macro that is displayed during playback. The message might be an overview of what the action macro does, or settings that are needed before the action macro is played back. You can insert as many user messages in an action macro that you want; they can be inserted before or after any action in an action macro.

When a message is displayed, click Close to continue with the playback of the action macro.

To insert a user message into an action macro

1 On the ribbon, click Manage tab ➤ Action Recorder panel. Click the down arrow next to the Action Macro list.

2 In the Action Macro list, select the action macro in which you want to insert a user message.

3 Expand the Action Recorder panel.

4 In the Action tree, right-click a node and click Insert User Message.

NOTE You can only insert a user message before or after a node located under the action macro node in the Action tree.

5 In the Insert User Message dialog box, enter the text message that you want displayed when the action macro is played back.

6 Click OK.

To edit a user message inserted into an action macro

1 On the ribbon, click Manage tab ➤ Action Recorder panel. Click the down arrow next to the Action Macro list.

2 In the Action Macro list, select the action macro whose user message you want to edit.

3 Expand the Action Recorder panel.

4 In the Action tree, right-click the Text Message node and click Edit Message.

5 In the Insert User Message dialog box, change the text message.

6 Click OK.

Quick Reference

Commands

ACTRECORD

Starts the Action Recorder.

ACTUSERMESSAGE

Pauses for user input in an action macro.

RIBBON

Opens the ribbon window.

Pause for User Input

Actions in an action macro can be modified to be played back with the values they were recorded with or to pause for input during playback.

While recording an action macro, you might choose a point or provide input that you do not want to use each time the action macro is played back. You can toggle the behavior of a value node in the current action macro to pause for input during playback. A value node might contain an acquired point, text string, number, command option, or object selection. If an action macro pauses for input, you can provide a new input value during playback.

To toggle the pause for input of a value during the playback of an action macro.

1 On the ribbon, click Manage tab ➤ Action Recorder panel. Click the down arrow next to the Action Macro list.

2 In the Action Macro list, select the action macro that contains the value node that you want to pause for input during playback.

3 Expand the Action Recorder panel.

4 In the Action tree, right-click the value node and click Pause for User Input.

Quick Reference

Commands

ACTRECORD

Starts the Action Recorder.

ACTUSERINPUT

Inserts a user message into an action macro.

RIBBON

Opens the ribbon window.

Work with Coordinates

You can use absolute or relative coordinates for acquired points in an action macro.

As you record an action macro, recorded coordinate values can be represented as absolute or relative. While a coordinate value can be absolute or relative, the stored value for all recorded coordinate values is absolute. Since all coordinate values are stored as absolute with an action macro, you can toggle between using the absolute or relative to previous point value for a recorded coordinate value during playback. The first recorded coordinate value or coordinate value after a UCS change is always defined as absolute. An absolute coordinate value in an action macro is used as the base point for all later relative coordinate values.

You can toggle the behavior of a coordinate value from the Action tree on the Action Recorder. You can also change all coordinate values in an action macro to be relative or absolute from the top node in the Action tree.

To toggle a coordinate value to be absolute or relative to the previous point

1. On the ribbon, click Manage tab ➤ Action Recorder panel. Click the down arrow next to the Action Macro list.
2. In the Action Macro list, select the action macro that contains the coordinate value node you want to modify.
3. Expand the Action Recorder panel.
4. In the Action tree, right-click the coordinate value node and click Relative to Previous.
   - To make a coordinate value absolute, click Relative to Previous if a check mark is present before it. If no check mark is present, then the coordinate value is already absolute.
   - To make a coordinate value relative to the previous point, click Relative to Previous if a check mark is not present before it. If a check mark is present, then the coordinate value is already relative to the previous point.

To toggle all coordinate values to be absolute or relative to the previous point

1. On the ribbon, click Manage tab ➤ Action Recorder panel. Click the down arrow next to the Action Macro list.
2. In the Action Macro list, select the action macro that contains the coordinate value node that you want to be absolute or relative to the previous coordinate.
3. Expand the Action Recorder panel.
4. In the Action tree, right-click the top node and click All Points Are Relative.
   - To make all coordinate values absolute, click All Points Are Relative if a check mark is present before it. If no check mark is present, then the coordinate values might already be absolute; there might also be a combination of absolute and relative coordinate values in the macro.

NOTE To be sure all coordinate values are absolute when All Points Are Relative is not checked, select All Points Are Relative twice to avoid some coordinate values being absolute while others are set relative to the previous point.

- To make all coordinate values relative to the previous point, except for the first coordinate value, click Relative to Previous if a check mark is not present before it. If a check mark is present, then all coordinate values are already relative to the previous point with the exception of the first coordinate value, which is always absolute.

Quick Reference

Commands

ACTRECORD

Starts the Action Recorder.

RIBBON

Opens the ribbon window.

Insert Base Points

Inserting a base point establishes an absolute coordinate which is used by the relative coordinate points that follow the base point in the action macro.

During the playback of an action macro, by default, a request to specify a new coordinate point is made for each base point in the action macro.

In the Action tree, base points can be inserted on an action macro or command node. You can insert base points at any time during recording. After recording, you can insert or delete base points from an action macro.

NOTE In the Action tree, you can right-click a base point and disable Pause for User Input. This eliminates the default behavior of the base point from requesting a new coordinate point during playback.

To insert a base point into an action macro

1 On the ribbon, click Manage tab ➤ Action Recorder panel. Click the down arrow next to the Action Macro list.

2 In the Action Macro list, select the action macro that you want to modify by inserting a base point.

3 Expand the Action Recorder panel.

4 In the Action tree, right-click a node and click Insert Base Point.

5 Click OK.

Quick Reference

Commands

ACTRECORD

Starts the Action Recorder.

ACTBASEPOINT

Inserts a base point in an action macro.

RIBBON

Opens the ribbon window.

Work with Object Selections

Selection nodes are modified through the Action tree to control which objects are used for the commands in an action macro.

When modifying an action macro, you can control the selection method to use when playing back an action macro. You can use one of the following options to alter the behavior of how objects are selected for the selection results node in an action macro:

- **Use Pick First.** Uses the objects selected prior to the start of the action macro.
- **Pause for User Input.** Prompts for a new selection set.
- **Use Macro-Created Object Selection.** Selects all the objects that have been created since the start of the action macro.

To pause for user input for a selection during playback

1 On the ribbon, click Manage tab ➤ Action Recorder panel. Click the down arrow next to the Action Macro list.

2. In the Action Macro list, select the action macro that contains the selection results node that you want to pause for user input during playback.
3. Expand the Action Recorder panel.
4. In the Action tree, right-click the selection results to node and click Pause for User Input.

To toggle the use of macro-created selection during playback

1. On the ribbon, click Manage tab ➤ Action Recorder panel. Click the down arrow next to the Action Macro list.
2. In the Action Macro list, select the action macro that contains the selection results node that you want to represent a selection of all the objects created during the macro playback.
3. Expand the Action Recorder panel.
4. In the Action tree, right-click the selection results node and click Macro-created Object Selection.

To use Pick First selection during playback

1. On the ribbon, click Manage tab ➤ Action Recorder panel. Click the down arrow next to the Action Macro list.
2. In the Action Macro list, select the action macro that contains the selection results node that you want to represent the Pick First selection of all the objects selected before a macro is played back.
3. Expand the Action Recorder panel.
4. In the Action tree, right-click the selection results node and click Use Pick First Set.

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Commands

ACTRECORD

Starts the Action Recorder.

RIBBON

Opens the ribbon window.

Tips for Using the Action Recorder

The Action Recorder is designed to be intuitive and allow you to create custom commands that can reduce the number of actions required to perform a repetitive task. There are some things to consider when recording an action macro.

Recording Action Macros

When recording an action macro, you should be aware of the following:

- The current drawing settings used when recording an action macro are not completely retained by an action macro. To make sure that specific drawing settings are used during playback, record them as part of the action macro using the system variable name or the SETVAR command.
- While many commands are recorded, there are some commands that are not recorded. The commands that are not recorded are related to drawing file operations, working with the Action Recorder, and grip editing. The following table lists the commands that are not recorded by the Action Recorder.

ACTSTOP	ACTUSERINPUT
ACTUSERMESSAGE	-ACTUSERMESSAGE
DXFIN	EXPORTLAYOUT
FILEOPEN	NEW
OPEN	PARTIALOPEN
PRESSPULL	QNEW
RECOVER	TABLEDIT
VBAIDE	-VBALOAD
VBALOAD	VBAMAN

VBANEW	VBAPREF
-VBARUN	VBARUN
VBASTMT	VBAUNLOAD
XOPEN	ACTBASEPOINT
ACTMANAGER	

- Actions recorded with the Action Recorder are limited to interactions with the Properties palette, Quick Properties palette, the Layer Modeless dialog box, and any user interface element that starts a command.
  Some of the user interface elements that start commands are: most tools on tool palettes, some actions in DesignCenter, and some tools on the status bars.

- When a view change occurs, that is not explicitly made by a command or coordinate change, (such as with the ViewCube, mouse wheel, or 3D Orbit), a View Change (Observation Change) node is added to the Action tree. You can delete a View Change node when recording is stopped. Upon deletion, during playback, you might be prompted to provide input or continue the playback because the view change did not occur. This might affect the creation of a selection set or the use of a command.

  NOTE Before deleting a View Change node, consider creating a copy of the original macro file since you cannot undo the deletion of the node.

- Changes to a dialog box are not recorded, but the dialog box is displayed during playback. Instead of using a dialog box during recording, use the command line version of the command to ensure that the action macro behaves consistently each time it is played back.

- Commands defined with AutoLISP and ObjectARX can be recorded with an action macro, but the command must be loaded before the action macro is played back. VBA macros and .NET assemblies can also be recorded as part of an action macro, but they must be loaded in order to be played back.

- Action macros cannot have the same name as a command that is already defined and loaded into AutoCAD.

- The direction of an arc segment created with the Arc option of the PLINE command is not played back correctly unless the Direction option is used to define the arc segment.
- While recording an action macro, you can record the current default value displayed on the command line or use the default value that is current when the action macro is played back. Pressing Enter without entering a specific value during recording, displays a dialog box where you select to use the current value during recording or the default value at playback.
- While recording the TABLE command, the creation of the table is recorded but any edits made to the cells of the table are not recorded.

Editing an Action Macro

When editing an action macro, the action macro files that are found in the paths defined by the system variables ACTRECPATH and ACTPATHare loaded. If more than one action macro file has the same name, the first action macro file that is found is loaded into the Action Recorder. The other files with the same names are ignored and not loaded.

To identify the path of a loaded action macro, select the action macro from the Action Macros drop-down list and expand the Action Recorder panel. Right-click the action macro's node in the Action tree and click Properties. In the Action Macro dialog box, the path to the action macro file is displayed in the Folder Path text box.

Playing Back an Action Macro

When playing back an action macro, you should be aware of the following:

- When playing back an action macro, the results of an action macro may vary from those achieved when initially recording the action macro due to differences between the drawing settings in the current drawing and the one open when the action macro was recorded.
- When playing back an action macro that displays a dialog box, the macro will pause and wait until the dialog box is dismissed after changes are made. If the dialog box is canceled, the macro will continue to play back but the results may differ from those expected.
- When playing back an action macro that contains commands defined with AutoLISP, ObjectARX, or .NET assemblies, playback of the action macro will fail if the files that define the commands are not loaded. If an action macro references a VBA macro, the playback of the action macro will fail if the project file is not loaded.

Exchanging Action Macros

When exchanging action macros with others, you should be aware of the following:

- Action macros recorded with one of the AutoCAD based vertical products may not play back correctly based on the commands that were used when the action macro was recorded.
- Action macros may not play back correctly when recorded in one language of AutoCAD and then played back with a different language of AutoCAD.

Quick Reference

Commands

ACTRECORD

Starts the Action Recorder.

RIBBON

Opens the ribbon window.

Examples of Action Macros

The following examples show some of the ways that action macros can automate repetitive tasks. The examples shows some of the different ways that you can record actions with the Action Recorder.

Create a New Layer and Draw Objects

In this example, you create an action macro that makes a new layer and then draws objects on the layer to create a two-dimensional top view of a hexagon bolt.

In this example, you learn how to

- Record and save an action macro
- Record commands and input values to create and modify a new layer
- Record commands and input values to create and modify objects
- Insert a user message

- Insert base point
- Pause for user input
- Play back an action macro

Start Recording an Action Macro

You start recording actions in the Action Recorder panel. To display the Action Recorder panel and start recording, follow these steps:

1 On the ribbon, click the Manage tab.

2 On the Action Recorder panel, click Record.

Record commands and input values to create and modify a new layer

Once the Action Recorder starts recording, you use the Layer Properties Manager to create a new layer. Follow these steps:

1 At the Command prompt, enter **-layer** and press Enter.

2 At the prompt, Enter an option [?/Make/Set/New/Rename/ON/OFF/Color/Ltype/LWeight/TRansparency/MATerial/Plot/Freeze/Thaw/LOck/Unlock/stAte/Description/rEconcile], enter **m** and press Enter.

3 At the prompt, Enter name for new layer (becomes the current layer) <0>, enter **Bolt** and press Enter.

4 At the prompt, Enter an option [?/Make/Set/New/Rename/ON/OFF/Color/Ltype/LWeight/TRansparency/MATerial/Plot/Freeze/Thaw/LOck/Unlock/stAte/Description/rEconcile], enter **c** and press Enter.

5 At the prompt, New color [Truecolor/COlorbook], enter **1** and press Enter.

6 At the prompt, Enter name list of layer(s) for color 1 (red) <Bolt>, press Enter to assign the color Red to the Bolt layer.

If the Action Macro - Value Not Recorded dialog box is displayed, click the Use the Value that is Current at Playback link. This will assign the color specified to the to the recent layer that was created with the Make option.

7 Press Enter again to exit the -LAYER command.

Record Commands and Input Values Used to Create and Modify Objects

Creating the Bolt layer has been recorded. Next, you create a circle and then a six sided polygon based on the center of the circle for a hexagon bolt. Once the circle and polygon are drawn, you use the SCALE command to control the size of the hexagon bolt when the action macro is played back. Follow these steps:

1. At the Command prompt, enter **circle** and press Enter.
2. At the prompt, Specify center point for circle or [3P/2P/Ttr (tan tan radius)], click in the drawing window.
3. At the prompt, Specify radius of circle or [Diameter], enter **0.9** and press ENTER.
4. At the Command prompt, enter **polygon** and press Enter.
5. At the prompt, Enter number of sides <4>, enter **6** and press Enter.
6. At the prompt, Specify center of polygon or [Edge], use the Center object snap and select the edge of the circle.
7. At the prompt, Enter an option [Inscribed in circle/Circumscribed about circle] <C>, enter **c** and press Enter.
8. At the prompt, Specify radius of circle, enter **1** and press Enter.
9. At the Command prompt, enter **scale** and press Enter.
10. At the prompt, Select objects, select both the circle and polygon and press Enter.
11. At the prompt, Specify base point, use the Center object snap and select the edge of the circle.
12. At the prompt, Specify scale factor or [Copy/Reference] <1.0000>, enter **1** and press Enter.

Stop Recording and Save an Action Macro

After all the actions have been recorded, you stop recording and save the recorded actions to an action macro file. Follow these steps:

1. On the Action Recorder panel, click Stop.
2. In the Action Macro dialog box, do the following:
   - In the Action Macro Command Name box, enter **CreateBolt**.

- In the Description box, enter **Creates a hexagon bolt**.

3 Click OK.

Insert a User Message

With a user message, you can provide instructions or general information about the action macro to the user before any changes are made to the drawing during playback. To insert a user message in the action macro, follow these steps:

1 On the Action Recorder panel, click the title bar to expand the panel.

2 In the Action tree, select the CreateBolt node and right-click. Click Insert User Message.

3 In the Insert User Message dialog box, enter **Creates a hexagon bolt by drawing a circle and polygon. During playback you are prompted for the center point of the circle and size of the bolt.** Click OK.

Insert a Base Point

With insert a base point, you are prompted to specify a base point when playing back an action macro. In this action macro, you specify a base point used for the center point of the circle during playback. Follow these steps:

1 On the Action Recorder panel, click the title bar to expand the panel.

2 In the Action tree, select the Circle action node and right-click. Click Insert Base Point.

Pause for User Input

With a pause for user input, you are prompted to enter a value when playing back an action macro. In this action macro, you change the scale factor for the SCALE command to pause for user input during play back. Follow these steps:

1 On the Action Recorder panel, click the title bar to expand the panel.

2 Select the Scale Factor value node under the Scale action node and right-click. Click Pause for User Input.

Play Back the Action Macro

When you play back the action macro, you are prompted to specify a base point of a circle and the scale factor for the SCALE command. To see the results of the action macro, follow these steps:

1. On the Action Recorder panel, on the Action Macro list, select CreateBolt.
2. Click Play.
3. In the User Message dialog box, click Close.
4. When prompted to specify a base point, click a coordinate point in the drawing window.
5. The circle and polygon are drawn.
6. When prompted for a scale factor, enter a numeric value (such as 1 or 0.25) at the Command prompt and press Enter.

   The circle and polygon are scaled based on the scale factor entered.
7. In the Action Macro - Playback Complete dialog box, click OK.

Quick Reference

Commands

ACTRECORD

Starts the Action Recorder.

ACTSTOP

Stops the Action Recorder and provides the option of saving the recorded actions to an action macro file.

ACTUSERINPUT

Pauses for user input in an action macro.

ACTUSERMESSAGE

Inserts a user message into an action macro.

ACTBASEPOINT

Inserts a base point in an action macro.

CIRCLE

Creates a circle.

LAYER

Manages layers and layer properties.

POLYGON

Creates an equilateral closed polyline.

RIBBON

Opens the ribbon window.

SCALE

Enlarges or reduces selected objects, keeping the proportions of the object the same after scaling.

Insert a Block and Change a Dynamic Property Value

This example shows how to insert a dynamic block from a tool palette and change its dynamic properties using the Properties palette.

In this example, you learn how to

- Record and save an action macro
- Record actions from the Tool Palettes window
- Modify an object using the Properties palette
- Remove action nodes from an action macro
- Insert Base Point
- Play back an action macro

Start Recording an Action Macro

You start recording actions on the Action Recorder panel. To display the Action Recorder panel and to start recording, follow these steps:

1. On the ribbon, click the Manage tab.
2. On the Action Recorder panel, click Record.

Record Actions from the Tool Palettes Window

You can use tools from a tool palette and then play back the action that is performed by a tool. From the Tool Palettes window, you will place the I Beam - Imperial dynamic block from the Structural tool palette. Follow these steps:

1. At the Command prompt, enter **toolpalettes** to display the Tool Palettes window.
2. At the Command prompt, enter **properties** to display the Properties palette.
3. In the Tool Palettes window, under the All Palettes group, click the Structural tab.
4. On the Structural tab, click the I Beam - Imperial tool.
5. On the Properties palette, under the Custom category, click the Beam Sizes field.
6. On the Beam Sizes drop-down list, select IPE A 140.
7. In the drawing window, specify the insertion point for the block.

Stop Recording and Save an Action Macro

After all the actions have been recorded, you stop recording and save the recorded actions to an action macro file. Follow these steps:

1. On the Action Recorder panel, click Stop.
2. In the Action Macro dialog box, do the following
   - In the Action Macro Command Name box, enter **InsertIPEA140**.
   - In the Description box, enter **Inserts an IPE A 140 beam**.
3. Click OK.

Remove Action Nodes

When you record an action macro, at times additional actions are recorded that you do not need. For example, while recording the action macro you displayed the Tool Palettes window and the Properties palette. Those action nodes are not needed in order to play back the action macro. To remove action nodes from the action macro, follow these steps:

1. On the Action Recorder panel, click the title bar to expand the panel.

2 In the Action tree, select the TOOLPALETTES action node under the Action Macro node and right-click. Click Delete.

3 Select the Properties action node and right-click. Click Delete.

Play Back the Action Macro

When you play back the action macro, you are prompted to specify the insertion point of the block. To see the results of the action macro, follow these steps:

1 On the Action Recorder panel, on the Action Macro list, select InsertIPEA140.

2 Click Play.

3 When prompted to specify a base point, click a base point in the drawing window to insert the block.

As the block is inserted, the beam size selected on the Properties palette is reflected on-screen.

4 In the Action Macro - Playback Complete dialog box, click OK.

Quick Reference

Commands

ACTRECORD

Starts the Action Recorder.

ACTSTOP

Stops the Action Recorder and provides the option of saving the recorded actions to an action macro file.

PROPERTIES

Controls properties of existing objects.

RIBBON

Opens the ribbon window.

TOOLPALETTES

Opens the Tool Palettes window.

Modify Circles with the Properties Palette

This example shows how to apply an object filter to select objects and then change the color property of the selected objects.

In this example, you learn how to

- Record and save an action macro
- Modify an object using the Properties palette
- Select objects and use an object selection filter
- Use Pick First selection
- Play back an action macro

Start Recording an Action Macro

You start recording actions on the Action Recorder panel. To display the Action Recorder panel and to start recording, follow these steps:

1. On the ribbon, click the Manage tab.
2. On the Action recorder panel, click Record.

Modify Objects Using the Properties Palette and Object Selection Filter

When working with the Properties palette, you can control which objects you modify by applying an object selection filter to the selected objects. Follow these steps:

1. Select the objects in the drawing that you want to modify and right-click. Click Properties.
2. On the Properties palette, in the Objects drop-down list, select Circles.
3. Under the General category, select the Color field.
4. In the Color drop-down list, select Blue.

Stop Recording and Save an Action Macro

After all the actions have been recorded, you stop recording and save the recorded actions to an action macro file. Follow these steps:

1. On the Action Recorder panel, click Stop.

2 In the Action Macro dialog box, do the following

- In the Action Macro Command Name box, enter **BlueCircles**.
- In the Description box, enter **Changes the color of all selected circles to blue**.

3 Click OK.

Change the Selection Set to Use the Pick First Selection Set

With a request for user input, you are prompted for a value to be entered instead of using a recorded value when playing back an action macro. In this action macro, you change the selection set created to use the Pick First selection. Follow these steps:

1 On the Action Recorder panel, click the title bar to expand the panel.

2 In the Action tree, under the Action Macro node, select the Pickfirst value node and right-click. Click Use Pick First Set.

Play Back the Action Macro

When you play back the action macro, you are prompted to select objects if no objects are selected. To see the results of the action macro, follow these steps:

1 Draw some circles and other objects in the drawing. Change the colors of the objects to colors other than blue.

2 On the Action Recorder panel, on the Action Macro list, select BlueCircles.

3 Click Play.

4 In the Action Macro - No Objects Selected dialog box, click Select Objects and Continue.

5 When prompted to select objects, select the circles and the other objects in the drawing. Press ENTER to complete object selection.

The circles in the selection set are changed to the color blue.

6 If the Action Macro - Playback Complete dialog box is displayed, click OK.

Undo the changes made by the action macro by clicking Undo from the Quick Access toolbar. Now select some objects in the drawing and playback the BlueCircles action macro. This time the action macro uses the Pick First selection and you are not prompted to select the objects in the drawing when the action macro is played back.

Quick Reference

Commands

ACTRECORD

Starts the Action Recorder.

ACTSTOP

Stops the Action Recorder and provides the option of saving the recorded actions to an action macro file.

PROPERTIES

Controls properties of existing objects.

RIBBON

Opens the ribbon window.

System Variables

PICKFIRST

Controls whether you select objects before (noun-verb selection) or after you issue a command.

Custom Linetypes

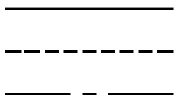
2

AutoCAD® provides a library of standard linetypes in the *acad.lin* and *acadiso.lin* files. You can use the linetypes as they are, modify them, or create your own custom linetypes.

Overview of Linetype Definitions

Linetypes are defined in one or more linetype definition files that have a *.lin* file extension.

The linetype name and definition determine the particular dash-dot sequence, the relative lengths of dashes and blank spaces, and the characteristics of any included text or shapes. You can use any of the standard linetypes that AutoCAD provides, or you can create your own linetypes.



examples of linetypes

A LIN file can contain definitions of many simple and complex linetypes. You can add new linetypes to an existing LIN file, or you can create your own LIN file. To create or modify linetype definitions, edit the LIN file using a text editor or word processor or use LINETYPE at the command prompt.

When you create a linetype, you must load the linetype before you can use it.

The LIN files included in AutoCAD are *acad.lin* and *acadiso.lin*. You can display or print these text files to better understand how to construct linetypes.

Quick Reference

Commands

LINETYPE

Loads, sets, and modifies linetypes.

System Variables

MEASUREINIT

Controls whether a drawing you start from scratch uses imperial or metric default settings.

Simple Custom Linetypes

Each linetype is defined on two lines in a linetype definition file. The first line contains the linetype name and an optional description. The second line is the code that defines the actual linetype pattern.

The second line must begin with the letter A (alignment), followed by a list of pattern descriptors that define pen-up lengths (spaces), pen-down lengths (dashes), and dots. You can include comments in an LIN file by beginning the line with a semicolon (;).

Linetype Definition Format

The format of the linetype definition is

```
*linetype_name,description
A,descriptor1,descriptor2, ...
```

For example, a linetype called DASHDOT is defined as

```
*DASHDOT,Dash dot __ . __ . __ . __ . __ . __ . __ . __
A,.5,-.25,0,-.25
```

This indicates a repeating pattern starting with a dash 0.5 drawing units long, a space 0.25 drawing units long, a dot, and another space 0.25 drawing units long. This pattern continues for the length of the line, ending with a dash 0.5 drawing units long. The linetype would be displayed as shown below.

__ . __ . __ . __ . __ . __ . __ . __

LIN files must be saved in ASCII format and use an *.lin* file extension. Additional information about each field in a linetype definition follows.

Linetype Name

The linetype name field begins with an asterisk (*) and should provide a unique, descriptive name for the linetype.

Description

The description of the linetype should help you visualize the linetype when you edit the LIN file. The description is also displayed in the Linetype Manager and in the Load or Reload Linetypes dialog box.

The description is optional and can include

- A simple representation of the linetype pattern using ASCII text
- An expanded description of the linetype
- A comment such as "Use this linetype for hidden lines"

If you omit the description, do not insert a comma after the linetype name. A description cannot exceed 47 characters.

Alignment Field (A)

The alignment field specifies the action for pattern alignment at the ends of individual lines, circles, and arcs. Currently, AutoCAD supports only A-type alignment, which guarantees that the endpoints of lines and arcs start and stop with a dash.

For example, suppose you create a linetype called CENTRAL that displays the repeating dash-dot sequence commonly used as a centerline. AutoCAD adjusts the dash-dot sequence on an individual line so that dashes and line endpoints coincide. The pattern fits the line so that at least half of the first dash begins and ends the line. If necessary, the first and last dashes are lengthened. If a line is too short to hold even one dash-dot sequence, AutoCAD draws a continuous line between the endpoints. For arcs also, the pattern is adjusted so that dashes are drawn at the endpoints. Circles do not have endpoints, but AutoCAD adjusts the dash-dot sequence to provide a reasonable display.

You must specify A-type alignment by entering **a** in the alignment field.

Pattern Descriptors

Each pattern descriptor field specifies the length of segments making up the linetype, separated by commas (no spaces are allowed):

- A positive decimal number denotes a pen-down (dash) segment of that length.
- A negative decimal number denotes a pen-up (space) segment of that length.
- A dash length of 0 draws a dot.

You can enter up to 12 dash-length specifications per linetype, provided they fit on one 80-character line in the LIN file. You need to include only one complete repetition of the linetype pattern defined by pattern descriptors. When the linetype is drawn, AutoCAD uses the first pattern descriptor for the starting and ending dashes. Between the starting and ending dashes, the pattern dash specifications are drawn sequentially, beginning with the second dash specification and restarting the pattern with the first dash specification when required.

A-type alignment requires that the first dash length be 0 or greater (a pen-down segment). The second dash length should be less than 0 if you need a pen-up segment and more than 0 if you are creating a continuous linetype. You must have at least two dash specifications for A-type alignment.

To create a simple linetype from the Command prompt

1. At the command prompt, enter **-linetype**.
2. Enter **c** (Create).
3. Enter a name for the linetype and press Enter.

   The linetype name can include up to 255 characters. Linetype names can contain letters, digits, and the special characters dollar sign ($), hyphen (-), and underscore (_). Linetype names cannot include blank spaces.
4. In the Create or Append Linetype File dialog box, select an LIN linetype library file from the File Name box and click Save.

   If you select an existing file, the new linetype name is added to the linetype names in the file.
5. Enter text that describes the new linetype (optional).

6. At the Enter Pattern prompt, specify the pattern of the line. Follow these guidelines:
   - All linetypes must begin with a dash.
   - Enter zeros for dots.
   - Enter negative real numbers for spaces. The value defines the length of the space in drawing units.
   - Enter positive real numbers for dashes. The value defines the length of the dash in drawing units.
   - Separate each dot, dash, or space value from the next with a comma.
   - Use a space between a dot and a dash.
7. Press Enter to end the command.

NOTE When you create a linetype, it is not loaded into your drawing automatically. Use the Load option of LINETYPE.

To add a simple linetype to a LIN file

1. Open the *acad.lin* or *acadiso.lin* file in a text editor that saves in ASCII format.
2. Create a header line that includes an asterisk and a linetype pattern name. The name of the linetype pattern is limited to 31 characters.
3. (Optional) To include a description in the header line, follow the linetype pattern name with a comma and description text.
4. Create a descriptor line that includes:
   - All linetypes must begin with a dash.
   - Enter zeros for dots.
   - Enter negative real numbers for spaces. The value defines the length of the space in drawing units.
   - Enter positive real numbers for dashes. The value defines the length of the dash in drawing units.
   - Separate each dot, dash, or space value from the next with a comma.
   - Use a space between a dot and a dash.

Quick Reference

Commands

LINETYPE

Loads, sets, and modifies linetypes.

System Variables

MEASUREINIT

Controls whether a drawing you start from scratch uses imperial or metric default settings.

Text in Custom Linetypes

Characters from text fonts can be included in linetypes.

Characters from text fonts can be included in linetypes. Linetypes with embedded characters can denote utilities, boundaries, contours, and so on. As with simple linetypes, lines are dynamically drawn as you specify the vertices. Characters embedded in lines are always displayed completely; they are never trimmed.

Embedded text characters are associated with a text style in the drawing. Any text styles associated with a linetype must exist in the drawing before you load the linetype.

The format for linetypes that include embedded characters is similar to that for simple linetypes in that it is a list of pattern descriptors separated by commas.

Character Descriptor Format

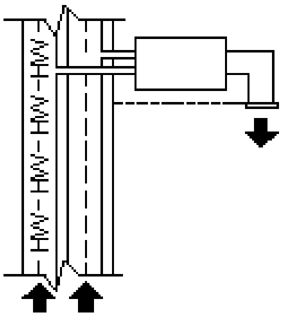
The format for adding text characters in a linetype description is as follows:

```
["text",textstylename,scale,rotation,xoffset,yoffset]
```

This format is added as a descriptor to a simple linetype. For example, a linetype called HOT_WATER_SUPPLY is defined as

```
*HOT_WATER_SUPPLY,---- HW ---- HW ---- HW ---- HW ---- HW ----
A,.5,-.2,["HW",STANDARD,S=.1,U=0.0,X=-0.1,Y=-.05],-.2
```

This indicates a repeating pattern starting with a dash 0.5 drawing units long, a space 0.2 drawing units long, the characters *HW* with some scale and placement parameters, and another space 0.2 drawing units long. The text characters come from the text font assigned to the STANDARD text style at a scale of 0.1, an upright rotation of 0 degrees, an *X* offset of -0.1, and a *Y* offset of -0.05. This pattern continues for the length of the line, ending with a dash 0.5 drawing units long. The linetype would be displayed as shown below.



Notice that the total upstroke length is 0.2 + 0.2 = 0.4 and that the text origin is offset -.01 units in the *X* direction from the end of the first upstroke. An equivalent linetype would be

```
*HOT_WATER_SUPPLY,---- HW ---- HW ---- HW ---- HW ---- HW ----
A,.5,-.1,["HW",STANDARD,S=.1,U=0.0,X=0.0,Y=-.05],-.3
```

The total upstroke is still 0.1 + 0.3 = 0.4, but the text origin is not offset in the *X* direction.

Additional information about each field in the character descriptor follows. The values to be used are signed decimal numbers such as 1, -17, and 0.01.

text The characters to be used in the linetype.

text style name The name of the text style to be used. If no text style is specified, AutoCAD uses the currently defined style.

scale `S=value`. The scale factor to be used for the text style relative to the scale of the linetype. The height of the text style is multiplied by the scale factor. If the height is 0, the value for `S=value` alone is used as the height.

rotation `U=value`, `R=value`, or `A=value`. `U=` specifies upright or easy-to-read text. `R=` specifies relative or tangential rotation with respect to the line. `A=` specifies absolute rotation of the text with respect to the origin; that is, all text has the same rotation regardless of its position relative to the line. The value can be appended with a `d` for degrees (degrees is the default value), `r` for radians, or `g` for grads. If rotation is omitted, 0 relative rotation is used.

Rotation is centered between the baseline and the nominal cap height.

NOTE Drawings containing legacy linetypes that do not use the U (upright) rotation flag can be updated to the latest linetype definition by reloading the linetype from the LIN files. Custom linetypes can be updated by changing the R (rotation) flag to the U (upright) flag prior to reloading a linetype definition. For information on loading a linetype, see Load Linetypes.

xoffset `X=value`. The shift of the text on the *X* axis of the linetype, which is along the line. If `xoffset` is omitted or is 0, the text is elaborated with no offset. Use this field to control the distance between the text and the previous pen-up or pen-down stroke. This value is not scaled by the scale factor defined by `S=value`, but it is scaled to the linetype.

yoffset `Y=value`. The shift of the text in the *Y* axis of the linetype, which is at a 90-degree angle to the line. If `yoffset` is omitted or is 0, the text is elaborated with no offset. Use this field to control the vertical alignment of the text with respect to the line. This value is not scaled by the scale factor defined by `S=value`, but it is scaled to the linetype.

To include text characters in linetypes

1. Create a simple linetype, as described in To add a simple linetype to a LIN file on page 67.
2. Add the text character descriptor within the linetype pattern, using the following format:

   [*"text"*,*textstylename*,*scale*,*rotation*,*xoffset*,*yoffset*]

Quick Reference

Commands

LINETYPE

Loads, sets, and modifies linetypes.

System Variables

MEASUREINIT

Controls whether a drawing you start from scratch uses imperial or metric default settings.

Shapes in Custom Linetypes

See also:

- Shapes and Shape Fonts on page 467

A complex linetype can contain embedded shapes that are saved in shape files. Complex linetypes can denote utilities, boundaries, contours, and so on.

As with simple linetypes, complex lines are dynamically drawn as the user specifies vertices. Shapes and text objects embedded in lines are always displayed completely; they are never trimmed.

The syntax for complex linetypes is similar to that of simple linetypes in that it is a comma-delimited list of pattern descriptors. Complex linetypes can include shape and text objects as pattern descriptors, as well as dash-dot descriptors.

The syntax for shape object descriptors in a linetype description is as follows:

```
[shapename,shxfilename] or [shapename,shxfilename,transform]
```

where *transform* is optional and can be any series of the following (each preceded by a comma):

`R=##` Relative rotation

`A=##` Absolute rotation

`U=##` Upright rotation

`S=##` Scale

`X=##` *X* offset

`Y=##` *Y* offset

In this syntax, `##` is a signed decimal number (1, -17, 0.01, and so on), the rotation is in degrees, and the remaining options are in linetype-scaled drawing units. The preceding *transform* letters, if they are used, must be followed by an equal sign and a number.

The following linetype definition defines a linetype named CON1LINE that is composed of a repeating pattern of a line segment, a space, and the embedded shape CON1 from the *ep.shx* file. (Note that the *ep.shx* file must be in the support path for the following example to work properly.)

```
*CON1LINE, --- [CON1] --- [CON1] --- [CON1]
A,1.0,-0.25,[CON1,ep.shx],-1.0
```

Except for the code enclosed in square brackets, everything is consistent with the definition of a simple linetype.

As previously described, a total of six fields can be used to define a shape as part of a linetype. The first two are mandatory and position-dependent; the next four are optional and can be ordered arbitrarily. The following two examples demonstrate various entries in the shape definition field.

```
[CAP,ep.shx,S=2,R=10,X=0.5]
```

The code above draws the `CAP` shape defined in the *ep.shx* shape file with a scale of two times the unit scale of the linetype, a tangential rotation of 10 degrees in a counterclockwise direction, and an *X* offset of 0.5 drawing units before shape elaboration takes place.

```
[DIP8,pd.shx,X=0.5,Y=1,R=0,S=1]
```

The code above draws the `DIP8` shape defined in the *pd.shx* shape file with an *X* offset of 0.5 drawing units before shape drawing takes place, and a *Y* offset of one drawing unit above the linetype, with 0 rotation and a scale equal to the unit scale of the linetype.

The following syntax defines a shape as part of a complex linetype.

```
[shapename,shapefilename,scale,rotate,xoffset,yoffset]
```

The definitions of the fields in the syntax follow.

shapename The name of the shape to be drawn. This field must be included. If it is omitted, linetype definition fails. If *`shapename`* does not exist in the specified shape file, continue drawing the linetype but without the embedded shape.

shapefilename The name of a compiled shape definition file (SHX). If it is omitted, linetype definition fails. If *`shapefilename`* is unqualified (that is, no path is specified), search the library path for the file. If *`shapefilename`* is fully qualified and not found at that location, remove the prefix and search the library path for the file. If it is not found, continue drawing the linetype but without the embedded shape.

scale `S=`*`value`*. The scale of the shape is used as a scale factor by which the shape's internally defined scale is multiplied. If the shape's internally defined scale is 0, the `S=`*`value`* alone is used as the scale.

rotate `U=value`, `R=`*`value`* or `A=`*`value`*. `R=` signifies relative or tangential rotation with respect to the line's elaboration. `A=` signifies absolute rotation of the shape with respect to the origin; all shapes have the same rotation regardless of their relative position to the line. The value can be appended with a `d` for degrees (if omitted, degree is the default), `r` for radians, or `g` for grads. If rotation is omitted, 0 relative rotation is used.

NOTE Drawings containing legacy linetypes that do not use the U (upright) rotation flag can be updated to the latest linetype definition by reloading the linetype from the LIN files. Custom linetypes can be updated by changing the R (rotation) flag to the U (upright) flag prior to reloading a linetype definition. For information on loading a linetype, see Load Linetypes.

xoffset `X=`*`value`*. The shift of the shape in the *X* axis of the linetype computed from the end of the linetype definition vertex. If *`xoffset`* is omitted or is 0, the shape is elaborated with no offset. Include this field if you want a continuous line with shapes. This value is not scaled by the scale factor defined by `S=`.

yoffset `Y=`*`value`*. The shift of the shape in the *Y* axis of the linetype computed from the end of the linetype definition vertex. If *`yoffset`* is omitted or 0, the shape is elaborated with no offset. This value is not scaled by the scale factor defined by `S=`.

Quick Reference

Commands

LINETYPE

Loads, sets, and modifies linetypes.

SHAPE

Inserts a shape from a shape file that has been loaded using LOAD.

System Variables

MEASUREINIT

Controls whether a drawing you start from scratch uses imperial or metric default settings.

Custom Hatch Patterns 3

AutoCAD® provides a library of standard hatch patterns in the *acad.pat* and *acadiso.pat* files. You can use the hatch patterns as they are, modify them, or create your own custom hatch patterns.

Overview of Hatch Pattern Definitions

In addition to using the predefined hatch patterns that are supplied, you can design and create your own custom hatch patterns.

In addition to using the predefined hatch patterns that are supplied, you can design and create your own custom hatch patterns. Developing a hatch pattern definition requires knowledge, practice, and patience. Because customizing hatches requires familiarity with hatch patterns, it is not recommended for new users.

The hatch patterns supplied by AutoCAD are stored in the *acad.pat* and *acadiso.pat* text files. You can add hatch pattern definitions to this file or create your own files.

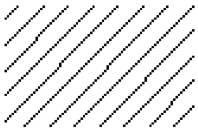
Regardless of where the definition is stored, a custom hatch pattern has the same format. It has a header line with a name, which begins with an asterisk and is no more than 31 characters long, and an optional description:

```
*pattern-name, description
```

It also has one or more line descriptors of the following form:

```
angle, x-origin,y-origin, delta-x,delta-y,dash-1,dash-2, …
```

The default hatch pattern ANSI31 shown in the Boundary Hatch and Fill dialog box looks like this:



and is defined as follows:

```
*ANSI31, ANSI Iron, Brick, Stone masonry
45, 0,0, 0,.125
```

The pattern name on the first line, `*ANSI31`, is followed by a description: `ANSI Iron, Brick, Stone masonry`. This simple pattern definition specifies a line drawn at an angle of 45 degrees, that the first line of the family of hatch lines is to pass through the drawing origin (0,0), and that the spacing between hatch lines of the family is to be 0.125 drawing units.

Hatch pattern definitions follow these rules:

- Each line in a pattern definition can contain up to 80 characters. You can include letters, numbers, and the special characters underline (_), hyphen (-), and dollar sign ($). However, you must begin a pattern definition with a letter or number, not a special character.
- AutoCAD ignores both blank lines and text to the right of a semicolon.
- Each pattern line is considered to be the first member of a line family, created by applying the delta offsets in both directions to generate an infinite family of parallel lines.
- The *`delta-x`* value indicates the displacement between members of the family in the direction of the line. It is used only for dashed lines.
- The *`delta-y`* value indicates the spacing between members of the family; that is, it is measured perpendicular to the lines.
- A line is considered to be of infinite length. A dash pattern is superimposed on the line.

NOTE A blank line must be placed after the last hatch pattern definition in a PAT file. If a blank line is not placed after the last hatch pattern definition, the last hatch pattern definition will not be accessible when creating a hatch fill.

The process of hatching consists of expanding each line in the pattern definition to its infinite family of parallel lines. All selected objects are checked for intersections with any of these lines; any intersections cause the hatch lines to be turned on and off as governed by the hatching style. Each family of hatch lines is generated parallel to an initial line with an absolute origin to guarantee proper alignment.

If you create a very dense hatch, AutoCAD may reject the hatch and display a message indicating that the hatch scale is too small or its dash length too short. You can change the maximum number of hatch lines by setting the MaxHatch environment variable using (setenv “MaxHatch” “n”) where n is a number between 100 and 10000000 (ten million).

NOTE When changing the value of MaxHatch, you must enter MaxHatch with the capitalization as shown.

To create a simple hatch pattern

1. Open the *acad.pat* or *acadiso.pat* file in a text editor that saves in ASCII format.
2. Create a header line that includes an asterisk and a pattern name. The name of the hatch pattern is limited to 31 characters.
3. (Optional) To include a description in the header line, follow the pattern name with a comma and description text.
4. Create a descriptor line that includes
   - An angle at which the line is drawn
   - An *X,Y* origin point
   - A *delta-x* of 0
   - A *delta-y* of any value

Quick Reference

Commands

ADCENTER

Manages and inserts content such as blocks, xrefs, and hatch patterns.

FILL

Controls the filling of objects such as hatches, 2D solids, and wide polylines.

HATCH

Fills an enclosed area or selected objects with a hatch pattern, solid fill, or gradient fill.

HATCHEDIT

Modifies an existing hatch or fill.

SOLID

Creates solid-filled triangles and quadrilaterals.

System Variables

FILLMODE

Specifies whether hatches and fills, 2D solids, and wide polylines are filled in.

HPANG

Sets the angle for new hatch patterns.

HPBOUND

Controls the object type created by HATCH and BOUNDARY.

HPDOUBLE

Specifies hatch pattern doubling for user-defined patterns.

HPNAME

Sets the default hatch pattern name.

HPSCALE

Sets the hatch pattern scale factor.

HPSPACE

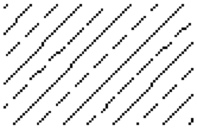
Sets the hatch pattern line spacing for user-defined patterns.

Hatch Patterns with Dashed Lines

To define dashed-line patterns, you append dash-length items to the end of the line definition item.

To define dashed-line patterns, you append dash-length items to the end of the line definition item. Each dash-length item specifies the length of a segment making up the line. If the length is positive, a pen-down segment is drawn. If the length is negative, the segment is pen-up, and it is not drawn. The pattern starts at the origin point with the first segment and cycles through the segments in circular fashion. A dash length of 0 draws a dot. You can specify up to six dash lengths per pattern line.

The hatch pattern ANSI33, shown on the Hatch contextual ribbon tab or in the Hatch and Gradient dialog box, looks like this:



and is defined as follows:

```
*ANSI33, ANSI Bronze, Brass, Copper
45, .176776695,0, 0,.25, .125,-.0625
```

For example, to modify a pattern for 45-degree lines to draw dashed lines with a dash length of 0.5 units and a space between dashes of 0.5 units, the line definition would be

```
*DASH45, Dashed lines at 45 degrees
45, 0,0, 0,.5, .5,-.5
```

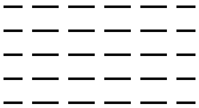
This is the same as the 45-degree pattern shown in Overview of Hatch Pattern Definitions on page 75, but with a dash specification added to the end. The pen-down length is 0.5 units, and the pen-up length is 0.5, meeting the stated objectives. If you wanted to draw a 0.5-unit dash, a 0.25-unit space, a dot, and a 0.25-unit space before the next dash, the definition would be

```
*DDOT45,Dash-dot-dash pattern: 45 degrees
45, 0,0, 0,.5, .5,-.25, 0,-.25
```

The following example shows the effect of `delta-x` specifications on dashed-line families. First, consider the following definition:

```
*GOSTAK
0, 0,0, 0,.5, .5,-.5
```

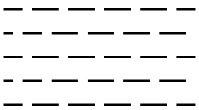
This draws a family of lines separated by 0.5, with each line broken equally into dashes and spaces. Because `delta-x` is zero, the dashes in each family member line up. An area hatched with this pattern would look like this:



Now change the pattern to

```
*SKEWED
0, 0,0, .5,.5, .5,-.5
```

It is the same, except that you have set `delta-x` to 0.5. This offsets each successive family member by 0.5 in the direction of the line (in this case, parallel to the *X* axis). Because the lines are infinite, the dash pattern slides down the specified amount. The hatched area would look like this:



To create a hatch pattern with dashed lines

1. Open the *acad.pat* or *acadiso.pat* file in a text editor that saves in ASCII format.
2. Create a header line that includes an asterisk and a pattern name. The name of the hatch pattern is limited to 31 characters.
3. (Optional) To include a description in the header line, follow the pattern name with a comma and description text.
4. Create a descriptor line that includes
   - An angle at which the line is drawn
   - An *X,Y* origin point
   - A `delta-x` of any value if you want to offset alternating lines in the line family
   - A `delta-y` of any value
   - A value for a dash length
   - A value for a dot length
   - An optional second value for a different dash length
   - An optional second value for a different dot length

Quick Reference

Commands

ADCENTER

Manages and inserts content such as blocks, xrefs, and hatch patterns.

FILL

Controls the filling of objects such as hatches, 2D solids, and wide polylines.

HATCH

Fills an enclosed area or selected objects with a hatch pattern, solid fill, or gradient fill.

HATCHEDIT

Modifies an existing hatch or fill.

SOLID

Creates solid-filled triangles and quadrilaterals.

System Variables

FILLMODE

Specifies whether hatches and fills, 2D solids, and wide polylines are filled in.

HPANG

Sets the angle for new hatch patterns.

HPBOUND

Controls the object type created by HATCH and BOUNDARY.

HPDOUBLE

Specifies hatch pattern doubling for user-defined patterns.

HPNAME

Sets the default hatch pattern name.

HPSCALE

Sets the hatch pattern scale factor.

HPSPACE

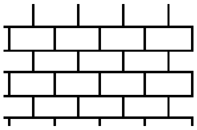
Sets the hatch pattern line spacing for user-defined patterns.

Hatch Patterns with Multiple Lines

Complex hatch patterns can have an origin that passes through offsets from the origin and can have multiple members in the line family.

Not all hatch patterns use origin points of 0,0. Complex hatch patterns can have an origin that passes through offsets from the origin and can have multiple members in the line family. In composing more complex patterns, you need to carefully specify the starting point, offsets, and dash pattern of each line family to form the hatch pattern correctly.

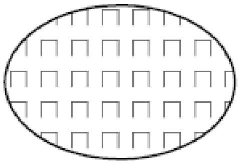
The hatch pattern AR-B816 shown on the Hatch contextual ribbon tab or in the Hatch and Gradient dialog box looks like this:



and is defined as follows with multiple lines describing the pattern:

```
*AR-B816, 8x16 Block elevation stretcher bond
0, 0,0, 0,8
90, 0,0, 8,8, 8,-8
```

The following figure illustrates a squared-off, inverted-U pattern (one line up, one over, and one down). The pattern repeats every one unit, and each unit is 0.5 high and wide.



This pattern would be defined as follows:

```
*IUS,Inverted U's
90, 0,0, 0,1, .5,-.5
0, 0,.5, 0,1, .5,-.5
270, .5,.5, 0,1, .5,-.5
```

The first line (the up bar) is a simple dashed line with 0,0 origin. The second line (the top bar) should begin at the end of the up bar, so its origin is 0,.5. The third line (the down bar) must start at the end of the top bar, which is at .5,.5 for the first instance of the pattern, so its origin is at this point. The third line of the pattern could be the following:

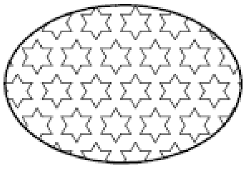
```
90, .5,0, 0,1, .5,-.5
```

or

```
270, .5,1, 0,1, -.5,.5
```

The dashed pattern starts at the origin points and continues in the vector direction given by the angle specification. Therefore, two dashed-line families that are opposed 180 degrees are not alike. Two solid-line families are alike.

The following pattern creates six-pointed stars.



This example can help you refine your skills at pattern definition. (Hint: 0.866 is the sine of 60 degrees.)

The following is the AutoCAD definition of this pattern:

```
*STARS,Star of David
0, 0,0, 0,.866, .5,-.5
60, 0,0, 0,.866, .5,-.5
120, .25,.433, 0,.866, .5,-.5
```

To create a hatch pattern with multiple lines

1. Open the *acad.pat* or *acadiso.pat* file in a text editor that saves in ASCII format.
2. Create a header line that includes an asterisk and a pattern name. The name of the hatch pattern is limited to 31 characters.
3. (Optional) To include a description in the header line, follow the pattern name with a comma and description text.
4. Create a descriptor line that includes
   - An angle at which the line is drawn

- An *X,Y* origin point
- A *delta-x* of any value if you want to offset alternating lines in the line family
- A *delta-y* of any value
- A value for a dash length
- A value for a dot length
- An optional second value for a different dash length
- An optional second value for a different dot length

5. Create a second line including all the parameters in the previous step.
6. (Optional) Create additional lines to complete the multiple-line hatch pattern.

Quick Reference

Commands

ADCENTER

Manages and inserts content such as blocks, xrefs, and hatch patterns.

FILL

Controls the filling of objects such as hatches, 2D solids, and wide polylines.

HATCH

Fills an enclosed area or selected objects with a hatch pattern, solid fill, or gradient fill.

HATCHEDIT

Modifies an existing hatch or fill.

SOLID

Creates solid-filled triangles and quadrilaterals.

System Variables

FILLMODE

Specifies whether hatches and fills, 2D solids, and wide polylines are filled in.

HPANG

Sets the angle for new hatch patterns.

HPBOUND

Controls the object type created by HATCH and BOUNDARY.

HPDOUBLE

Specifies hatch pattern doubling for user-defined patterns.

HPNAME

Sets the default hatch pattern name.

HPSCALE

Sets the hatch pattern scale factor.

HPSPACE

Sets the hatch pattern line spacing for user-defined patterns.

User Interface Customization

4

When you work in the program, you use a variety of ribbon panels, menus, toolbars, shortcut keys, and other user interface elements to help you accomplish your tasks efficiently. You can also streamline your environment by customizing these elements.

Understand User Interface Customization

Using the customization tools of AutoCAD, you can tailor your drawing environment to suit your needs. Customization capabilities, including the customize (CUIx) file format and the Customize User Interface (CUI) Editor, help you to easily create and modify customized content.

Overview of the Customization

Customization of the user interface is done by modifying the XML-based CUIx file with the Customize User Interface (CUI) Editor. The XML-based CUIx file replaces the customization and menu files from releases prior to AutoCAD 2012. Instead of using a text editor to customize menu files (MNU and MNS files) used in release prior to AutoCAD 2006, you customize the user interface from within AutoCAD. You can

- Add or change toolbars, menus, and ribbon panels (including shortcut menus, image tile menus, and tablet menus)
- Add and modify the commands on the Quick Access toolbar
- Create or change workspaces
- Assign commands to various user interface elements

- Create or change macros
- Define DIESEL strings
- Create or change aliases
- Add descriptive text for command tooltips
- Control the properties displayed when using rollover tooltips

Customizable User Interface Elements

The editor allows you to create and manage commands that are used in the CUIx file in a centralized location. Along with commands, you are able to customize many of the different user interface elements. From the CUI Editor you can customize

- Double click actions
- Legacy user interface elements (tablets, tablet buttons, and image tile menus)
- Mouse buttons
- Pull-down menus
- Quick Access toolbar
- Quick properties
- Toolbars
- Ribbon panels
- Ribbon tabs
- Ribbon contextual tab states
- Rollover tooltips
- Shortcut keys
- Shortcut menus
- Temporary override keys
- Workspaces

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

CUIEXPORT

Exports customized settings from the main CUIx file to an enterprise or partial CUIx file.

CUIIMPORT

Imports customized settings from an enterprise or partial CUIx file to the main CUIx file.

CUILOAD

Loads a CUIx file.

CUIUNLOAD

Unloads a CUIx file.

QUICKCUI

Displays the Customize User Interface Editor in a collapsed state.

System Variables

DBLCLKEDIT

Controls the double click editing behavior in the drawing area.

ENTERPRISEMENU

Stores the enterprise customization file name (if defined), including the path for the file name.

MENUNAME

Stores the customization file name, including the path for the file name.

TOOLTIPS

Controls the display of tooltips on the ribbon, toolbars, and other user interface elements.

Use the Customization Environment

You customize the XML-based CUIx file with the Customize User Interface (CUI) Editor to create new commands, user interface elements, and workspaces.

Overview of the Customize User Interface (CUI) Editor

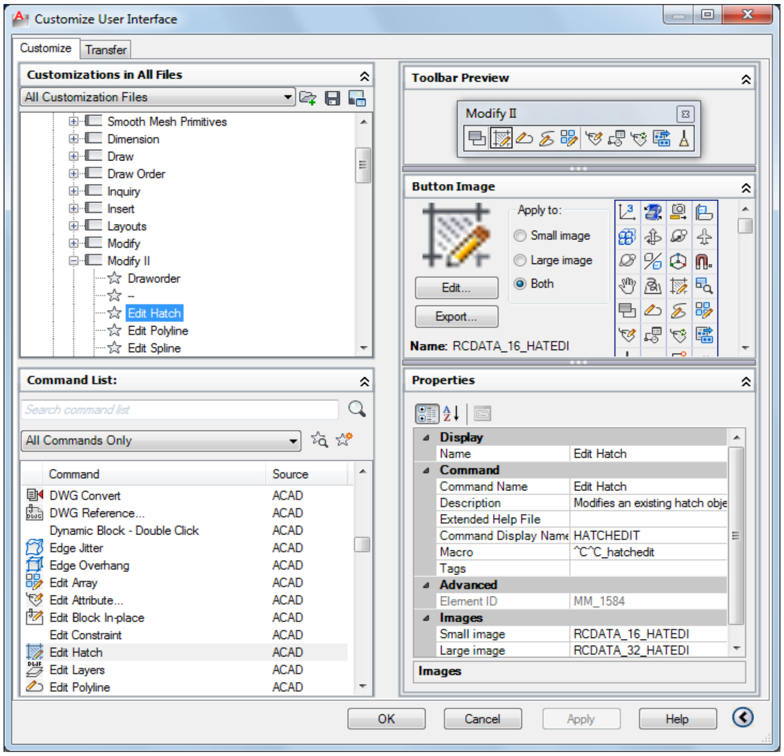
The Customize User Interface (CUI) Editor is used to customize the user interface of AutoCAD. Before you start customizing your own menus, toolbars, and other user interface elements, you should familiarize yourself with the customization environment.

To open the Customize User Interface Editor, click Manage tab ➤ Customization panel ➤ User Interface. Once the Customize User Interface (CUI) Editor is opened, view the contents of the loaded customization files by expanding the elements in the tree structure, and view the properties of the elements by selecting them.

Select the Transfer tab to see how to migrate or transfer customizations; select the Customize tab to see how to create or modify user interface elements.

Once you are familiar with the environment, you can start to take advantage of the capabilities of the tools. For more information about the improved customization capabilities, see How Customization Has Changed on page 96.

Following is an example of the Customize User Interface (CUI) Editor, Customize tab. You use this tab to customize interface elements in CUIx files.



Command	Source
DWG Convert	ACAD
DWG Reference...	ACAD
Dynamic Block - Double Click	ACAD
Edge Jitter	ACAD
Edge Overhang	ACAD
Edit Array	ACAD
Edit Attribute...	ACAD
Edit Block In-place	ACAD
Edit Constraint	ACAD
Edit Hatch	ACAD
Edit Layers	ACAD
Edit Polyline	ACAD

Display	
Name	Edit Hatch
Command	
Command Name	Edit Hatch
Description	Modifies an existing hatch obje
Extended Help File	
Command Display Name	HATCHEDIT
Macro	^C^C_hatchedit
Tags	
Advanced	
Element ID	MM_1584
Images	
Small image	RCDATA_16_HATEDI
Large image	RCDATA_32_HATEDI

Images

Customize the user interface to make the drawing environment specific to certain types of tasks. For example, if you want a toolbar that contains the commands you use most often, you can create a new Favorites toolbar in the Customize User Interface (CUI) Editor and then load the new toolbar in AutoCAD.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

CUIEXPORT

Exports customized settings from the main CUIx file to an enterprise or partial CUIx file.

CUIIMPORT

Imports customized settings from an enterprise or partial CUIx file to the main CUIx file.

CUILOAD

Loads a CUIx file.

CUIUNLOAD

Unloads a CUIx file.

QUICKCUI

Displays the Customize User Interface Editor in a collapsed state.

System Variables

DBLCLKEDIT

Controls the double click editing behavior in the drawing area.

ENTERPRISEMENU

Stores the enterprise customization file name (if defined), including the path for the file name.

MENUNAME

Stores the customization file name, including the path for the file name.

TOOLTIPS

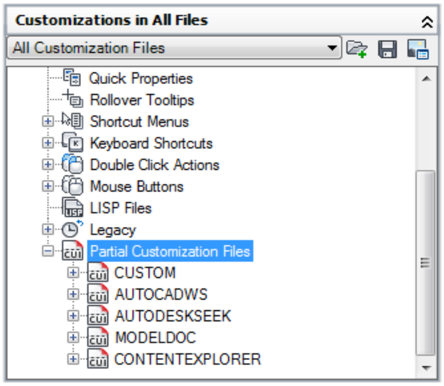
Controls the display of tooltips on the ribbon, toolbars, and other user interface elements.

Work with the Customizations In Pane

The Customizations In pane is used to navigate the different user interface elements that are in the loaded customization files.

In this pane, you create and modify user interface elements such as workspaces, toolbars, and menus. Along the top of the pane you will find tools that load partial customization files into the main customization file, save changes to the loaded customization files, and control how you view the loaded customization files.

The tree view is used to create new user interface elements such as toolbars and menus. Once a new user interface element is created, commands can then be added by dragging them from the Command List pane. Along with being able to create user interface elements and add commands to a user interface element, you can change the order in which commands appear on toolbars, menus, and ribbon panels by dragging them up and down.



Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

Work with the Command List Pane

The Command List pane is used to create and locate commands that are contained in the loaded customization files.

Use the Create a New Command button to create a new custom command in the CUIx file that is listed in the Customization File drop-down list at the top of the Customizations In <*file name*> pane. A command must be created before it can be associated with a user interface element in the Customizations In <*file name*> pane.

Next to the Create a New Command button is the Find Command or Text button. The Find Command or Text button displays the Find and Replace dialog box, where you can search for or replace text strings in the Command List pane only.

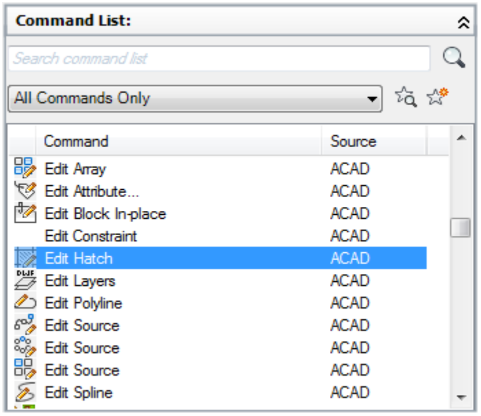
The Categories drop-down list near the top of the Command List pane contains a listing of preset categories used to filter the commands displayed in the

Command list box. There are many different categories that you can select from, for example

- **All Commands**. Displays all of the commands for each of the loaded customization files.
- **Custom Commands**. Displays the user defined commands that have been added to the loaded customization files. These commands are not part of a customization file that ships with AutoCAD.
- **Controls Elements**. Displays the special controls that can be added to a toolbar or ribbon panel, such as drop-down lists, sliders, and other controls.

Available commands and controls are displayed in the bottom of the Command List pane. The names of the available commands, the image that is assigned to a command, and the name of the customization group that the command is assigned to are displayed. When the cursor hovers over top of a command, the macro assigned to the command is displayed in a tooltip.

At the top of the Command List pane is the Command Filter field which allows you to filter the Command list based on the text string entered. The text string is matched with any part of a command name, and the commands with the matching text strings are displayed in the Command list box.



Command List:

Search command list

All Commands Only

Command	Source
Edit Array	ACAD
Edit Attribute...	ACAD
Edit Block In-place	ACAD
Edit Constraint	ACAD
Edit Hatch	ACAD
Edit Layers	ACAD
Edit Polyline	ACAD
Edit Source	ACAD
Edit Source	ACAD
Edit Source	ACAD
Edit Spline	ACAD

Quick Reference

Commands

CUI

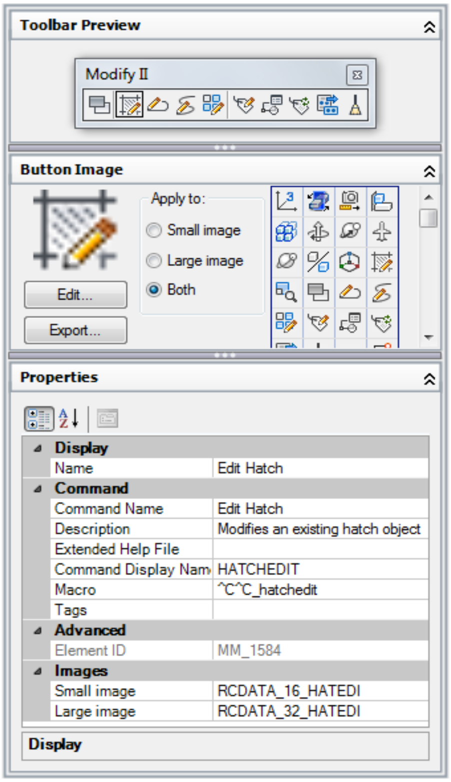
Manages the customized user interface elements in the product.

Work with the Dynamic Display Pane

The Dynamic Display pane controls the display of additional panes that respond to the item that is selected in either the Customizations In pane or Command List pane.

Based on the item selected, one or more of the following panes will be displayed:

- Button Image
- Information
- Panel Preview
- Properties
- Quick Properties
- Shortcuts
- Toolbar Preview
- Workspace Contents



Apply to:
○ Small image
○ Large image
● Both

Display	
Name	Edit Hatch
Command	
Command Name	Edit Hatch
Description	Modifies an existing hatch object
Extended Help File	
Command Display Nam	HATCHEDIT
Macro	^C^C_hatchedit
Tags	
Advanced	
Element ID	MM_1584
Images	
Small image	RCDATA_16_HATEDI
Large image	RCDATA_32_HATEDI

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

How Customization Has Changed

Although the basic customization techniques remain the same as in previous versions of the product, the environment that you use to customize the product was changed starting with AutoCAD 2006.

All of the previous customization options are still available. You are still able to create, edit, and delete interface elements; you can create partial customization files; you can use macros and advanced entries such as DIESEL expressions and AutoLISP routines.

However, you no longer perform customization tasks by creating or editing MNU or MNS text files by hand. All customizations are done through the program interface, in the Customize User Interface (CUI) Editor.

Menu Files Versus Customization Files

In releases prior to AutoCAD 2006, you customized the user interface by editing an MNU or MNS file in an ASCII text editor such as Notepad. You manually entered and verified customization data in the text file, which could be a tedious and error-prone process. As a result, a simple syntax error (such as mismatched parentheses) in the text file could invalidate the entire menu file, leading you back to the text file to investigate where you made the error.

With the Customize User Interface (CUI) Editor, you drag a command to a menu or toolbar or right-click to add, delete, or modify a user interface element. The Customize User Interface (CUI) Editor displays element properties and a list of options to choose from. This prevents you from creating syntax errors or spelling mistakes that may have occurred when you manually entered text in an MNU or MNS file.

The MNU and MNS files used in the past have been replaced with just one file type, the XML-based CUIx file. CUIx is the successor to the CUI file format which was introduced in AutoCAD 2006.

The XML-based format of the CUIx file allows the product to track customizations. When upgrading to a future version of the program, all of your customizations are automatically integrated into the new release. The XML format also supports a backward-compatible customization file. This means that you can view a CUIx file from a future version in the previous release while preserving the customization data from the future version. However, you cannot modify the future version's CUIx file in the previous release. For more information about migrating customization data, see Transfer and Migrate Customization on page 379.

The following table lists the menu files that previously shipped with the product and shows how those files are mapped to AutoCAD 2012.

Menu files mapped to CUIx files

Menu file	Description	In AutoCAD 2012	Description of change
MNU	ASCII text file. In previous releases, defined most user inter-	CUIx	An XML file that defines most user interface ele-

Menu files mapped to CUIx files

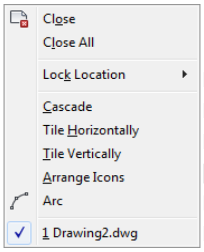
Menu file	Description	In AutoCAD 2012	Description of change
	face elements. The main MNU file, *acad.mnu*, was automatically loaded when you started the product. Partial MNU files could be loaded or unloaded as you needed them during a drawing session.		ments. The main CUIx file, *acad.cuix*, is automatically loaded when you start the product. Partial CUIx files can be loaded or unloaded as you need them during a drawing session.
MNS	Source menu file. Was the same as the MNU ASCII text file but did not contain comments or special formatting.	CUIx	An XML file that defines most user interface elements. The main CUIx file, *acad.cuix*, is automatically loaded when you start the product. Partial CUIx files can be loaded or unloaded as you need them during a drawing session.
MNC	Compiled ASCII text file. Contained command strings and syntax that defined the functionality and appearance of user interface elements.	CUI x	An XML file that defines most user interface elements. The main CUIx file, *acad.cuix*, is automatically loaded when you start the product. Partial CUIx files can be loaded or unloaded as you need them during a drawing session.
MNL	Menu LISP file. Contains AutoLISP expressions that are used by the user interface elements.	MNL	No change.
MNR	Menu resource file. Contains the bitmaps that are used by the user interface elements.	MNR	No change.

Menu Text File Structure Versus CUI and CUIx Structure

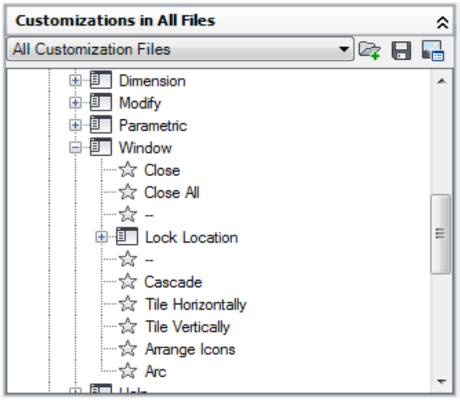
In releases prior to AutoCAD 2006, you added, edited, and deleted menu information directly in a text file. In AutoCAD 2006 and later, you use the Customize User Interface (CUI) Editor.

Following is an example of how the Window menu looked in the legacy menu file *acad.mnu*.

Contents of the Window menu in *acad.mnu*

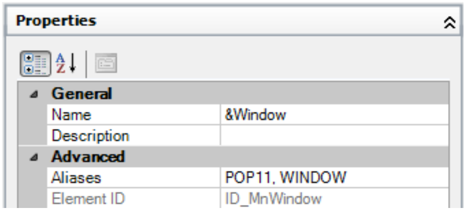
Window menu	Description
	***POP10 **WINDOW ID_MnWindow [&Window] ID_DWG_CLOSE [Cl&ose]^C^C_close ID_WINDOW_CLOSEALL [C&lose All]^C^C_closeall [--] ID_WINDOW_CASCADE [&Cascade]^C^C_syswindows;_cascade ID_WINDOW_TILE_HORZ [Tile &Horizontally]^C^C_syswindows;_hor ID_WINDOW_TILE_VERT [&Tile Vertically]^C^C_syswindows;_vert ID_WINDOW_ARRANGE [&Arrange Icons]^C^C_syswindows;_arrange

Compare the menu data above with the same menu data as it is displayed in the Customize User Interface (CUI) Editor, in the tree view.



For a more detailed comparison, following are examples of the Window menu properties, Close command properties, Close All command properties, and the Window shortcut menu that is displayed with the Insert Separator option.

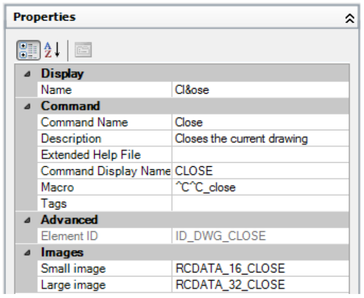
Window menu Properties pane



Properties

General	
Name	&Window
Description	
Advanced	
Aliases	POP11, WINDOW
Element ID	ID_MnWindow

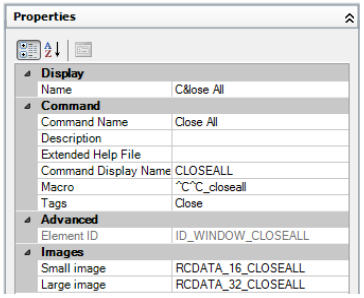
Window menu, Properties pane for the Close command



Properties

Display	
Name	Cl&ose
Command	
Command Name	Close
Description	Closes the current drawing
Extended Help File	
Command Display Name	CLOSE
Macro	^C^C_close
Tags	
Advanced	
Element ID	ID_DWG_CLOSE
Images	
Small image	RCDATA_16_CLOSE
Large image	RCDATA_32_CLOSE

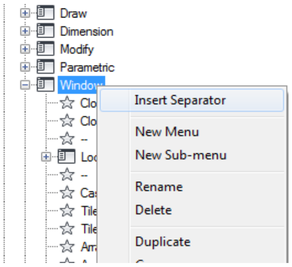
Window menu, Properties pane for the Close All command



Properties

Display	
Name	C&lose All
Command	
Command Name	Close All
Description	
Extended Help File	
Command Display Name	CLOSEALL
Macro	^C^C_closeall
Tags	Close
Advanced	
Element ID	ID_WINDOW_CLOSEALL
Images	
Small image	RCDATA_16_CLOSEALL
Large image	RCDATA_32_CLOSEALL

Window menu tree node, shortcut menu displayed with Insert Separator option

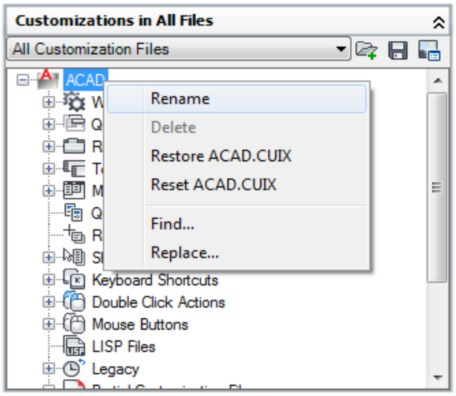


Menu Group Versus Customization Group

There is no difference between a *menu group* (the term used in previous releases) and a *customization group*. A CUIx file loaded into AutoCAD must have a unique customization group name to prevent conflicts between customization files in the program.

The main CUIx file, *acad.cuix* by default, has a customization group named ACAD. You can load as many customization files into the program, as long as they each have a unique customization group name.

Following is an example of how you change the ACAD customization group name in the Customize tab of the Customize User Interface (CUI) Editor. You can change the partial CUIx file (named CUSTOM in this example) using the same method.



Dynamic Help

Dynamic Help is a feature that is in the online Help system and references some of the customization elements that are found in the CUIx file when it is loaded into AutoCAD. What Dynamic Help does, is it looks up the Element ID of a command that has been identified in the online Help system, and where that command is currently being referenced on a ribbon panel or menu when the CUIx file is loaded.

If the command is on a ribbon panel or menu, access to the command is updated in the online Help system to reflect the new location of the command. If one of the standard commands that ships with AutoCAD is moved from one ribbon panel or menu to another, the online Help system will automatically reflect this change the next time it is displayed. Currently, only commands on ribbon panels and menus work with Dynamic Help.

Dynamic Help may not display properly if a command is not available:

- In one of the loaded CUIx files
- On an accessible menu, ribbon panel, or ribbon tab in the current workspace

NOTE Dynamic Help only works with the online Help documents that come with AutoCAD, and has no affect on third-party documentation.

See also:

- Transfer and Migrate Customization on page 379
- Create and Load a Partial CUIx File on page 127
- Create an Enterprise CUIx File on page 131

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

CUIEXPORT

Exports customized settings from the main CUIx file to an enterprise or partial CUIx file.

CUIIMPORT

Imports customized settings from an enterprise or partial CUIx file to the main CUIx file.

CUILOAD

Loads a CUIx file.

CUIUNLOAD

Unloads a CUIx file.

QUICKCUI

Displays the Customize User Interface Editor in a collapsed state.

Customization Glossary

You should know several terms for customizing AutoCAD 2012.

Customization (CUIx) file A package file that contains multiple XML-based files and custom image files. Each one of the XML-based files contain the data for a different type of user interface element that can be customized. The custom images that are stored in the file are those that are referenced by the commands defined in the customization data and are not stored in a resource DLL. You modify a customization file through the Customize User Interface (CUI) Editor. CUIx files replace the CUI, MNU, MNS, and MNC files that were used to define menus in releases prior to AutoCAD 2012.

Customization group A name that is assigned to a CUIx file to identify customization content in the CUIx file. A CUIx file loaded into AutoCAD must have a unique customization group name to prevent conflicts between CUIx files in the program. In releases prior to AutoCAD 2006, called a *menugroup*.

Element ID A unique identifier of an interface element. In previous releases, called a *tag*.

Dashboard panel An organizational structure used to lay out commands and controls for display on the dashboard, which was available in AutoCAD 2007 and AutoCAD 2008. The dashboard was replaced by the ribbon in AutoCAD 2009 and later. For information about transferring dashboard panels to ribbon panels, see To copy a dashboard panel to a ribbon panel on page 204.

Enterprise customization file A CUIx file that is typically controlled by a CAD manager. It is often accessed by many users and is stored in a shared network location. The file is read-only to users to prevent the data in the file from being changed. A CAD manager creates an enterprise CUIx file by modifying a main CUIx file and then saving the file to a shared network location. Users then specify this file in the Options dialog box, Files tab.

Interface element An object that can be customized, such as a toolbar, pull-down menu, shortcut key, palette, and so on. It is a node in the Customizations In <*file name*> pane that contains user interface items.

Interface item The individual parts of a user interface element, such as a toolbar button, pull-down menu item, shortcut key, temporary override key, and so on.

Legacy Customization (CUI) file An XML-based file that stores customization data for AutoCAD 2006 through AutoCAD 2009. The CUI file has been replaced by the CUIx file. A CUIx file can be generated from a CUI file using the Transfer tab of the CUI command.

Legacy Menu (MNS) file An ASCII based file that stores menu customization data for AutoCAD 2005 and earlier. Most of the file needed to be edited outside of AutoCAD using a text editor such as Notepad, but there were a few features that could be customized in AutoCAD using the CUSTOMIZE command. The MNS file has been replaced by the CUIx file. A CUIx file can be generated from an MNS file using the Transfer tab of the CUI command.

Legacy Menu Template (MNU) file An ASCII based file that is used as a template to define the contents of the MNS file when the MNU file is loaded into AutoCAD with the MENU command. The MNU file is used in AutoCAD 2005 and earlier, and is very similar to the MNS file. The MNU file has been replaced by the CUIx file. A CUIx file can be generated from a MNU file using the Transfer tab of the CUI command.

Macro A series of commands that are run in a defined sequence to accomplish a drawing task.

Main customization file A writable CUIx file that defines most of the user interface elements (including the standard menus, toolbars, keyboard accelerators, and so on). The *acad.cuix* file (the default main CUIx file) is automatically loaded when you start AutoCAD.

Ribbon An interface element that displays panels made up of commands and controls that can be docked horizontally or vertically along the program's application window.

Ribbon panel An organizational structure used to lay out commands and controls for display on the ribbon or as a floating user interface.

Palette An interface element that can be docked or floating in the drawing area. Palettes include the Command Line window, Tool Palettes Window, Properties palette, and so on.

Partial customization file Any CUIx file that is not defined as the main or enterprise CUIx file. You can load and unload partial CUIx files as you need them during a drawing session.

Quick Access toolbar An interface element that is located to the right of the application menu and provides direct access to a defined set of commands.

Tree node A hierarchical structure in the Customize User Interface (CUI) Editor that contains interface elements and items that can be imported, exported, and customized.

Workspace A collection of user interface elements, including their contents, properties, display states, and locations.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

CUIEXPORT

Exports customized settings from the main CUIx file to an enterprise or partial CUIx file.

CUIIMPORT

Imports customized settings from an enterprise or partial CUIx file to the main CUIx file.

CUILOAD

Loads a CUIx file.

CUIUNLOAD

Unloads a CUIx file.

CUSTOMIZE

Customizes tool palettes and tool palette groups.

QUICKCUI

Displays the Customize User Interface Editor in a collapsed state.

RIBBON

Opens the ribbon window.

RIBBONCLOSE

Closes the ribbon window.

TOOLPALETTES

Opens the Tool Palettes window.

TOOLPALETTESCLOSE

Closes the Tool Palettes window.

System Variables

DBLCLKEDIT

Controls the double click editing behavior in the drawing area.

ENTERPRISEMENU

Stores the enterprise customization file name (if defined), including the path for the file name.

MENUNAME

Stores the customization file name, including the path for the file name.

ROLLOVERTIPS

Controls the display of rollover tooltips when the cursor hovers over an object.

TOOLTIPS

Controls the display of tooltips on the ribbon, toolbars, and other user interface elements.

Work with the Customize User Interface (CUI) Editor

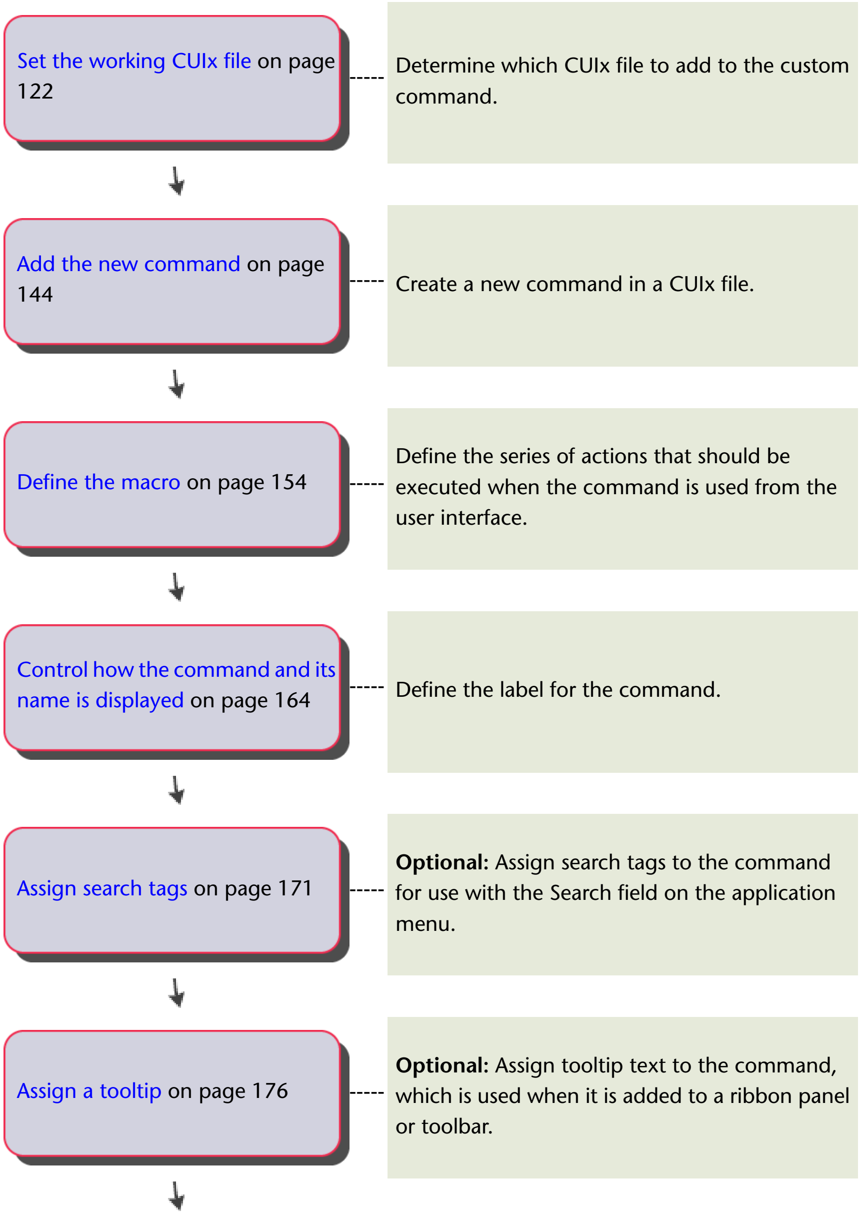
With the Customize User Interface (CUI) Editor, you can create and manage standard and custom commands and user interface elements.

By customizing the user interface, you can arrange and access the commands that you frequently use. You can also extend AutoCAD by creating your own custom commands. Use the diagrams under this topic to understand the steps required to successfully create a custom command or to customize the various user interface elements that are available for customization.

Create a Command

Custom commands to define a series of actions that should be taken when the custom command is used. You can also determine how the command should appear when added to a user interface.

When creating a custom command, you need to give the command a unique name, element ID, and macro. Once the basic properties of a command have been defined, you can assign values to additional properties that determine the content for the command's tooltip, an image, and search tags. For more information about creating custom commands, see Customize Commands on page 142.



Set the working CUIx file on page 122

Determine which CUIx file to add to the custom command.

Add the new command on page 144

Create a new command in a CUIx file.

Define the macro on page 154

Define the series of actions that should be executed when the command is used from the user interface.

Control how the command and its name is displayed on page 164

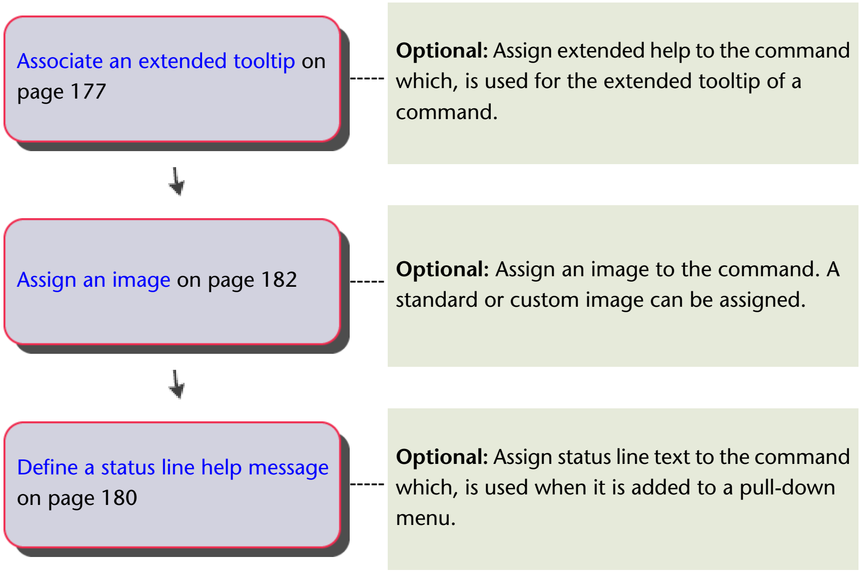
Define the label for the command.

Assign search tags on page 171

Optional: Assign search tags to the command for use with the Search field on the application menu.

Assign a tooltip on page 176

Optional: Assign tooltip text to the command, which is used when it is added to a ribbon panel or toolbar.



Associate an extended tooltip on page 177

Optional: Assign extended help to the command which, is used for the extended tooltip of a command.

Assign an image on page 182

Optional: Assign an image to the command. A standard or custom image can be assigned.

Define a status line help message on page 180

Optional: Assign status line text to the command which, is used when it is added to a pull-down menu.

Create User Interface Elements

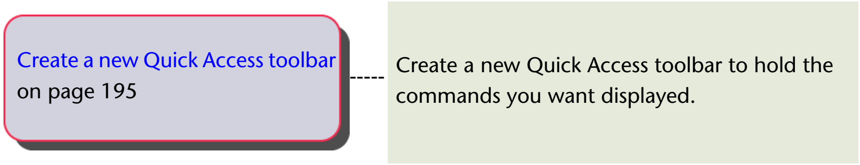
User interface elements are used to organize and display commands in AutoCAD.

To decide what user interface elements to create, determine how often you want to access a command. Then determine if you want to add the custom command to a shortcut key, the Quick Access toolbar, a ribbon panel or another type of user interface element.

Create a Quick Access Toolbar

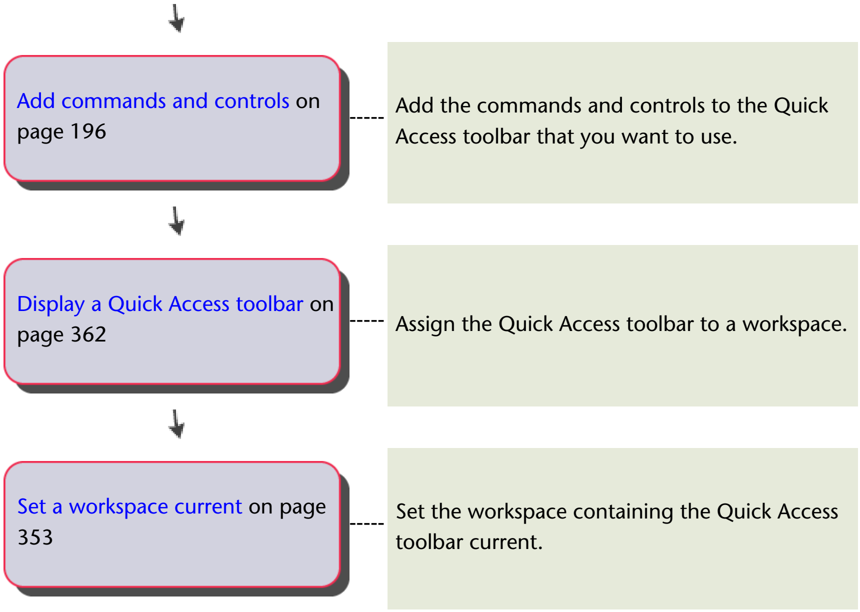
You create Quick Access toolbars in the CUI Editor to determine which commands and controls are displayed on the Quick Access toolbar.

Quick Access toolbars are used to organize and display the commands that you frequently use. For more information about customizing the Quick Access toolbar, see Quick Access Toolbars on page 194.



Create a new Quick Access toolbar on page 195

Create a new Quick Access toolbar to hold the commands you want displayed.



Add commands and controls on page 196

Add the commands and controls to the Quick Access toolbar that you want to use.

Display a Quick Access toolbar on page 362

Assign the Quick Access toolbar to a workspace.

Set a workspace current on page 353

Set the workspace containing the Quick Access toolbar current.

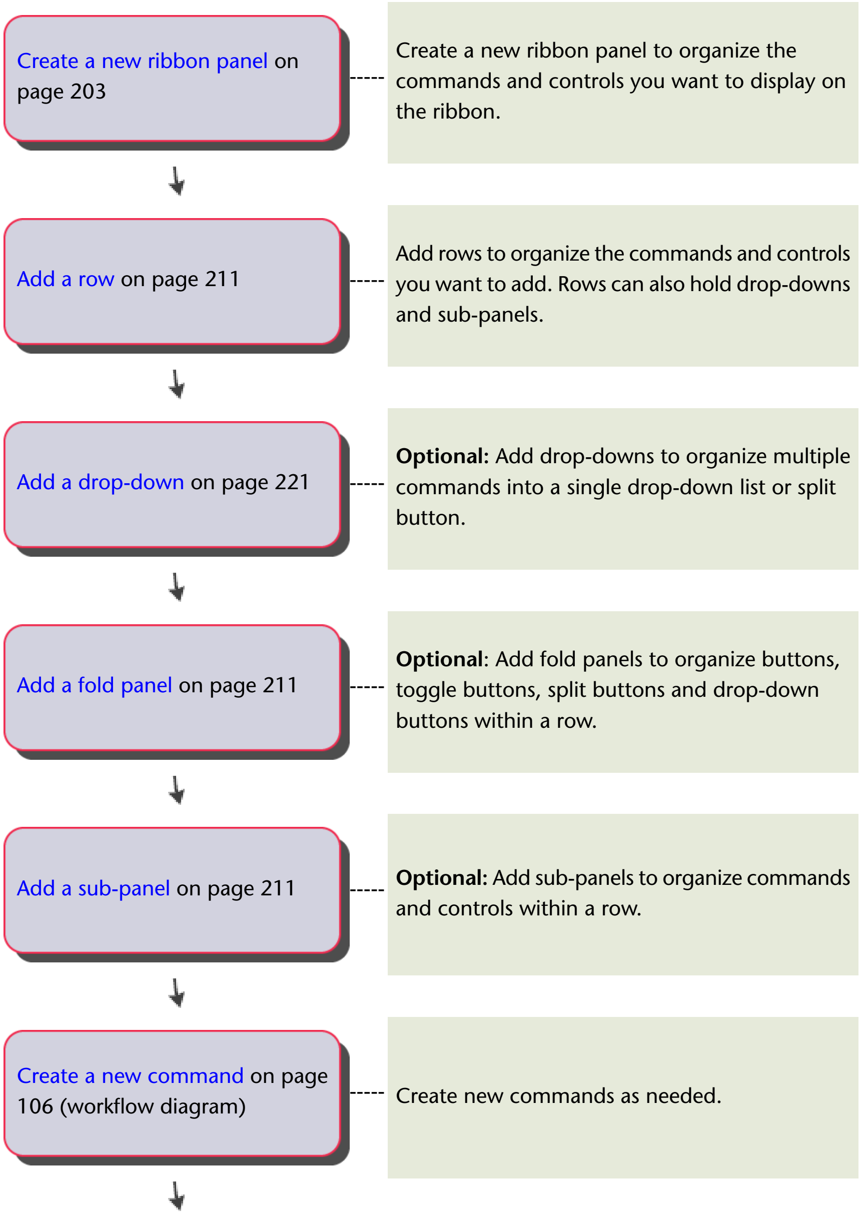
Customize the Ribbon

Ribbon customization is broken out into three main components: panels, tabs, and contextual tab states. Each component of the ribbon is used to organize and display the commands that you want to use frequently.

Create a Ribbon Panel

Ribbon panels organize commands and controls on the ribbon.

You use rows, sub-panels, and drop-downs on a ribbon panel to organize the commands and controls you want to display on the ribbon. Each panel is divided into two halves with a panel separator; an upper and lower half. Rows above the panel separator are displayed by default while those below it are displayed only when the panel is expanded. Each panel can also be assigned a command to its Panel Launcher button, which can be used to start an associated dialog box. For more information about ribbon panel customization, see Ribbon Panels on page 201.



Create a new ribbon panel on page 203

Create a new ribbon panel to organize the commands and controls you want to display on the ribbon.

Add a row on page 211

Add rows to organize the commands and controls you want to add. Rows can also hold drop-downs and sub-panels.

Add a drop-down on page 221

Optional: Add drop-downs to organize multiple commands into a single drop-down list or split button.

Add a fold panel on page 211

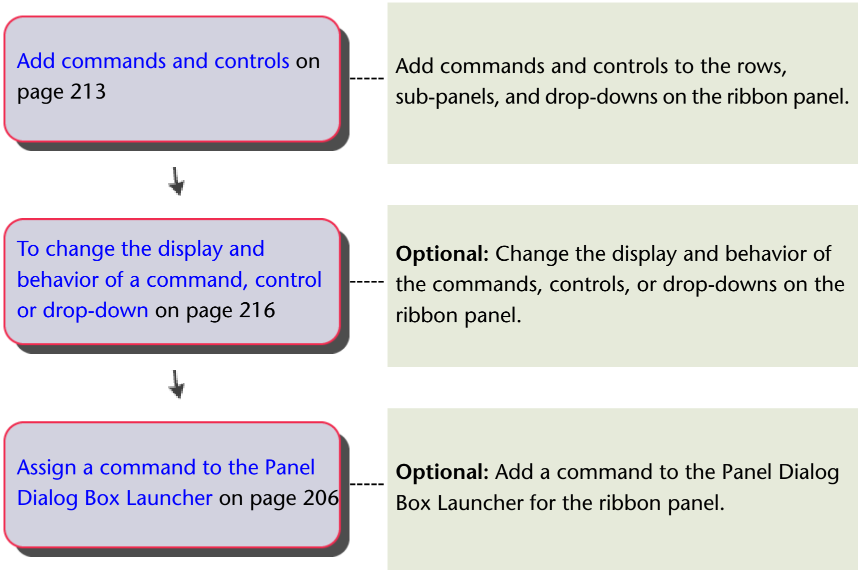
Optional: Add fold panels to organize buttons, toggle buttons, split buttons and drop-down buttons within a row.

Add a sub-panel on page 211

Optional: Add sub-panels to organize commands and controls within a row.

Create a new command on page 106 (workflow diagram)

Create new commands as needed.



Add commands and controls on page 213

Add commands and controls to the rows, sub-panels, and drop-downs on the ribbon panel.

To change the display and behavior of a command, control or drop-down on page 216

Optional: Change the display and behavior of the commands, controls, or drop-downs on the ribbon panel.

Assign a command to the Panel Dialog Box Launcher on page 206

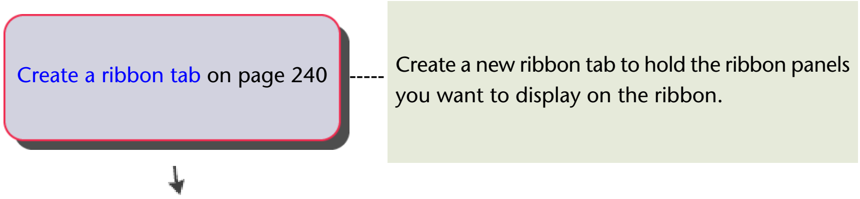
Optional: Add a command to the Panel Dialog Box Launcher for the ribbon panel.

Once you have created a ribbon panel, it must be added to a ribbon tab before it can be displayed on the ribbon. For more information about assigning a ribbon panel to a ribbon panel, see the Create a Ribbon Tab on page 111 workflow diagram.

Create a Ribbon Tab

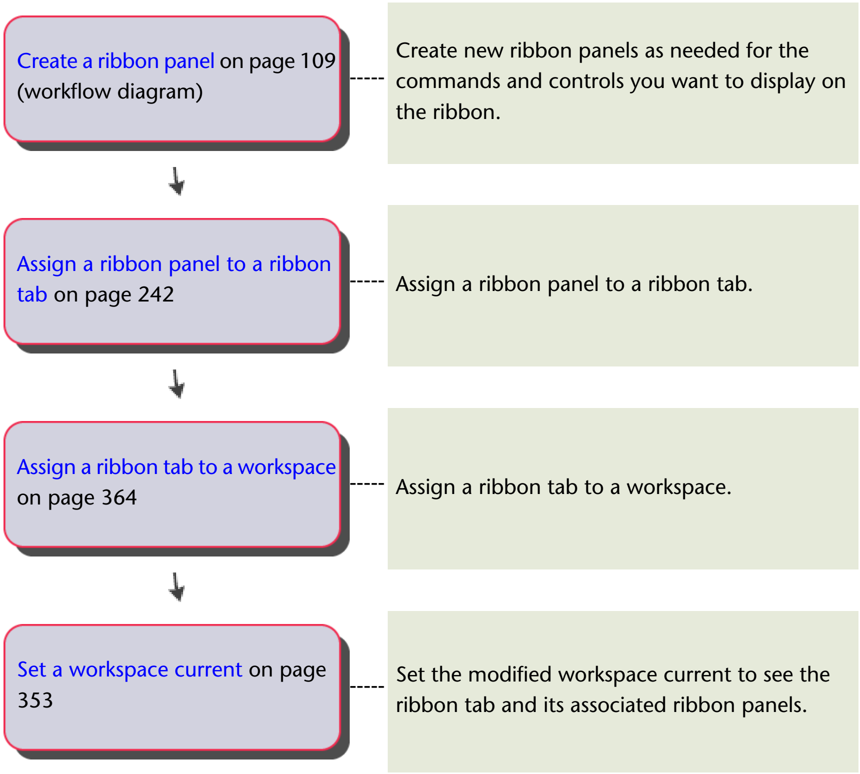
Ribbon tabs control and organize the display of a ribbon panel on the ribbon.

You create ribbon tabs to organize multiple ribbon panels into a single group of related tools. Once ribbon panels are added to the ribbon tab, the ribbon tab must be assigned to a workspace before it is displayed on the ribbon. For more information about ribbon tab customization, see Ribbon Tabs on page 238.



Create a ribbon tab on page 240

Create a new ribbon tab to hold the ribbon panels you want to display on the ribbon.



Create a ribbon panel on page 109 (workflow diagram)

Create new ribbon panels as needed for the commands and controls you want to display on the ribbon.

Assign a ribbon panel to a ribbon tab on page 242

Assign a ribbon panel to a ribbon tab.

Assign a ribbon tab to a workspace on page 364

Assign a ribbon tab to a workspace.

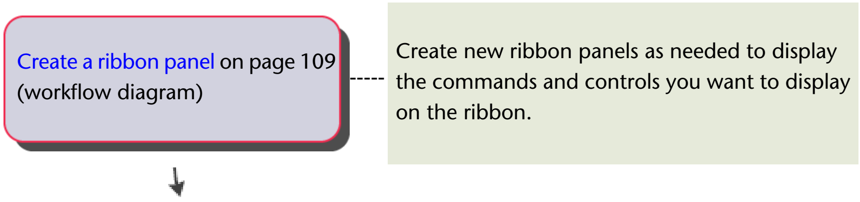
Set a workspace current on page 353

Set the modified workspace current to see the ribbon tab and its associated ribbon panels.

Create a Ribbon Contextual Tab State

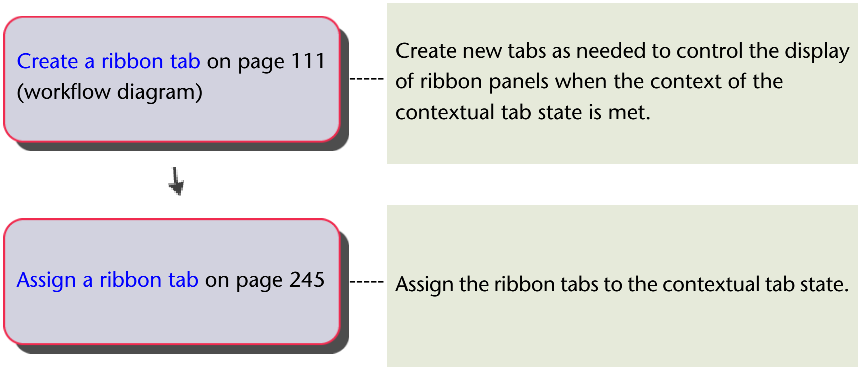
A contextual tab state is used to control the display of ribbon tabs on the ribbon when certain commands are active or an object is selected.

You assign ribbon tabs to a contextual tab state to display commands and controls on the ribbon when working in a specific context. For more information about the customization of ribbon contextual tab states, see Ribbon Contextual Tab States on page 245.



Create a ribbon panel on page 109 (workflow diagram)

Create new ribbon panels as needed to display the commands and controls you want to display on the ribbon.



Create a ribbon tab on page 111 (workflow diagram)

Create new tabs as needed to control the display of ribbon panels when the context of the contextual tab state is met.

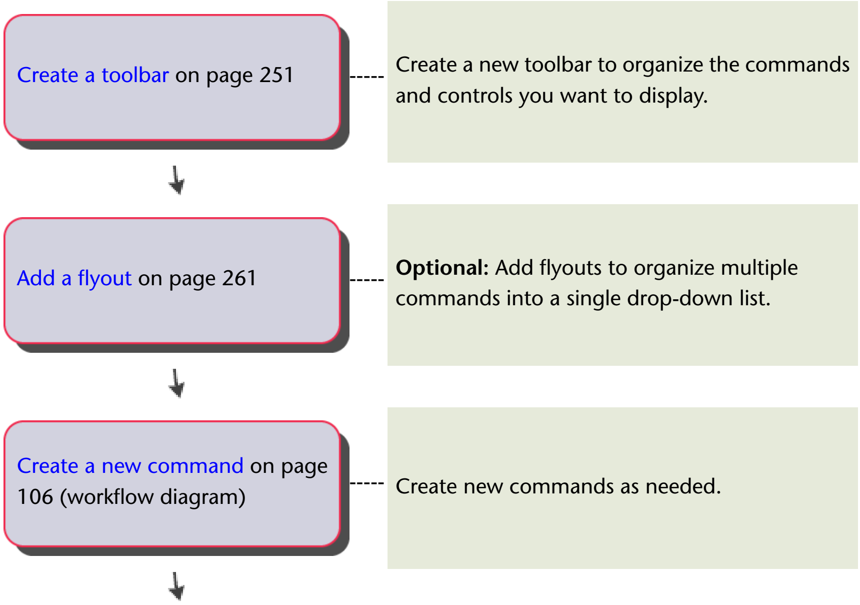
Assign a ribbon tab on page 245

Assign the ribbon tabs to the contextual tab state.

Create a Toolbar

Toolbars organize commands and controls on small dockable windows.

You can add commands and controls to a toolbar making it easier to access the commands you use. Commands on a toolbar can be displayed as a single button or a grouping of buttons with a flyout. For more information about toolbar customization, see Create and Edit Toolbars on page 248.



Create a toolbar on page 251

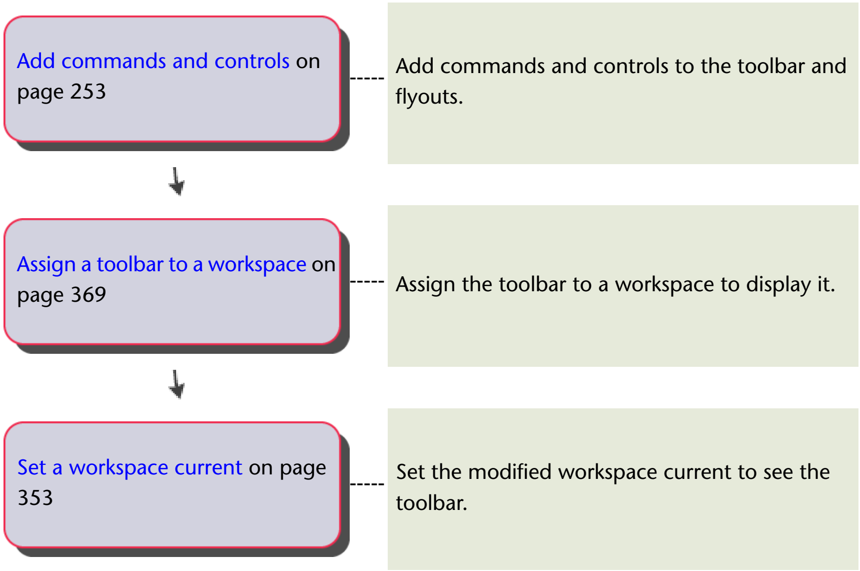
Create a new toolbar to organize the commands and controls you want to display.

Add a flyout on page 261

Optional: Add flyouts to organize multiple commands into a single drop-down list.

Create a new command on page 106 (workflow diagram)

Create new commands as needed.



Add commands and controls on page 253

Add commands and controls to the toolbar and flyouts.

Assign a toolbar to a workspace on page 369

Assign the toolbar to a workspace to display it.

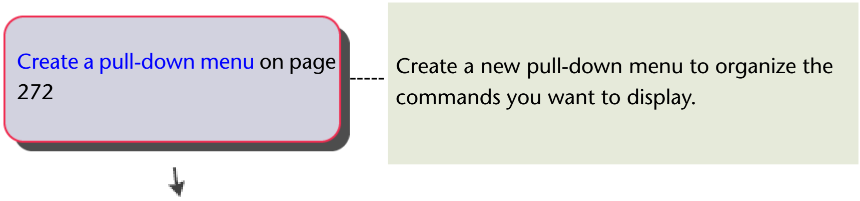
Set a workspace current on page 353

Set the modified workspace current to see the toolbar.

Create a Pull-Down Menu

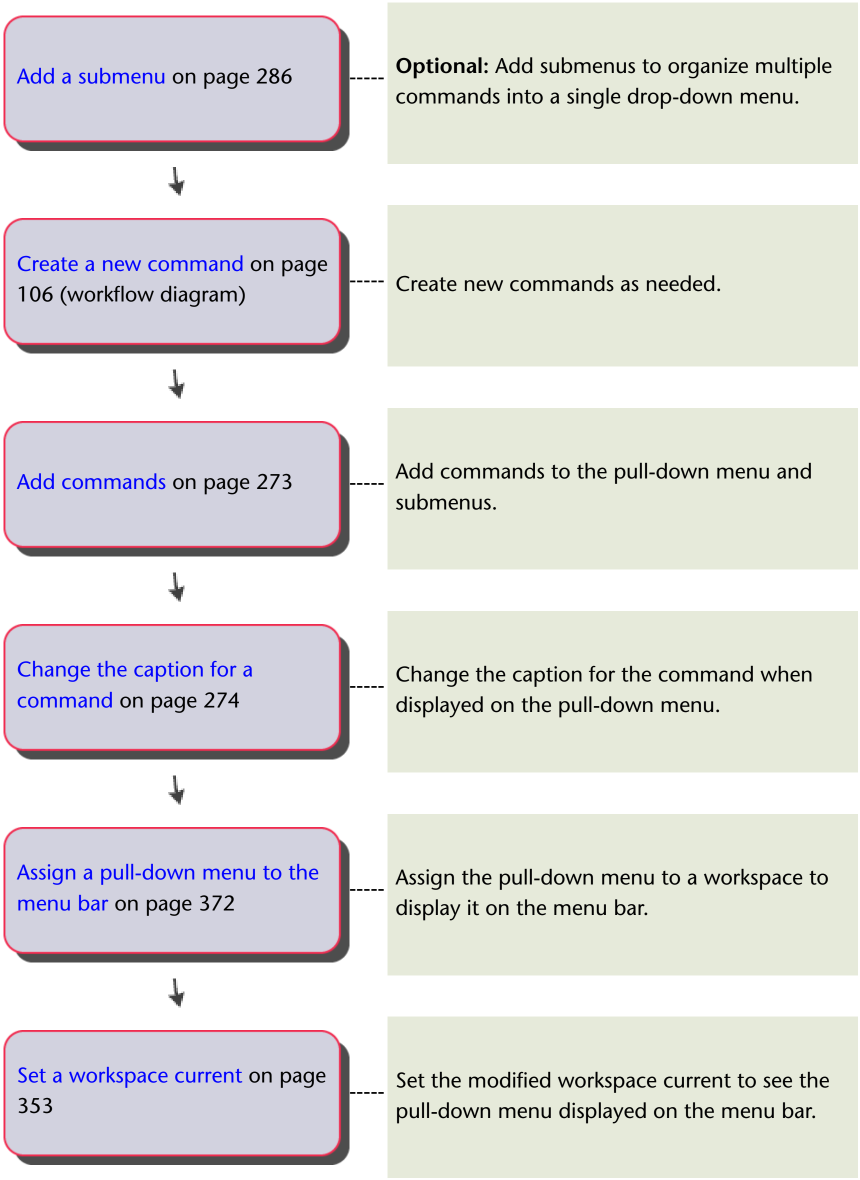
Pull-down menus take up the least amount of space in the application frame of AutoCAD of all user interface elements, while providing access to a wide range of commands.

You can add commands to a pull-down menu for easy to access to it from the menu bar, while not losing a large amount of space on the screen. Commands on a pull-down menu can be displayed as a single item or as a grouping of items with a submenu. Pull-down menus must be added to a workspace in order for them to be displayed on the menu bar. For more information about pull-down menu customization, see Create a Pull-Down Menu on page 271.



Create a pull-down menu on page 272

Create a new pull-down menu to organize the commands you want to display.



Add a submenu on page 286

Optional: Add submenus to organize multiple commands into a single drop-down menu.

Create a new command on page 106 (workflow diagram)

Create new commands as needed.

Add commands on page 273

Add commands to the pull-down menu and submenus.

Change the caption for a command on page 274

Change the caption for the command when displayed on the pull-down menu.

Assign a pull-down menu to the menu bar on page 372

Assign the pull-down menu to a workspace to display it on the menu bar.

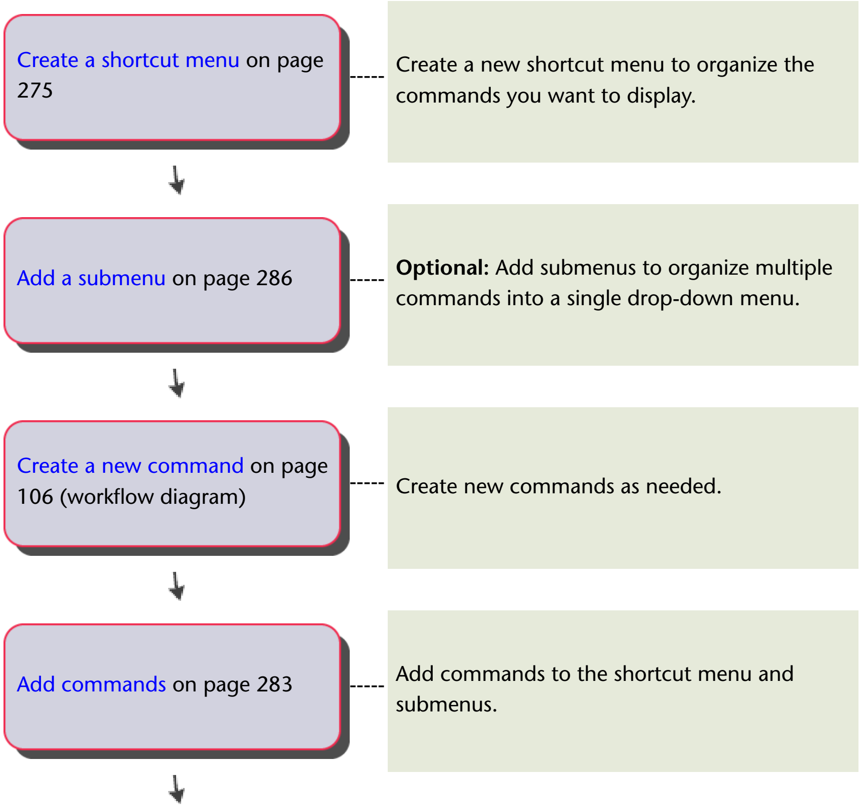
Set a workspace current on page 353

Set the modified workspace current to see the pull-down menu displayed on the menu bar.

Create a Shortcut Menu

Shortcut menus provide contextual access to commands based on right-clicking. Contextual states vary depending on if a command is active, an object is selected, or if no command or object is selected.

You create custom shortcut menus that replace the default shortcut menus in AutoCAD or to insert additional commands into a specific shortcut menu. Commands on a shortcut menu can be displayed as a single item or as a grouping of items with a submenu. Unlike pull-down menus, shortcut menus do not need to be added to a workspace in order to be displayed. For more information about shortcut menu customization, see Create a Shortcut Menu on page 275.



Create a shortcut menu on page 275

Create a new shortcut menu to organize the commands you want to display.

Add a submenu on page 286

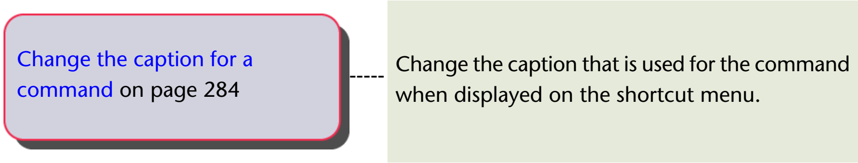
Optional: Add submenus to organize multiple commands into a single drop-down menu.

Create a new command on page 106 (workflow diagram)

Create new commands as needed.

Add commands on page 283

Add commands to the shortcut menu and submenus.



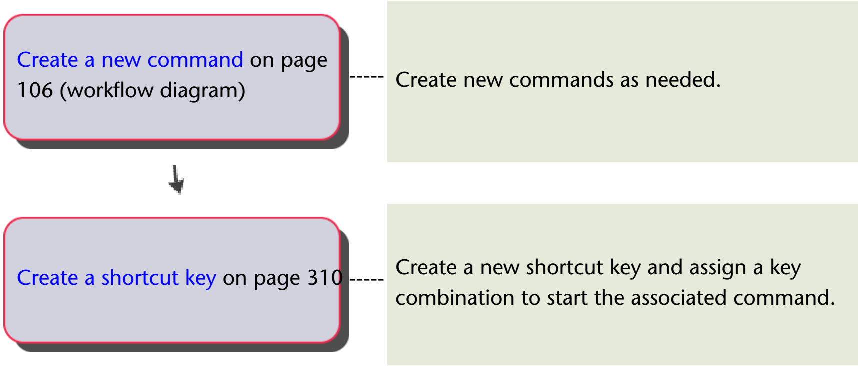
Change the caption for a command on page 284

Change the caption that is used for the command when displayed on the shortcut menu.

Customize Shortcut Key

Shortcut keys start a command by with a combination of the Ctrl or Alt key and some additional keys.

You assign commands to a shortcut key combination to make it easy to start the command. You use a key combination instead of clicking a menu item or a button. Shortcut keys include using the Ctrl or Alt key and also an alphanumeric key and or the Shift key. For more information about shortcut key customization, see Keyboard Shortcuts on page 309.



Create a new command on page 106 (workflow diagram)

Create new commands as needed.

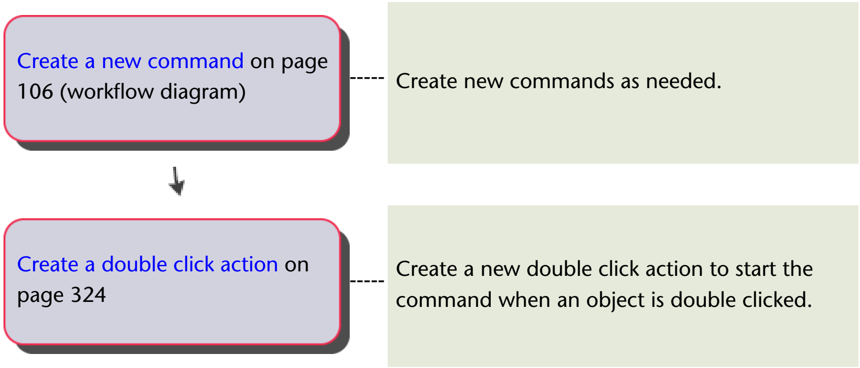
Create a shortcut key on page 310

Create a new shortcut key and assign a key combination to start the associated command.

Create a Double Click Action

Double click actions start a command based on the objects that are selected when you double-click in the drawing window.

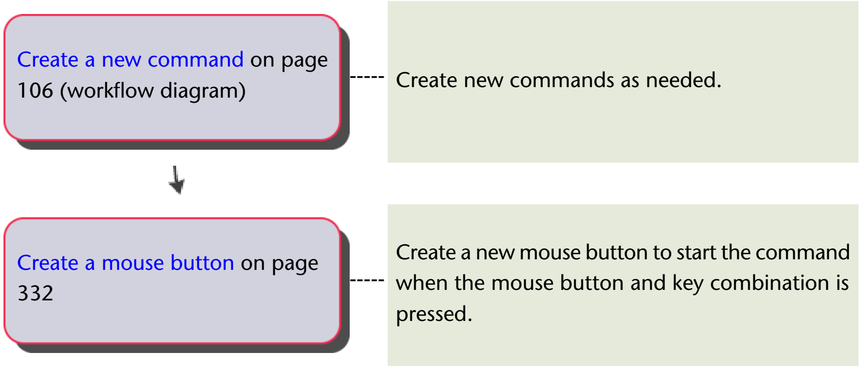
You assign commands to a double click action, which typically starts a command that allows you to modify the selected object. For more information about double click action customization, see Double Click Actions on page 324.


Create a new command on page 106 (workflow diagram)
Create new commands as needed.
Create a double click action on page 324
Create a new double click action to start the command when an object is double clicked.

Create a Mouse Button

Mouse buttons start a command based on a mouse click and a key combination.

You assign commands to mouse button and key combinations. For more information about mouse button customization, see Mouse Buttons on page 332.


Create a new command on page 106 (workflow diagram)
Create new commands as needed.
Create a mouse button on page 332
Create a new mouse button to start the command when the mouse button and key combination is pressed.

Create and Modify Workspaces

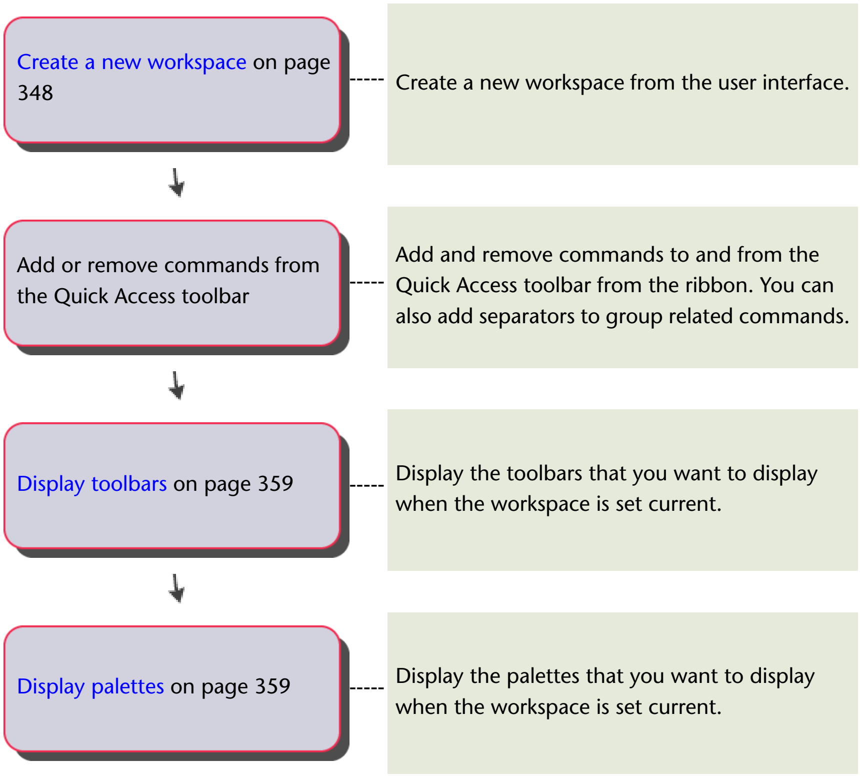
Workspaces control the display and order in which user interface elements are displayed.

You create and manage workspaces from the user interface of AutoCAD or with the Customize User Interface (CUI) Editor. Creating and managing workspaces from the user interface is limited; the CUI Editor gives you full control over all user interface elements in a workspace. For more information about workspace customization, see Customize Workspaces on page 343.

Create a Workspace from the User Interface

You can perform some basic customization of a workspace from the user interface.

From the user interface, you can control the display of toolbars and palettes; you can also add and remove commands from the Quick Access toolbar. You can interactively update the position and display of both toolbars and palettes. This cannot be done from the CUI Editor. For more information about workspace customization from the user interface, see Control User Interface Elements Outside the CUI Editor on page 357.



Create a new workspace on page 348 — Create a new workspace from the user interface.

Add or remove commands from the Quick Access toolbar — Add and remove commands to and from the Quick Access toolbar from the ribbon. You can also add separators to group related commands.

Display toolbars on page 359 — Display the toolbars that you want to display when the workspace is set current.

Display palettes on page 359 — Display the palettes that you want to display when the workspace is set current.

Save the workspace on page 348

Save the changes made to the user interface elements to a workspace.

Create a Workspace with the CUI Editor

The CUI Editor provides an editing environment to customization a workspace.

From the CUI Editor, you can control the display of the Quick Access toolbar, ribbon tabs, toolbars, menus, and palettes. You can also control the display of certain features in the application and drawing windows. For more information about workspace customization from the CUI Editor, see Control User Interface Elements in the CUI Editor on page 360.

Create a new workspace on page 347

Create a new workspace using the CUI Editor.

Display a Quick Access toolbar on page 362

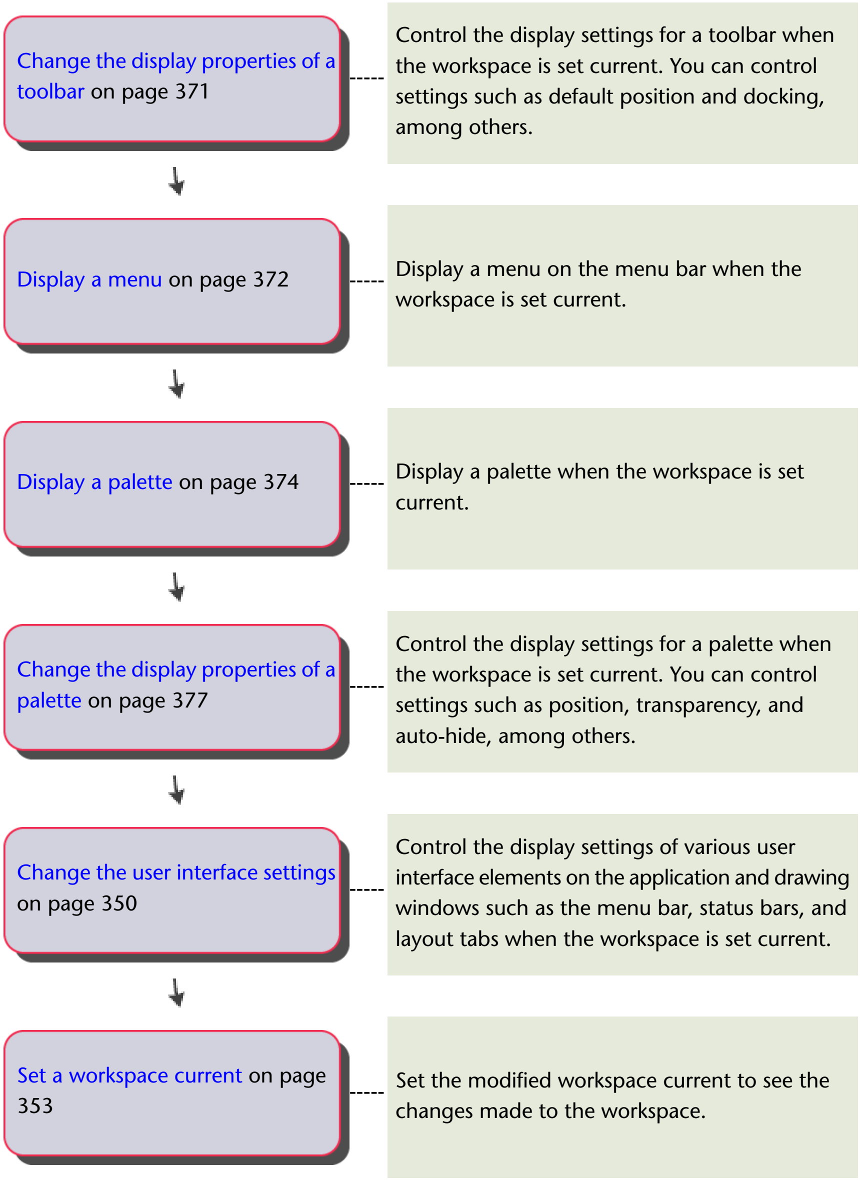
Display a Quick Access toolbar when the workspace is set current.

Display a ribbon tab on page 364

Display a ribbon tab on the ribbon when the workspace is set current.

Display a toolbar on page 369

Display a toolbar when the workspace is set current.



Change the display properties of a toolbar on page 371

Control the display settings for a toolbar when the workspace is set current. You can control settings such as default position and docking, among others.

Display a menu on page 372

Display a menu on the menu bar when the workspace is set current.

Display a palette on page 374

Display a palette when the workspace is set current.

Change the display properties of a palette on page 377

Control the display settings for a palette when the workspace is set current. You can control settings such as position, transparency, and auto-hide, among others.

Change the user interface settings on page 350

Control the display settings of various user interface elements on the application and drawing windows such as the menu bar, status bars, and layout tabs when the workspace is set current.

Set a workspace current on page 353

Set the modified workspace current to see the changes made to the workspace.

Create and Manage Customization Files

Customization (CUIx) files are used to store commands, user interface elements, and references to partial CUIx files and AutoLISP files. CUIx files can be designated as main, partial, or enterprise.

Basics of Customization Files

Customization files are loaded into AutoCAD to define elements that make up the user interface and are edited using the Customize User Interface (CUI) Editor.

AutoCAD comes with several different CUIx files that can be tailored to your work environment. AutoCAD has two main designations for CUIx files, main and enterprise; by default AutoCAD uses a main CUIx file. You can customize the files that come with AutoCAD or you can create your own CUIx files from scratch using the Transfer tab in the Customize User Interface (CUI) Editor.

When customizing the CUIx files that come with AutoCAD or creating your own CUIx files, the Customize User Interface (CUI) Editor creates a backup copy of the file when you first start making changes to the CUIx file. This allows you to restore the file if you delete something that you wanted to keep. If you happen to modify a CUIx file that comes with AutoCAD, you can reset it back to its original state.

The Customize User Interface allows you to not only create new user interface elements and commands from scratch, but you can also copy existing user interface elements and commands to modify them.

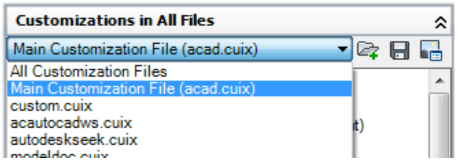
To set the working CUIx file

Before you can add custom commands to a CUIx file, you must set a CUIx file as the working file.

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, Customizations In *<file name>* pane, click the down arrow on the Customization Files drop-down list.

3 Select Main Customization File *<file name>* or one of the loaded CUIx files to set it as the working CUIx file.

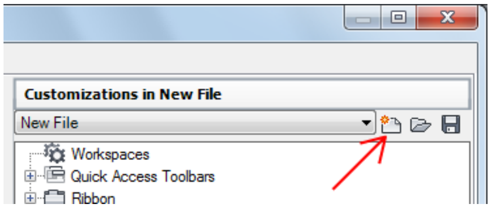

Customizations in All Files
Main Customization File (acad.cuix)
All Customization Files
Main Customization File (acad.cuix)
custom.cuix
acautocadws.cuix
autodeskseek.cuix
modeldoc.cuix

All new commands created are added directly to the working CUIx file. If the CUIx file that you want to work with is not loaded, select Open from the Customization Files drop-down list. Then browse to and select the CUIx file you want to work with.

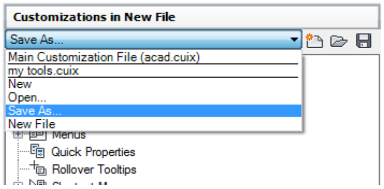
To create a CUIx file from scratch

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Transfer tab, in the right pane, click the Create a New Customization File button.



3 In the right pane, select Save As from the drop-down list.



4 In the Save As dialog box, specify the location to save the new customization file to and enter a name in the File Name text box.

5 Click Save to create and save the customization file.

To create a customization file from an existing customization file

1 In Windows Explorer, navigate to the following location:

(Windows XP) *<drive>:\Documents and Settings\<user profile name>\Application Data\Autodesk\<product name>\<release number>\<language>\support\<customization file name>.cuix*

(Windows Vista) *<drive>:\Users\<user profile name>\AppData\Roaming\Autodesk\<product name>\<release number>\<language>\support\<customization file name>.cuix*

NOTE The folders under your profile may be hidden by default. To display these files, you may need to change your display settings. Click Start menu (Windows) ➤ Control Panel ➤ (Appearance and Themes, or Appearance and Personalization) ➤ Folder Options. In the Folder Options dialog box, View tab, click Show Hidden Files and Folders.

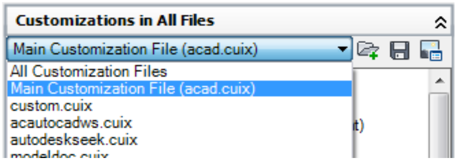
2 Copy the selected CUIx file to a new file name (such as *enterprise.cuix*) or location (such as the shared network location where users will access the file) so that you preserve the original CUIx file (in case you want to modify or use it again later).

WARNING This method of creating a new CUIx file can result in additional work if you do not want all the commands and user interface elements in the copied CUIx file.

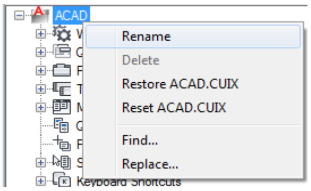
To rename a customization group name

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customizations In *<file name>* pane, select a CUIx file from the drop-down list.


Customizations in All Files
Main Customization File (acad.cuix)
All Customization Files
Main Customization File (acad.cuix)
custom.cuix
acautocadws.cuix
autodeskseek.cuix
modeldoc.cuix
t)

3 In the Customizations In *<file name>* pane, right-click the customization group name and click Rename.



4 Enter a new customization group name and press Enter.

NOTE You can click, wait, and click again on the customization group name to edit its name in-place.

NOTE The customization group name cannot contain spaces.

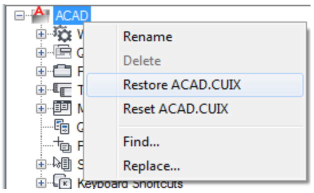
5 Click Apply.

To restore a customization backup file

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, right-click the customization group name.

3 Click Restore <*file name*>.



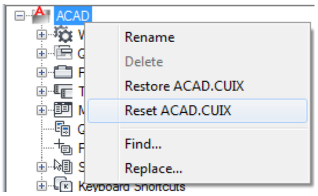
4 Click Apply.

To reset a standard customization file

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, right-click over the customization group name.

3 Click Reset <*file name*>.



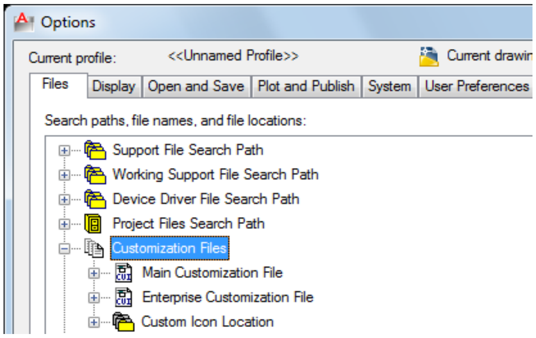
NOTE Only CUIx files found in the *UserDataCache* folder under the install location of AutoCAD can be reset.

4 Click Apply.

To designate a CUIx file as the main CUIx file

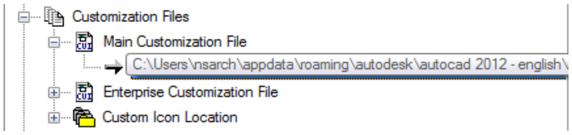
1 Click Application menu ➤ Options.

2 In the Options dialog box, Files tab, click the plus sign (+) next to Customization Files to expand the list.



3 Click the plus sign (+) next to Main Customization File to expand it.

4 Select the item below Main Customization File and click Browse.



C:\Users\nsarch\appdata\roaming\autodesk\autocad 2012 - english\

5 In the Select a File dialog box, browse to and select the customization file to load. Click Open.

The file you selected is now designated as the main customization file for the program.

6 In the Options dialog box, click OK.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

MENU

Loads a customization file.

OPTIONS

Customizes the program settings.

System Variables

MENUNAME

Stores the customization file name, including the path for the file name.

Create and Load a Partial CUIx File

Create, load, or unload partial customization files as you need them. Loading and using a partial CUIx file allows you to create and modify most user interface elements (toolbars, menus, ribbon panels, and so on) in a separate CUIx file without having to import the customization to your main CUIx file.

The order of the partial CUIx files in the Partial Customization Files tree determines the order they are loaded in the program. You can rearrange the tree hierarchy to change the load order. Use the Transfer tab of the Customize User Interface (CUI) Editor to create a partial CUIx file. For more information on creating a new CUIx file, see To create a CUIx file from scratch on page 123. CUIx files can be loaded or unloaded with the CUILOAD and CUIUNLOAD commands from the Command prompt, or you can use the Customize tab in the Customize User Interface (CUI) Editor.

Commands and user interface elements can be added to a partial CUIx file that is loaded under the main CUIx file, but not the enterprise CUIx file unless it is loaded as the main CUIx file. Before adding commands to a partial CUIx file, the partial CUIx file must be set as the working CUIx. For more information on adding a command to a partial CUIx file, see To add commands to a partial CUIx file on page 130.

When a partial CUIx file is loaded, any workspaces defined in the file cannot be set current. To use a workspace defined in a partial CUIx file, it must be transferred to the main CUIx file first. For more information on transferring a workspace to the main CUIx file, see To import a workspace to a main CUIx file on page 355.

To load a partial CUIx file using the CUILOAD command

1 At the Command prompt, enter **cuiload**.

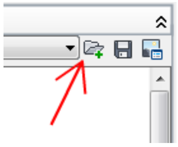
2 In the Load/Unload Customizations dialog box, in the File Name text box, enter a path to the CUIx file you want to load, or click Browse to locate the file.

3 Click Load, and then click Close.

To load a partial CUIx file using the Customize tab

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

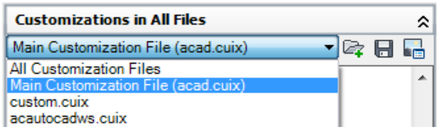
2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, select Main Customization File (<*customization file name*>*.cuix*) from the drop-down list. To the right of the drop-down list, click the Load Partial Customization File button.



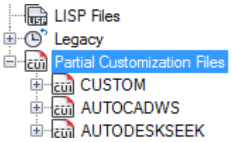
3 In the Open dialog box, locate and select the partial CUIx file you want to load, and click Open.

NOTE If the partial CUIx file you are attempting to load has the same customization group name as the main CUIx file, you need to change the customization group name before loading it. Open the partial CUIx file in the CUI Editor, select the customization group name, and right-click to rename it.

4 To verify that the file has been loaded into the main CUIx file, in the Customizations In <*file name*> pane, select the Main Customization File (<*customization file name*>*.cuix*) from the drop-down list.


Customizations in All Files
Main Customization File (acad.cuix)
All Customization Files
Main Customization File (acad.cuix)
custom.cuix
acautocadws.cuix

Loaded partial CUIx files in the main CUIx file are listed under the Partial Customization Files node.



5 Click Apply.

To unload a partial CUIx file using the CUIUNLOAD command

1 At the Command prompt, enter **cuiunload**.

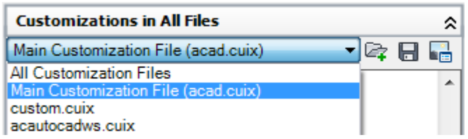
2 In the Load/Unload Customizations dialog box, in the Loaded Customizations Group box, select a CUIx file.

3 Click Unload, and then click Close.

To unload a partial CUIx file using the Customize tab

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

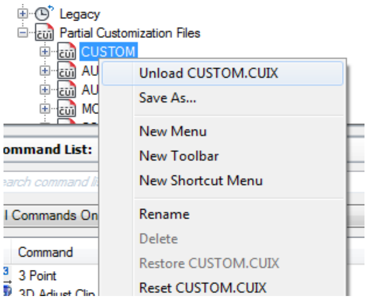
2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, select Main Customization File (<*customization file name*>*.cuix*) from the drop-down list.


Customizations in All Files
Main Customization File (acad.cuix)
All Customization Files
Main Customization File (acad.cuix)
custom.cuix
acautocadws.cuix

3 In the tree view of the main CUIx file, click the plus sign (+) next to the Partial Customization Files node to expand it.

Any partial CUIx files loaded in the main CUIx file are displayed.

4 Right-click the partial CUIx file that you want to unload. Click Unload <customization file name>.cuix.



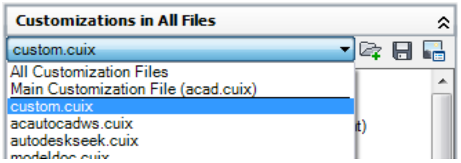
The partial CUIx file is unloaded and removed from the list.

5 Click Apply.

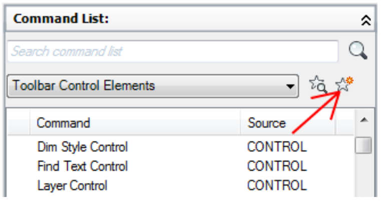
To add commands to a partial CUIx file

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In *<file name>* pane, select the partial CUIx file from the drop-down list.



3 In the Commands List pane, click Create a New Command.


Command List:

Search command list

Toolbar Control Elements

Command	Source
Dim Style Control	CONTROL
Find Text Control	CONTROL
Layer Control	CONTROL

4 Adjust the properties of the new command in the Properties pane as necessary.

5 Click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

CUILOAD

Loads a CUIx file.

CUIUNLOAD

Unloads a CUIx file.

Create an Enterprise CUIx File

An enterprise CUIx file typically stores customization information that is shared by many users, but is controlled by a CAD manager. Enterprise CUIx files make maintaining and modifying customization data easier for the individual responsible for controlling company standards.

Create an enterprise CUIx file by performing the following tasks:

- **Create an enterprise CUIx file from an existing CUIx file or a new CUIx file.** Make a copy of the main customization file (*acad.cuix*) or another customization file of your choice that contains all the base user interface elements you need. If you want to start with a new customization file, use the Transfer tab to create a blank customization file.
- **Designate the new file as your main CUIx file.** Using the Options dialog box, you must load the customization file as your the main customization

file so you make edits to all of the different user interface elements. Make sure to note which customization file is currently designated as the main customization file, as you will need to restore it later.

- **Modify the contents of the enterprise CUIx file.** Once the customization file is designated as the main customization file, you can change the customization group name and modify the CUIx file contents as needed. Changing the customization group name allows you to load more than one CUIx file in the program at one time. CUIx files with the same customization group name cannot be loaded into the program.
- **Replace the main CUIx file.** Using the Options dialog box, replace the previous customization file that was designated as the main customization file.
- **Save the enterprise CUIx file to a shared network location.** When you save the new enterprise file to a shared network location, all of your users that have access to the specified location can access the file.

NOTE The folder where you place the enterprise CUIx file should be in a shared location that your users can access. To learn more about creating a network share, see "How to Create a Network Share" in the *Network Administrator's Guide*.

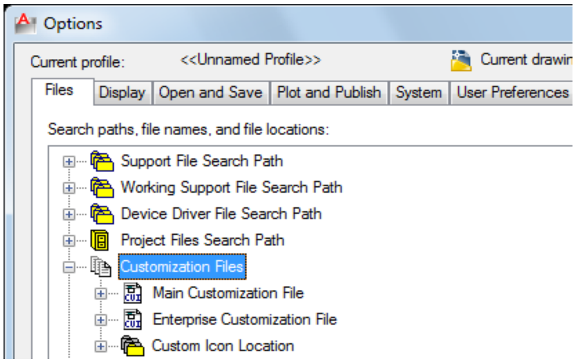
- **Specify the enterprise CUIx file location.** The program automatically designates an enterprise customization file as read-only when you specify its file location in the Options dialog box. Specifying the enterprise customization file location can be done on individual workstations or in the Deployment wizard. For more information about setting the location in the Deployment wizard, see "Select Search Paths and File Locations" in the *Network Administrator's Guide*.

WARNING Even though the Customize User Interface (CUI) Editor loads the enterprise customization file as read-only, this still doesn't completely protect the file from being modified. The enterprise customization file could be loaded as the main customization file and then modified. To protect the enterprise customization file, the location where it is stored be marked as read-only and write access should be limited to those you want to be able to edit the file.

To designate a CUIx file as an enterprise CUIx file

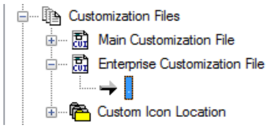
1 On each user's workstation in AutoCAD, click Application menu ➤ Options.

2 In the Options dialog box, Files tab, click the plus sign (+) next to Customization Files to expand the list.



3 Click the plus sign next to Enterprise Customization File to open it.

4 Select the item below Enterprise Customization Files and click Browse.



5 In the Select a File dialog box, browse to the location of the enterprise customization file. Click Open.

The enterprise CUIx file if shared, must be saved in a location that all users can access.

6 In the Options dialog box, click OK.

NOTE In the Deployment wizard, you designate the enterprise CUIx file in the wizard's Specify Settings page. For more information about designating an enterprise CUIx file in the Deployment wizard, see "Select Search Paths and File Locations" in the *Network Administrator's Guide*.

To modify an enterprise CUIx file

1 Click Application menu ➤ Options.

2 In the Options dialog box, Files tab, click the plus sign (+) next to Customization Files to expand the list.

3 Click the plus sign next to Main Customization File to expand it.

Take note of the current main CUIx file's name and location as you will need to restore it later.

4. Select the item below Main Customization Files and click Browse. In the Select a File dialog box, browse to the location of the enterprise customization file. Click Open.
5. Click the plus sign next to Enterprise Customization File to expand it.

   Take note of the current enterprise CUIx file's name and location as you will need to restore it later.
6. Select the item below Enterprise Customization Files and click Browse. In the Select a File dialog box, browse to the location of the main customization file. Click Open.
7. In the Options dialog box, click OK to save the changes.
8. Click Manage tab ➤ Customization panel ➤ User Interface.
9. In the Customize User Interface Editor, Customize tab, create new commands and user interface elements as necessary.
10. Once done adding new commands and user interface elements, click OK. Switch the file names of the main and enterprise values around in the Options dialog box.

    The main and enterprise CUIx files should now resemble the original configuration prior to making the changes.

TIP You can create two different profiles that can be used to switch between your main and enterprise CUIx files. One profile will have the CUIx files in a normal configuration that is used by your drafters, and the other profile has the main and enterprise CUIx files switched around making the enterprise customization file editable.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

CUIEXPORT

Exports customized settings from the main CUIx file to an enterprise or partial CUIx file.

CUILOAD

Loads a CUIx file.

CUIUNLOAD

Unloads a CUIx file.

MENU

Loads a customization file.

OPTIONS

Customizes the program settings.

System Variables

ENTERPRISEMENU

Stores the enterprise customization file name (if defined), including the path for the file name.

MENUNAME

Stores the customization file name, including the path for the file name.

Find and Replace Commands and Text in a CUIx File

You can search one or more CUIx files for commands or search strings (including commands or user interface element names, command display names, descriptions, macros, and tags). You can also replace commands or search strings one at a time or all at once.

You can limit or expand your search depending on the search results you want to achieve.

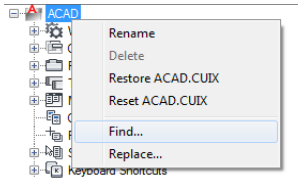
- **Limit the search to commands located in the Command List pane.** This search does not include the names of user interface elements, the commands that are associated to them, and their properties. For example, if you limit the search for the LINE command in the Command List only, a message similar to the following is displayed when you start your search: “Search string found in command 'Dimension, Linear' property 'Name' at position 11 (1/12).”

- **Expand the search to include all properties in all tree view nodes in the Customizations In pane.** This type of search finds all instances or a search string. For example, if you search for the string “line” and start in the tree view, a message similar to the following is displayed: “Search string found in ‘Linear’ property ‘Name’ at position 0 (1/55).”

To find a search string in a CUIx file

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customizations In *<file name>* pane, right-click anywhere in the tree view. Click Find.

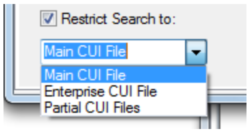


3 In the Find and Replace dialog box, Find tab, do the following:

- In the Find What box, enter the search string.

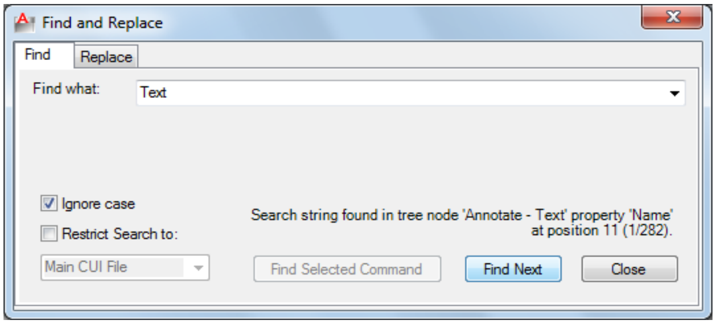
- In the Ignore Case option, clear the check box if you want the search to find every instance of the search string regardless of its case.

- In the Restrict Search To option, select the check box if you want to restrict the search to just one CUIx file. Then, under this option, select a CUIx file from the drop-down list.



- Click Find Next to locate all instances of the search string.

A message is displayed that details the location of the search string and the number of results generated from the search.



Find what: Text

☑ Ignore case

□ Restrict Search to:

Search string found in tree node 'Annotate - Text' property 'Name' at position 11 (1/282).

4 Click Find Next to continue your search.

5 Click Close.

6 In the Customize User Interface Editor, click Apply.

To find a search string in the Command List pane

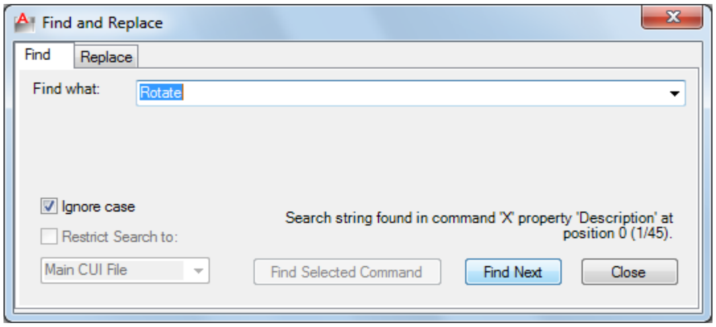
1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Command List pane, right-click anywhere in the Command list. Click Find.

3 In the Find and Replace dialog box, Find tab, do the following:

- In the Find What box, enter the search string.
- In the Ignore Case option, clear the check box if you want the search to find every instance of the search string regardless of its case.
- Click Find Next to locate all instances of the search string.

A message is displayed that details the location of the search string and the number of results generated from the search.



Find what: Rotate

☑ Ignore case

□ Restrict Search to: Main CUI File

Search string found in command 'X' property 'Description' at position 0 (1/45).

4 Click Find Next to continue your search.

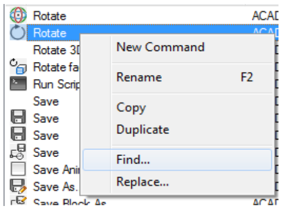
5 Click Close.

6 In the Customize User Interface Editor, click Apply.

To find where a command in the Command List pane is used

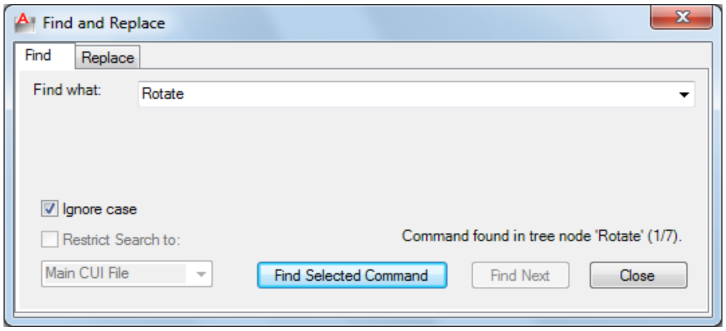
1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Command List pane, right-click the command name you want to find. Click Find.



3 In the Find and Replace dialog box, Find tab, do the following:

- In the Find What box, enter the command name.
- In the Ignore Case option, clear the check box if you want the search to find every instance of the search string regardless of its case.
- Click Find Selected Command to locate all instances of the command.



Find what: Rotate

☑ Ignore case

□ Restrict Search to: Main CUI File

Command found in tree node 'Rotate' (1/7).

4 In the search results text that is displayed, review the location of the matching search string, its exact position in the tree node or Properties pane, and the number of instances in which the command or search string occurs.

5 Click Find Selected Command to continue your search.

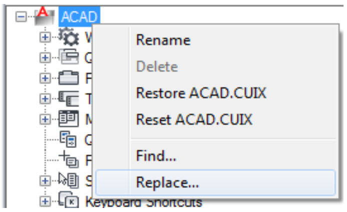
6 Click Close.

7 In the Customize User Interface Editor, click Apply.

To replace a search string

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, Customizations In <*file name*> pane, right-click anywhere in the tree view. Click Replace.



3 In the Find and Replace dialog box, Replace tab, do the following:

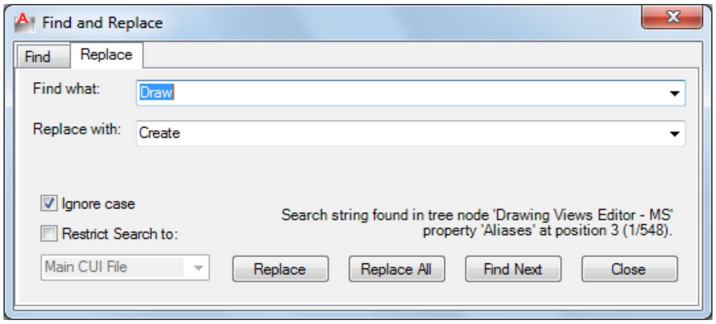
- In the Find What box, enter the search string.
- In the Replace With box, specify the text string you want to use to replace the found string.

- In the Ignore Case option, clear the check box if you want the search to find every instance of the search string, regardless of its case.

- In the Restrict Search To option, select the check box if you want to restrict the search to just one CUIx file. Then, under this option, select a CUIx file from the drop-down list.

- To step through each instance of a found string before replacing it, click Replace. In the search results text that is displayed, review the location of the matching search string, its exact position in the tree node or Properties pane, and the number of instances in which the command or search string occurs. You cannot undo this action.

- To replace all instances of the search string, click Replace All. You cannot undo this action.



Find what: Draw

Replace with: Create

☑ Ignore case

□ Restrict Search to:

Main CUI File

Search string found in tree node 'Drawing Views Editor - MS' property 'Aliases' at position 3 (1/548).

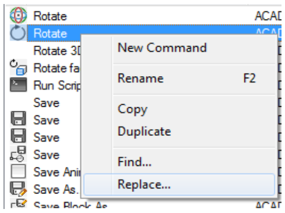
4 Click Close.

5 In the Customize User Interface Editor, click Apply.

To replace a command string

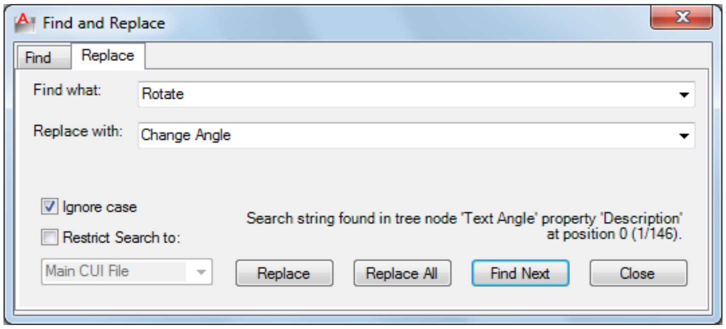
1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, Command List pane, right-click the command name you want to replace. Click Replace.



3 In the Find and Replace dialog box, Replace tab, in the Find What box, the command name you selected in the previous step is displayed. To complete the dialog box, do the following:

- In the Replace With box, specify the command name you want to use to replace the found command.
- In the Ignore Case option, clear the check box if you want the search to find every instance of the command, regardless of its case.
- To step through each instance of a command name before replacing it, click Replace. In the search results text that is displayed, review the location of the matching search string, its exact position in the tree node or Properties pane, and the number of instances in which the command or search string occurs. By renaming the command in the Command list, you rename the command *everywhere* that command is used in the CUIx file. You cannot undo this action.
- To replace all instances of the command, click Replace All. You cannot undo this action.



Find what: Rotate

Replace with: Change Angle

☑ Ignore case

☐ Restrict Search to: Main CUI File

Search string found in tree node 'Text Angle' property 'Description' at position 0 (1/146).

4 Click Close.

5 In the Customize User Interface Editor, click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

Customize Commands

Commands in the Customize User Interface (CUI) Editor are used to define custom macros which are used to start standard and custom commands which can be executed from the command prompt in AutoCAD.

Overview of Commands

You can easily create, edit, and reuse commands. The Customize tab of the Customize User Interface (CUI) Editor allows you to add any command listed in the Command List pane to a toolbar, menu, and one of the other user interface element that can be customized.

When you change the properties of a command in the Command List pane or the tree view in the Customizations In pane, the properties of the command are changed everywhere the command is referenced. Each property of a command in the Command List pane controls which actions are taken when the command is used and how the command looks when added to a user interface element.

The following table shows the properties of the Scale command as they appear in the Properties pane.

Properties for the Scale command in the Command List pane

Properties pane item	Description	Example
Name	String displayed as a menu name or as a tooltip when you click a toolbar button. The string must include alphanumeric characters with no punctuation other than a hyphen (-) or an underscore (_).	Scale
Description	String displayed as a tooltip when the cursor hovers over a toolbar or panel button, or menu item.	Enlarges or reduces selected objects, keeping the proportions of

Properties for the Scale command in the Command List pane

Properties pane item	Description	Example
		the object the same after scaling
Extended Help File	Displays the file name and ID for the extended tooltip that is displayed when the cursor hovers over a toolbar or panel button.	
Command Display Name	String that contains the name of the command that is related to the command.	SCALE
Macro	The command macro. It follows the standard macro syntax. **NOTE** When you change the name of a macro, the name of its corresponding menu item or toolbar button does not change. You must change a menu item or toolbar button name by selecting it in the tree view.	$M=$(if,$(eq,$(substr,$(getvar,cmdnames),1,4),GRIP),_scale,^C^C_scale)
Tags	Keywords associated to a command. Tags provide an additional field to search for a loaded command when using the Search field in the application menu.	
Element ID	Tag that uniquely identifies a command.	ID_Scale
Small Image	ID string of the small-image resource (16 × 16 bitmap). The string must include alphanumeric characters with no punctuation other than a hyphen (-) or an underscore (_). It can also be a user-defined bitmap. Click the [ ] button to open the Select Image File dialog box.	RCDATA_16_SCALE
Large Image	ID string of the large-image resource (32 × 32 bitmap). If the specified bitmap is not 32 × 32, the program scales it to that size. The string must include alphanumeric characters with no punctuation other than a hyphen (-) or an un-	RCDATA_32_SCALE

Properties for the Scale command in the Command List pane		
Properties pane item	**Description**	**Example**
	derscore (_). It can also be a user-defined bitmap. Click the [ ] button to open the Select Image File dialog box	

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

Create, Edit, and Reuse Commands

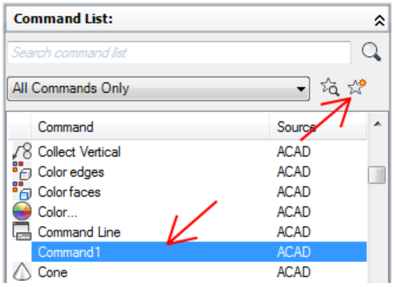
You can create a new command from scratch, copy an existing command to create a new command, or edit the properties of an existing command.

When you change the properties of a command in the Command List pane, the command is updated for all user interface elements that reference the command.

To create a command

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, Command List pane, click Create a New Command.



Command List:

Search command list

All Commands Only

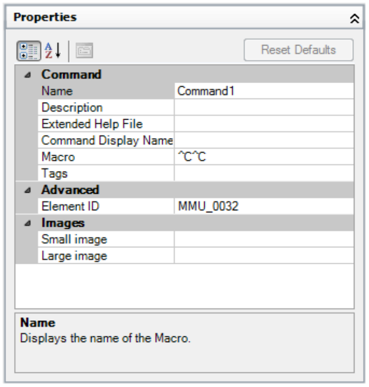
Command	Source
Collect Vertical	ACAD
Color edges	ACAD
Color faces	ACAD
Color...	ACAD
Command Line	ACAD
Command1	ACAD
Cone	ACAD

A new command (named Command1) is displayed in both the Command List pane and the Properties pane.

3 In the Properties pane, do the following:

- In the Name box, enter a name for the command. The name is displayed as a tooltip or menu name when the command is added to a user interface element.
- In the Description box, enter a description for the command. The description will be displayed on the status bar or in a tooltip. When the cursor hovers over the command on a menu, the description is displayed on the status bar while if it is on a toolbar or ribbon panel it is displayed in a tooltip.
- In the Extended Help File box, enter the name of the file and ID to use for the extended help for the command.
- In the Command Display Name box, enter the name of the command that you want to display for the command.
- In the Macro box, enter a macro for the command.
- In the Tags box, enter the tags you want to use when searching for commands in the Search field of the application menu.
- In the Element ID box, enter an element ID for the command.

For information about adding button images to a command, see Create Custom Images for Commands on page 184.



Properties

Reset Defaults

Command	
Name	Command1
Description	
Extended Help File	
Command Display Name	
Macro	^C^C
Tags	
Advanced	
Element ID	MMU_0032
Images	
Small image	
Large image	

Name
Displays the name of the Macro.

To remove a command

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, Command List pane, select Custom from the Command Filter drop-down list.

   The list is filtered to only show the commands that you have created in the loaded customization files.

3 Select the command to be removed, and right-click over the command.

4 Click Remove.

NOTE A command only can be removed when it is not being referenced by a user interface element, such as a toolbar or menu.

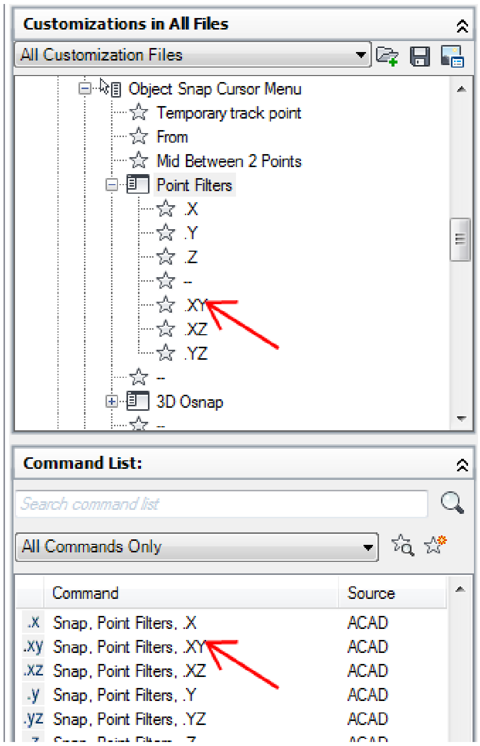
WARNING There is no way to undo the removal of a command or user interface element from inside the Customize User Interface (CUI) Editor, so be careful when removing commands and user interface elements. If you accidentally remove the wrong command or user interface element the best thing to do is click Cancel, but this will also undo any other changes that you might have made. If you already made several changes to the CUIx file and do not want to lose the changes that you already made, you can open the backup CUIx file that is automatically created after a change is made to a CUIx file from the Transfer tab and then proceed to recover the command or user interface element that was accidentally removed.

To edit a command

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, do one of the following:

   - In the Command List pane, select the command you want to edit.
   - In the Customizations In <*file name*> pane, tree view, locate and then select the command you want to edit.



	Command	Source
.x	Snap, Point Filters, .X	ACAD
.xy	Snap, Point Filters, .XY	ACAD
.xz	Snap, Point Filters, .XZ	ACAD
.y	Snap, Point Filters, .Y	ACAD
.yz	Snap, Point Filters, .YZ	ACAD

3 In the Properties pane, do any of the following to edit the command:

- In the Name box, enter a name for the command. The name is displayed as a tooltip or menu name when the command is added to a user interface element.

- In the Description box, enter a description for the command. The description will be displayed on the status bar or in a tooltip. When the cursor hovers over the command on a menu, the description is displayed on the status bar while if it is on a toolbar or ribbon panel it is displayed in a tooltip.

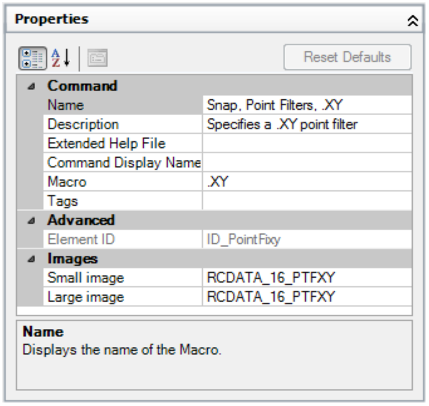
- In the Extended Help File box, enter the name of the file and ID to use for the extended help for the command.

- In the Command Display Name box, enter the name of the command that you want to display for the command.

- In the Macro box, enter a macro for the command.

- In the Tags box, enter the tags you want to use when search for commands with the Search field of the application menu.
- In the Element ID box, enter an element ID for the command. (For new commands only. You cannot modify the element ID of an existing command).

For information about adding button images to a command, see Create Custom Images for Commands on page 184.



Properties

Reset Defaults

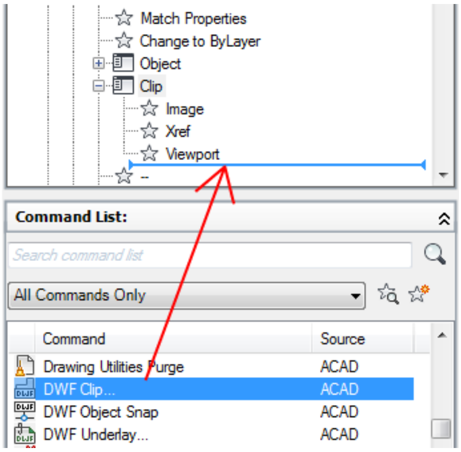
Command	
Name	Snap, Point Filters, .XY
Description	Specifies a .XY point filter
Extended Help File	
Command Display Name	
Macro	.XY
Tags	
Advanced	
Element ID	ID_PointFixy
Images	
Small image	RCDATA_16_PTFXY
Large image	RCDATA_16_PTFXY

Name
Displays the name of the Macro.

To use a command

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, Command List pane, locate the command you want to use and drag it to an interface element.



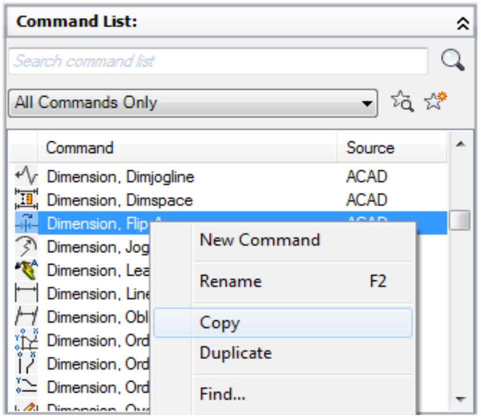
Command	Source
Drawing Utilities Purge	ACAD
DWF Clip...	ACAD
DWF Object Snap	ACAD
DWF Underlay...	ACAD

To copy and paste a command

1 Click Manage tab ➤ Customization panel ➤ User Interface.

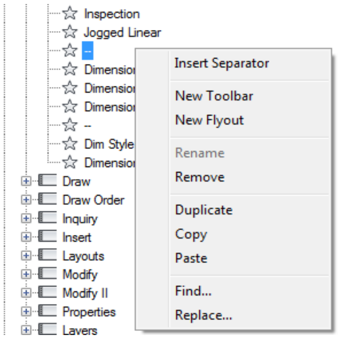
2 In the Customize User Interface Editor, Customize tab, Command List pane, locate the command you want to copy.

3 Right-click over the command. Click Copy.



Command	Source
Dimension, Dimjogline	ACAD
Dimension, Dimspace	ACAD
Dimension, Flip	
Dimension, Jog	
Dimension, Lea	
Dimension, Line	
Dimension, Obl	
Dimension, Ord	
Dimension, Ord	
Dimension, Ord	

4 Right-click over a user interface element like a toolbar or menu. Click Paste.



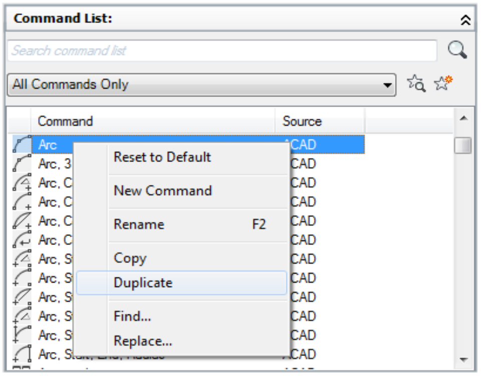
NOTE The key combination Ctrl+C can be used to copy a command and Ctrl+V can be used to paste a command.

To duplicate a command

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, Command List pane, locate the command you want to duplicate.

3 Right-click over the command. Click Duplicate.



A copy of the selected command is created in-place directly above the selected command in the Command List pane.

NOTE The key combination Ctrl+D can be used to duplicate a command in-place.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

Create Macros

A macro defines the action that results when an interface element is selected. A macro accomplishes a drawing task that would otherwise take a series of actions by a user.

Overview of Macros

A macro can contain commands, special characters, DIESEL (Direct Interpretively Evaluated String Expression Language) or AutoLISP programming code.

NOTE As AutoCAD is revised and enhanced, the sequence of prompts for various commands (and sometimes command names) might change. Therefore, your custom macros might require minor changes when you upgrade to a new release of AutoCAD.

You add macros to interface elements by using the Customize User Interface (CUI) Editor. Select an existing command or create a new command in the Command List pane. Enter macros in the Macros section of the Properties pane. There are no length limitations for macros. However, you do need to know how specific characters are used in macros and be aware of other considerations or limitations.

Macro Basics

A macro in a user interface element can be as simple as a command (such as **circle**) and some special characters (such as ^C^C).

For example, the macro `^C^C_circle \1`, draws a circle with a radius of 1 unit. The components that define this macro are explained in the table below.

Components in CIRCLE macro

Component	Component type	Result
^C^C	Special control character	Cancels any running commands
_	Special control character	Automatically translates the command that follows into other languages
CIRCLE	Command	Starts the CIRCLE command
\	Special control character	Creates a pause for the user to specify the center point
1	Special control character	Responds to the prompt for the circle's radius (1)

For a list of special control characters that you can use in macros, see Use Special Control Characters in Macros on page 154.

Cancel Running Commands

Make sure that you have no AutoCAD commands in progress before you execute a macro. To automatically cancel a command before executing a macro, enter `^C^C` at the beginning of the macro (which is the same as pressing ESC twice). Although a single `^C` cancels most commands, `^C^C` is required to return to the command prompt from a dimensioning command and `^C^C^C` is required based on the current option of the -LAYER command. `^C^C` handles canceling out of most command sequences and therefore is the recommended sequence used to ensure no command is active before the macro is started.

Verify Macro Characters

Every character in a macro is significant, even a blank space.

When you place a space at the end of the macro, AutoCAD processes the macro as though you had entered a command (**circle**, for example) and then pressed the Spacebar to complete the command.

Terminate Macros

Some macros require special terminators. Some commands (TEXT, for example) require you to press Enter rather than Spacebar to terminate the command. Some commands require more than one space (or Enter) to complete, but some text editors cannot create a line with trailing blanks.

Two special conventions resolve these problems.

- A semicolon (;) in a macro automatically issues Enter at the Command prompt.
- If a line ends with a control character, a backslash (\), a plus sign (+), or a semicolon (;), AutoCAD does not add a blank space after it.

An item that ends with a backslash (\) pauses a macro for user input.

Compare the following macros:

```
ucs
ucs ;
```

The first example enters **ucs** at the command prompt and presses Spacebar. The following prompt is displayed.

Specify origin of UCS or
[Face/NAmed/OBject/Previous/View/World/X/Y/Z/ZAxis] <World>:

The second example enters **ucs**, presses Spacebar, and presses Enter, which accepts the default value (World).

Suppress Echoes and Prompts in Macros

Characters in a macro appear at the command line as though you had typed the characters on the keyboard. This display duplication is called “echoing”. You can suppress the “echoed” displays with the MENUECHO system variable. If echoes and prompts from item input are turned off, a `^P` in the item turns them off.

Create Long Macros

You can create a macro of any length, without requiring any special characters at the end of a line. The Properties pane in the Customize User Interface (CUI) Editor accepts a macro of any length.

To assign or modify a command macro

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, Command List pane, locate the command you want to assign (or modify) a command macro.

3 In the Properties pane, select the Macro field and click the [ ] button that is displayed.

   The Long String Editor dialog box is displayed.

4 In the Long String Editor, edit the macro as desired and click OK.

   You are returned to the Customize User Interface Editor.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

Use Special Control Characters in Macros

You can use special characters, including control characters, in macros. In a macro, the caret (^) is equivalent to pressing the Ctrl key on the keyboard. You can combine the caret with another character to construct macros that do such things as turn the grid on and off (`^G`) or cancel a command (`^C`).

The macro for the Address command below uses the backslash (`\`) to pause for user input and the semicolon (`;`) for Enter.

```
text \.4 0 DRAFT Inc;;;Main St.;;;City, State;
```

The macro starts the TEXT command, pauses for the user to specify a start point, and then enters the address on three lines. In the triple semicolon (`;;;`), the first semicolon ends the text string, the second repeats TEXT, and the third accepts the default placement below the previous line.

Macros use the special characters listed in the following table.

Special characters used in macros

Character	Description
;	Issues Enter
^M	Issues Enter
^I	Issues Tab
[blank space]	Enters a space; a blank space between command sequences in a command is equivalent to pressing the Spacebar
\	Pauses for user input (cannot be used with accelerators)
.	Allows you to access a built-in AutoCAD command even if it was undefined using the UNDEFINE command.
_	Translates AutoCAD commands and options that follow
=*	Displays the current top-level pull-down, shortcut, or image menu
*^C^C	Repeats a command until another command is chosen
$	Introduces a conditional DIESEL macro expression ($M=)
^B	Turns Snap on or off (equivalent to Ctrl+B)
^C	Cancels the active command or command option (equivalent to Esc)
^D	Turns Dynamic UCS on or off (equivalent to Ctrl+D)
^E	Sets the next isometric plane (equivalent to Ctrl+E)
^G	Turns Grid on or off (equivalent to Ctrl+G)
^H	Issues Backspace
^O	Turns Ortho on or off
^P	Turns MENUECHO on or off

Special characters used in macros

Character	Description
`^Q`	Echoes all prompts, status listings, and input to the printer (equivalent to Ctrl+Q)
`^R`	Turns command versioning on or off. Command versioning is required for some commands to ensure command macros written in an older release work properly in the latest release.
`^T`	Turns tablet on or off (equivalent to Ctrl+T)
`^V`	Changes the current viewport
`^Z`	Null character that suppresses the automatic addition of Spacebar at the end of a command

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

TEXT

Creates a single-line text object.

Pause for User Input in Macros

To accept input from the keyboard or pointing device in the middle of a command, place a backslash (\) in the macro at the point where you want input.

```
circle \1
```

In the circle example, \1 pauses for the user to specify the center point and then reads a radius of 1. Note that there is no space after the backslash.

```
-layer off \;
```

In this example, the macro starts -LAYER at the Command prompt, enters the Off option (off), and then pauses for the user to enter a layer name (\). The macro then turns that layer off and exits the -LAYER command (;).

NOTE LAYER normally prompts for another operation and exits only if you press Spacebar or Enter. In the macro, the semicolon (;) is the equivalent of pressing Enter.

A macro typically resumes after one user input, such as a single point location. Therefore, you cannot construct a macro that accepts a variable number of inputs (as in object selection) and then continues. However, an exception is made for SELECT: a backslash (\) suspends the SELECT command until object selection has been completed. Consider the following example:

```
select \change previous ;properties color red ;
```

In this macro, SELECT creates a selection set of one or more objects (select \). The macro then starts CHANGE (change), references the selection set using the Previous option (previous;), and changes the color of all selected objects to red (properties color red ;).

NOTE The backslash character (\) causes a macro to pause for user input. You cannot use a backslash for any other purpose in a macro. When you need to specify a file directory path, use a forward slash (/) as the path delimiter: for example, /direct/file.

The following circumstances delay resumption of a macro after a pause:

- If input of a point location is expected, object snap modes may be used before the point is specified.
- If X/Y/Z point filters are used, the command remains suspended until the entire point has been accumulated.
- For SELECT only, the macro does not resume until object selection has been completed.
- If the user responds with a transparent command, the suspended macro remains suspended until the transparent command is completed and the originally requested input is received.
- If the user responds by choosing another command (to supply options or to execute a transparent command), the original macro is suspended, and the newly selected item is processed to completion. Then, the suspended macro is resumed.

NOTE When command input comes from a command, the settings of the PICKADD and PICKAUTO system variables are assumed to be 1 and 0, respectively. This preserves compatibility with previous releases of AutoCAD and makes customization easier because you are not required to check the settings of these variables.

Quick Reference

Commands

CHANGE

Changes the properties of existing objects.

LAYER

Manages layers and layer properties.

SELECT

Places selected objects in the Previous selection set.

System Variables

PICKADD

Controls whether subsequent selections replace the current selection set or add to it.

PICKAUTO

Controls automatic windowing for object selection.

Provide International Support in Macros

To develop menus that can be used with a non-English-language version of AutoCAD, precede each command or option with the underscore character (_). The underscore character allows the standard commands and options to be translated automatically.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

Use Built-in Commands in Macros

To develop macros that use built-in commands that are part of AutoCAD, precede each command with the period character (.). The period character allows the built-in command to be used even if it has been undefined with the UNDEFINE command making the macro predicable when it is used on other systems that share the same customization file.

Quick Reference

Commands

REDEFINE

Restores AutoCAD internal commands overridden by UNDEFINE.

UNDEFINE

Allows an application-defined command to override an internal command.

Repeat Commands in Macros

You can use a leading asterisk (*) to repeat a command in a macro until you choose another command.

Once you have selected a command, you might want to use it several times before moving on to another command. In a macro, you can repeat a command until you choose another command. You cannot use this feature to choose options.

If a macro begins with `*^C^C`, the command is repeated until you terminate by pressing Esc on the keyboard or by selecting another command.

NOTE Do not use ^C (Cancel) within a macro that begins with the string *^C^C; this cancels the repetition.

The macros in the following examples repeat the commands:

```
*^C^Cmove Single
*^C^Ccopy Single
*^C^Cerase Single
*^C^Cstretch Single Crossing
*^C^Crotate Single
*^C^Cscale Single
```

Each macro in the example starts a command and then prompts you to select an object. Any other prompts necessary to complete the command are displayed, and then the command ends and starts again.

NOTE Command repetition cannot be used in macros for image tile menus.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

Use Single Object Selection Mode in Macros

Single Object Selection mode cancels the normal repetition of the Select Objects prompt in editing commands. After you select one object and respond to any other prompts, the command ends.

Consider the macro in the following example:

```
*^C^Cerase single
```

This macro terminates the current command and starts ERASE in Single Object Selection mode. After you choose this command, you either select a single object to be erased or click a blank area in the drawing and specify window selection. Any objects selected in this way are erased, and the command is repeated (due to the leading asterisk) so that you can erase additional objects. Press Esc to exit this mode.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

Use Macros to Swap User Interface Elements

You can replace the contents of active menus, mouse buttons, tablet buttons, or tablet menus. The swapped content can be that of another user interface element of the same type in the main CUIx file, or it can come from a partial CUIx file.

You cannot swap interface elements that are of different types (menus and mouse buttons, for example). However, within a given type, you can swap any user interface element for any other element.

NOTE Swapping can lead to some strange behavior for tablet menus, because they typically have a different number of macros.

Use the following syntax in a macro to swap elements:

```
$section=customizationgroup.menuname
```

The following describes each section of the macro syntax for swapping elements:

Macro syntax for swapping elements

$ Loads an interface element

section Specifies the element type. Valid names are:

`A1-A4` for Aux menus 1 through 4

`B1-B4` for mouse buttons 1 through 4

`P0-P16` for pull-down menus 0 through 16

`I` for the image tile menu

`S` for the screen menu (obsolete in and later)

`T1-T4` for tablet menus 1 through 4

customizationgroup Specifies the customization group that *menuname* is a member of (not necessary if *menuname* is in the main CUIx file).

menuname Specifies which section or submenu to insert. It is the main label or alias for the section to load

A pull-down menu can be present either in the menu bar or on the active shortcut menu but not both.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

Use Conditional Expressions in Macros

You can add conditional expressions to a macro by using a command that introduces macro expressions written in DIESEL (Direct Interpretively Evaluated String Expression Language).

The format is:

```
$M=expression
```

Introducing the macro with `$M=` tells AutoCAD to evaluate a string as a DIESEL expression, and that *`expression`* is the DIESEL expression. The following example defines a conditional expression in a macro:

```
FILLMODE $M=$(-,1,$(getvar,fillmode))
```

The macro switches the FILLMODE system variable on and off by subtracting the current value of FILLMODE from 1 and returning the resulting value to the FILLMODE system variable. You can use this method to toggle system variables whose valid values are 1 or 0.

Termination of Macros That Contain Conditional Expressions

If you use the DIESEL string language to perform "if-then" tests, conditions might exist where you do not want the normal terminating space or semicolon (resulting in Enter). If you add `^Z` to the end of the macro, AutoCAD does not automatically add a space (Enter) to the end of the macro expression.

As with other control characters in commands, the `^Z` used here is a string composed of `^` (a caret) and `Z` and is not equivalent to pressing Ctrl+Z.

In the following examples, `^Z` is used as a macro terminator.

```
^C^C$M=$(if,$(=,$(getvar,tilemode),0),$S=mview _mspace )^Z
^C^C$M=$(if,$(=,$(getvar,tilemode),0),$S=mview _pspace )^Z
```

If these macros did not end with `^Z`, AutoCAD would automatically add a space (ENTER), repeating the last command entered.

See also:

- Use Special Control Characters in Macros on page 154
- DIESEL on page 387

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

System Variables

FILLMODE

Specifies whether hatches and fills, 2D solids, and wide polylines are filled in.

Use AutoLISP in Macros

Creating commands that use AutoLISP is a more advanced way to use the AutoCAD customization feature.

You can use AutoLISP variables and expressions to create macros that perform complex tasks. To use AutoLISP efficiently in macros, place AutoLISP code in a separate MNL file. AutoCAD loads the MNL file when it loads a CUIx file with the same name and in the same location.

You can specify additional AutoLISP files to load in the Customize User Interface (CUI) Editor. Creating commands that use AutoLISP is a more advanced way to use the AutoCAD customization feature. Carefully study the following examples and the information in the *AutoLISP Reference* and the *AutoLISP Developer's Guide*. To access the additional help resources, on the InfoCenter toolbar, to the right of the Help button, click the drop-down arrow. Experimentation and practice will help you use this feature effectively.

Call a Macro

To programmatically execute a pull-down menu macro, use the following syntax:

```
(menucmd "Gcustomizationgroup.element_ID=|")
```

The previous syntax works only if the menu macro is part of a menu that is on the AutoCAD menu bar and is available for use. For more information about this syntax, see the *AutoLISP Reference*.

Preset Values

An application that uses block insertion presets could provide commands like these: [Set WINWID][Set WALLTHK][Insert Window]

```
^C^C^P(setq WINWID (getreal "Enter window width: ")) ^P
^C^C^P(setq WALLTHK (getreal "Enter wall thickness: ")) ^P
^C^C_INSERT window XScale !WINWID YScale !WALLTHK
```

This code inserts the block named "window," scaling its *X* axis to the current window width and its *Y* axis to the current wall thickness. In this example, the actual values come from the user-defined AutoLISP symbols WINWID and WALLTHK. The rotation is up to the user to decide so that the window can be rotated in the wall.

Resize Grips

With the following commands, grip size adjustment can be done on the fly:

```
^P(setvar "gripsize"(1+ (getvar "gripsize")))(redraw)(princ)
^P(setvar "gripsize"(1- (getvar "gripsize")))(redraw)(princ)
```

To add validity checking to these commands, values less than 0 and greater than 255 cannot be used for the GRIPSIZE system variable.

Prompt for User Input

The following item prompts for two points and draws a rectangular polyline with the specified points as its corners.

```
^P(setq a (getpoint "Enter first corner: "));\+
(setq b (getpoint "Enter opposite corner: "));\+
pline !a (list (car a)(cadr b)) !b (list (car b)(cadr a)) c;^P
```

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

Control the Display of Command Items

The way a menu or ribbon button item is displayed indicates its availability in the program.

A menu or ribbon button item can be displayed as:

- Grayed out (disabled)
- Marked with a check marker or border
- Both grayed out and marked

Ribbon button items do not display a check mark when marked; only a border is displayed.

NOTE To disable or mark ribbon button items, the "~" or "!." sequence cannot be placed before a command name explicitly; it must be inside a DIESEL expression.

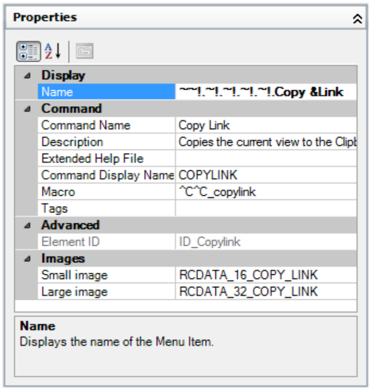
Gray Out (Disable) Menu or Ribbon Button Items

You gray out a menu or ribbon button item by doing one of the following:

- Beginning a name with a tilde (~)
- Using a DIESEL string expression

Ribbon button items only support the use of DIESEL string expressions. For more information about using DIESEL expressions, see DIESEL Expressions in Macros. When grayed out, the macro and submenus associated with the menu or ribbon button item are made inaccessible.

In the following example, the tilde (~) is placed at the beginning of the Copy Link command label in the Name cell of the Properties pane.

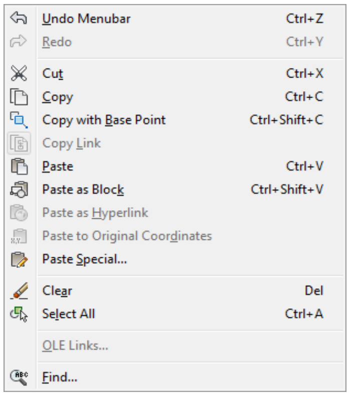


Properties

Display	
Name	~~!.~!.~!.~!.~!.Copy &Link
Command	
Command Name	Copy Link
Description	Copies the current view to the Clipb
Extended Help File	
Command Display Name	COPYLINK
Macro	^C^C_copylink
Tags	
Advanced	
Element ID	ID_Copylink
Images	
Small image	RCDATA_16_COPY_LINK
Large image	RCDATA_32_COPY_LINK

Name
Displays the name of the Menu Item.

Following is the resulting Copy Link command grayed out in the Edit menu.



DIESEL string expressions are used to conditionally disable or enable a menu or ribbon button item each time they are displayed. For example, the DIESEL string expression in the Macros cell of the Properties pane disables the MOVE command while any other command is active.

```
$(if,$(getvar,cmdactive),~)MOVE^C^C_move
```

The AutoLISP *menucmd* function can also be used to disable and enable items from a macro or application. For examples, see Reference Pull-Down or Shortcut Menus on page 288.

Mark Menu or Ribbon Button Items

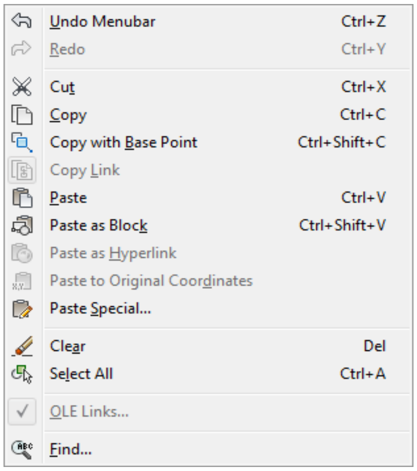
You can mark a menu or ribbon button item by doing one of the following:

- Beginning a command name with an exclamation point and a period (`!.`)
- Using a DIESEL string expression

Ribbon button items only support the use of DIESEL string expressions. A menu or ribbon button item is marked in one of two ways:

- *A check mark.* Displayed when a menu item does not have an image associated with it.
- *A border.* Displayed when a menu or ribbon button item has an image associated with it; a border is displayed around the image.

Following is an example of the Edit menu with the OLE Links command marked with a check mark and the Copy Link command's image marked with a border:



Menu items can and ribbon button items must contain DIESEL string expressions to conditionally mark them each time they are displayed. When the following DIESEL string is added to the Macros cell for the applicable command in the Properties pane, a check mark is placed to the left of the menu item whose related system variable is currently enabled.

```
$(if,$(getvar,orthomode),!.)Ortho^O
$(if,$(getvar,snapmode),!.)Snap^B
$(if,$(getvar,gridmode),!.)Grid^G
```

The AutoLISP *menucmd* function can be used to mark labels from a macro or application. For examples, see Reference Pull-Down or Shortcut Menus on page 288.

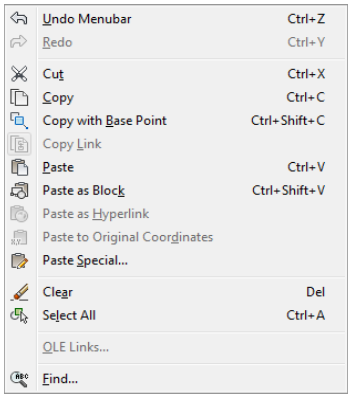
Simultaneously Disable and Mark Command Items

You can mark and disable commands at the same time using either of the following formats:

```
~!. labeltext
!.~ labeltext
```

The tilde (~) is the special character code to disable a command and an exclamation point and period (!.) is the special character code to mark a command.

The tilde (~), exclamation point, and period (!.) are placed at the beginning of the Copy Link command label in the Name cell of the Properties pane. Following is the resulting Copy Link marked and grayed out in the Edit menu.



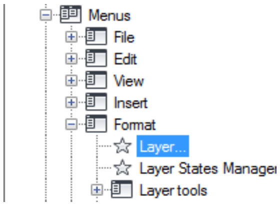
As with the previous examples, a DIESEL expression can be used to simultaneously disable and mark a command item.

To gray out (disable) a command's menu or ribbon button label

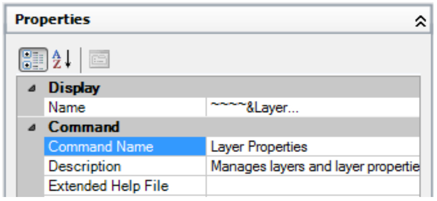
1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the menu that contains the command you want to disable.

3 Select the command you want to gray out.



4 In the Properties pane, in the Name field, add a tilde (~) or add the desired DIESEL expression to the beginning of the command.

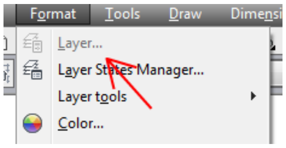


Display	
Name	~~~~&Layer...
Command	
Command Name	Layer Properties
Description	Manages layers and layer propertie
Extended Help File	

NOTE The command must be selected from the Customizations In pane, otherwise you are just modifying the name of the command and not the label that is displayed to the user.

5 Click Apply.

The changes to the command will be visible after the changes have been applied and the CUI Editor is closed.

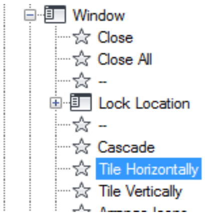


To mark command's menu or ribbon button label

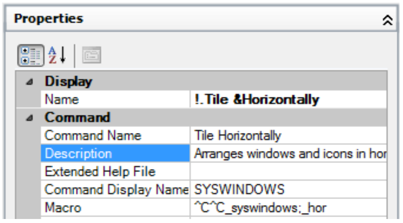
1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the menu that contains the command you want to mark.

3 Select the command you want to mark.



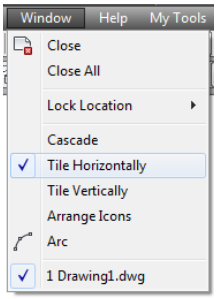
4 In the Properties pane, in the Name field, add an exclamation point and a period (`!.`) or add the desired DIESEL expression to the beginning of the command.



Display	
Name	**!.Tile &Horizontally**
Command	
Command Name	Tile Horizontally
Description	Arranges windows and icons in hor
Extended Help File	
Command Display Name	SYSWINDOWS
Macro	^C^C_syswindows;_hor

5 Click Apply.

The changes to the command will be visible after the changes have been applied and the CUI Editor is closed.



To simultaneously gray out (disable) and mark a command's menu or ribbon button label

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the menu that contains the command you want to disable and mark.

3 Select the command you want to gray out and mark.

4 In the Properties pane, in the Name field, add a tilde, an exclamation point, and a period (~!. or !.~) or add the desired DIESEL expression to the beginning of the command.

5 Click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

Assign Search Tags

With search tags, you can search for a command or a group of commands with the application menu.

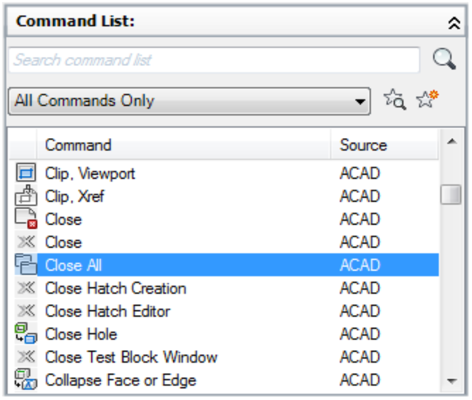
You can assign one or more tags to a command to make it easy to locate when performing a search from the application menu. You add tags to a command using the Tag Editor dialog box. When a tag is assigned to a command, it is displayed on a tooltip (when the command is on a toolbar or ribbon panel and the cursor hovers over the command).

You can change the display of tooltips on the Display tab of the Options dialog box. See Search for Commands in the *User's Guide* to learn more about using search in the application menu.

To add tags to a command

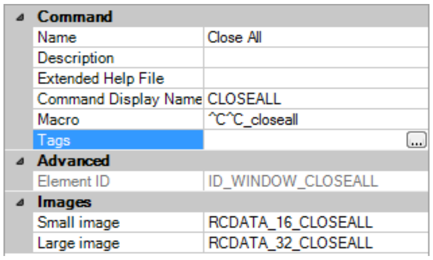
1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, Command List pane, select the command to which you want to add a tag.



Command	Source
Clip, Viewport	ACAD
Clip, Xref	ACAD
Close	ACAD
Close	ACAD
Close All	ACAD
Close Hatch Creation	ACAD
Close Hatch Editor	ACAD
Close Hole	ACAD
Close Test Block Window	ACAD
Collapse Face or Edge	ACAD

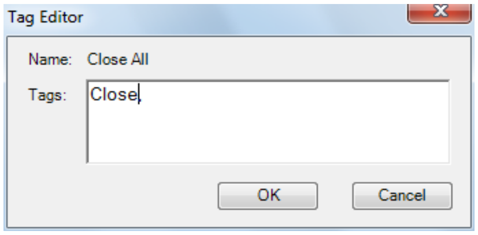
3 In the Properties pane, select the Tags field and click the [ ] button.



Command	
Name	Close All
Description	
Extended Help File	
Command Display Name	CLOSEALL
Macro	^C^C_closeall
Tags	
Advanced	
Element ID	ID_WINDOW_CLOSEALL
Images	
Small image	RCDATA_16_CLOSEALL
Large image	RCDATA_32_CLOSEALL

4 In the Tag Editor dialog box, in the Tags box, enter a tag.

As you enter a tag, a popup menu might display showing a list of previously used tags. Click a tag on the menu to use that tag. You can add more than one tag to a command; separate each tag with a comma.



Name: Close All

Tags: Close

5 To add another tag for a command, press the Left Arrow key and enter the tag. Repeat as needed.

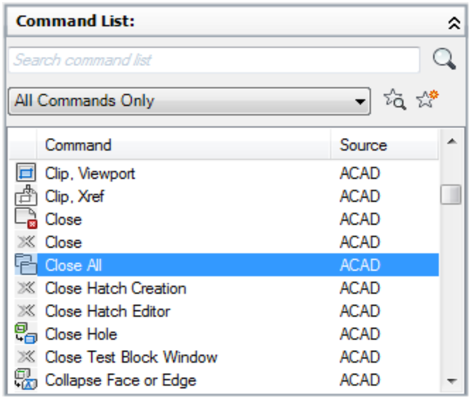
6 Click OK.

7 In the Customize User Interface Editor, click Apply.

To remove a tag from a command

1 Click Manage tab ➤ Customization panel ➤ User Interface.

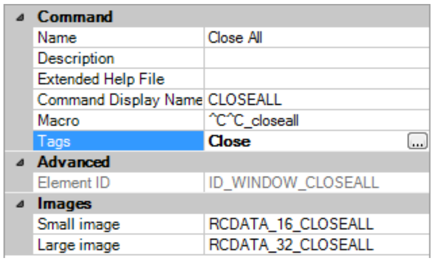
2 In the Customize User Interface Editor, Customize tab, Command List pane, select the command from which you want to remove a tag.



Command	Source
Clip, Viewport	ACAD
Clip, Xref	ACAD
Close	ACAD
Close	ACAD
Close All	ACAD
Close Hatch Creation	ACAD
Close Hatch Editor	ACAD
Close Hole	ACAD
Close Test Block Window	ACAD
Collapse Face or Edge	ACAD

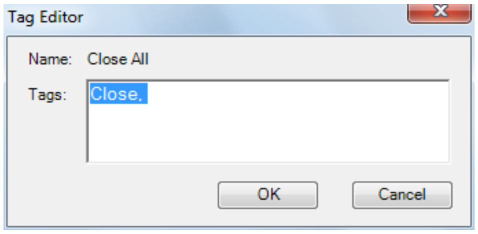
The Properties pane is displayed on the right side.

3 In the Properties pane, select the Tags field and click the [ ] button.



Command	
Name	Close All
Description	
Extended Help File	
Command Display Name	CLOSEALL
Macro	^C^C_closeall
Tags	Close
Advanced	
Element ID	ID_WINDOW_CLOSEALL
Images	
Small image	RCDATA_16_CLOSEALL
Large image	RCDATA_32_CLOSEALL

4 In the Tag Editor dialog box, in the Tags box, click the tag you want to remove. Press Delete.



Name: Close All

Tags: Close,

The tag is removed.

5 Click OK.

6 In the Customize User Interface Editor, click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

OPTIONS

Customizes the program settings.

Create Tooltips and Extended Help for Commands

Tooltips are descriptive messages that are displayed near the cursor when it hovers over a toolbar or panel button, or menu item.

The Description property associated to a command provides a simple description for what the command does. The value of the Description property is displayed as part of a basic tooltip that is displayed when the cursor hovers over a button on a toolbar, or ribbon panel. Along with the description, a command tooltip also displays the name of the command, and the values assigned to the Command Display Name and Tags properties.

Additionally, a command can be assigned an extended help file and ID so it can display a second level of information for the command. The content from the extended help file is displayed in the extended description area of a tooltip. The content for the extended description area of a tooltip is stored in an XAML file, and can contain rich-text and images.

Control the Display of Tooltips

You control the display of tooltips and when the extended help assigned to a command is displayed from the Options dialog box. See Set Interface Options in the *User's Guide* to learn more about tooltips.

Example of an XAML File

The XAML structure is a format that was developed by Microsoft. The following is an example of what an XAML file might look like for two custom commands that exist in your CUIx file.

```
<ResourceDictionary
 xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
 xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
 xmlns:src="clr-namespace:Autodesk.Windows;assembly=AdWindows">
 <src:RibbonToolTip x:Key="MYEH_CMD_0001">
 <src:RibbonToolTip.ExpandedContent>
 <StackPanel>
 <TextBlock Background="AntiqueWhite" TextAlignment="Center">
 Creates a rectangular revision cloud on the <Bold>REVISION</Bold>
 layer.
 </TextBlock>
 <Image Source="images/rectcloud.jpg" Width="Auto" Height="Auto">
 </Image>
 </StackPanel>
 </src:RibbonToolTip.ExpandedContent>
 </src:RibbonToolTip>
 <src:RibbonToolTip x:Key="MYEH_CMD_0002">
 <src:RibbonToolTip.ExpandedContent>
 <StackPanel>
 <TextBlock Background="Yellow" TextAlignment="Left">
 Creates a polygonal revision cloud on the
 <Run Text=" REVISION " Foreground="Red" FontStyle="Italic"/>
 layer.
 </TextBlock>
 <Image Source="images/rectcloud.jpg" Width="Auto" Height="Auto">
 </Image>
 </StackPanel>
 </src:RibbonToolTip.ExpandedContent>
 </src:RibbonToolTip>
</ResourceDictionary>
```

The ResourceDictionary element is used to define the type of content that is in the XAML file; while the scr:RibbonToolTip element is used to define each of the extended help topics in the file. In the previous example there are two different extended help topics, and they are uniquely defined by the keys MYEH_CMD_0001 and MYEH_CMD_0002.

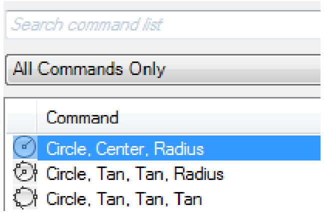
NOTE Extended tooltips defined to work with AutoCAD 2009 need to be updated to work with AutoCAD 2012. For information on converting an extended tooltip created for AutoCAD 2009 to work with AutoCAD 2012, see the procedure To convert an AutoCAD 2009 extended tooltip to work with AutoCAD 2012 on this page.

The Stack Panel element groups the TextBlock and Image elements together. You can have as many TextBlock and Image elements under a StackPanel element that you need. The TextBlock element holds the text; the Image element holds an illustration that is part of the extended help. To learn more about XAML, visit Microsoft's web site at *http://www.microsoft.com* and perform a search for XAML.

To add a tooltip to a command

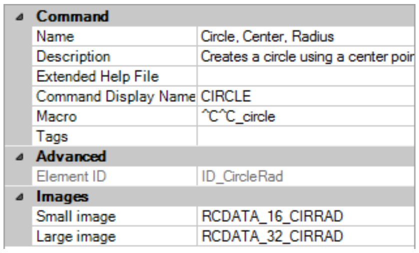
1. Click Manage tab ➤ Customization panel ➤ User Interface.

2. In the Customize User Interface Editor, Customize tab, Command List pane, click the command to which you want to add a tooltip.



Command
Circle, Center, Radius
Circle, Tan, Tan, Radius
Circle, Tan, Tan, Tan

3. In the Properties pane, Description field, enter the tooltip text for the selected command.



Command	
Name	Circle, Center, Radius
Description	Creates a circle using a center poir
Extended Help File	
Command Display Name	CIRCLE
Macro	^C^C_circle
Tags	
Advanced	
Element ID	ID_CircleRad
Images	
Small image	RCDATA_16_CIRRAD
Large image	RCDATA_32_CIRRAD

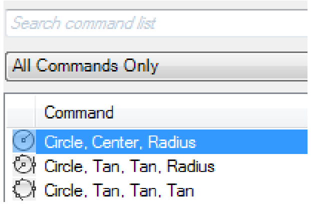
4. Click Apply.

   The next time the cursor hovers over the command on a toolbar, or ribbon panel, the text is displayed in the tooltip.

To add extended help to a command

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, Command List pane, click the command to which you want to add extended help.

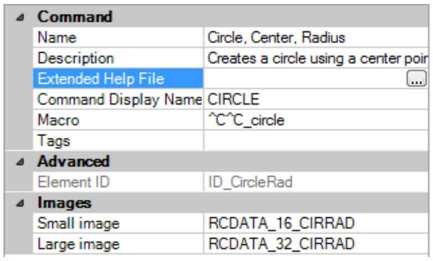


Search command list

All Commands Only

Command
Circle, Center, Radius
Circle, Tan, Tan, Radius
Circle, Tan, Tan, Tan

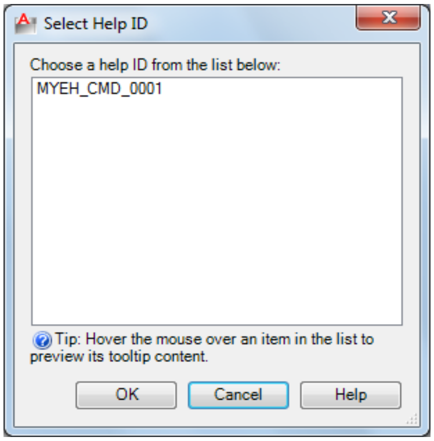
3 In the Properties pane, select the Extended Help File field and click [ ] button.



Command	
Name	Circle, Center, Radius
Description	Creates a circle using a center poir
Extended Help File	...
Command Display Name	CIRCLE
Macro	^C^C_circle
Tags	
Advanced	
Element ID	ID_CircleRad
Images	
Small image	RCDATA_16_CIRRAD
Large image	RCDATA_32_CIRRAD

4 In the Select Extended Help File dialog box, browse to and select the XAML file that contains the extended help for the command. Click Open.

5 In the Select Help ID dialog box, select the help ID for the extended help content. Click OK.



Choose a help ID from the list below:

MYEH_CMD_0001

Tip: Hover the mouse over an item in the list to preview its tooltip content.

6 Click Apply.

When the command is added to a toolbar or ribbon panel, the extended help is displayed if extended help is enabled for tooltips and the cursor hovers over the command for the designated time interval.

To create an XAML file

1 In a text editor (for example, Microsoft® Windows® Notepad), create a new file and enter the elements needed to define the extended help content.

As an example, enter the text below in the text editor:

```
<ResourceDictionary
 xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presenta
tion"
 xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
 xmlns:src="clr-namespace:Autodesk.Windows;assembly=AdWindows">
 <src:RibbonToolTip x:Key="MYEH_CMD_0003">
 <src:RibbonToolTip.ExpandedContent>
 <StackPanel>
 <TextBlock Background="AntiqueWhite" TextAlignment="Center">
 Configures the settings for the current drawing.
 </TextBlock>
 </StackPanel>
 </src:RibbonToolTip.ExpandedContent>
 </src:RibbonToolTip>
</ResourceDictionary>
```

2 Save the file as ASCII text (TXT file), with a file extension of *.xaml*.

To convert an AutoCAD 2009 extended tooltip to work with AutoCAD 2012

1 Open the XAML file in a text editor (for example, Microsoft® Windows® Notepad).

The following is an example of an extended tooltip created to use with AutoCAD 2009. You change the text shown in italic.

```
<src:ProgressivePanel x:Key="MYEH_CMD_0003">
<StackPanel>
<TextBlock Background="AntiqueWhite" TextAlignment="Center">
Configures the settings for the current drawing.
</TextBlock>
</StackPanel>
</src:ProgressivePanel>
```

2 Change the text shown in italic in the previous step to match the following:

```
<src:RibbonToolTip x:Key="MYEH_CMD_0003">
<src:RibbonToolTip.ExpandedContent>
<StackPanel>
<TextBlock Background="AntiqueWhite" TextAlignment="Center">
Configures the settings for the current drawing.
</TextBlock>
</StackPanel>
</src:RibbonToolTip.ExpandedContent>
</src:RibbonToolTip>
```

3 Save the changes made to the XAML file.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

OPTIONS

Customizes the program settings.

System Variables

TOOLTIPS

Controls the display of tooltips on the ribbon, toolbars, and other user interface elements.

Create Status Line Help Messages

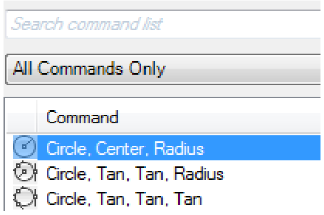
Status line help messages are simple, descriptive messages that are displayed on the status line (at the bottom of the application window) when the cursor hovers over a menu item.

You can change or add descriptions for menu items by updating the Description property for a related command. If the status bar for the program is not displayed, no descriptive message is displayed for the menu item. The current workspace controls the display of the application status bar for the program. See Set Interface Options in the *User's Guide* to learn more about workspaces.

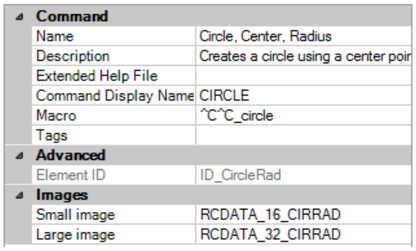
To create a status line help message

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, Command List pane, select the command to which you want to add a help message.



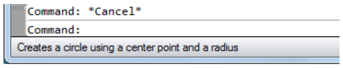
3 In the Properties pane, Description box, enter the descriptive text for the selected command.



Command	
Name	Circle, Center, Radius
Description	Creates a circle using a center poir
Extended Help File	
Command Display Name	CIRCLE
Macro	^C^C_circle
Tags	
Advanced	
Element ID	ID_CircleRad
Images	
Small image	RCDATA_16_CIRRAD
Large image	RCDATA_32_CIRRAD

4 Click Apply.

The next time you use the command, the descriptive text you added is displayed in the status line when the cursor hovers over the command on a menu.



```
Command: *Cancel*
Command:
Creates a circle using a center point and a radius
```

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

OPTIONS

Customizes the program settings.

Create and Manage Images for Commands

Images can be assigned to commands, and can be of two different types: standard and custom. Standard images come with AutoCAD in a library, while custom images are created and managed from the Button Image pane and the Button Editor dialog box in the Customize User Interface Editor.

Assign Images to a Command

Standard and custom images can be assigned to a command.

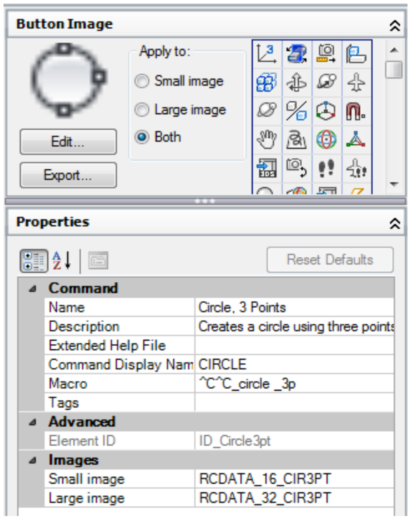
When a command is added to a ribbon or toolbar, the assigned image is displayed on the ribbon or toolbar button, or if added to a pull-down menu, the image is displayed next to the menu item.

AutoCAD comes with a library of standard images that are used for the standard commands; these can be assigned to your own custom commands. You can create your own custom commands using the Button Editor dialog box found in the Customize User Interface Editor or an external image editor. For more information about creating custom images for your commands, see Create Custom Images for Commands on page 184.

To assign an image to a command

1. Click Manage tab ➤ Customization panel ➤ User Interface.
2. In the Customize User Interface Editor, Customize tab, in the Command List pane, select command to which you want to add an image.

   The Button Image pane (in the upper-right corner) and the Properties pane (in the lower-right corner) are displayed.



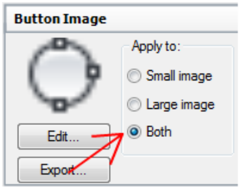
Apply to:
○ Small image
○ Large image
● Both

Command	
Name	Circle, 3 Points
Description	Creates a circle using three point
Extended Help File	
Command Display Nam	CIRCLE
Macro	^C^C_circle _3p
Tags	
Advanced	
Element ID	ID_Circle3pt
Images	
Small image	RCDATA_16_CIR3PT
Large image	RCDATA_32_CIR3PT

3. Do one of the following:

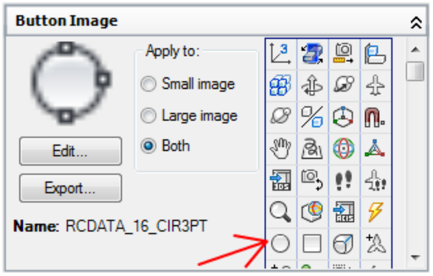
Assign a standard image

- In the Button Image pane, under Apply To, select one of the three image assignment options; Small Image, Large Image, or Both.



Apply to:
○ Small image
○ Large image
● Both

- Select an image from the image list and the image name is assigned to the Small, Large, or both the Small and Large image properties of the selected command.



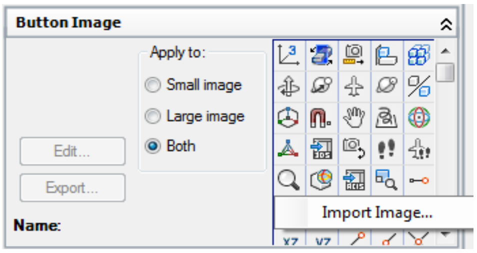
Apply to:
○ Small image
○ Large image
● Both

Name: RCDATA_16_CIR3PT

NOTE As you select an image from the image list, the image's name is displayed below the Export button in the Button Image pane.

Import and assign a custom image

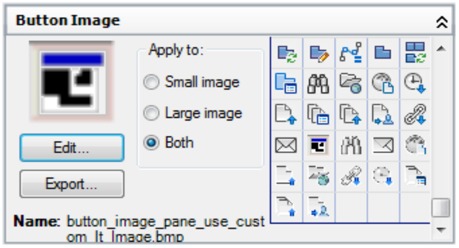
- In the Button Image pane, right-click in the list of images and click Import Image.



Apply to:
○ Small image
○ Large image
● Both

Name:

- In the Open dialog box, browse to and select the BMP file that you want to import and click Open.
- In the Button Image pane, under Apply To, select one of the three image assignment options; Small Image, Large Image, or Both. Then select the image you imported from the image list.



Apply to:
○ Small image
○ Large image
● Both

Name: button_image_pane_use_custom_lt_Image.bmp

4 Click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

Create Custom Images for Commands

Custom images can be created and assigned to a command.

Create custom images using the Button Editor (available from the CUI Editor), or using an external image editor. Start with an existing button image or create your own from scratch. By default, custom images are saved in the working customization file. Saved custom images can be exported to an external BMP file to use in other customization files.

NOTE Prior to AutoCAD 2010, custom images were stored separately from the customization file. In AutoCAD 2010 and later, images are stored as part of the CUIx file, making it easier to share with others.

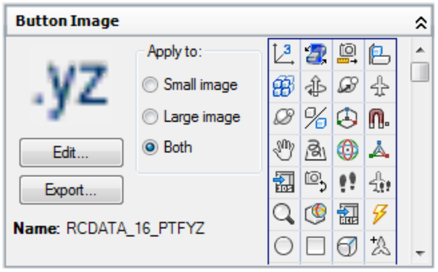
The internal Button Editor allows you to create two different sizes: small (16 x 16 pixels) and large (32 x 32 pixels). By default, images that do not match these sizes are scaled to fit.

If your icons are defined with sizes other than 16x16 pixels for small icons or 32x32 pixels for large icons, set RIBBONICONRESIZE to 0. AutoCAD does not resize ribbon icons to a standard size when RIBBONICONRESIZE is set to 0. You must also set Button Style for the command or drop-down menu to LargeWithoutText.

To create or edit a button image

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Command List pane or the Customizations In <*file name*> pane, click a command to display the Button Image pane (in the upper-right corner).



Button Image

Apply to:

○ Small image

○ Large image

● Both

Name: RCDATA_16_PTFYZ

3 In the Button Image pane, select an image from the image list that is closest in appearance to the image you want to create or select an existing image to edit. Click Edit.

TIP If you want to start with a blank image, select any image from the image list under the Button Images pane. Click Edit to display the Button Editor dialog box. In the Button Editor dialog box, click Clear.

4 In the Button Editor dialog box, use the Pencil, Line, Circle, and Erase buttons to create or edit the button image. To change the selected color, select a color from the color palette, or click More to open the Select Color dialog box.

- **Pencil button**. Edits one pixel at a time in the selected color. You can drag the pointing device to edit several pixels at once.

- **Line button**. Creates lines in the selected color. Click and hold to set the first endpoint of the line. Drag to draw the line. Release to complete the line.

- **Circle button**. Creates circles in the selected color. Click and hold to set the center of the circle. Drag to set the radius. Release to complete the circle.

- **Erase button**. Resets the color of one pixel at a time to the default canvas color.

NOTE Click Import to import a BMP file stored on a local or network drive to edit it in the Button Editor dialog box and store it in the working CUIx file.

5 Click Save.

The Save Image dialog box is displayed.

6 In the Save Image dialog box, Image Name text box, enter a name and click OK.

The image is saved to the working CUIx file.

7 Click Close.

You are returned to the Customize User Interface Editor.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

Manage, Import, and Export Custom Images

Custom images stored as externally saved BMP files can be imported into a loaded customization file and exported from a customization file to a local or network drive. Custom images can be deleted from a customization file in the Image Manager.

Prior to AutoCAD 2012, custom images used for commands in a customization file were stored on a local or network drive as separate BMP files or in a resource DLL. Resource DLLs are still maintained externally to customization files but starting with AutoCAD 2012, BMP files used by custom commands defined in a customization file are stored in the customization file.

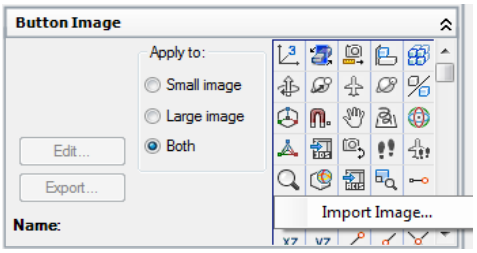
You can use the Image Manager, the Button Editor dialog box, or the Button Image pane to manage custom images in the loaded customization files. With the Image Manager, you can import and export custom images to and from a customization file. You can also use the Image Manager to see which custom images are currently stored in a loaded customization file and remove those that you no longer need. You can also use the Button Editor dialog box and Button Image pane to import and export custom images.

To import a custom image to the image list and the working customization file

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, in the Command List pane, select any command to display the Button Image pane.

3 In the Button Image pane, right-click the image list and click Import Image.



Button Image

Apply to:

○ Small image

○ Large image

● Both

Edit...

Export...

Name:

Import Image...

4 In the Open dialog box, browse to and select the BMP file that you want to import and click Open.

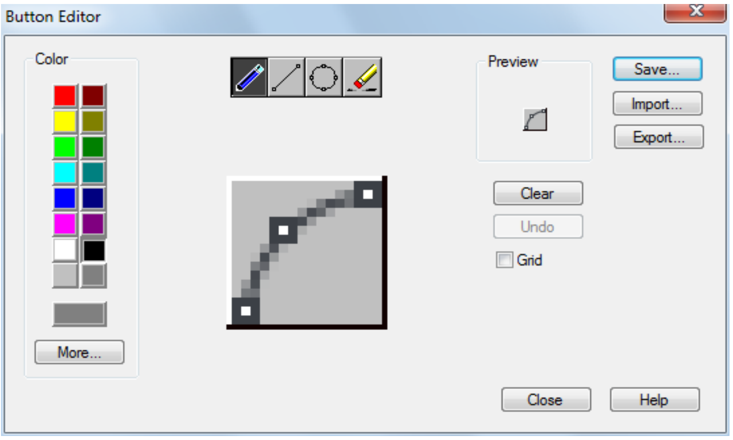
The image is added to the image list and can then be assigned to a command.

To export an image from the image list

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, in the Command List pane, select any command to display the Button Image pane.

3 In the Button Image pane, select the image to export, and click Export.



4 In the Export Image File dialog box, browse to the folder to which you want to export the image and enter a name for the image in the File Name text box.

5 Click Save.

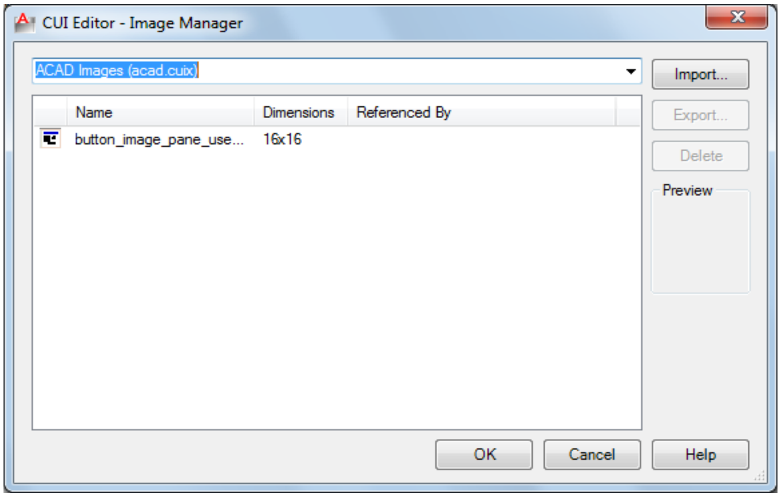
NOTE You can only export images in the BMP (**.bmp*, **.rle*, or **.dib*) format.

To import an image into a loaded customization file using the Image Manager

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <file name > pane, click Launches the Image Manager Dialog.

3 In the Image Manager, Loaded Customization Files drop-down list, select the loaded customization file into which you want to import a custom image.



Name	Dimensions	Referenced By
button_image_pane_use...	16x16	

4 In the Import Images dialog box, browse to and select the images you want to import. Click Open.

If the CUI Editor - Image Already Exists dialog box is displayed, click Import Image as Copy to create a copy of the image being imported or Overwrite Existing Image to replace the image with the one being imported.

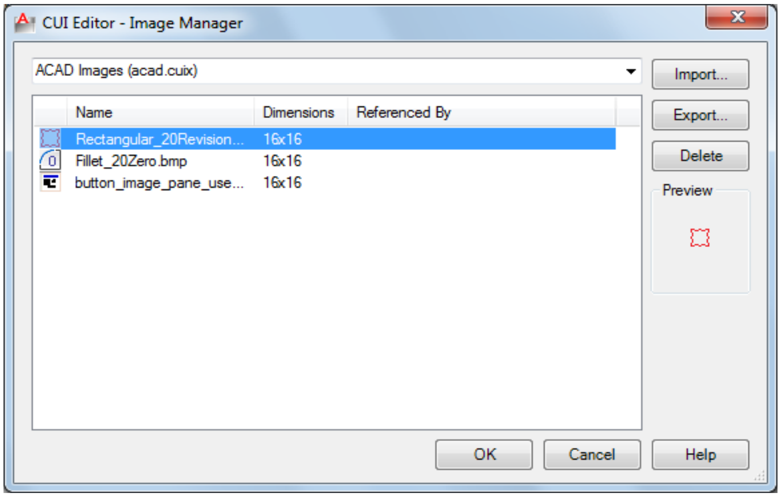
5 Click OK.

To export an image from a loaded customization file with the Image Manager

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <file name > pane, click Launches the Image Manager Dialog.

3 In the Image Manager, Loaded Customization Files drop-down list, select the loaded customization file that contains the custom image you want to export.



CUI Editor - Image Manager

ACAD Images (acad.cuix)

Name	Dimensions	Referenced By
Rectangular_20Revision...	16x16	
Fillet_20Zero.bmp	16x16	
button_image_pane_use...	16x16	

4 In the Custom Images list, select the image you want to export and click Export.

5 In the Browse For Folder dialog box, browse to the folder to which you want to export the selected images. Click OK.

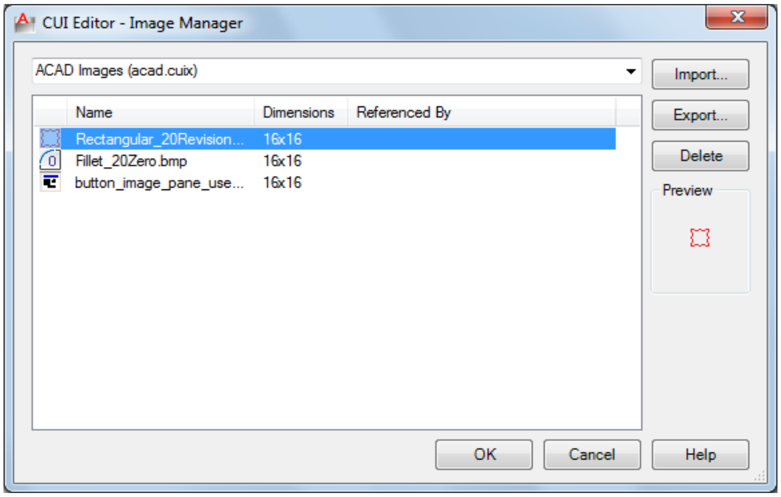
6 Click OK.

To delete an image from a loaded customization file

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <file name > pane, click Launches the Image Manager Dialog.

3 In the Image Manager, Loaded Customization Files drop-down list, select the loaded customization file that contains the custom image that you want to delete.



ACAD Images (acad.cuix)

Name	Dimensions	Referenced By
Rectangular_20Revision...	16x16	
Fillet_20Zero.bmp	16x16	
button_image_pane_use...	16x16	

4 In the Custom Images list, select the image you want to remove and click Delete.

5 In the CUI Editor - Confirm Deletion of Image dialog box, click Delete Image.

If the selected image is assigned to a command, the CUI Editor - Confirm Deletion of Referenced Image dialog box is displayed. The deletion of the image cannot be undone.

6 Click OK.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

System Variables

RIBBONICONRESIZE

Controls whether to resize icons on the ribbon to standard sizes.

Customize User Interface Elements

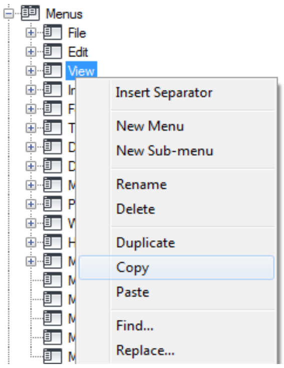
User interface elements in the Customize User Interface (CUI) Editor are used to control how standard and custom commands can be started.

To copy and paste a user interface element

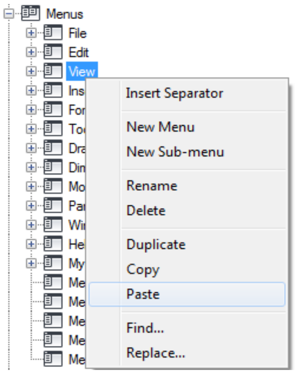
1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, Customizations In <*file name*> pane, expand the main node for the user interface element that you want to copy.

3 Right-click the user interface element, and click Copy.



4 Right-click the node that you want to paste the selected user interface element to, and click Paste.



NOTE The key combination Ctrl+C can be used to copy a user interface element and Ctrl+V can be used to paste a user interface element in the Customizations In <*file name*> pane.

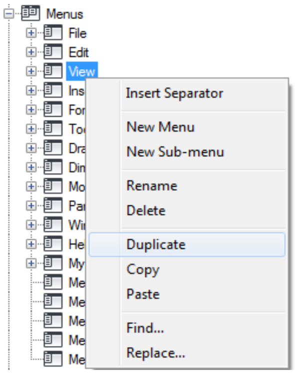
5 Click Apply.

To duplicate a user interface element

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, Customizations In <*file name*> pane, expand the main node for the user interface element that you want to duplicate.

3 Right-click the user interface element, and click Duplicate.



A copy of the selected user interface element is created in-place directly above the selection in the Customizations In <*file name*> pane.

NOTE The key combination Ctrl+D can be used to duplicate a user interface element in-place.

4 Click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

Quick Access Toolbars

The Quick Access toolbar is located along the top of the application window (above or below the ribbon) and provides direct access to a defined set of commands.

The Quick Access toolbar is always located in the same place in the program, but different commands may be displayed on it based on the current workspace. You can customize the Quick Access toolbar by

- Creating Quick Access toolbars under the Customizations In <*file name*> pane and then adding the Quick Access toolbar to a workspace under the Workspace Contents pane in the Customize User Interface (CUI) Editor.
- Adding commands directly to the Quick Access toolbar from the ribbon or when the Customize User Interface (CUI) Editor is displayed. You can also remove commands when the Customize User Interface (CUI) Editor is displayed or not.

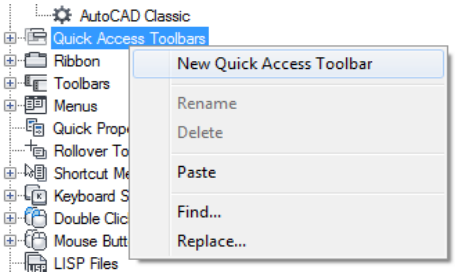
Customizing a Quick Access toolbar is similar to customizing a ribbon panel or toolbar. You can add, remove, and reposition commands and controls to tailor the user interface element to the way you work. You can also add drop-downs and separators to group and organize related commands.

Once a Quick Access toolbar has been defined, it can be displayed in the application window by assigning it to the Quick Access Toolbar node of a workspace under the Workspace Contents pane. For more information about assigning a Quick Access toolbar to a workspace, see To display a Quick Access toolbar on page 362.

NOTE You can add controls to a Quick Access toolbar. The controls you can add are listed under Ribbon Controls in the drop-down list under the Command List pane.

To create a Quick Access toolbar

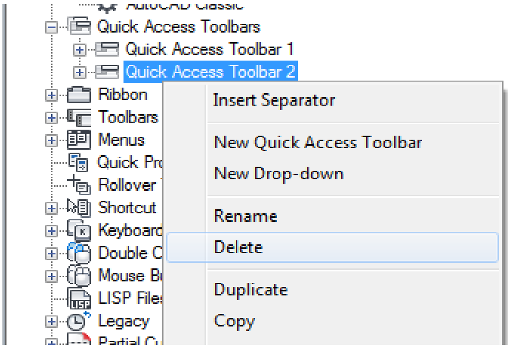
1. Click Manage tab ➤ Customization panel ➤ User Interface. CUI
2. In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, right-click Quick Access Toolbars. Click New Quick Access Toolbar.

   A new Quick Access toolbar (named Quick Access Toolbar1) is placed at the bottom of the Quick Access Toolbars tree.
3. Do one of the following:
   - Enter a new name over the default name Quick Access Toolbar1.
   - Right-click Quick Access Toolbar1. Click Rename. Enter a new name.
   - Click Quick Access Toolbar1, wait, and click again over the Quick Access toolbar's name again to edit its name in-place.
4. Click Apply.

To delete a Quick Access toolbar

1. Click Manage tab ➤ Customization panel ➤ User Interface. CUI
2. In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Quick Access Toolbars node to expand it.
3. Right-click the Quick Access toolbar you want to delete and click Delete.



4 Click Apply.

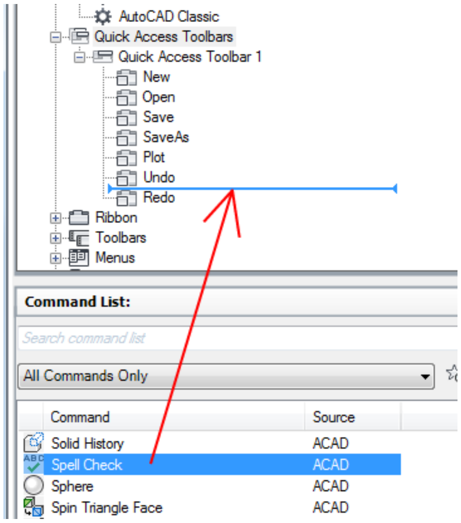
To add a command or control to a Quick Access toolbar from the CUI Editor

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Quick Access Toolbars node to expand it.

3 Click the plus sign (+) next to the Quick Access toolbar that you want to modify.

4 Under the Command List pane, drag the command or control you want to add to the Quick Access toolbar from the Command List pane to the Quick Access Toolbar node under the Customizations In <*file name*> pane.



Command	Source
Solid History	ACAD
Spell Check	ACAD
Sphere	ACAD
Spin Triangle Face	ACAD

A splitter bar is displayed to indicate the location where the command or control will be added when you release the pointing device button.

5 Once the splitter bar is in the location you want to insert the command or control, release the pointing device button.

6 Click Apply.

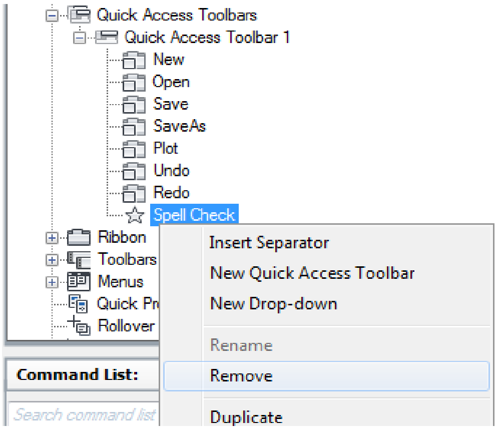
To remove a command or control from a Quick Access toolbar with the CUI Editor

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Quick Access Toolbars node to expand it.

3 Click the plus sign (+) next to the Quick Access toolbar from which you want to remove a command or control.

4 Right-click the command you want to remove and click Remove.



5 Click Apply.

To add a command to the Quick Access toolbar outside the CUI Editor

Do one of the following:

- Right-click a command on the ribbon, and click Add to Quick Access Toolbar.
- On the Quick Access toolbar, click the Customize button located on the right side and select one of the listed commands or select More Commands. Selecting More Commands displays the Customize User Interface (CUI) Editor in a compact state. Drag commands from the Command List pane to the Quick Access toolbar in the application window.

To remove a command from the Quick Access toolbar outside the CUI Editor

- Right-click the command you want to remove and click Remove from Quick Access Toolbar.

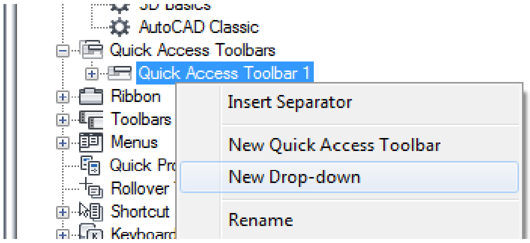
To add a drop-down to a Quick Access toolbar

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Quick Access Toolbars node to expand it.

3 Click the plus sign (+) next to the Quick Access toolbar that you want to modify.

4 Right-click the Quick Access toolbar which you want to add a drop-down to. Click New Drop-down.



A new drop-down (named New Drop-down) is added to the bottom of the Quick Access toolbar.

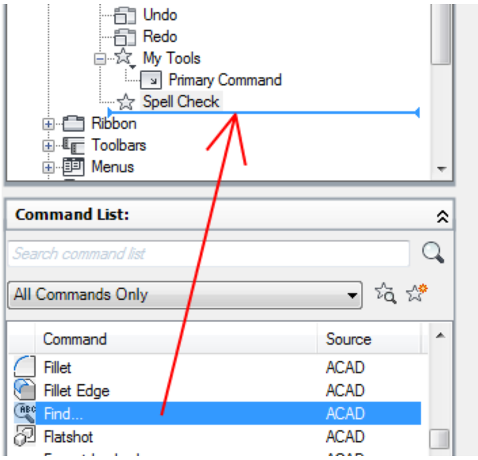
5 Right-click the new drop-down. Click Rename. Enter a new name.

NOTE You can click, wait, and click again over a drop-down name to edit its name in-place in the Customizations In <*file name*> pane.

---

6 Drag the drop-down under the Quick Access toolbar to the position where you want it placed. Use the visual indicator bar that is displayed to help specify the location for the drop-down. Release the pointing device button to reposition the drop-down.

7 Under the Command List pane, drag the command or control you want to add to the Quick Access toolbar from the Command List pane to the Quick Access Toolbar node under the Customizations In <*file name*> pane.



Command	Source
Fillet	ACAD
Fillet Edge	ACAD
Find...	ACAD
Flatshot	ACAD

A visual indicator bar is displayed to indicate the location where the command or control will be added when the pointing device button is released.

8 Once the splitter bar is in the location where you want to insert the command or control, release the pointing device button.

9 Adjust the properties of the drop-down as desired to control the appearance of the drop-down and the commands under the drop-down. on page 216

10 If the drop-down will use the Split behavior, add a command to the Primary Command node under the drop-down to set the command for the main button.

11 Click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

Ribbon

You can customize the ribbon by creating and modifying ribbon panels and organizing ribbon panels into groups of task-based tools with ribbon tabs. Ribbon tabs can be displayed on the ribbon with a workspace or based on a contextual tab state when they are needed.

Ribbon Panels

By customizing ribbon panels, you can organize commands that you use frequently similar to toolbars. With ribbon panels, you can quickly access commands, and reduce the number of user interface elements that are displayed.

Overview of Ribbon Panels

Ribbon panels are organized by rows, sub-panels, and slideout elements. Rows and sub-panels are used to organize how commands and controls are displayed on the ribbon panel. A slideout is automatically added to each ribbon panel and controls which rows are shown by default. Rows located below a slideout are displayed only when a ribbon panel is expanded.

The following table describes the properties of the Home 2D - Draw ribbon panel as they appear in the Properties pane.

Properties for the Home 2D - Draw Ribbon Panel

Properties Pane Item	Description	Example
Name	Name of the panel; does not appear in the user interface.	Home 2D - Draw
Display Text	Title of the panel; displayed when the ribbon is set to display titles or when a panel is floating.	Draw
Description	Text used to describe the element; does not appear in the user interface and is optional.	
KeyTip	Specifies the keytip characters that can be used to access the ribbon panel from the keyboard.	

Properties for the Home 2D - Draw Ribbon Panel

Properties Pane Item	Description	Example
Aliases	Specifies the aliases for the panel. Click the [ ] button to open the Aliases dialog box. Each alias in the CUIx file should be unique and is used to reference the panel programmatically.	ID_Draw
Element ID	Tag that uniquely identifies a panel.	ID_PanelDraw

Create a Ribbon Panel

Ribbon panels can be created from scratch or from an existing toolbar or dashboard panel. Create ribbon panels from scratch under the Ribbon Panels node on the Customizations In <*file name*> pane of the Customize tab. This gives you control over which commands are displayed on the ribbon panel.

If you have an existing toolbar or dashboard panel from a previous release, you can create a new ribbon panel from them. Copy toolbars to a ribbon panel from the Toolbars node under the Customizations In <*file name*> pane on the Customize or Transfer tabs. Dashboard panels can only be copied to ribbon panels from the Dashboard Panels node on the Transfer tab.

Display Ribbon Panels on the Ribbon

The display of ribbon panels is controlled with ribbon tabs. Once a ribbon tab is defined, the ribbon tab can be added to a workspace, which controls which ribbon tabs are displayed and the order in which they are displayed on the ribbon. For more information about ribbon tabs, see Ribbon Tabs on page 238 under Customize User Interface Elements on page 192.

Associating Tool Palette Group with a Ribbon Panel

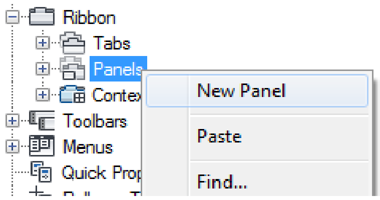
You can associate a tool palette group with a ribbon panel. By associating a tool palette group to a ribbon panel you can quickly access additional tools that are related to a ribbon panel and are defined on a tool palette. The association of a tool palette group to a ribbon panel is done from the ribbon. For more information about tool palettes and tool palette groups, see Customize Tool Palettes and Organize Tool Palettes in the *User's Guide*.

To create a ribbon panel

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Ribbons node to expand it.

3 Right-click Panels. Click New Panel.

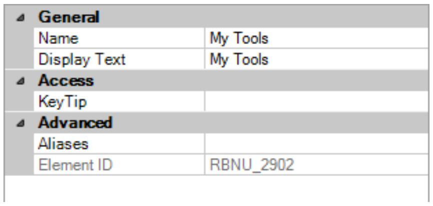


A new panel (named Panel1) is placed at the bottom of the Ribbon Panels tree.

4 Right-click Panel1. Click Rename. Enter a new panel name.

5 Select the new panel, and update its properties in the Properties pane:

- In the Display Text box, enter the text you want to display for the title of the panel when it is displayed on the ribbon.
- In the KeyTip box, enter the characters to access the ribbon panel from the keyboard.
- In the Aliases box, enter an alias for the ribbon panel.



General	
Name	My Tools
Display Text	My Tools
Access	
KeyTip	
Advanced	
Aliases	
Element ID	RBNU_2902

6 Click Apply.

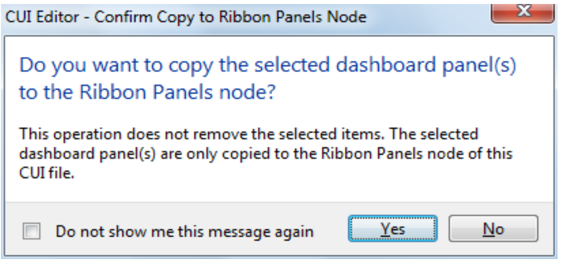
To copy a toolbar to a ribbon panel

1. Click Manage tab ➤ Customization panel ➤ User Interface.
2. In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Toolbars to expand it.
3. Right-click the toolbar that you want to copy to a ribbon panel. Click Copy to Ribbon Panels.
4. In the CUI Editor - Confirm Copy to Ribbon Panels Node dialog box, click Yes.

   The copied toolbar is copied to the Panels node under the Ribbons node.
5. Click Apply.

To copy a dashboard panel to a ribbon panel

1. Click Manage tab ➤ Customization panel ➤ User Interface.
2. In the Customize User Interface Editor, Transfer tab, in the Customizations In <*file name*> pane on the right, click Open Customization File.
3. In the Open dialog box, Files of Type drop-down list, select Legacy Customization Files (*.cui).
4. Browse to and select the customization (CUI) file that contains the dashboard panels you want to copy to ribbon panels. Click Open.
5. Click the plus sign (+) next to Dashboard Panels to expand it.
6. Right-click over the dashboard panel you want to copy to a ribbon panel. Click Copy to Ribbon Panels.
7. In the CUI Editor - Confirm Copy to Ribbon Panels Node dialog box, click Yes.



CUI Editor - Confirm Copy to Ribbon Panels Node

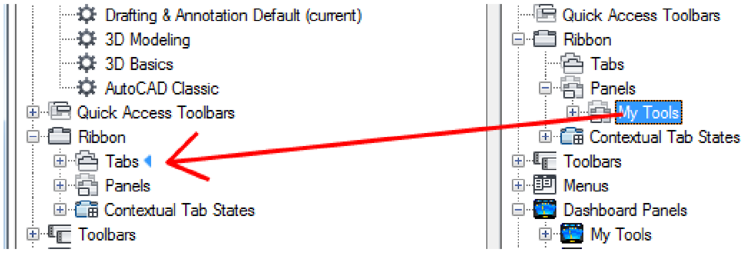
Do you want to copy the selected dashboard panel(s) to the Ribbon Panels node?

This operation does not remove the selected items. The selected dashboard panel(s) are only copied to the Ribbon Panels node of this CUI file.

□ Do not show me this message again

The copied dashboard panel is copied to the Panels node under the Ribbons node.

8 Drag the new ribbon panel from the Customizations In <*file name*> pane on the right to the Panels node of one of the loaded CUIx files in the Customizations In <*file name*> pane on the left.



9 Click Apply.

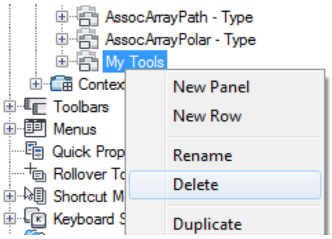
To remove a ribbon panel

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Ribbon to expand it.

3 Click the plus sign (+) next to Panels to expand it.

4 Right-click the panel that you want to remove. Click Delete.



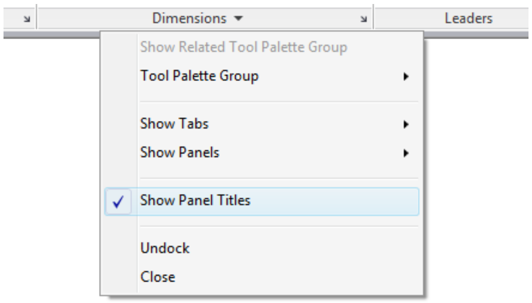
WARNING There is no way to undo the removal of a user interface element, so be careful when removing user interface elements. If you remove the wrong user interface element, the best thing to do is click Cancel to not save changes, but this will also undo any other changes that you might have made.

5 In the AutoCAD message box, click Yes.

6 Click Apply.

To control the display of ribbon panel titles on the ribbon

- Right-click a ribbon tab on the ribbon, and click Show Panel Titles.



To assign a command to the Panel Dialog Box Launcher

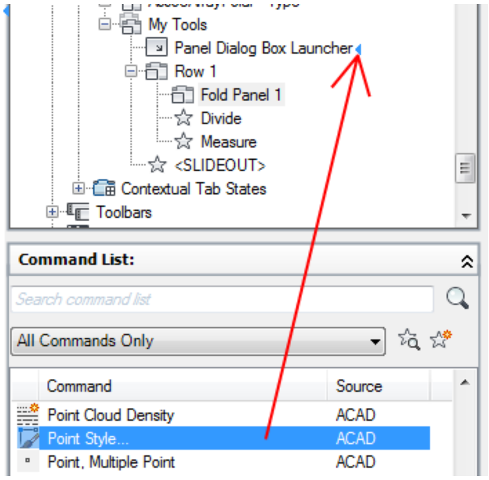
1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Ribbon to expand it.

3 Click the plus sign (+) next to Panels to expand it.

4 Click the plus sign (+) next to the ribbon panel where you want to assign a command to its Panel Dialog Box Launcher node.

5 Drag a command from the Command List pane to the Panel Dialog Box Launcher node for the panel.



Command	Source
Point Cloud Density	ACAD
Point Style...	ACAD
Point, Multiple Point	ACAD

6 Click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

RIBBON

Opens the ribbon window.

RIBBONCLOSE

Closes the ribbon window.

Add and Organize Commands and Controls on a Ribbon Panel

Commands and controls are added to and organized with rows and sub-panels on a ribbon panel.

You can add and rearrange the commands and controls on a row that you use often, and you can remove those from a row that you use infrequently. Rows are used to hold and organize commands and controls on a ribbon panel. Along with using rows to organize commands, you can also create drop-downs that contain multiple commands and only take up the space of a single command. For more information about drop-downs on ribbon panels, see Add Drop-downs to a Ribbon Panel on page 219.

In addition to using rows and sub-panels to organize commands, you can also use menu separators. Menu separators are used to add space or lines between commands and controls.

The following table describes the properties for the Line command of Row 1 on the Home 2D - Draw ribbon panel as they appear in the Properties pane.

Properties for the Line Command on Row 1 of the Home 2D - Draw Ribbon Panel

Properties Pane Item	Description	Example
Name	Text used as the name and label of the command button; does appear in the user interface. **NOTE** Use the "\n" character sequence to represent a line break and display a command label on more than one line. The "\n" character sequence is displayed as a space instead of the characters "\n" after the changes to the command are saved.	Line
Button Style	Controls the size and the label display of the command. The available options are Large With Text (Vertical), Large With Text (Horizontal), SmallWithText, SmallWithoutText, or LargeWithoutText. **NOTE** It is recommended to not use the Large With Text (Horizontal) option as it takes up extra space on the ribbon. If your icons are defined with sizes other than 16x16 for small icons or 32x32 for large icons, set RIBBONICONRESIZE to 0. AutoCAD does not resize ribbon icons to a standard size when RIBBONICONRESIZE is set to 0. Additionally,	Large with Text (Vertical)

Properties for the Line Command on Row 1 of the Home 2D - Draw Ribbon Panel

Properties Pane Item	Description	Example
	Button Style for the command or drop-down menu must be set to LargeWithoutText.	
Group Name	Specifies the group name assigned to the command that is used to control the organization of the command on a drop-down.	
Command Name	Text that contains the name of the command as it appears in the Command List pane.	Line
Description	Text used to describe the element; does not appear in the user interface.	Creates straight line segments
Extended Help File	Text that displays the file name and ID for the extended tooltip that is displayed when the cursor hovers over a toolbar or panel button.	
Command Display Name	Text that contains the name of the command that is related to the command.	LINE
Macro	The command macro. It follows the standard macro syntax. **NOTE** When you change the name of a macro, the name of its corresponding menu item or toolbar button does not change. You must change a menu item or toolbar button name by selecting it in the tree view.	^C^C_line
Tags	Keywords associated to a command. Tags provide an additional field to search when using the Search field in the application menu.	
KeyTip	Specifies the keytip characters that can be used to access the command from the keyboard.	LI
Tooltip Title	Text string that controls the title of the tooltip for the command.	

Properties for the Line Command on Row 1 of the Home 2D - Draw Ribbon Panel

Properties Pane Item	Description	Example
Element ID	Tag that uniquely identifies a command.	UIDU_0005
Small Image	ID string of the small-image resource (16 × 16 bitmap). The string must include alphanumeric characters with no punctuation other than a hyphen (-) or an underscore (_). It can also be a user-defined bitmap. Click the [ ] button to open the Select Image File dialog box.	RCDATA_16_LINE
Large Image	ID string of the large-image resource (32 × 32 bitmap). If the specified bitmap is not 32 × 32, the program scales it to that size. The string must include alphanumeric characters with no punctuation other than a hyphen (-) or an underscore (_). It can also be a user-defined bitmap. Click the [ ] button to open the Select Image File dialog box.	RCDATA_32_LINE

Organize Commands and Controls with Rows

A row, similar to a toolbar, determines the order and position that commands and controls appear on a ribbon panel. Rows run horizontally on a ribbon panel no matter if the ribbon is displayed horizontally or vertically. Not all rows might be displayed by default on a ribbon panel, the <SLIDEOUT> element controls which rows are displayed without expanding a ribbon panel. A down arrow to the right of a ribbon panel's title indicates that the ribbon panel can be expanded.

Organize Rows with Sub-panels

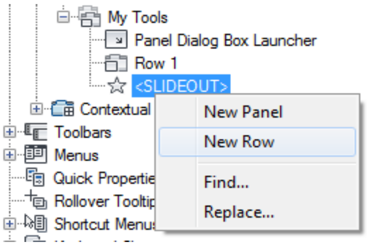
Sub-panels do not directly contain commands. Instead, sub-panels are used in combination with rows to organize commands and controls on a ribbon panel.

Organize Rows with Fold Panels

Fold panels can have buttons, toggles button, split buttons, and drop-down buttons. Button Style must be set to Large with Text. Fold panels can be converted to sub-panels.

To add a row to a ribbon panel

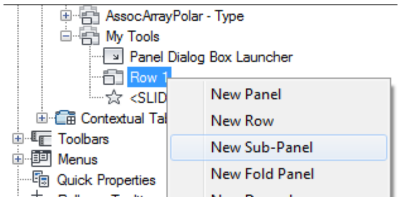
1. Click Manage tab ➤ Customization panel ➤ User Interface.
2. In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Ribbon to expand it.
3. Click the plus sign (+) next to Panels to expand it.
4. Right-click the ribbon panel to which you want to add a row. Click New Row.



5. Click Apply.

To add a sub-panel or fold panel to a row on a ribbon panel

1. Click Manage tab ➤ Customization panel ➤ User Interface.
2. In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Ribbon to expand it.
3. Click the plus sign (+) next to Panels to expand it.
4. Click the plus sign (+) next to the ribbon panel where you want to add a sub-panel or fold panel.
5. Create a new row for the sub-panel or fold-panel if needed, or click the plus sign (+) next to the row where you want to add a sub-panel or fold panel.
6. Right-click the row where you want to add a sub-panel or fold-panel. Click New Sub-Panel or New Fold Panel.



7 Click Apply.

To remove a row or sub-panel from a ribbon panel

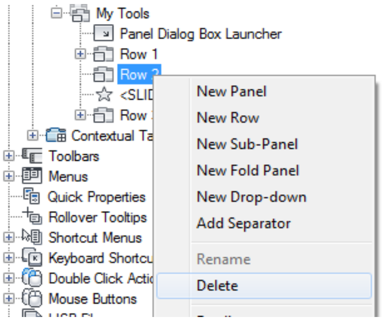
1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Ribbon to expand it.

3 Click the plus sign (+) next to Panels to expand it.

4 Click the plus sign (+) next to the ribbon panel from which you want to remove a row or sub-panel.

5 Right-click the row or sub-panel that you want to remove. Click Delete.



6 Click Apply.

To reposition a row or sub-panel on a ribbon panel

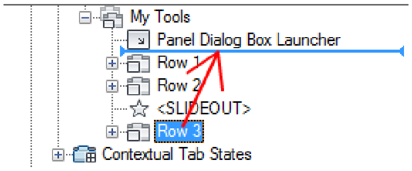
1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Ribbon to expand it.

3 Click the plus sign (+) next to Panels to expand it.

4 Click the plus sign (+) next to the ribbon panel where you want to reposition a row or sub-panel.

5 Drag the row or sub-panel that you want to reposition up or down under the ribbon panel's node. Use the visual indicator bar to position the row above or below other rows or sub-panels.



6 Click Apply.

To add a command to a ribbon panel

1 Click Manage tab ➤ Customization panel ➤ User Interface.

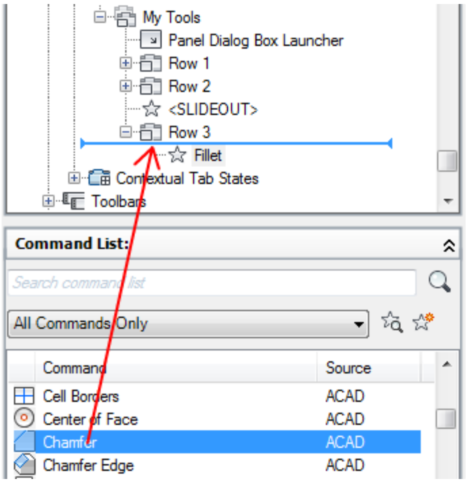
2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Ribbon to expand it.

3 Click the plus sign (+) next to Panels to expand it.

4 Click the plus sign (+) next to the ribbon panel where you want to add a command.

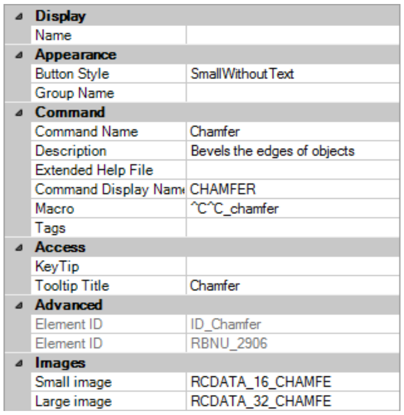
5 Click the plus sign (+) next to the rows, sub-panels, or drop-downs to get to the location you want to add a command.

6 Drag a command from the Command List pane to a row, sub-panel, or drop-down on the panel. Use the visual indicator bar to specify the position of the command.



Command	Source
Cell Borders	ACAD
Center of Face	ACAD
Chamfer	ACAD
Chamfer Edge	ACAD

7 In the Properties pane, change the properties of the command you added on page 216.



Display	
Name	
Appearance	
Button Style	SmallWithoutText
Group Name	
Command	
Command Name	Chamfer
Description	Bevels the edges of objects
Extended Help File	
Command Display Nam	CHAMFER
Macro	^C^C_chamfer
Tags	
Access	
KeyTip	
Tooltip Title	Chamfer
Advanced	
Element ID	ID_Chamfer
Element ID	RBNU_2906
Images	
Small image	RCDATA_16_CHAMFE
Large image	RCDATA_32_CHAMFE

8 Click Apply.

To remove a command from a ribbon panel

1 Click Manage tab ➤ Customization panel ➤ User Interface.

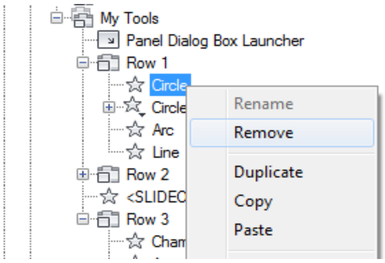
2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Ribbon to expand it.

3 Click the plus sign (+) next to Panels to expand it.

4 Click the plus sign (+) next to the ribbon panel where you want to remove a command.

5 Click the plus sign (+) next to the rows, sub-panels, or drop-downs to get to the location you want to remove a command.

6 Right-click the command that you want to remove. Click Remove.



7 Click Apply.

To reposition a command on a ribbon panel

1 Click Manage tab ➤ Customization panel ➤ User Interface.

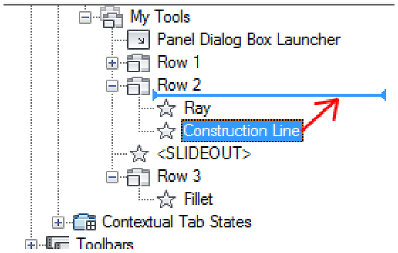
2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Ribbon to expand it.

3 Click the plus sign (+) next to Panels to expand it.

4 Click the plus sign (+) next to the ribbon panel where you want to reposition a command.

5 Click the plus sign (+) next to the rows, sub-panels, or drop-downs to get to the location you want to reposition a command.

6 Drag the command to a new location. Use the visual indicator bar to specify the position of the command.



- My Tools
  - Panel Dialog Box Launcher
  - Row 1
  - Row 2
    - Ray
    - Construction Line
  - <SLIDEOUT>
  - Row 3
    - Fillet
- Contextual Tab States
- Toolbars

7 Click Apply.

To change the display and behavior of commands, controls and drop-downs on a ribbon panel

- Do one of the following:

To show the label and set the orientation of a command or drop-down on a ribbon panel

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Ribbon to expand it.

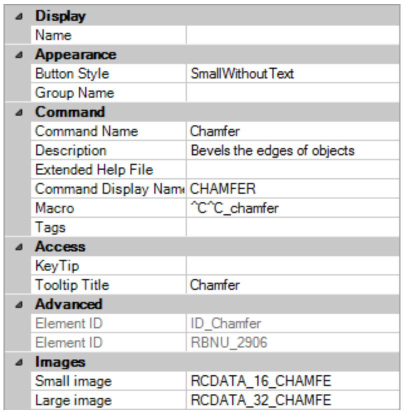
3 Click the plus sign (+) next to Panels to expand it.

4 Click the plus sign (+) next to the ribbon panel where you want to show the label for a command.

5 Click the plus sign (+) next to the row, sub-panel, or drop-down where you want to show the label for a command. If you need to, continue expanding rows, sub-panels, and drop-downs to get to the command or drop-down.

6 Select the command that you want to show its label for.

7 In the Properties pane, Button Style box, click the down arrow and select Large With Text (Vertical), Large With Text (Horizontal), or SmallWithText.



Display	
Name	
Appearance	
Button Style	SmallWithoutText
Group Name	
Command	
Command Name	Chamfer
Description	Bevels the edges of objects
Extended Help File	
Command Display Nam	CHAMFER
Macro	^C^C_chamfer
Tags	
Access	
KeyTip	
Tooltip Title	Chamfer
Advanced	
Element ID	ID_Chamfer
Element ID	RBNU_2906
Images	
Small image	RCDATA_16_CHAMFE
Large image	RCDATA_32_CHAMFE

8 Click Apply.

To set the size of a command or drop-down on a ribbon panel

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Ribbon to expand it.

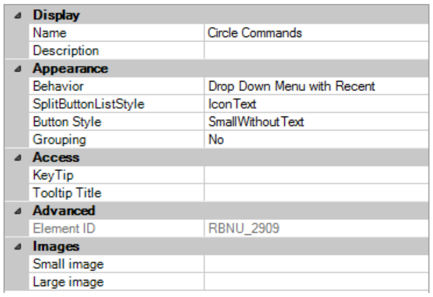
3 Click the plus sign (+) next to Panels to expand it.

4 Click the plus sign (+) next to the ribbon panel which has the command or drop-down for which you want to set the size.

5 Click the plus sign (+) next to the row or sub-panel that has the command or drop-down for which you want to set the size. If you need to, continue expanding rows, sub-panels, and drop-downs to get to the command or drop-down.

6 Select the command or drop-down for which you want to set the size.

7 In the Properties pane, Button Style box, click the down arrow and select Large With Text (Vertical), Large With Text (Horizontal), SmallWithText, SmallWithoutText, or LargeWithoutText.



Display	
Name	Circle Commands
Description	
Appearance	
Behavior	Drop Down Menu with Recent
SplitButtonListStyle	IconText
Button Style	SmallWithoutText
Grouping	No
Access	
KeyTip	
Tooltip Title	
Advanced	
Element ID	RBNU_2909
Images	
Small image	
Large image	

8 Click Apply.

To set the button and style of a drop-down on a ribbon panel

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Ribbon to expand it.

3 Click the plus sign (+) next to Panels to expand it.

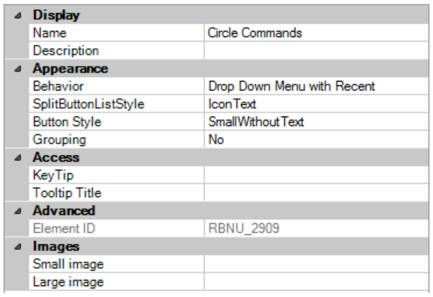
4 Click the plus sign (+) next to the ribbon panel where you want to change the style of a drop-down.

5 Click the plus sign (+) next to the row or sub-panel that contains the drop-down you want to change. If you need to, continue expanding rows and sub-panels to get to the drop-down.

6 Select the drop-down that you want to change, and update its properties in the Properties pane:

- In the Behavior box, click the down arrow and select Drop Down Menu with Recent, Drop Down Menu, Split with Recent, Split, or Split with Recent (Static).

- In the Split Button List Style box, click the down arrow and select Icon, Icon and Text, and Descriptive.



Display	
Name	Circle Commands
Description	
Appearance	
Behavior	Drop Down Menu with Recent
SplitButtonListStyle	IconText
Button Style	SmallWithoutText
Grouping	No
Access	
KeyTip	
Tooltip Title	
Advanced	
Element ID	RBNU_2909
Images	
Small image	
Large image	

7 Click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

RIBBON

Opens the ribbon window.

RIBBONCLOSE

Closes the ribbon window.

System Variables

RIBBONICONRESIZE

Controls whether to resize icons on the ribbon to standard sizes.

Add Drop-downs to a Ribbon Panel

Drop-downs can be used to group multiple related commands into a single button.

Ribbon panel drop-downs, like toolbar flyouts, that can hold a number of commands in a single place on a ribbon panel. Drop-downs are used to help reduce the amount of space that related commands can take up. Commands on a drop-down can be started by clicking the main button or selecting a command from the menu when the main or split button is clicked based on how the properties of a drop-down are configured. When a drop-down is set as a split button, the main button can reflect the most recently used command or not, or display the image of the most recently used command with a static label.

The following table describes the properties for the Arc drop-down of Row 1 on under Sub-Panel 1 of the Home 2D - Draw ribbon panel as they appear in the Properties pane.

Properties for the Arc Drop-down on Row 1 of the Home 2D - Draw Ribbon Panel

Properties Pane Item	Description	Example
Name	Logical name for the drop-down; does not appear in the user interface. **NOTE** The "\n" character sequence represents a line break in a command label, which is used to allow a command label to be displayed on more than one line. Once focus from the Name field is lost, the "\n" character sequence is displayed as a space instead of the characters "\n".	Arc
Description	Text used to describe the element; does not appear in the user interface.	
Behavior	Specifies if the button executes a command or displays a list of commands. The available options are Drop Down Menu with Recent, Drop Down Menu, Split with Recent, Split, Split with Recent (Static).	Split with Recent
Split Button List Style	Specifies how the commands on the drop-down will be displayed. The available options are Icon, IconText, or Descriptive.	IconText
Button Style	Controls the size and the label display of the drop-down. The available options are Large With Text (Vertical), Large With Text (Horizontal), SmallWithText, SmallWithoutText, or LargeWithoutText. **NOTE** It is recommended to not use the Large With Text (Horizontal) option as it takes up extra space on the ribbon. If your icons are defined with sizes other than 16x16 for small icons or 32x32 for large icons, set RIB-	Large with Text (Vertical)

Properties for the Arc Drop-down on Row 1 of the Home 2D - Draw Ribbon Panel

Properties Pane Item	Description	Example
	BONICONRESIZE to 0. AutoCAD does not resize ribbon icons to a standard size when RIBBONICONRESIZE is set to 0. Additionally, Button Style for the command or drop-down menu must be set to LargeWithoutText.	
Grouping	Controls whether the commands assigned to a drop-down are grouped based on the values assigned to their Group Name properties.	No
KeyTip	Specifies the keytip characters that can be used to access the command from the keyboard.	AR
Tooltip Title	Text string that controls the title of the tooltip for the command.	
Element ID	Tag that uniquely identifies a panel section.	ID_RBN_SPLITBTN_ARC
Small Image	ID string of the small-image resource (16 × 16 bitmap). The string must include alphanumeric characters with no punctuation other than a hyphen (-) or an underscore (_). It can also be a user-defined bitmap. Click the [ ] button to open the Select Image File dialog box.	RCDATA_16_ARC3PT
Large Image	ID string of the large-image resource (32 × 32 bitmap). If the specified bitmap is not 32 × 32, the program scales it to that size. The string must include alphanumeric characters with no punctuation other than a hyphen (-) or an underscore (_). It can also be a user-defined bitmap. Click the [ ] button to open the Select Image File dialog box.	RCDATA_16_ARC3PT

To create a drop-down in a row on a ribbon panel

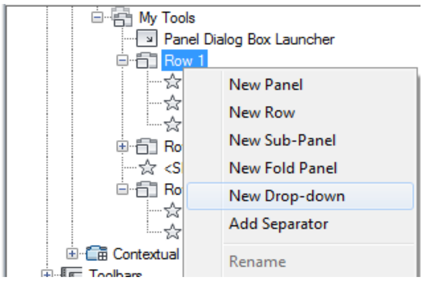
1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Ribbon to expand it.

3 Click the plus sign (+) next to Panels to expand it.

4 Click the plus sign (+) next to the ribbon panel where you want to add a drop-down.

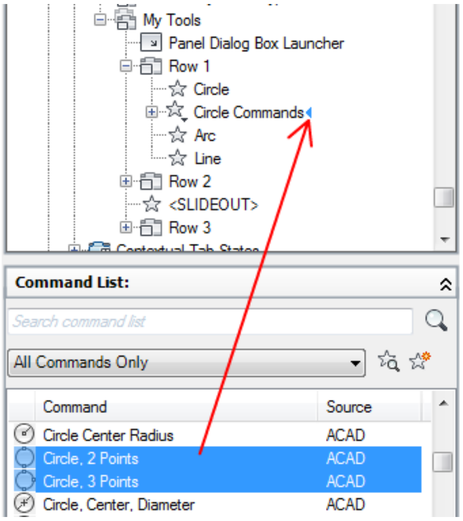
5 Right-click the row to which you want to add a drop-down. Click New Drop-down.



A new drop-down (named New Drop-down) is created in the last position of the row.

6 Right-click the new drop-down. Click Rename. Enter a new name.

7 In the Command List pane, drag the commands that you want to add to the new drop-down in the Customizations In <*file name*> pane.



8 Adjust the properties of the drop-down as desired to control the appearance of the drop-down and the commands under the drop-down. on page 216

9 If the drop-down will use the Split behavior, add a command to the Primary Command node under the drop-down to set the command for the main button.

10 Click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

RIBBON

Opens the ribbon window.

RIBBONCLOSE

Closes the ribbon window.

System Variables

RIBBONICONRESIZE

Controls whether to resize icons on the ribbon to standard sizes.

Add and Remove Ribbon Panel Controls

You can add, remove, and relocate ribbon panel controls, such as drop-down lists, sliders, text boxes, and other types of panel-specific controls that start commands or change a setting. For example, the Home 2D/3D - Layers panel contains controls for working with the layers of a drawing.

The following table describes the controls found in the Customize User Interface (CUI) Editor that can be used on ribbon panels.

Controls available for ribbon panels

Control element	Control Type	Description
3D Navigation PointTriplet1	Multiple	Controls the point of view (position of the camera) in the current viewport.
3D Navigation PointTriplet2	Multiple	Controls the target point of the camera (center point) for the current viewport.
AcActionRecorderBasePointButtonItem	Button	Inserts a base point to establish an absolute coordinate for following actions.
AcActionRecorderComboBoxItem	Drop-down list	Sets an action macro current for playback or editing.
AcActionRecorderManageMacrosButtonItem	Button	Displays the Action Macro Manager dialog box.
AcActionRecorderPlaybackButtonItem	Button	Plays back the selected action macro or stops the action macro that is currently being played back.
AcActionRecorderPreferenceButtonItem	Button	Displays the Action Recorder Preferences dialog box.
ActionRecorderRecorderButtonItem	Button	Starts the Action Recorder and records actions as they are performed; stops the Action Recorder when a recording is completed.
AcActionRecorderTreeViewRibbonItem	Tree view	Displays the actions in the current action macro.
AcActionRecorderUserInputButtonItem	Button	Inserts a request for user input for the selected action, if requesting user input is supported for the selected action.
AcActionRecorderUserMessageButtonItem	Button	Inserts a user message into the action macro based on the selected action in the Action tree.

Controls available for ribbon panels

Control element	Control Type	Description
Ribbon Toggle Button - Advanced Render Settings	Toggle	Displays or hides the Advanced Render Settings palette.
Ribbon Command Button - Animation Pause	Button	Pauses the recording of the current animation being recorded.
Ribbon Command Button - Animation Play	Button	Plays back the recently recorded animation.
Ribbon Command Button - Animation Record	Button	Starts the recording of a new animation.
Ribbon Command Button - Animation Save	Button	Saves the recently recorded animation.
Ribbon Command Button - Animation Settings	Button	Displays the Animation Settings dialog box.
Ribbon Toggle Button - Authoring Palettes	Toggle	Displays or hides the Block Authoring palettes.
Ribbon Combo Box - Background Color	Drop-down list	Displays and changes the background color of the selected cells in a table.
Ribbon Toggle Button - Block Constraint Status	Toggle	Controls constraint display status and the shading of objects based on their constraint level.
Ribbon Label - Block	Label	Displays the name of the block that is currently being edited in the Block Editor.
Ribbon Combo Box - Block Visibility States	Drop-down list	Displays a list of the visibility states saved with the current block in the Block Editor.
Ribbon Command Button - Block Visibility Hide	Button	Makes objects visible in the current visibility state or all visibility states in the block definition opened for edit in the Block Editor.

Controls available for ribbon panels

Control element	Control Type	Description
Ribbon Command Button - Block Visibility Mode	Button	Controls how objects that are made invisible for the current visibility state are displayed in the Block Editor.
Ribbon Command Button - Block Visibility State	Button	Makes objects invisible in the current visibility state or all visibility states in the block definition opened for edit in the Block Editor.
Ribbon Command Button - Block Visibility States	Button	Allows you to create or modify the visibility states of the current block definition opened for edit in the Block Editor.
Ribbon Toggle Button - Camera Display	Toggle	Displays or hides the camera glyphs in a drawing.
Ribbon Combo Box - Cell Styles	Drop-down list	Displays and changes the cell style of the selected cells in a table.
Ribbon Toggle Button - Command Line	Toggle	Displays or hides the command line window.
Ribbon Toggle Button - Default Lighting	Toggle	Indicates the type of lighting system used for the current viewport (default or user-defined).
Ribbon Toggle Button - Design Center	Toggle	Displays or closes the DesignCenter palette.
Ribbon Toggle Button - DGN Osnap	Toggle	Controls object snapping for DGN underlays.
Ribbon Combo Box - Dimension Style	Drop-down list	Displays and sets the current dimension style.
Ribbon Toggle Button - Drawing Recovery Manager	Toggle	Displays or closes the Drawing Recovery Manager palette.
Ribbon Toggle Button - Drawing Status Bar	Toggle	Displays or hides the drawing status bar.
Ribbon Toggle Button - DWF Osnap	Toggle	Controls object snapping for DWF underlays.

Controls available for ribbon panels

Control element	Control Type	Description
Ribbon Toggle Button - Dynamic Constraint Display	Toggle	Displays or hides dynamic constraints.
Ribbon Combo Box - What to Export	Drop-down list	Controls which part of the drawing should be exported to a DWF, DWFx or PDF file.
Ribbon Combo Box - Page Setup	Drop-down list	Allows you to export the drawing to a DWF, DWfx, or PDF file using the page setup settings in the Page Setup Manager or to override these settings.
Ribbon Toggle Button - External References	Toggle	Displays or closes the External References palette.
Ribbon - Image, Show Image Toggle Button	Toggle	Displays or hides the selected raster image.
Ribbon - Image, Transparency Toggle Button	Toggle	Controls the use of transparency for the selected raster image.
Ribbon Combo Box - Impression Plot Style	Drop-down list	Controls which plot style table should be applied to the drawing when exporting to Autodesk Impression.
Ribbon Command Button - Export to Impression	Button	Exports the drawing to Autodesk Impression.
Ribbon Gallery - Impression Stroke Type	Gallery	Controls which stroke type should be applied to the drawing when exporting to Autodesk Impression.
Ribbon Combo Box - What to Export to Impression	Drop-down list	Controls which part of the drawing should be exported to Autodesk Impression.
Ribbon Combo Box - IPE Color Color	Drop-down list	Displays and changes the current color for the selected text in the multiline text editor.

Controls available for ribbon panels

Control element	Control Type	Description
Ribbon Combo Box - Font	Drop-down list	Displays and changes the current font style for the selected text in the multiline text editor.
Ribbon Combo Box - Text Height	Drop-down list	Displays and changes the current text height for the selected text in the multiline text editor.
Ribbon Gallery - IPE Text Style	Gallery	Displays and changes the current text style for the selected text in the multiline text editor.
Ribbon Spinner - Oblique Angle	Spinner	Displays and changes the current oblique angle for the selected text in the multiline text editor.
Ribbon Button - Paragraph Button	Button	Displays the Paragraph dialog box when the multiline text editor is active.
Spell Check Settings	Button	Displays the Check Spelling Settings dialog box when the multiline text editor is active.
Ribbon Spinner - Tracking	Spinner	Displays and changes the current tracking spacing for the selected text in the multiline text editor.
Ribbon Spinner Width Factor	Spinner	Displays and changes the current width factor for the selected text in the multiline text editor.
Ribbon Toggle Button - Layer Properties	Toggle	Displays or closes the Layer Properties Manager palette.
LayerFilterComboControl	Drop-down list	Displays and sets the layer filter used in the drawing.
Ribbon Combo Box - Layer State	Drop-down list	Displays the available layer states; you can restore a saved layer state.

Controls available for ribbon panels

Control element	Control Type	Description
Ribbon Toggle Button - Light Glyph Display	Toggle	Displays or hides the light glyphs in a drawing.
Brightness	Slider	Adjusts the global brightness for the lighting used when rendering.
Ribbon Toggle Button - Lights in Model	Toggle	Displays or hides the Lights in Model palette.
Contrast	Slider	Adjusts the global contrast for the lighting used when rendering.
Date	Slider	Adjusts the calendar day to use for the sunlight system.
Midtones	Slider	Adjusts the global midtones for the lighting used when rendering.
Time	Slider	Adjusts the time of day to use for the sunlight system.
Ribbon Combo Box - Linetypes	Drop-down list	Displays and sets the current linetype.
Ribbon Combo Box - Lineweight	Drop-down list	Displays and sets the current lineweight.
Ribbon Toggle Button - Locked Layer Fading	Toggle	Enables or disables the fading effect for locked layers.
Locked layer fading	Slider	Adjusts the percentage lock layers are faded into the background.
Ribbon Toggle Button - Markup Set Manager	Toggle	Displays or closes the Markup Set Manager palette.
Ribbon Toggle Button - Materials	Toggle	Displays or hides the Materials palette.
Ribbon Combo Box - Multileader Style	Drop-down list	Displays and sets the current multileader style.

Controls available for ribbon panels

Control element	Control Type	Description
3D Navigation Combo Control	Multiple	Displays and sets the current view to a standard orthographic or isometric view, or a saved name view based on the current space.
Lens length	Slider	Adjusts the lens length of a perspective view.
Step size	Slider	Adjusts the step size for the 3D walk and fly features.
Step velocity	Slider	Adjusts the step velocity for the 3D walk and fly features.
Ribbon Combo Box - Object Color	Drop-down list	Displays and sets the current object color.
Ribbon Menu Button - Switch Windows	Button	Displays a list of all open drawings; you can switch to a different open drawing.
Ribbon Combo Box - Render Output Size	Drop-down list	Displays and sets the current render output image size.
Ribbon Radio Button - Paragraph Alignment	Radio button	Displays and changes the current paragraph alignment for the selected text in the multiline text editor.
Ribbon Toggle Button - Parameters Manager	Toggle	Displays or closes the Parameters Manager palette.
Ribbon Toggle Button - PDF Osnap	Toggle	Controls object snapping for PDF underlays.
Ribbon Combo Box - Plot Style	Drop-down list	Displays and sets the current plot style when the current drawing uses named plot styles.
Ribbon Toggle Button - Properties	Toggle	Displays or closes the Properties palette.
Ribbon Toggle Button - Quick Calculator	Toggle	Displays or closes the QuickCalc palette.

Controls available for ribbon panels

Control element	Control Type	Description
Ribbon Label - ReferenceEditName	Label	Displays the name of the block that is directly being edited in the current drawing.
Ribbon Progress Bar - Render	Button and progress bar	Shows the amount of time left to complete the current rendering.
Ribbon Button - Render Output File Browse	Button	Specifies a location and file name for the rendered output.
Ribbon Text Box - Render Output File	Text Box	Displays or sets the path and file name to use when saving rendered output.
Ribbon Toggle Button - Render Output File	Toggle	Enables or disables automatic saving of a rendered image to an electronic file.
Ribbon Combo Box - Render Presets	Drop-down list	Displays and sets the current render preset.
Render quality	Slider	Adjusts the current rendering quality.
RibbonAutodeskSeekControl	Text box and button	Allows you to perform a context search from the Autodesk Seek web site.
Join Viewports	Button	Allows you to merge two adjacent tiled viewports into a single viewport.
Ribbon Control - Empty Row Aligner	Spacer	Allows you to align empty rows with other rows that contain commands and controls.
Ribbon Text Box - Find Text	Text box	Searches a drawing for matching text based on a text string.
Ribbon Combo Box - Section Plane Color	Drop-down list	Displays and sets the plane color of the selected section object.
Ribbon Toggle Button - Live Section	Toggle	Turns on or off live sectioning for the selected section object.

Controls available for ribbon panels

Control element	Control Type	Description
Transparency	Slider	Displays and sets the transparency level for the selected section object.
Ribbon Combo Box - Section Type	Drop-down list	Displays and sets the section type for the selected section object.
Ribbon Toggle Button - Sheet Set Manager	Toggle	Displays or closes the Sheet Set Manager palette.
Ribbon Menu Button - Status Bar Options	Drop-down menu button	Displays a list of the status bar items that are currently turned on or off.
Ribbon Toggle Button - Sun Properites	Toggle	Displays or hides the Sun Properties palette.
Ribbon Toggle Button - Sun Status	Toggle	Indicates the current state of the sunlight system, and enables or disables the use of the sunlight system when rendering.
Ribbon Combo Box - Table Styles	Drop-down list	Displays and sets the current table style.
Ribbon Gallery - Text Style	Drop-down list	Displays and sets the current text style.
Ribbon Combo Box - Annotation Text Height	Drop-down list	Displays and sets the default text height for new text objects.
Ribbon Toggle Button - Tool Palettes	Toggle	Displays or hides the Tool Palettes window.
Ribbon - Underlay, Adjust Color for Background	Toggle	Determines if the colors of the selected underlay are adjusted based on the current background color.
Brightness	Slider	Displays and sets the current brightness for the selected underlay.
Contrast	Slider	Displays and sets the current contrast for the selected underlay.

Controls available for ribbon panels

Control element	Control Type	Description
Ribbon - Underlay, Display Monochrome Toggle Button	Toggle	Determines if the selected underlay should be displayed in monochrome colors only.
Fade	Slider	Displays and sets the current fade value for the selected underlay.
Ribbon - Clip Toggle Button	Toggle	Determines if the selected underlay is fully visible or just the area based on the clipping boundary.
Ribbon - Show Underlay Toggle Button	Toggle	Determines if the selected underlay is visible or not.
Ribbon Toggle Button - ViewCube	Toggle	Indicates the display state of the ViewCube, and enables or disables the display of the ViewCube.
Ribbon Combo Box - Viewport Configurations	Drop-down list	Sets how the active tiled viewport should be divided.
Ribbon Combo Box - Visual Styles Edge Color	Drop-down list	Displays and sets the color used for the edges and isolines of 3D objects for the current visual style.
Ribbon Toggle Button - Edge Jitter	Toggle	Indicates whether edge jitter is enabled, and enables or disables edge jitter for the current visual style.
Jitter	Slider	Adjusts the amount lines are jittered for the current visual style.
Ribbon Toggle Button - Edge Overhang	Toggle	Indicates whether edge overhang is enabled, and enables or disables edge overhang for the current visual style.
Overhang	Slider	Adjusts the amount lines overhang for the current visual style.

Controls available for ribbon panels

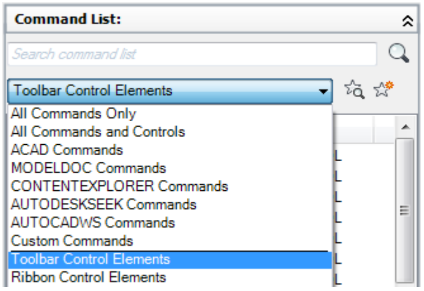
Control element	Control Type	Description
Ribbon Gallery - Visual Styles	Gallery	Displays and sets the visual style for the active viewport.
Ribbon Combo Box - Visual Styles Intersection Edge Color	Drop-down list	Displays and sets the color used for intersecting lines for the current visual style.
Ribbon Toggle Button - Intersection Edges	Toggle	Indicates whether intersection edges is enabled, and enables or disables intersection edges for the current visual style.
Ribbon Combo Box - Visual Styles Obscured Edge Color	Drop-down list	Displays and sets the color used for obscured edges for the current visual style.
Ribbon Toggle Button - Obscured Edges	Toggle	Indicates whether obscured edges is enabled, and enables or disables obscured edges for the current visual style.
Ribbon Toggle Button - Visual Styles Manager	Toggle	Displays or closes the Visual Styles Manager palette.
Ribbon Toggle Button - Silhouette Edges	Toggle	Indicates whether silhouette edges is enabled, and enables or disables silhouette edges for the current visual style.
Silhouette width	Slider	Adjusts the width of the silhouette edges for the current visual style.
Opacity	Slider	Displays and sets the level of opacity that is applied to 3D objects for the current visual style.
Ribbon Control Drop Down - Shadow Mode	Drop-down menu	Displays and sets the types of shadows that should be displayed for the current visual style.
Xref fading	Slider	Displays and sets the level of fading that is applied to the objects of an xref.

Controls available for ribbon panels

Control element	Control Type	Description
Ribbon Toggle Button - X-Ray Effect	Toggle	Indicates x-ray mode for the current visual style, and enables or disables x-ray mode.
Ribbon Toggle Button - Xref fading	Toggle	Indicates the objects of xrefs are faded into the background, enables or disables xref fading.
Layer Combo Control	Drop-down list	Displays and sets the current layer.

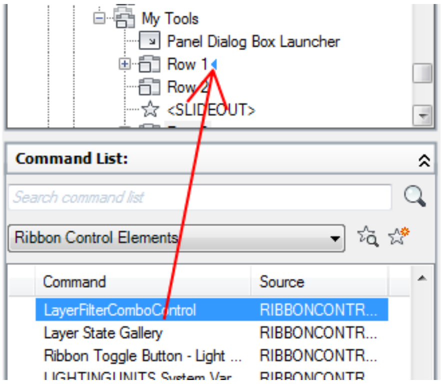
To add a control to a ribbon panel

1. Click Manage tab ➤ Customization panel ➤ User Interface. CUI
2. In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Ribbon to expand it.
3. Click the plus sign (+) next to Panels to expand it.
4. Click the plus sign (+) next to the ribbon panel where you want to add a control.
5. Create a new row for the control if you need to, or click the plus sign (+) next to the row where you want to add a control.
6. In the Command List pane, in the Categories list, click Ribbon Control Elements.



The Command List pane displays the list of ribbon control elements only.

7 Drag a control from the Command List pane to add it to the panel. Use the visual indicator bar to specify the position of the control.



8 Click Apply.

To reposition a control on a ribbon panel

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

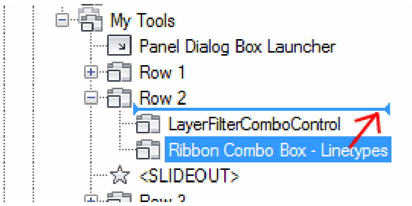
2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Ribbon to expand it.

3 Click the plus sign (+) next to Panels to expand it.

4 Click the plus sign (+) next to the ribbon panel where you want to reposition a control.

5 Click the plus sign (+) next to the row where you want to reposition a control. If you need to, continue expanding sub-panels, rows, and drop-downs to get to the control.

6 Drag the control to a new location. Use the visual indicator bar to specify the position of the command.



7 Click Apply.

To remove a control from a ribbon panel

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

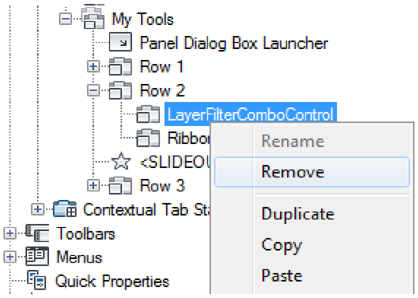
2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Ribbon to expand it.

3 Click the plus sign (+) next to Panels to expand it.

4 Click the plus sign (+) next to the ribbon panel where you want to remove a control.

5 Click the plus sign (+) next to the row where you want to remove a control. If you need to, continue expanding sub-panels, rows, and drop-downs to get to the control.

6 Right-click the control that you want to remove. Click Remove.



7 Click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

RIBBON

Opens the ribbon window.

RIBBONCLOSE

Closes the ribbon window.

Ribbon Tabs

Ribbon tabs control the display and order in which ribbon panels are displayed on the ribbon. You add ribbon tabs to a workspace to control which ribbon tabs are displayed on the ribbon.

Ribbon tabs do not contain any commands or controls like a ribbon panel does; instead, they manage the display of ribbon panels on the ribbon. Once a ribbon tab is created, you can then add references to any of the ribbon panels from the Panels node under the Ribbon node in the Customizations In *<file name>* pane to the ribbon tab. After references to ribbon panels are added to a ribbon tab, you can control the initial display order in which ribbon panels appear on a ribbon tab from the ribbon tab's node in the Customizations In *<file name>* pane.

NOTE Newly created ribbon tabs are not automatically added to a workspace. To display a new ribbon tab on the ribbon, select the workspace in which you want the ribbon tab to be displayed with and then use the Workspace Contents pane to add it to the workspace. For information on adding a ribbon tab to a workspace, see To display ribbon tabs from the CUI Editor on page 364.

In the Workspace Contents pane, you add and remove ribbon tabs from the ribbon, which is controlled by the current workspace. Once a ribbon tab has been added to a workspace, you can control the order in which the tab is displayed on the ribbon by expanding the Ribbon Tabs node under the Workspace Contents pane.

From the Workspace Contents pane, you can control the default display of ribbon tabs and panels; this allows you to keep the associations of ribbon tabs and panels with a workspace, but turn it off. You can also control the tool palette group associated with a ribbon tab, and the collapse behavior, resize order, and orientation of a ribbon panel from the Workspace Contents pane.

The following table describes the properties for the Home - 2D ribbon tab as they appear in the Properties pane.

Properties for the Home - 2D ribbon tab

Properties pane item	Description	Example
Display Text	Title of the tab; displayed when the ribbon tab is assigned to a workspace and the Ribbon palette is displayed.	Home
Contextual Display Type	Specifies whether the ribbon tab is displayed on its own tab or is merged with the ribbon tabs already displayed on the ribbon. The available options are Full or Merged.	Full
Default Display	Specifies if the ribbon tab is displayed the first time the CUIx file is loaded as a partial customization file. The available options are Do Not Add to Workspaces or Add to Workspaces.	Add to workspaces
Workspace Behavior	Specifies how the ribbon tab is merged or added to the ribbon when this CUIx file is loaded as a partial customization file. The available options are Add Tab Only, Merge Tab Only, or Merge or Add Tab.	Merge or add tab
KeyTip	Specifies the keytip character to access the ribbon tab on the ribbon from the keyboard.	H
Aliases	Specifies the aliases for the ribbon tab. Click the [ ] button to open the Aliases dialog box. Each alias in the CUIx file should be unique; it is used to reference the ribbon tab programmatically.	ID_TabHome
Element ID	Tag that uniquely identifies a panel.	ID_TabHome

Display Ribbon Tabs from a Partial CUIx File

When you load a partial CUIx file with ribbon tabs, you can use the Workspace Behavior property to control how the ribbon tabs might be displayed in all existing workspaces.

The Add Tab Only option displays the ribbon tab as its own tab, while the Merge Tab Only option merges the ribbon tab with a ribbon tab in the main CUIx file that is assigned the same alias. The Merge or Add Tab option attempts to merge the ribbon tab before a new ribbon tab is created on the ribbon.

NOTE You might need to use the CUILOAD command to reload a partial CUIx file in order for the ribbon tabs to be properly added to all existing workspaces. Reloading a partial CUIx file will affect the display of all its ribbon tabs.

The Plug-ins ribbon tab found in the *acad.cuix* utilizes the concept of merging multiple ribbon tabs from all the currently loaded CUIx files into a single ribbon tab. If you create custom applications, you can merge a ribbon tab that contains your commands on it with the Plug-ins tab.

If you want to merge your ribbon tab with the Plug-ins tab, change the following properties of your ribbon tab to:

- **Default Display:** Add to workspaces
- **Workspace Behavior:** Merge or add tab
- **Aliases:** ID_ADDINSTAB

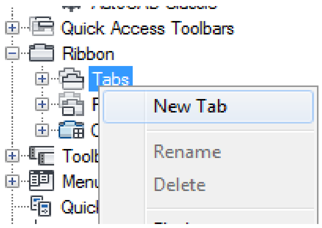
NOTE You can merge any number of ribbon tabs together as long as the aliases are the same.

To create a ribbon tab

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Ribbon to expand it.

3 Right-click Tabs and click New Tab.

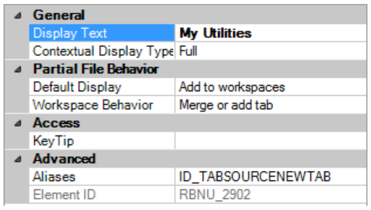


A new ribbon tab (named New Tab) is placed at the bottom of the Tabs node.

4 Right-click New Tab. Click Rename. Enter a new name for the ribbon tab.

5 Select the new ribbon tab in the tree view, and update the Properties pane:

- In the Display Text box, enter a text string that will appear on the ribbon tab.
- In the Contextual Display Type box, specify how the ribbon tab should be displayed on the ribbon when used with a contextual ribbon tab state.
- In the Default Display box, specify if the ribbon tab should be displayed by default when the CUIx file is loaded as a partial customization file.
- In the Workspace Behavior box, specify if the ribbon tab is merged or added to the ribbon when the CUIx file is loaded as a partial file.
- In the KeyTip box, enter a text string that can be used to access the ribbon tab from the keyboard.
- In the Aliases box, enter an alias for the ribbon tab.



General	
Display Text	**My Utilities**
Contextual Display Type	Full
Partial File Behavior	
Default Display	Add to workspaces
Workspace Behavior	Merge or add tab
Access	
KeyTip	
Advanced	
Aliases	ID_TABSOURCENEWTAB
Element ID	RBNU_2902

6 Click Apply.

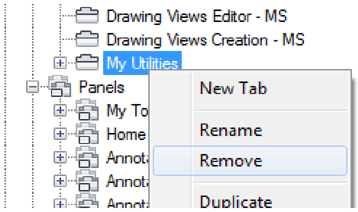
To remove a ribbon tab

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Ribbon to expand it.

3 Click the plus sign (+) next to Tabs to expand it.

4 Right-click the ribbon tab that you want to remove. Click Remove.



WARNING There is no way to undo the removal of a user interface element, so be careful when removing user interface elements. If you remove the wrong user interface element, the best thing to do is click Cancel to not save changes, but this will also undo any other changes that you might have made.

5 Click Apply.

To add a ribbon panel to a ribbon tab

1 Click Manage tab ➤ Customization panel ➤ User Interface.

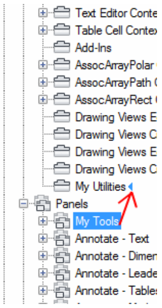
2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Ribbon to expand it.

3 Click the plus sign (+) next to Tabs to expand it.

4 Click the plus sign (+) next to the ribbon tab where you want to add a ribbon panel.

5 Click the plus sign (+) next to Panels to expand it.

6 Drag a ribbon panel from the Panels node to a ribbon tab. Use the visual indicator bar to specify the position of the ribbon panel on the ribbon tab.



7 Click Apply.

To remove a ribbon panel from a ribbon tab

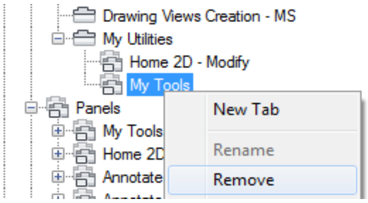
1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Ribbon to expand it.

3 Click the plus sign (+) next to Tabs to expand it.

4 Click the plus sign (+) next to the ribbon tab where you want to remove a ribbon panel.

5 Right-click the ribbon panel that you want to remove. Click Remove.



WARNING There is no way to undo the removal of a user interface element, so be careful when removing user interface elements. If you remove the wrong user interface element, the best thing to do is click Cancel to not save changes, but this will also undo any other changes that you might have made.

6 Click Apply.

To set the initial position of a ribbon panel on a ribbon tab

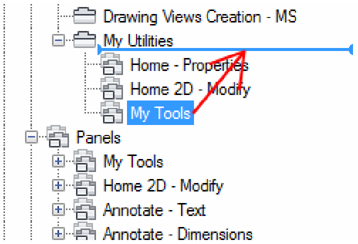
1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Ribbon to expand it.

3 Click the plus sign (+) next to Tabs to expand it.

4 Click the plus sign (+) next to the ribbon tab where you want to reposition a ribbon panel.

5 Select the ribbon panel that you want to reposition and drag it to a new location.



A visual indicator bar is displayed between the ribbon panels indicating the placement of the ribbon panel when you release the pointing device button.

6 Once the splitter bar is in the place where you want to insert the ribbon panel, release the pointing device button.

7 Click Apply.

To set the resize style of a ribbon panel on a ribbon tab

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Ribbon to expand it.

3 Click the plus sign (+) next to Tabs to expand it.

4. Click the plus sign (+) next to the ribbon tab that contains the ribbon panel for which you want to adjust the resize style.
5. Select the ribbon panel that you want to change.
6. In the Properties pane, Resize Style, select an option (Collapse as Needed, Never Collapse, or Collapse Last).
7. Click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

RIBBON

Opens the ribbon window.

RIBBONCLOSE

Closes the ribbon window.

Ribbon Contextual Tab States

Ribbon contextual tab states are used to control the display of ribbon panels on the ribbon when certain commands are active or an object is selected.

You use the same ribbon tabs that you create to control the display of ribbon panels on the ribbon through a workspace, as those used for ribbon contextual tab states. Instead of using a workspace to control the display of a ribbon tab, you assign a ribbon tab to one of the predefined contextual states listed under the Contextual Tab States node in the Customizations In <*file name*> pane. Predefined contextual tab states range from selecting an object such as a table or opening a block in the Block Editor.

To assign a ribbon tab to a contextual tab state

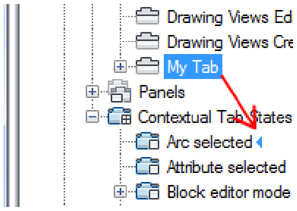
1. Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Ribbon to expand it.

3 Click the plus sign (+) next to Tabs to expand it.

4 Click the plus sign (+) next to Contextual Tab States to expand it.

5 Drag a ribbon tab from the Tabs node to a ribbon contextual tab state.



6 Click Apply.

To remove a ribbon tab from a contextual tab state

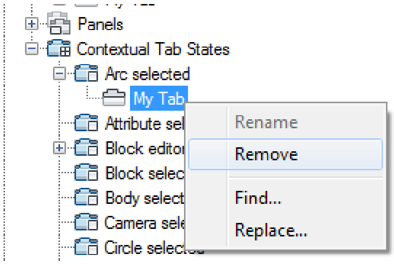
1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Ribbon to expand it.

3 Click the plus sign (+) next to Contextual Tab States to expand it.

4 Click the plus sign (+) next to the contextual tab state that contains the ribbon tab you want to remove.

5 Right-click the ribbon tab under the contextual tab state and click Remove.



6 Click Apply.

To set the contextual display type a ribbon tab

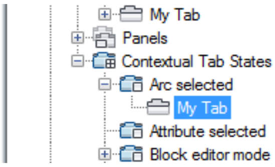
1. Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2. In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Ribbon to expand it.

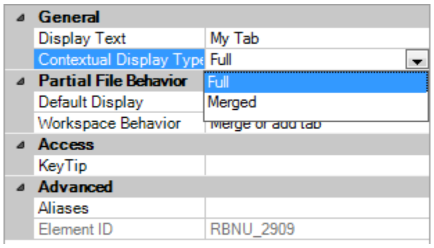
3. Click the plus sign (+) next to Contextual Tab States to expand it.

4. Click the plus sign (+) next to the contextual tab state that contains the ribbon tab for which you want to change the contextual display type.

5. Select the ribbon tab you want to change.



6. In the Properties pane, Contextual Display Type, select Full or Merged.



General	
Display Text	My Tab
Contextual Display Type	Full
Partial File Behavior	Full Merged
Default Display	
Workspace Behavior	Merge or add tab
Access	
KeyTip	
Advanced	
Aliases	
Element ID	RBNU_2909

7. Click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

RIBBON

Opens the ribbon window.

RIBBONCLOSE

Closes the ribbon window.

System Variables

RIBBONCONTEXTSELECT

Controls how ribbon contextual tabs are displayed when you single- or double-click an object.

RIBBONCONTEXTSELLIM

Limits the number of objects that can be changed at one time with the ribbon property controls or a contextual tab.

RIBBONSELECTMODE

Determines whether a pickfirst selection set remains selected after a ribbon contextual tab is invoked and the command is completed.

Toolbars

Toolbar customization can be as easy as placing or resizing a toolbar in the application window to gain drawing efficiency or space. You can also create and modify toolbars and flyout toolbars, add commands and controls, and reposition and remove commands and controls from a toolbar.

Create and Edit Toolbars

Some of the simplest toolbar customizations can make your daily drawing tasks more efficient. For example, you can consolidate frequently used commands and controls onto one toolbar, remove buttons that you never use, or change some simple toolbar properties.

You can also specify information to be displayed when the cursor passes over a button in the form of a tooltip.

You can add buttons or remove buttons you use infrequently, and rearrange buttons and toolbars. You can also create your own toolbars and flyout toolbars, and create or change the button image associated with a command. When creating a toolbar, you can create a toolbar from scratch, create a copy of an existing toolbar, or create a toolbar from an existing pull-down menu. Sub-menu items are not included when a toolbar is created from a pull-down menu.

NOTE When you create a toolbar, you should determine in which workspaces you want to display the toolbar. By default, a new toolbar is displayed in all workspaces.

The following table shows the properties of the Standard toolbar as they appear in the Properties pane.

Properties for the Standard toolbar

Properties pane item	Description	Example
Name	String used as the caption for the toolbar.	Standard
Description	Text used to describe the element; does not appear in the user interface.	Standard Toolbar
Default Display	Specifies if the toolbar is displayed when the CUIx file is loaded as a partial customization file. The available options are Do Not Add to Workspaces or Add to Workspaces.	Add to workspaces
Orientation	Specifies whether the toolbar is floating or docked (top, bottom, left, or right) the first time the CUIx file is loaded.	Top
Default X Location	Specifies the location from the left edge of the screen when the toolbar appears when it is floating, or the location when it is docked. If docked, a value of 0 indicates the left most location in a docked area.	0
Default Y Location	Specifies the location from the top edge of the screen when the toolbar appears when it is floating, or the location when it is docked. If docked, a value of 0 indicates the top most location in a docked area.	0
Rows	Specifies the number of rows the items on the toolbar are displayed in when the toolbar is floating.	1
Aliases	Specifies the aliases for the toolbar. Click the [ ] button to open the Aliases dialog box. Each alias in the CUIx file should be unique and it is used to reference the toolbar programmatically.	TB_STANDARD, Standard
Element ID	Tag that uniquely identifies a toolbar.	ID_TbStandard

NOTE The properties On By Default, Orientation, Default X Location, Default Y Location, and Rows are used only the first time the CUIx file is loaded and when no default workspace is set. After a toolbar is loaded the first time, a workspace is used to control the Appearance properties of a toolbar. See the procedure To change the properties of a toolbar on page 371 for more information.

When you create a new toolbar, the first task you need to do is to provide a name for it. A new toolbar has no commands or controls assigned to it. If a toolbar has no commands or controls on it, it is ignored by the program until you add at least one command or control to it. You add commands and controls to a toolbar by dragging a command or control from an existing toolbar or the Command List pane and dropping it onto a toolbar. Once a command or control has been added to a toolbar, you can change the text that is displayed in the tooltip when the cursor hovers over top of the button by changing the Name property that is displayed in the Properties pane.

Customize Toolbars with the Toolbar Preview Pane

You can customize a toolbar using the tree view under the Customizations In <*file name*> pane or the Toolbar Preview pane. The Toolbar Preview pane allows you to add and remove commands or controls visually in real-time instead of just using the tree view. You can also interactively drag a command or control in the preview pane to reposition it.

Customize Toolbars from the Application Window

The program allows you to customize toolbars that are displayed in the application when the Customize User Interface (CUI) Editor is open. You drag commands from the Command List pane and drop then directly onto a visible toolbar that is docked or floating in the application window. You can also remove, reposition, or copy commands on a visible toolbar while the CUI Editor is open.

Create Ribbon Panels from Toolbars

New ribbon panels can be created from a toolbar by dragging existing toolbars from the Toolbars node under the Customizations In <*file name*> pane to the Panels node under Ribbon in the Customizations In <*file name*> pane. When the toolbar is dropped, you are prompted to convert a copy of the toolbar to a ribbon panel. See Ribbon Panels on page 201 for more information about customizing ribbon panels.

To display a toolbar

- Do one of the following:

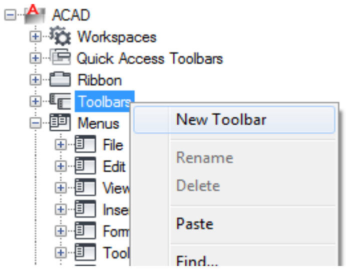
To display toolbars from the user interface on page 359

To display toolbars using the CUI Editor on page 369

To create a toolbar

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, right-click Toolbars. Click New Toolbar.



A new toolbar (named Toolbar1) is placed at the bottom of the Toolbars tree.

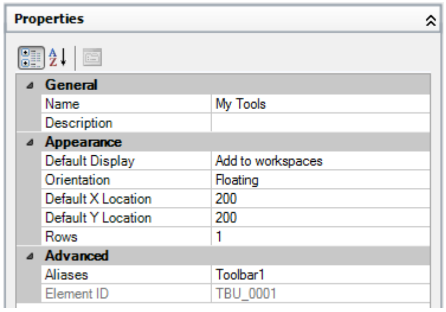
3 Do one of the following:

- Enter a new name over the default name Toolbar1.
- Right-click Toolbar1. Click Rename. Enter a new toolbar name.
- Click Toolbar1, wait, and click again over the toolbar's name again to edit its name in-place.

4 Select the new toolbar in the tree view, and update the Properties pane:

- In the Description box, enter a description for the toolbar.
- In the Default Display box, specify if the toolbar should be displayed by default when the CUIx file is loaded as a partial customization file.
- In the Orientation box, specify the orientation of the toolbar.
- In the Default X Location box, enter a number.
- In the Default Y Location box, enter a number.
- In the Rows box, enter the number of rows for an undocked toolbar.

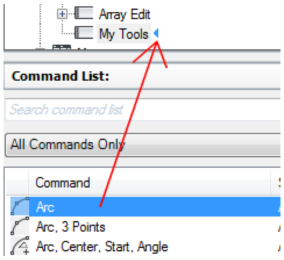
- In the Aliases box, enter an alias for the toolbar.



Properties

General	
Name	My Tools
Description	
Appearance	
Default Display	Add to workspaces
Orientation	Floating
Default X Location	200
Default Y Location	200
Rows	1
Advanced	
Aliases	Toolbar1
Element ID	TBU_0001

5 In the Command List pane, drag the command you want to add to a location just below the name of the toolbar in the Customizations In <*file name*> pane.



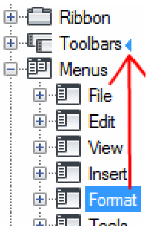
6 Click Apply.

To create a toolbar from a pull-down menu

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Menus tree node to expand it.

3 Drag the menu that you want to create a toolbar from and drop it onto the Toolbars node.



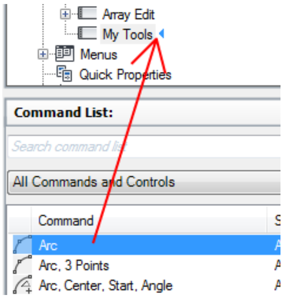
4 Update the workspace as desired to update the display and position for the new toolbar.

To add a command to a toolbar in the Customizations In pane

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Toolbars tree node to expand it.

3 In the Command List pane, drag the command to the toolbar you want to add it to in the Customizations In <*file name*> pane.



4 Click Apply.

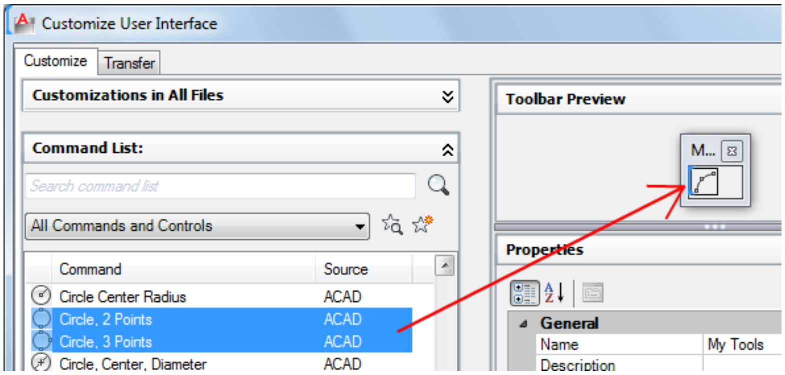
To add a command to a toolbar in the Toolbar Preview pane

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Toolbars tree node to expand it.

3 Select the toolbar you want to add a command to.

4 In the Command List pane, drag the command you want to add to the selected toolbar and drop it on the toolbar's preview in the Toolbar Preview pane.



Command	Source
Circle Center Radius	ACAD
Circle, 2 Points	ACAD
Circle, 3 Points	ACAD
Circle, Center, Diameter	ACAD

Name	My Tools
Description	

You can control where the command is placed by releasing the mouse button when the black vertical splitter bar is displayed.

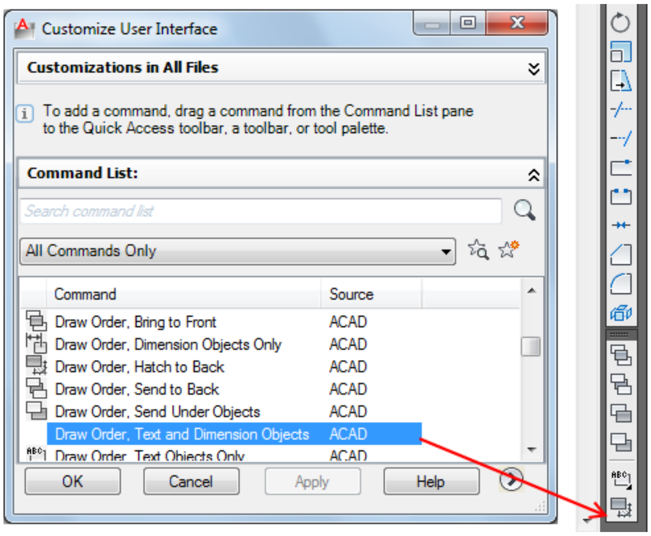
5 Click Apply.

To add a command to a toolbar outside the CUI Editor

1 Display the toolbar you want to add a command to by right-clicking over a toolbar button. Click the name of the toolbar.

2 Right-click over any toolbar button. Click Customize.

3 In the Customize User Interface Editor, Customize tab, Command List pane, drag the command you want to add and drop it onto the toolbar.



To add a command, drag a command from the Command List pane to the Quick Access toolbar, a toolbar, or tool palette.

Command	Source
Draw Order, Bring to Front	ACAD
Draw Order, Dimension Objects Only	ACAD
Draw Order, Hatch to Back	ACAD
Draw Order, Send to Back	ACAD
Draw Order, Send Under Objects	ACAD
Draw Order, Text and Dimension Objects	ACAD
Draw Order, Text Objects Only	ACAD

You can control the location of the command you are adding by using the visual or horizontal indicator bar.

4 Click Apply.

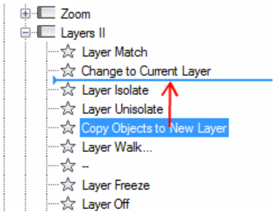
To reposition a command or control on a toolbar in the Customizations In pane

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Toolbars tree node to expand it.

3 Click the plus sign (+) next to the toolbar that contains the command or control you want to reposition to expand it.

4 Drag the name of the command or control you want to reposition to the new location in the list of tools.



While dragging the command or control, use the visual indicator bar to specify the new position of the command or control. When the left arrow appears, the command or control is moved to the front of the toolbar.

5 Click Apply.

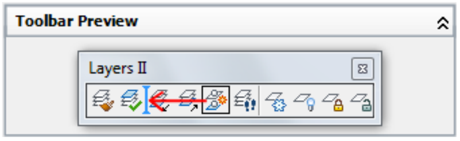
To reposition a command or control on a toolbar in the Toolbar Preview pane

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Toolbars tree node to expand it.

3 Select the toolbar that contains the command or control you want to reposition.

4 In the Toolbar Preview, drag the command or control that you want to reposition.



While dragging the command or control, use the visual indicator bar to specify the new position of the command or control.

5 Click Apply.

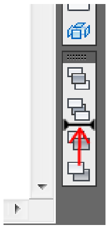
To reposition a command on a toolbar outside the CUI Editor

1 Display the toolbar you want to reposition a command on by right-clicking over a toolbar button. Click the name of the toolbar.

2 Right-click over any toolbar button. Click Customize.

The Customize User Interface (CUI) Editor is displayed.

3 Drag the command on the toolbar that you want to reposition.



While dragging the command, use the visual indicator bar to specify the new position of the command.

4 Click Apply.

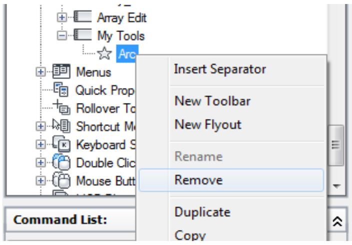
To remove a command or control from a toolbar in the Customizations In pane

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Toolbars tree node to expand it.

3 Click the plus sign (+) next to a toolbar that contains the command or control you want to remove.

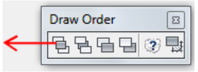
4 Right-click the name of the command or control you want to remove. Click Remove.



5 Click Apply.

To remove a command or control from a toolbar in the Toolbar Preview pane

1. Click Manage tab ➤ Customization panel ➤ User Interface.
2. In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Toolbars tree node to expand it.
3. Select the toolbar that contains the command or control you want to reposition.
4. In the Toolbar Preview pane, drag the command or control that you want to remove and drop it outside of the preview.

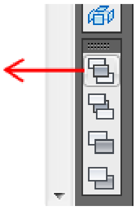


5. Click Apply.

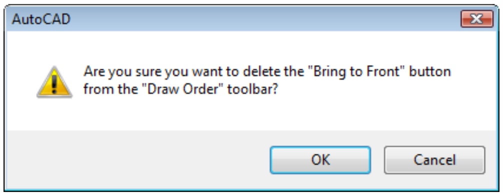
To remove a command from a toolbar outside the CUI Editor

1. Display the toolbar from which you want to remove a command by right-clicking over a toolbar button. Click the name of the toolbar.
2. Right-click over any toolbar button. Click Customize.

   The Customize User Interface (CUI) Editor is displayed.
3. Drag the command you want to remove from the toolbar and drop it over the drawing window.



4. Click OK to confirm the deletion of the command from the toolbar.


AutoCAD

Are you sure you want to delete the "Bring to Front" button from the "Draw Order" toolbar?

5 In the Customize User Interface (CUI) Editor, click Apply.

To change properties of a toolbar

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Toolbars tree node to expand it.

> **NOTE** Making changes to a toolbar's properties here only affect the initial appearance of the toolbar after the CUIx file has been loaded. To control the appearance of a toolbar, it is best to use a workspace.

3 Select the toolbar whose properties you want to change.

4 In the Properties pane, make your changes.

5 Click Apply.

To change the tooltip of a command

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Toolbars tree node to expand it.

3 Select the toolbar whose tooltip text you want to change.

4 In the Properties pane, Display section, make the desired change to the Name property (not the Command Name or Command Display Name properties), and the Description and Extended Help File properties.

5 Click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

QUICKCUI

Displays the Customize User Interface Editor in a collapsed state.

RIBBON

Opens the ribbon window.

RIBBONCLOSE

Closes the ribbon window.

System Variables

TOOLTIPS

Controls the display of tooltips on the ribbon, toolbars, and other user interface elements.

Add Flyouts to a Toolbar

You can use flyouts to group related commands together on a toolbar.

A flyout is a set of commands nested under a single button on a toolbar. Flyout buttons have a black triangle in the lower-right corner. To create a flyout, you can start from scratch, or drag an existing toolbar or drag pull-down menu onto a toolbar. When a pull-down menu is dragged onto a toolbar, a new toolbar is created and a flyout is created in the position that the pull-down menu was dropped onto the toolbar.

The following table shows the properties for the Zoom flyout as they appear in the Properties pane.

Properties for the Zoom flyout on the Standard toolbar

Properties pane item	Description	Example
Name	String that does not appear in the user interface unless the property Use Own Button is set to Yes.	Zoom

Properties for the Zoom flyout on the Standard toolbar

Properties pane item	Description	Example
Description	Text used to describe the element, does not appear in the user interface.	
Source Toolbar	A read-only value used to specify which toolbar is being referenced to create the flyout.	TB_ZOOM
Use Own Button	Controls whether the last used toolbar button is set as the current button or not. The possible values are Yes or No.	No
Small Image	ID string of the small-image resource (16 × 16 bitmap). The string must include alphanumeric characters with no punctuation other than a hyphen (-) or an underscore (_). It can also be a user-defined bitmap. Click the [ ] button to open the Select Image File dialog box.	RCDATA_16_ZOOM
Large Image	ID string of the large-image resource (32 × 32 bitmap). If the specified bitmap is not 32 × 32, the program scales it to that size. The string must include alphanumeric characters with no punctuation other than a hyphen (-) or an underscore (_). It can also be a user-defined bitmap. Click the [ ] button to open the Select Image File dialog box	RCDATA_16_ZOOM

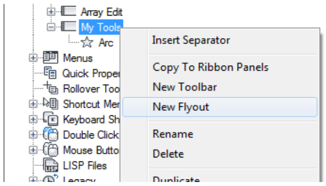
WARNING Do not change the aliases for a toolbar that is being used as a flyout; otherwise the link between the toolbar and flyout will become broken.

To create a flyout toolbar from scratch

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Toolbars tree node to expand it.

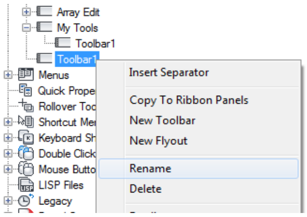
3 Right-click the toolbar to which you want to add a flyout toolbar. Click New Flyout.



A new flyout toolbar (named Toolbar1) is placed below the toolbar you selected.

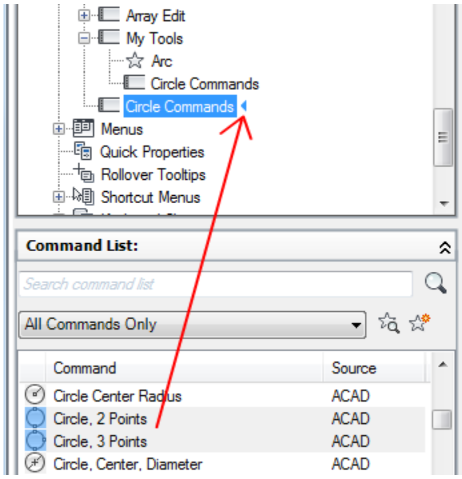
4 Right-click Toolbar1. Click Rename. Enter a new toolbar name.

NOTE You can click, wait, and click again over a toolbar name to edit its name in-place in the Customizations In <*file name*> pane.



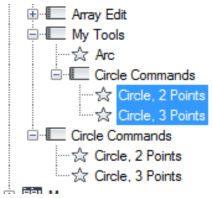
NOTE Just renaming the toolbar won’t change the name of the flyout. You must select and rename the flyout independently if you want them to both have the same name.

5 In the Command List pane, drag the command you want to add to the toolbar flyout in the Customizations In <*file name*> pane.



Command	Source
Circle Center Radius	ACAD
Circle, 2 Points	ACAD
Circle, 3 Points	ACAD
Circle, Center, Diameter	ACAD

6 Click Apply.



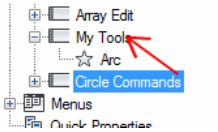
To create a flyout toolbar from another toolbar

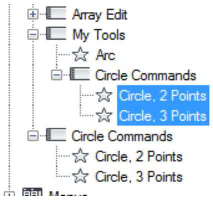
1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Toolbars tree node to expand it.

3 Click the plus sign (+) next to the toolbar to which you want to add a flyout toolbar.

4 Locate the toolbar you want to use as a flyout. Drag the toolbar to a location in the expanded toolbar.





5 Click Apply.

To create a flyout toolbar from a pull-down menu

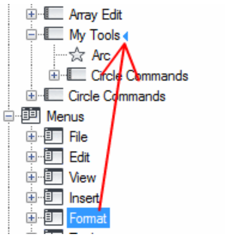
1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Toolbars tree node to expand it.

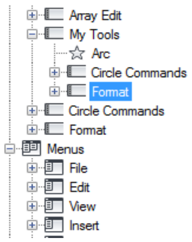
3 Click the plus sign (+) next to the toolbar to which you want to add a flyout toolbar.

4 Click the plus sign (+) next to the Menus tree node to expand it.

5 Drag the menu that you want to create a flyout from and drop it onto the node of the toolbar where you want to place the flyout.



If the menu is dropped on a toolbar, a new flyout and toolbar are created.



6 Reposition the new flyout on the toolbar.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

Add, Remove or Switch Toolbar Controls

Toolbar controls are drop-down lists of items that can affect the objects in a drawing or the way the program behaves from a toolbar. For example, the Layers toolbar contains controls for defining layer settings. In the Customize User Interface (CUI) Editor, you can add, remove, and relocate controls within toolbars.

The following table lists the toolbar controls found in the Customize User Interface (CUI) Editor and their definitions. The control elements in the left column of the table are not always the text that is displayed as a tooltip in the program (for example, Undo Skinny Button is displayed as Undo in the program's tooltip). Refer to this table when you want to change a control in a toolbar.

Control elements for toolbars

Control element	Description
Autodesk Seek Control	Allows for entering a text string to locate content on the Autodesk Seek web site.
Dim Style Control	Displays and sets the current dimension style.

Control elements for toolbars

Control element	Description
Find Text Control	Allows for searching on a text string contained in the current drawing.
Layer Control	Displays the current layer and allows you to set a layer current.
Line Type Control	Displays and sets the current linetype.
Line Weight Control	Displays and sets the current line weight.
Multileader Style Control	Displays and sets the current multileader style.
Named View Control	Displays and sets the current named view.
OPT Color Control	Displays and sets the current color.
Plot Style Control	Displays and sets the current plot style.
Redo Skinny Button Control	Allows you to reverse the previous undo or undoes.
Reference Block Name Control	Displays the name of the xref being edited.
Table Style Control	Displays and sets the current table style.
Text Style Control	Displays and sets the current text style.
UCS Control	Displays the current UCS and allows you to restore a saved UCS.
Undo Skinny Button Control	Allows you to undo the previous action or actions.
View Control	Displays and sets the current standard 3D view for a viewport.
Viewport Scale Control	Displays and sets the current scale for a floating viewport.
Workspace Control	Displays the current workspace and allows you to set a workspace current.

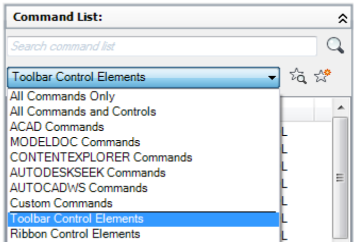
To add a control to a toolbar in the Customizations In pane

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, Customizations In <*file name*> pane, click the plus sign (+) next to the Toolbars tree node to expand it.

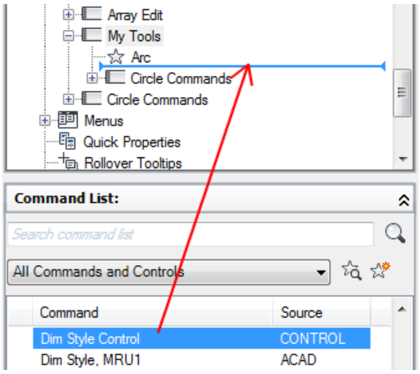
3 Click the plus sign (+) next to the toolbar to which you want to add a control.

4 In the Command List pane, Categories list, click Toolbar Control Elements.



The Command List pane displays the list of toolbar control elements only.

5 In the Command list, drag the control to the Customizations In <*file name*> pane to the position where you want to add it in the toolbar.



Command	Source
Dim Style Control	CONTROL
Dim Style, MRU1	ACAD

6 Click Apply.

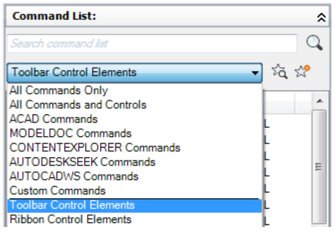
To add a control to a toolbar in the Toolbar Preview pane

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Toolbars tree node to expand it.

3 Select the toolbar to which you want to add a control.

4 In the Command List pane, Categories list, click Control Elements.



Command List:

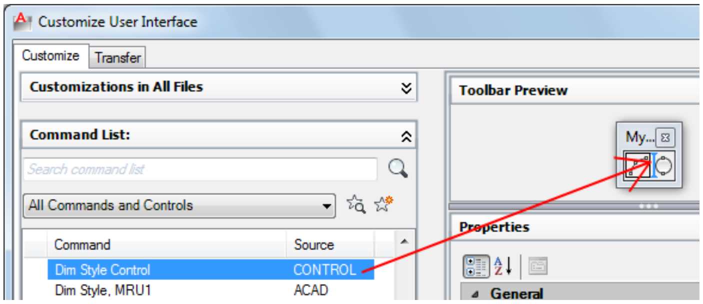
Search command list

Toolbar Control Elements

All Commands Only
All Commands and Controls
ACAD Commands
MODELDOC Commands
CONTENTEXPLORER Commands
AUTODESKSEEK Commands
AUTOCADWS Commands
Custom Commands
Toolbar Control Elements
Ribbon Control Elements

The Command List pane displays the list of toolbar control elements only.

5 In the Command List pane, drag the control you want to add to the selected toolbar and drop it on the toolbar's preview in the Toolbar Preview pane.



Customize User Interface

Customize | Transfer

Customizations in All Files

Command List:

Search command list

All Commands and Controls

Command	Source
Dim Style Control	CONTROL
Dim Style, MRU1	ACAD

Toolbar Preview

My...

Properties

General

You can control where you place the command by releasing the mouse button when the vertical splitter bar is displayed in the location you want.

6 Click Apply.

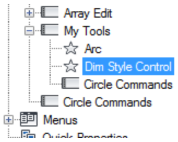
To switch a control in a toolbar

1 Click Manage tab ➤ Customization panel ➤ User Interface.

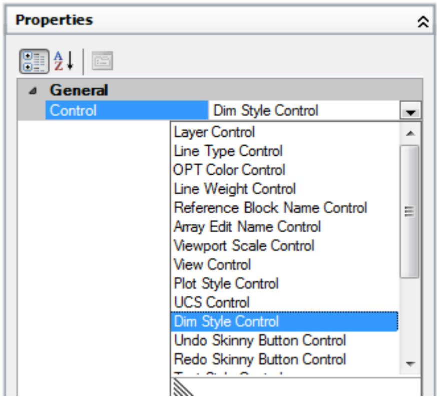
2 In the Customize User Interface Editor, Customize tab, Customizations In <*file name*> pane, click the plus sign (+) next to the Toolbars tree node to expand it.

3 Click the plus sign (+) next to the toolbar to which you want to add a control.

4 Click the control element under the toolbar.



5 In the Properties pane, Control box, click the down arrow to display a list of toolbar controls.



Control: Dim Style Control

6 Click a toolbar control to replace the original control with the one you selected.

7 Click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

Pull-down and Shortcut Menus

Pull-down menus are displayed as a list under a menu bar. Shortcut menus (also called context menus) are displayed at or near the crosshairs or cursor when you right-click in the drawing window, text window, command window, in toolbar areas, or the ribbon.

Overview of Pull-Down and Shortcut Menus

A pull-down menu can contain up to 999 commands. A shortcut menu can contain up to 499 commands. The command limit includes all menus in a hierarchy. If commands in the menu file exceed these limits (which is unlikely), the program ignores the extra commands. If a pull-down or shortcut menu is longer than the available display space, it is truncated to fit. When a pull-down or shortcut menu is truncated, two arrows are added to the menu; one is added at the top and another to the bottom. With the arrows, you can scroll the list of menu items up or down. The following table shows the properties for the File menu as they appear in the Properties pane. The properties for a pull-down menu and shortcut menu are identical.

Properties for the File menu

Properties pane item	Description	Example
Name	String used as the caption of the menu on the menu bar.	&File
Description	Text used to describe the element; does not appear in the user interface.	
Aliases	Specifies the aliases for the menu. Click the [ ] button to open the Aliases dialog box. Each alias in the CUIx file should be unique; and it is used to reference the menu programmatically.	POP1, FILE
Element ID	Tag that uniquely identifies a menu.	ID_MnFile

NOTE When you create a pull-down or shortcut menu, you must also add at least one command to the menu. Otherwise, the menu will not be displayed on the menu bar.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

System Variables

MENUBAR

Controls the display of the menu bar.

Create a Pull-Down Menu

You can create a pull-down menu, add submenus and commands to it on the Customize tab of the Customize User Interface (CUI) Editor.

You can create and modify standard pull-down menus to display and organize the commands to best match the way you work. Commands are added to a pull-down menu from the Command List pane. Once commands are added to a pull-down menu, you can change the caption displayed for the command on the menu, reposition commands, and organize commands using separators. Along with separators, you can also group commands using submenus. For more information on submenus, see Create Submenus on page 285.

As you modify the positioning of commands on menus, the online Help system is automatically updated to reflect the change through the Dynamic Help feature. For more information about how Dynamic Help affects customization, see How Customization Has Changed on page 96.

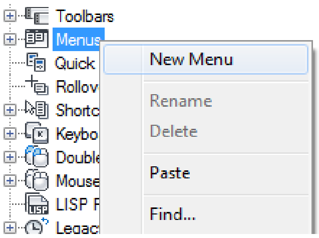
NOTE When you create a menu, you should determine in which workspaces you want to display the menu in. By default, a new menu is displayed in all workspaces.

Pull-Down Menu Aliases

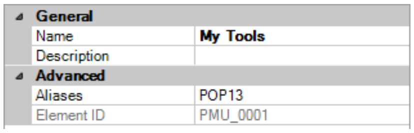
Pull-down menus should have one alias in the range of POP1 through POP499. Menus with an alias of POP1 through POP16 are loaded by default when a menu loads. All other menus must be added to a workspace to be displayed.

To create a pull-down menu

1. Click Manage tab ➤ Customization panel ➤ User Interface.
2. In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, right-click Menus. Click New Menu.

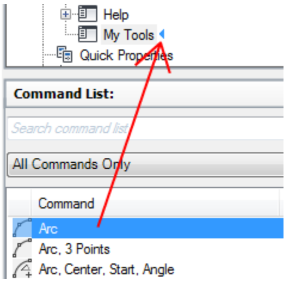
   

   A new menu (named Menu1) is placed at the bottom of the Menus tree.
3. Do one of the following:
   - Enter a new name over the default name Menu1.
   - Right-click Menu1. Click Rename. Enter a new menu name.
   - Click Menu1, wait, and click again over the menu's name again to edit its name in-place.
4. Select the new menu in the tree view, and update the Properties pane as follows:
   - In the Description box, enter a description for the menu.
   - In the Aliases box, an alias is automatically assigned to the new menu, based on the number of menus already loaded. For example, if the alias assignment is POP12, eleven menus are already loaded. View or edit the alias.
   - (Optional) If the name change is based upon a DIESEL expression, the DIESEL expression should be included in the Name box.

General	
Name	**My Tools**
Description	
Advanced	
Aliases	POP13
Element ID	PMU_0001

5. In the Command List pane, drag the command to a location just below the menu in the Customizations In <*file name*> pane.



NOTE You can change the name of a command after it has been added to a menu. This allows you to define how the user can access the menu item using keyboard navigation with the Alt key. To do this, select the menu item under the Menus node and then change the Name property in the Properties pane.

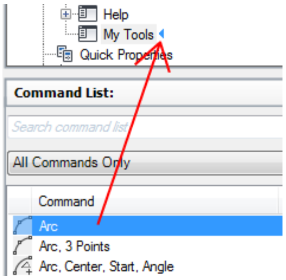
6 Click Apply.

To add a command to a pull-down menu

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the menu to which you want to add a command.

3 In the Command List pane, drag the command you want to add to a location just below the menu in the Customizations In <*file name*> pane.



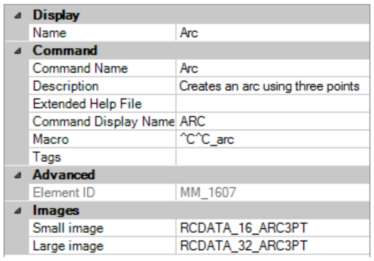
NOTE You can change the name of a command after it has been added to a menu. This allows you to define how the user can access the menu item using keyboard navigation with the Alt key. To do this, select the menu item under the Menus node and then change the Name property in the Properties pane.

4. Click Apply.

   For information about creating a command, see Create, Edit, and Reuse Commands on page 144.

To change the caption of a menu item on a pull-down menu

1. Click Manage tab ➤ Customization panel ➤ User Interface. CUI
2. In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Menus node to expand it.
3. Click the plus sign (+) next to the pull-down menu that has the command whose text you want to change.
4. Select the command whose text you want to change.
5. In the Properties pane, in the Display section, make the desired change to the Name property (not the Command Name or Command Display Name properties).



Display	
Name	Arc
Command	
Command Name	Arc
Description	Creates an arc using three points
Extended Help File	
Command Display Name	ARC
Macro	^C^C_arc
Tags	
Advanced	
Element ID	MM_1607
Images	
Small image	RCDATA_16_ARC3PT
Large image	RCDATA_32_ARC3PT

6. Click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

System Variables

MENUBAR

Controls the display of the menu bar.

Create a Shortcut Menu

Shortcut menus are displayed at or near the location of your cursor when you right-click on the pointing device. The shortcut menu and the options it provides depend on the location of the cursor and other conditions, such as whether an object is selected or a command is in progress.

Context-sensitive shortcut menus display menu options that are relative to the current command or the selected object when you right-click.

Shortcut Menu Aliases

Shortcut menus are referenced by their aliases and are used in specific situations. In the Customize User Interface (CUI) Editor, the alias names must follow the proper naming conventions. For example, the shortcut menu named “Default Menu” displays the following information in the Aliases section of the Properties pane:

POP501, CMDEFAULT

`CMDEFAULT` is one of the reserved aliases that the program looks for in specific situations. In this case, the shortcut menu assigned the alias `CMDEFAULT` is displayed if no objects are selected and no command is in progress when you right-click over the drawing window.

Aliases for context-sensitive shortcut menus must be numbered between POP500 and POP999, with the exception of the Object Snap menu which uses an alias of POP0. The following aliases are reserved for use by the program:

Program aliases for shortcut menus

Alias	Description
GRIPS	Defines the Hot Grip shortcut menu. (Right-click the drawing area while a grip on an object is selected.)
CMDEFAULT	Defines the Default mode shortcut menu. (Right-click the drawing area while no command is active and no objects are selected.)
CMEDIT	Defines the Edit mode shortcut menu. (Right-click the drawing area while one or more objects are selected, no grips are selected, and no command is active.)
CMCOMMAND	Defines the Command mode menu. (Right-click the drawing area while a command is active.) In addition to the content of the CMCOMMAND menu, the command's options (keywords within the square brackets) are inserted into this menu.
SNAP	Defines the Object Snap menu. (Shift+right-click the drawing area.)

Object Specific Shortcut Menus

The CMEDIT and CMCOMMAND shortcut menus can be made context-sensitive. In addition to the content of the CMEDIT menu, the appropriate object menu (if it exists) is inserted into this menu when one or more of a specific object type are selected. Object menus use either of the following naming conventions:

OBJECT_*objectname*

OBJECTS_*objectname*

If a single object is selected, the OBJECT_*objectname* menu is used, and if more than one of the same object type is selected, the OBJECTS_*objectname* menu is used. If no OBJECT_*objectname* is available, the program uses the OBJECTS_*objectname* menu (if it exists).

The object name used for the alias is the drawing interchange format (DXF™) name of the object in most cases except for inserted objects. The following table shows the object names that are specific to inserted objects (blocks, dynamic blocks, and xrefs).

Object names specific to insert objects

Object Name	Description
ATTBLOCKREF	Block reference with attributes
ATTDYNBLOCKREF	Dynamic block reference with attributes
BLOCKREF	Block reference without attributes
DYNBLOCKREF	Dynamic block reference without attributes
XREF	External reference (xref)

For example, to support an object-specific shortcut menu for one or more selected block references, you would create or modify a shortcut menu and change its properties to those in the following table. The important property to change is Aliases, which would need to modified to include the alias `OBJECTS_BLOCKREF`.

Properties for the Block Reference Objects shortcut menu

Properties pane item	Description	Example
Name	String that is only used in the CUI Editor and is not displayed in the user interface.	Block Objects Menu
Description	Text used to describe the element; does not appear in the user interface.	Shortcut menu for block objects
Aliases	Specifies the aliases for the shortcut menu. Click the [ ] button to open the Aliases dialog box. Each alias in the CUIx file should be unique and it is used to reference the shortcut menu programmatically.	POP512,OBJECTS_BLOCKREF
Element ID	Tag that uniquely identifies a shortcut menu.	PM_0021

Command Specific Shortcut Menus

Like the `CMEDIT` menu, the `CMCOMMAND` menu can contain context-sensitive commands. Menus named `COMMAND_`*`commandname`* control which commands are appended to the `CMCOMMAND` menu when a command is active. The text of *`commandname`* can be any valid AutoCAD command, including custom-defined or third-party commands.

In many cases, you can enter a hyphen before a command to suppress the display of a dialog box and display prompts for the command instead. To create a context-sensitive menu for a command that displays prompts instead of a dialog box (such as `-INSERT`), you need to name the menu `COMMAND_-INSERT`.

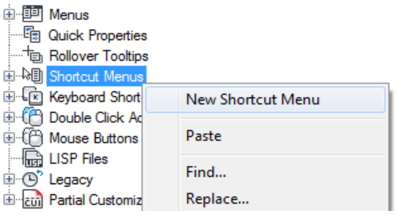
To create a shortcut menu

Do one of the following:

- **To create a standard shortcut menu**

  a Click Manage tab ➤ Customization panel ➤ User Interface.

  b In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, right-click Shortcut Menus. Click New Shortcut Menu.

  The new shortcut menu (named ShortcutMenu1) is placed at the bottom of the Menus tree.

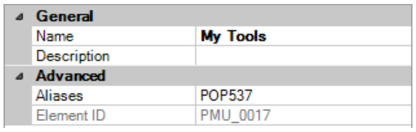
  c Do one of the following:

  - Enter a new name over the default name ShortcutMenu1.
  - Right-click ShortcutMenu1. Click Rename. Enter a new shortcut menu name.
  - Click ShortcutMenu1, wait, and click again over the shortcut menu's name to edit its name in-place.

d In the Properties pane, Description box, optionally enter a description for the shortcut menu.

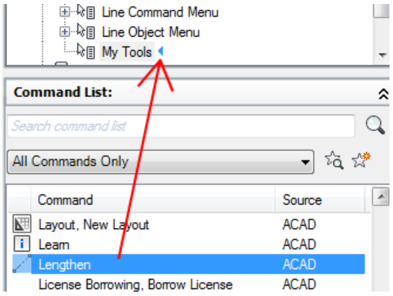
e In the Aliases box, click the [ ] button.

f In the Aliases dialog box, press Enter so you are on a new line. Enter additional aliases for the menu, and after each one, press Enter. An alias is automatically assigned, and defaults to the next available POP number, based on the number of shortcut menus already loaded in the program.

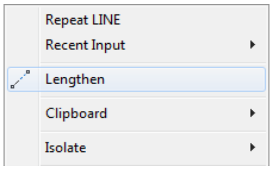


General	
Name	**My Tools**
Description	
Advanced	
Aliases	POP537
Element ID	PMU_0017

g In the Command List pane, drag the command that you want to add to the location just below the shortcut menu in the Customizations In <*file name*> pane.



Command	Source
Layout, New Layout	ACAD
Learn	ACAD
Lengthen	ACAD
License Borrowing, Borrow License	ACAD



h Continue adding commands until the new shortcut menu is complete.

i Click Apply.

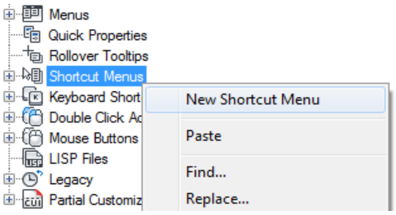
■ To create a command shortcut menu

In order for the commands on the shortcut menu to appear when a command is active, make sure to use the alias COMMAND_*commandname*.

For example, if you want the commands on the shortcut menu to appear when using the LINE command use the alias COMMAND_LINE. The commands from the shortcut menu will appear at the bottom of the shortcut menu with the alias CMCOMMAND when it is displayed.

a Click Manage tab ➤ Customization panel ➤ User Interface.

b In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, right-click Shortcut Menus. Click New Shortcut Menu.



The new shortcut menu (named ShortcutMenu1) is placed at the bottom of the Menus tree.

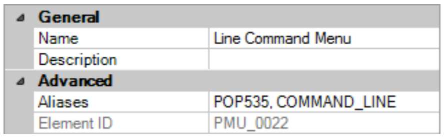
c Do one of the following:

- Enter a new name over the default name ShortcutMenu1.
- Right-click ShortcutMenu1. Click Rename. Enter a new shortcut menu name.
- Click ShortcutMenu1, wait, and click again over the shortcut menu's name to edit its name in-place.

d In the Properties pane, Description box, optionally enter a description for the shortcut menu.

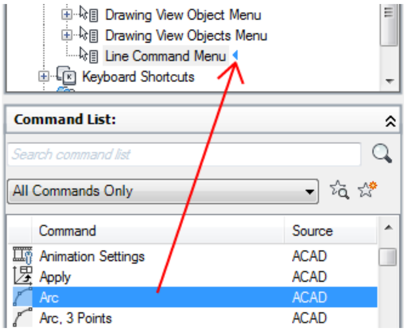
e In the Aliases box, click the [ ] button.

f In the Aliases dialog box, press Enter so you are on a new line. Enter additional aliases for the menu, and after each one, press Enter. An alias is automatically assigned, and defaults to the next available POP number, based on the number of shortcut menus already loaded in the program.

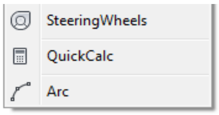


General	
Name	Line Command Menu
Description	
Advanced	
Aliases	POP535, COMMAND_LINE
Element ID	PMU_0022

g In the Command List pane, drag the command that you want to add to the location just below the shortcut menu in the Customizations In <*file name*> pane.



Command	Source
Animation Settings	ACAD
Apply	ACAD
Arc	ACAD
Arc, 3 Points	ACAD



h Continue adding commands until the new shortcut menu is complete.

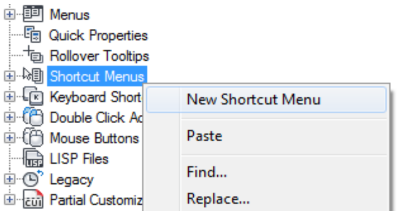
i Click Apply.

■ To create an object shortcut menu

In order for the commands on the shortcut menu to appear when an object or objects of the same type are selected, make sure to use the alias OBJECT_*objecttype* or OBJECTS_*objecttype*. For example, if you want the commands on the shortcut menu to appear when a LINE object is selected in the drawing, use the alias OBJECT_LINE. The commands from the shortcut menu will appear near the top of the shortcut menu with the alias CMEDIT when it is displayed.

a Click Manage tab ➤ Customization panel ➤ User Interface.

b In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, right-click Shortcut Menus. Click New Shortcut Menu.



The new shortcut menu (named ShortcutMenu1) is placed at the bottom of the Menus tree.

c Do one of the following:

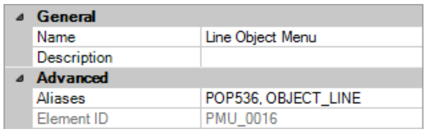
- Enter a new name over the default name ShortcutMenu1.
- Right-click ShortcutMenu1. Click Rename. Enter a new shortcut menu name.
- Click ShortcutMenu1, wait, and click again over the shortcut menu's name to edit its name in-place.

d In the Properties pane, Description box, optionally enter a description for the shortcut menu.

e In the Aliases box, click the [ ] button.

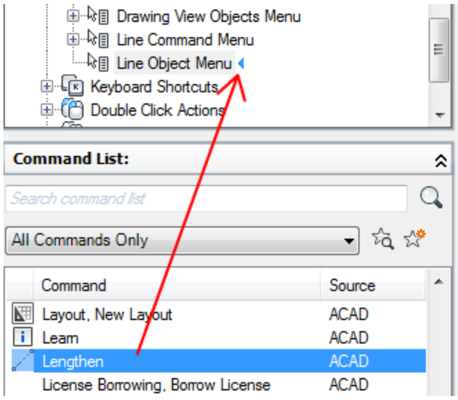
f In the Aliases dialog box, press Enter so you are on a new line. Enter additional aliases for the menu, and after each one, press Enter. An alias is automatically assigned, and defaults to the next available POP number, based on the number of shortcut menus already loaded in the program.

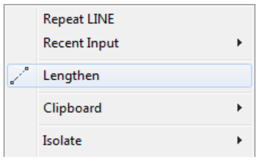
NOTE If you create a shortcut menu with the alias OBJECTS_*objecttype*, the commands assigned to the shortcut menu will be displayed when one or more objects are selected before right-clicking over the drawing area.



General	
Name	Line Object Menu
Description	
Advanced	
Aliases	POP536, OBJECT_LINE
Element ID	PMU_0016

g In the Command List pane, drag the command that you want to add to the location just below the shortcut menu in the Customizations In <*file name*> pane.





h Continue adding commands until the new shortcut menu is complete.

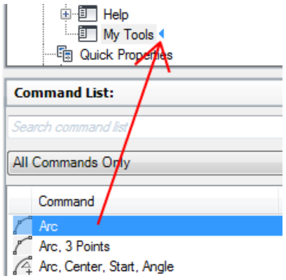
i Click Apply.

To add a command to a shortcut menu

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the menu to which you want to add a command.

3 In the Command List pane, drag the command you want to add to a location just below the menu in the Customizations In <*file name*> pane.



NOTE You can change the name of a command after it has been added to a menu. This allows you to define how the user can access the menu item using keyboard navigation with the Alt key. To do this, select the menu item under the Shortcut Menus node and then change the Name property in the Properties pane.

4 Click Apply.

For information about creating a command, see Create, Edit, and Reuse Commands on page 144.

To change the caption of a menu item on a shortcut menu

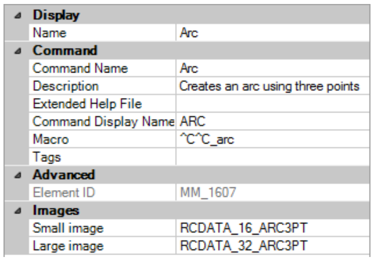
1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Shortcut Menus node to expand it.

3 Click the plus sign (+) next to the shortcut menu that has the command whose text you want to change.

4 Select the command whose text you want to change.

5 In the Properties pane, in the Display section, make the desired change to the Name property (not the Command Name or Command Display Name properties).



Display	
Name	Arc
Command	
Command Name	Arc
Description	Creates an arc using three points
Extended Help File	
Command Display Name	ARC
Macro	^C^C_arc
Tags	
Advanced	
Element ID	MM_1607
Images	
Small image	RCDATA_16_ARC3PT
Large image	RCDATA_32_ARC3PT

6 Click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

System Variables

SHORTCUTMENU

Controls whether Default, Edit, and Command mode shortcut menus are available in the drawing area.

Create Submenus

You can create submenus to organize and group similar commands together. Submenus are created in much the same way that you create a menu.

The following table describes the non-alphanumeric characters that can be used to control the display and behavior of the caption for a submenu. Non-alphanumeric characters not listed are reserved for future use as special menu characters.

Special characters for submenus

Character	Description	Example
`$(`	Enables the pull-down or shortcut command label to evaluate a DIESEL string macro if `$(` are the first characters.	$(if,$(and,$(getvar,CleanScreenState),1),!.)Clean S&creen

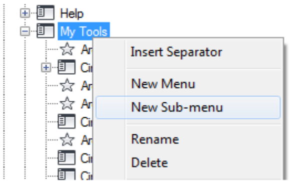
Special characters for submenus

Character	Description	Example
~	Makes a command unavailable.	~Plot Style
`!.`	Marks a command with a check mark or if an icon is displayed for the menu item it appears sunken.	!.Layer...
&	Placed directly before a character, specifies the character as the menu access key in a pull-down or shortcut menu label.	`S&ample` displays Sample (with the letter *a* underlined).
`\t`	Pushes all label text entered after these characters to the right side of the menu.	Help\tF1 displays Help on the left side of the pull-down menu and F1 on the right side.

To create a submenu

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Menus. Select the menu you want to add a submenu to.



3 Right-click the menu. Click New Sub-menu.

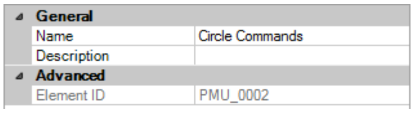
The new submenu (named Menu1) is placed at the bottom of the Menu you selected to add the submenu to.

4 Do one of the following:

- Enter a new name over the default name Menu1.
- Right-click Menu1. Click Rename. Enter a new submenu name.

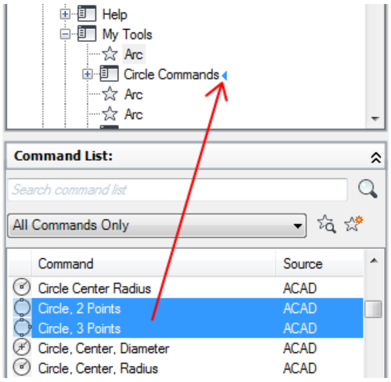
- Click Menu1, wait, and click again over the menu's name again to edit its name in-place.

5 In the Properties pane, do the following:
   - In the Description box, optionally enter a description for the submenu.



General	
Name	Circle Commands
Description	
Advanced	
Element ID	PMU_0002

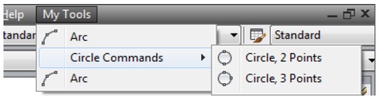
6 In the Command List pane, drag the command you want to add to a location just below the name of the submenu in the Customizations In <*file name*> pane.



Command	Source
Circle Center Radius	ACAD
Circle, 2 Points	ACAD
Circle, 3 Points	ACAD
Circle, Center, Diameter	ACAD
Circle, Center, Radius	ACAD

7 Continue adding commands until the new submenu is complete.

8 Click Apply.



Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

Reference Pull-Down or Shortcut Menus

Using a method similar to that used to activate submenus, you can activate or deactivate another pull-down or shortcut menu. This is called *menu referencing*.

Pull-down or shortcut menus can be referenced using two different methods: *relative* and *absolute*. Relative referencing uses the customization group name and element ID. Absolute referencing uses the absolute position of a menu item in the menu hierarchy. Relative referencing is recommended because of its dynamic nature, which allows it to function regardless of the current state of a menu.

Relative Referencing of Pull-Down and Shortcut Commands

To reference a pull-down or shortcut menu item based on its customization group and element ID, use the AutoLISP *menucmd* function. The following syntax references a menu item based on its element ID.

```
(menucmd "Gcustomizationgroup.element_id=value")
```

The following example uses the relative referencing syntax to disable the menu item ID_Line that is stored in the ACAD customization group. It works regardless of the menu item's location in the menu.

```
(menucmd "GACAD.ID_Line=~")
```

If you know what is contained in the main CUIx file, you can create a partial CUIx file with an additional menu item that references the main file. In this manner, partial CUIx files and specific base files can work together.

Absolute Referencing of Pull-Down and Shortcut Menu Items

In addition to referencing a menu item, you can activate or deactivate a menu item with the $P*n*=*xxx* syntax. This is the format:

```
$Pn.i=xxx
```

The $ loads a menu section; P*n* specifies the active menu section (0 through 16 are valid values); *i* specifies the menu item number; and *xxx* (if present), specifies a string of grayed out or marked characters.

Using the $P*n*=*xxx* syntax, the following example adds a check mark to item 1 in the POP7 section.

```
$P7.1=!.
```

The following example uses the AutoLISP *menucmd* function to reference a pull-down or shortcut menu item. Because customization files are dynamic (through the loading of partial CUIx files), the following syntax will not work in all cases.

```
(menucmd "P1.2=~")
```

This syntax relies on the location of the menu item and does not work if a new item is inserted before `POP1` by the CUILOAD command.

Menu item numbering is consecutive regardless of the hierarchy of the menu.

To make it easy for an item to address itself regardless of its location in the menu hierarchy, use these forms:

`$P@.@=`*`xxx`* References the current or most recently chosen command.

`$P@.`*`n`*`=`*`xxx`* References item *`n`* in the current or most recently chosen menu.

AutoLISP Access to Label Status

The AutoLISP *`menucmd`* function accepts `$P`*`n`*`=`*`xxx`* command strings but without the leading `$`. For these functions, the *`xxx`* portion of the command string can have special values.

`P`*`n`*`.`*`i`*`=?` Returns the current disabled and marked status for the specified item as a string (for example, `~` for a disabled item, `!.` for an item with a check mark, and `""` for an item that is neither grayed out nor marked).

`P`*`n`*`.`*`i`*`=#?` Returns the same type of string as described for `P`*`n`*`.i=?`, but with the `P`*`n`*`.`*`i`*`=` prefix. This is useful in conjunction with the `@` forms, because the actual menu and item number are returned.

For example, if the fifth item in the `POP6` section is disabled, the following *`menucmd`* code returns the following string values.

```
(menucmd "P6.5=?")      returns "~"
(menucmd "P6.5=#?")     returns "P6.5=~"
```

See “Use of AutoLISP in Macros” in the *AutoLISP Developer's Guide*.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

Swap and Insert Pull-Down Menus

Using the Customize User Interface (CUI) Editor, you can use workspaces to control the swapping of pull-down menus. However, you can also swap one pull-down menu programmatically for another (for example, when a user loads an application that requires an additional menu).

Swap Pull-Down Menus

Because the program has cascading pull-down menus, there is little need to swap menus. Also, swapping menus can detract from the consistency of the user interface. However, using `$` commands, you can swap pull-down menus and submenus. An alternative to menu swapping involves relative (or global) referencing. Using this method, you can insert the new menu in front of a known menu and then remove the known menu.

For menu-swapping purposes, the pull-down menu areas are named `P1` through `P16`. You can change the title that appears in the menu bar by replacing that line of the menu with a `$Pn=` command. You can use the special command `$Pn=*` from within any command to force the menu currently assigned to area `POP`*n* to pull down for greater flexibility in movement of the pointing device.

The following macro example replaces a menu at position `P3` with the menu named `MyMenu` in the customization group named `MYMENU`.

```
$P3=mymenu.new3
```

The same thing can be done with the AutoLISP *menucmd* function as follows:

```
(menucmd "P3=mymenu.new3")
```

You can use the `$P`*n*`=*` special command from within any macro to force the menu currently assigned to area `POP`*n* to be displayed.

NOTE The swapping of pull-down menus does not conform to the Microsoft® user interface guidelines and is not guaranteed to be available in future releases of the program.

Insert and Remove Pull-Down Menus

Menu swapping is done by activating one menu directly from another menu. Menu swapping is supported for the following interface elements:

- B - Buttons
- P - Pull-down menus

- A - Mouse buttons
- I - Image tile menus
- T - Tablet menus

The syntax for the swapping of partial menus is as follows:

```
$section=customizationgroup.menuname
```

section

B1-4, A1-4, P0-16, T1-4

customizationgroup

Customization group name in the desired CUIx file

menuname

Main label or alias

You can use the AutoLISP *menucmd* function to insert or remove a pull-down menu. The syntax is similar to that used to swap pull-down menus except that the left side of the assignment is the pull-down menu before which the new menu will be inserted. The right side of the assignment is a plus sign (+) followed by the name of the menu group, a period, and the menu's alias, as shown in the following syntax:

```
(menucmd "customizationgroup1.menuname1=+customizationgroup2.menun
ame2")
```

You can also insert a menu with the `Pn=` syntax. The following macro inserts a menu after the `P5` menu.

```
(menucmd "P5=+mymenu.new3")
$P5=+mymenu.new3
```

If you use this method to insert a menu, remember that you cannot rely on its being inserted at the `P6` menu location as you might expect. There are two reasons that this may not be the case.

- If the current menu bar has only three menus, inserting a menu after menu `P5` results in the new menu's location being `P4`.
- If the user inserts or removes a customization file with the CUILOAD command or when another application inserts or removes customization files, menu numbering can get out of sync.

This is the syntax for removing a menu:

```
(menucmd "Gcustomizationgroup.menuname=-")
Gcustomizationgroup.menuname=-
```

The following shows how to remove the menu `NEW3` that is a member of the `MyMenu` group.

```
(menucmd "Gmymenu.new3=-")
$Gmymenu.new3=-"
```

As you might expect, the preceding format is preferable to the `Pn=` format because it removes only the specified menu. The following shows how to remove the menu at the `P4` location (whatever it is).

```
(menucmd "P4=-")
$P4=-
```

NOTE Use the `Pn` syntax as part of the syntax for a *menucmd* statement only. Use the $Pn syntax for macro-specific statements.

Control Toolbars Across Partial CUIx Files

To control toolbars across partial CUIx files, use the following syntax at the Enter toolbar name or [ALL]: prompt of the -TOOLBAR command.

```
menugroup.subsection-name
```

This syntax accesses the toolbar identified by `menugroup.menuname` and allows you to use the full spectrum of -TOOLBAR command options on that toolbar.

If the menu group is left out of any of these commands and functions, the program defaults to the main CUIx file.

You should be aware of the following:

- Image tile menus cannot be swapped from external customization files.
- You can swap customization elements of the same type only; that is, one shortcut menu for another, one toolbar for another, and so on. Trying to swap between types may result in unpredictable behavior.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

CUILOAD

Loads a CUIx file.

CUIUNLOAD

Unloads a CUIx file.

-TOOLBAR

Displays, hides, and customizes toolbars.

WORKSPACE

Creates, modifies, and saves workspaces and makes a workspace current.

Quick Properties

The Quick Properties palette displays a customizable subset of the properties displayed in the Properties palette. You can also customize the types of objects that display the Quick Properties palette when selected or double-clicked.

The available properties are the same as those on the Properties palette and for rollover tooltips.

NOTE You can synchronize the properties that are displayed on the Quick Properties palette with those for rollover tooltips.

Display Objects Properties on the Quick Properties Palette

When customizing the Quick Properties palette, you control which object *types* display properties on the Quick Properties palette, and which properties are displayed. You use the Objects pane to add and remove the object types that are set to display properties on the Quick Properties palette. Once an object type is added to the Objects pane, you can then decide which properties to display when on object of that type is selected or double-clicked in the drawing area.

You can change the general properties for a selected object type or for all object types. Selecting an object type from the Objects pane allows you to control the display of the general properties for the selected object type, or by clicking the General button at the bottom of the Objects pane you can override the general properties of all object types.

When the General button at the bottom of the Objects pane is clicked, a list of the general properties that can be used to override the general properties of all object types is displayed along with the Reset Overrides button. Selecting the general properties that you want to display for all object types and clicking Reset Overrides applies the selected general properties to all listed object types in the Objects pane. However, after applying a general property to all object types you can deselect any general property for a specific object type by selecting the object type and deselecting the property.

Display the Quick Properties Palette

By default, the Quick Properties palette is displayed when an object is double-clicked, and that object type is enabled in the Customize User Interface (CUI) editor for Quick Properties. The Quick Properties palette is also displayed when objects are selected, if the object type of the selected objects is enabled for Quick Properties, if the QPMODE system variable is set to 1 or 2, and if the PICKFIRST system variable is set to 1 (on).

The QUICKPROPERTIES command displays the Quick Properties palette for any objects that are selected, regardless of other settings.

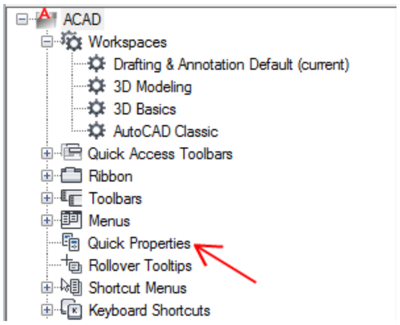
See Display and Change the Properties of Objects in the *User's Guide* for more information about controlling the display of the Quick Properties.

NOTE When the system variable QPMODE is set to a value of 1, the general properties that are checked are displayed in the Quick Properties palette for all object types that are not in the list on the Objects pane.

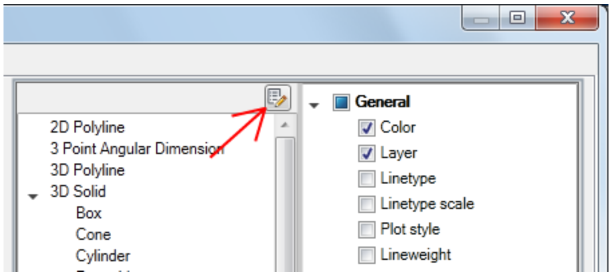
To control which object types are used with the Quick Properties palette

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, select Quick Properties.



3 In the Objects pane, click Edit Object Type List.



General

☑ Color

☑ Layer

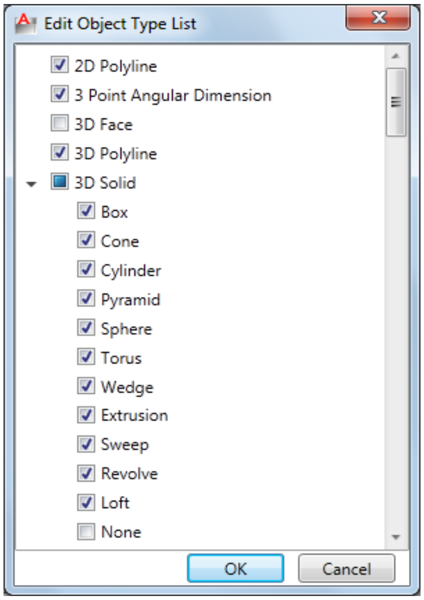
□ Linetype

□ Linetype scale

□ Plot style

□ Lineweight

4 In the Edit Object Type List dialog box, select the object types you want to display properties for on the Quick Properties palette.



Edit Object Type List

- ☑ 2D Polyline
- ☑ 3 Point Angular Dimension
- □ 3D Face
- ☑ 3D Polyline
- ■ 3D Solid
  - ☑ Box
  - ☑ Cone
  - ☑ Cylinder
  - ☑ Pyramid
  - ☑ Sphere
  - ☑ Torus
  - ☑ Wedge
  - ☑ Extrusion
  - ☑ Sweep
  - ☑ Revolve
  - ☑ Loft
  - □ None

OK | Cancel

If an object type is checked, the properties for the object type are displayed on the Quick Properties palette when an object of the same type is selected, QPMODE is set to 2, and PICKFIRST is turned on. Clear the check mark next to an object type to remove support for the object type from the Quick Properties palette.

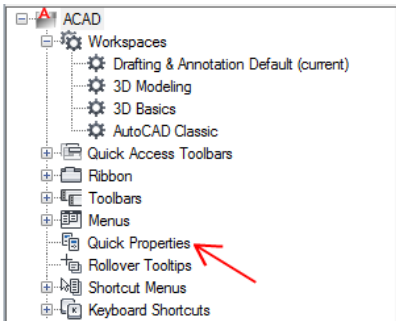
5 Click OK.

6 In the Customize User Interface Editor, click Apply.

To control the display of a property for an object on the Quick Properties palette

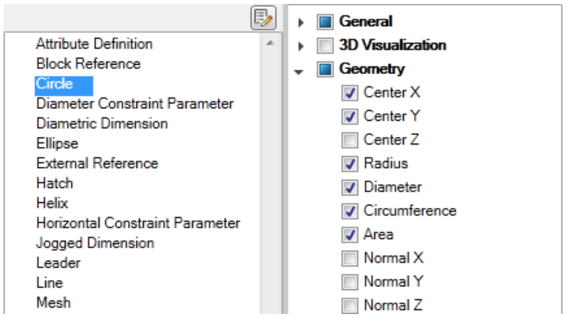
1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, select Quick Properties.



3 In the Objects pane, select an object from the Object Type list.

4 In the Properties pane, select the properties you want displayed for an object type on the Quick Properties palette.



- ■ General
- □ 3D Visualization
- ■ Geometry
  - ☑ Center X
  - ☑ Center Y
  - □ Center Z
  - ☑ Radius
  - ☑ Diameter
  - ☑ Circumference
  - ☑ Area
  - □ Normal X
  - □ Normal Y
  - □ Normal Z

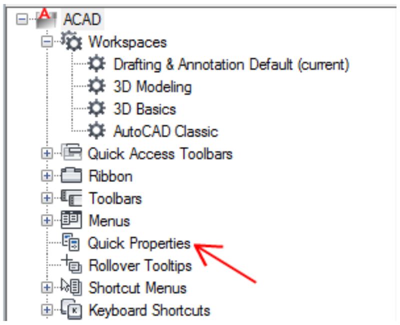
If a property is checked, the property is displayed on the Quick Properties palette when an object of the same type is selected in the drawing window. Clear the check mark next to a property to remove the property for the selected object type from the Quick Properties palette.

5 Click Apply.

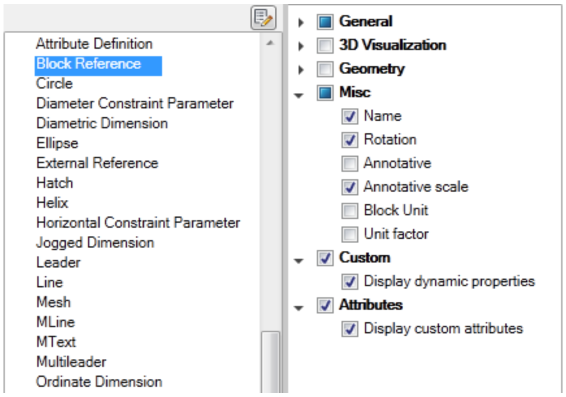
To control the display of custom properties and attributes for block references on the Quick Properties palette

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, select Quick Properties.



3 In the Objects pane, select Block Reference from the Object Type list.



■ **General**
☐ **3D Visualization**
☐ **Geometry**
■ **Misc**
☑ Name
☑ Rotation
☐ Annotative
☑ Annotative scale
☐ Block Unit
☐ Unit factor
☑ **Custom**
☑ Display dynamic properties
☑ **Attributes**
☑ Display custom attributes

4 In the Properties pane, select the check box next to Custom and Attributes.

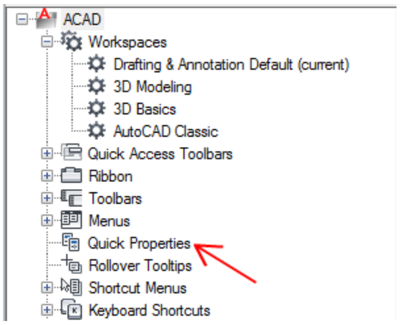
If the Custom category is checked, the dynamic properties for a block are displayed on the Quick Properties palette. If the Attributes category is checked, the attributes for a block are displayed on the Quick Properties palette

5 Click Apply.

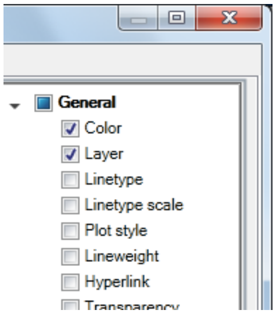
To override the general properties for all object types

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, select Quick Properties.



3 In the Properties pane, select the check boxes next to the general properties you want the Quick Properties palette to display for all object types.


General

☑ Color

☑ Layer

☐ Linetype

☐ Linetype scale

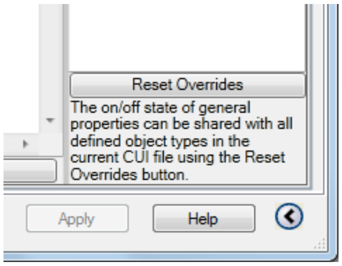
☐ Plot style

☐ Lineweight

☐ Hyperlink

☐ Transparency

4 Click Reset Overrides.



The on/off state of general properties can be shared with all defined object types in the current CUI file using the Reset Overrides button.

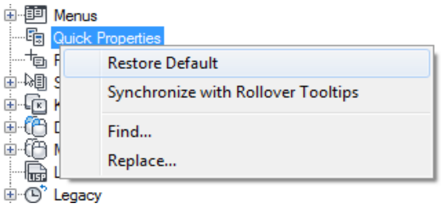
5 Click Apply.

To restore the default settings for Quick Properties

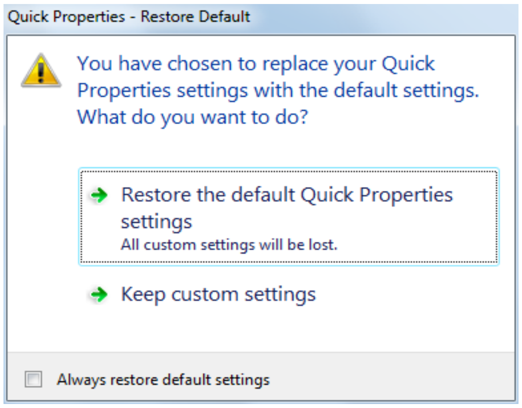
1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, right-click Quick Properties.

3 Click Restore Default.



4 Click Restore the Default Quick Properties Settings.



Quick Properties - Restore Default

You have chosen to replace your Quick Properties settings with the default settings. What do you want to do?

➔ Restore the default Quick Properties settings
All custom settings will be lost.

➔ Keep custom settings

□ Always restore default settings

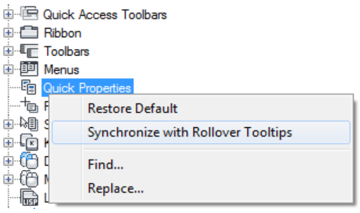
5 Click Apply.

To synchronize Quick Properties with rollover tooltips

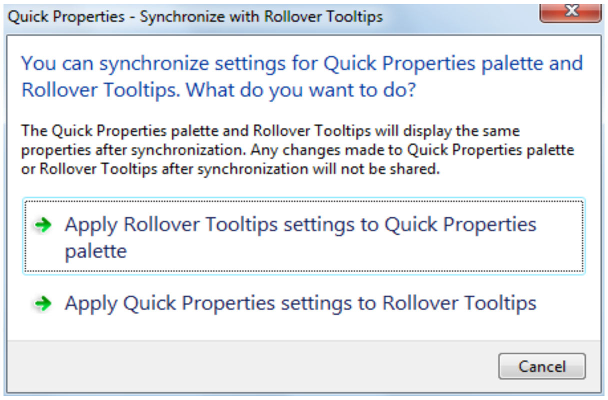
1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, right-click Quick Properties.

3 Click Synchronize with Rollover Tooltips.



4 Click Apply Rollover Tooltips Settings to Quick Properties palette.


Quick Properties - Synchronize with Rollover Tooltips

You can synchronize settings for Quick Properties palette and Rollover Tooltips. What do you want to do?

The Quick Properties palette and Rollover Tooltips will display the same properties after synchronization. Any changes made to Quick Properties palette or Rollover Tooltips after synchronization will not be shared.

Apply Rollover Tooltips settings to Quick Properties palette
Apply Quick Properties settings to Rollover Tooltips
Cancel

5 Click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

DSETTINGS

Sets grid and snap, polar and object snap tracking, object snap modes, Dynamic Input, and Quick Properties.

System Variables

QPLOCATION

Sets the location for the Quick Properties palette.

QPMODE

Controls whether the Quick Properties palette is displayed when objects are selected.

Rollover Tooltips

Rollover tooltips display the current values of selected properties.

The properties and values that are displayed in a rollover tooltip can be customized by object type. When customizing the display of the properties for a rollover tooltip, you can display properties common to all object types or properties that are specific to an object type. The available properties are the same as those on the Properties and Quick Properties palettes.

NOTE You can synchronize the properties used for rollover tooltips with those displayed on the Quick Properties palette.

Display Objects Properties on Rollover Tooltips

When customizing rollover tooltips, you control which object types display a tooltip when the cursor hovers over an object in the drawing window. You use the Objects pane to add and remove the object types for which you want to see a rollover tooltip. Once an object type is listed in the Objects pane, you can then specify which properties in the Properties pane are displayed on the rollover tooltip for the selected object type.

You can change the general properties for a selected object type or for all object types. Selecting an object type from the Objects pane allows you to control the display of the general and object specific properties for that selected object type. You can click the General button at the bottom of the Objects pane to override the general properties of all object types.

When the General button at the bottom of the Objects pane is clicked, a list of the general properties that can be used to override the properties of all object types is displayed along with the Reset Overrides button. Select the general properties that you want to display for all object types and click Reset Overrides. However, after applying a general property to all object types you can deselect any general property for a specific object type by selecting the object type and deselecting the property.

NOTE When an object is not in the Object Type list on the Objects pane, the general properties that are checked for all object types are displayed on the rollover tooltips.

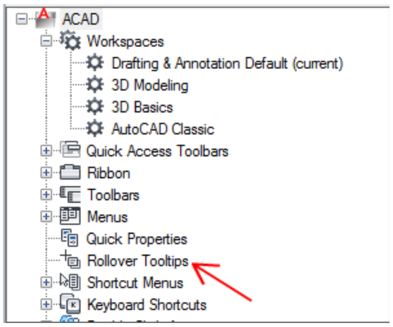
Display Rollover Tooltips

Rollover tooltips are displayed for objects when the ROLLOVERTIPS system variable is set to 1. See Set Interface Options in the *User's Guide* for more information about controlling the display of rollover tooltips and other tooltip settings for the program.

To control which objects support rollover tooltips

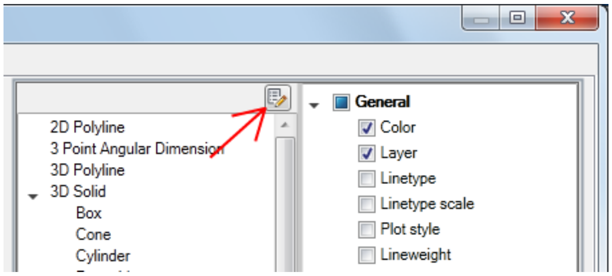
1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, select Rollover Tooltips.



ACAD
Workspaces
Drafting & Annotation Default (current)
3D Modeling
3D Basics
AutoCAD Classic
Quick Access Toolbars
Ribbon
Toolbars
Menus
Quick Properties
Rollover Tooltips
Shortcut Menus
Keyboard Shortcuts

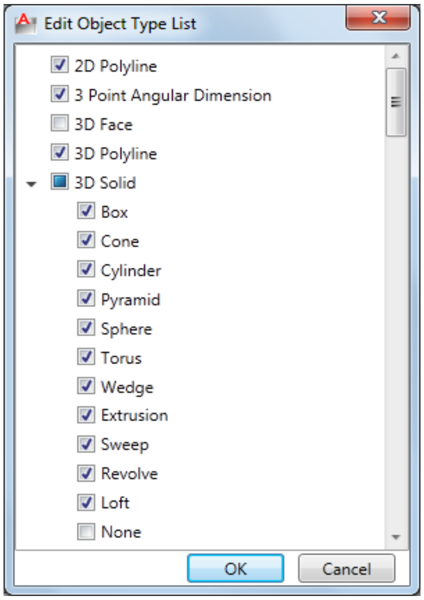
3 In the Objects pane, click Edit Object Type List.



2D Polyline
3 Point Angular Dimension
3D Polyline
3D Solid
Box
Cone
Cylinder

General
☑ Color
☑ Layer
□ Linetype
□ Linetype scale
□ Plot style
□ Lineweight

4 In the Edit Object Type List dialog box, select the object types you want to display properties for on a rollover tooltip.



☑ 2D Polyline
☑ 3 Point Angular Dimension
☐ 3D Face
☑ 3D Polyline
▣ 3D Solid
- ☑ Box
- ☑ Cone
- ☑ Cylinder
- ☑ Pyramid
- ☑ Sphere
- ☑ Torus
- ☑ Wedge
- ☑ Extrusion
- ☑ Sweep
- ☑ Revolve
- ☑ Loft
- ☐ None

If an object type is checked, the properties for the object type are displayed on a rollover tooltip when the cursor hovers over an object of the same type. Clear the check mark next to an object type to remove support for the object type from rollover tooltips.

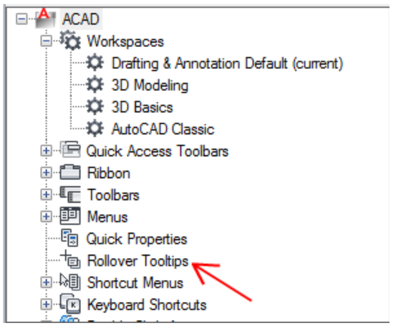
5 Click OK.

6 In the Customize User Interface Editor, click Apply.

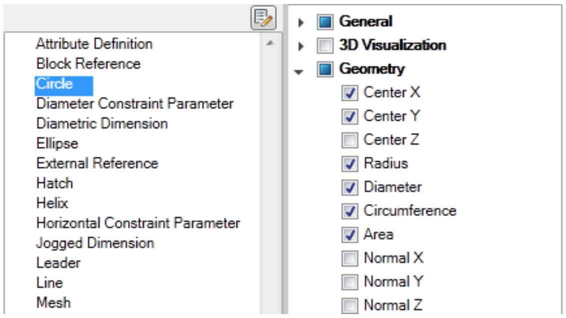
To control which properties are displayed on a rollover tooltip

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, select Rollover Tooltips.



3 In the Objects pane, select an object from the Object Type list.



- ▪ General
- □ 3D Visualization
- ▪ Geometry
  - ☑ Center X
  - ☑ Center Y
  - □ Center Z
  - ☑ Radius
  - ☑ Diameter
  - ☑ Circumference
  - ☑ Area
  - □ Normal X
  - □ Normal Y
  - □ Normal Z

4 In the Properties pane, select the properties you want to display on a rollover tooltip.

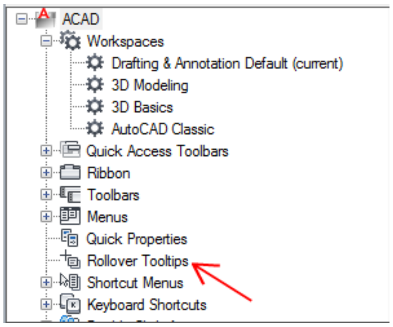
If a property is checked, the property is displayed on a rollover tooltip when the cursor hovers over an object of the selected object type in the drawing window. Clear the check mark next to a property to remove the property for the selected object type.

5 Click Apply.

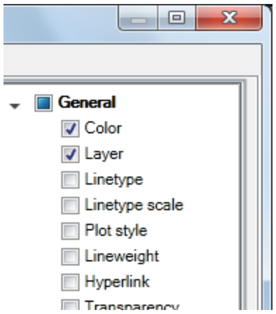
To override the general properties for all object types that support rollover tooltips

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, select Rollover Tooltips.

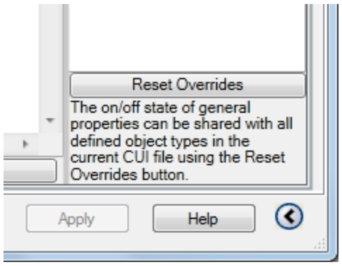


3 In the Properties pane, select the check boxes next to the general properties you want rollover tooltips to display for all object types.



General
- ☑ Color
- ☑ Layer
- ☐ Linetype
- ☐ Linetype scale
- ☐ Plot style
- ☐ Lineweight
- ☐ Hyperlink
- ☐ Transparency

4 Click Reset Overrides.



The on/off state of general properties can be shared with all defined object types in the current CUI file using the Reset Overrides button.

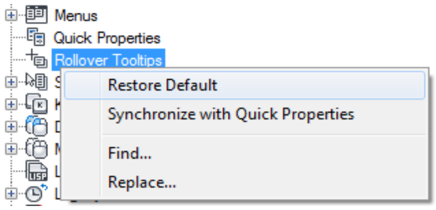
5 Click Apply.

To restore the default settings for rollover tooltips

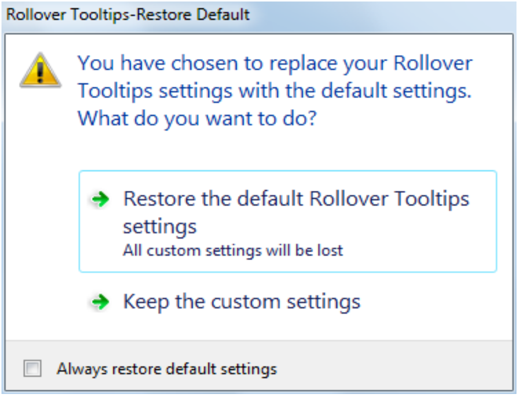
1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, right-click Rollover Tooltips.

3 Click Restore Default.



4 Click Restore the Default Rollover Tooltips Settings.


Rollover Tooltips-Restore Default

You have chosen to replace your Rollover Tooltips settings with the default settings. What do you want to do?

Restore the default Rollover Tooltips settings
All custom settings will be lost

Keep the custom settings

□ Always restore default settings

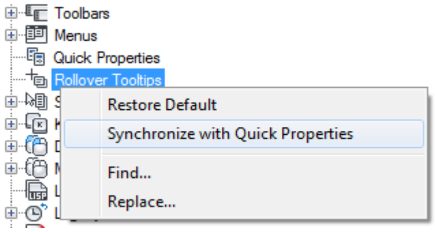
5 Click Apply.

To synchronize rollover tooltips with Quick Properties

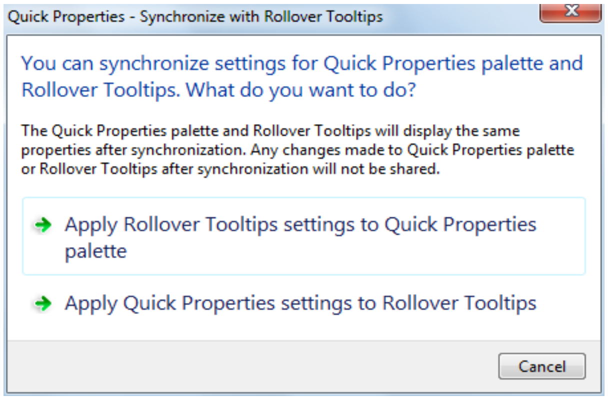
1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, right-click Rollover Tooltips.

3 Click Synchronize with Quick Properties.



4 Click Apply Quick Properties Settings to Rollover Tooltips.



Quick Properties - Synchronize with Rollover Tooltips

You can synchronize settings for Quick Properties palette and Rollover Tooltips. What do you want to do?

The Quick Properties palette and Rollover Tooltips will display the same properties after synchronization. Any changes made to Quick Properties palette or Rollover Tooltips after synchronization will not be shared.

→ Apply Rollover Tooltips settings to Quick Properties palette

→ Apply Quick Properties settings to Rollover Tooltips

5 Click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

OPTIONS

Customizes the program settings.

System Variables

ROLLOVERTIPS

Controls the display of rollover tooltips when the cursor hovers over an object.

Keyboard Shortcuts

Shortcut keys can be used to start commands and to be temporary override keys to execute a command or change a setting when a key is pressed.

Shortcut Keys

You can assign shortcut keys (sometimes called accelerator keys) to commands you use frequently.

Overview of Shortcut Keys

Shortcut keys are key combinations that start commands. For example, you can press Ctrl+O to open a file and Ctrl+S to save a file, which is the same as clicking Open and Save on the Quick Access toolbar or File menu.

To create a shortcut key, you start by dragging a command from the Commands List pane to the Shortcut Keys node in the Customizations In <*file name*> pane. Once you create a shortcut key, you assign a key combination to it.

The following table shows the properties of the Save shortcut key as they appear in the Properties pane.

Properties for the Save Shortcut Key

Properties pane item	Description	Example
Name	String that is only used in the CUI Editor and is not displayed in the user interface.	Save
Description	Text used to describe the element; does not appear in the user interface.	Saves the current drawing
Extended Help File	Displays the file name and ID for the extended tooltip that is displayed when the cursor hovers over a toolbar or panel button.	
Command Display Name	String that contains the name of the command that is related to the command.	QSAVE

Properties for the Save Shortcut Key

Properties pane item	Description	Example
Macro	The command macro. It follows the standard macro syntax.	^C^C_qsave
Key(s)	Specifies the keystroke combination that is used to execute the macro. Click the [ ] button to open the Shortcut Keys dialog box.	CTRL+S
Tags	Keywords associated to a command. Tags provide an additional field to search in the application menu.	
Element ID	Tag that uniquely identifies a command.	ID_Save

NOTE A shortcut key inherits its properties from the command that is used to create it.

To create or modify a shortcut key

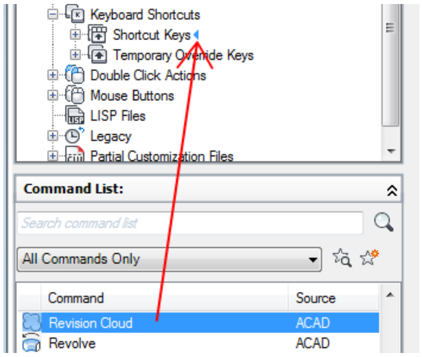
1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, click the plus sign (+) next to Keyboard Shortcuts to expand it.

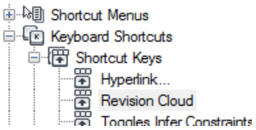
3 Click the plus sign (+) next to Shortcut Keys to expand it.

4 Do one of the following:

- To create a shortcut key, in the Command List pane, drag the command to the Shortcut Keys node of the Customizations In <*file name*> pane.

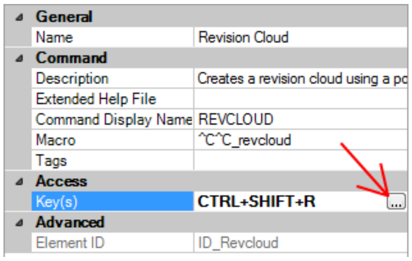


- To modify a shortcut key, select a shortcut key.



In the Properties pane, the properties for the shortcut key are displayed.

5 In the Key(s) box, click the [ ] button to open the Shortcut Keys dialog box.



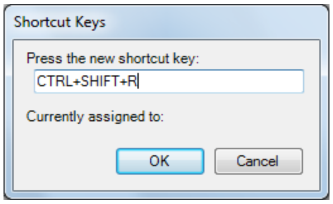
General	
Name	Revision Cloud
Command	
Description	Creates a revision cloud using a po
Extended Help File	
Command Display Name	REVCLOUD
Macro	^C^C_revcloud
Tags	
Access	
Key(s)	**CTRL+SHIFT+R**
Advanced	
Element ID	ID_Revcloud

6 Hold down the modifier key Ctrl with a combination of Shift and Alt if desired and press a letter, number, function, or virtual key such as F1 or Insert. Valid modifier and key combinations include the following:

- Function (F*n*) keys containing no modifiers
- Number Pad (NUMPAD*n*) keys containing no modifiers
- Ctrl+letter, Ctrl+number, Ctrl+function, Ctrl+virtual key
- Ctrl+Alt+letter, Ctrl+Alt+number, Ctrl+Alt+function, Ctrl+Alt+virtual key

- Ctrl+Shift+letter, Ctrl+Shift+number, Ctrl+Shift+function, Ctrl+Shift+virtual key
- Ctrl+Shift+Alt+letter, Ctrl+Shift+Alt+number, Ctrl+Shift+Alt+function, Ctrl+Shift+Alt+virtual key

NOTE The virtual keys that are supported are Escape, Insert, Delete, Home, End, Page Up, Page Down, Left Arrow, Right Arrow, Up Arrow, and Down Arrow. The virtual key Escape can only be used by itself or with the modifier combination Ctrl+Shift+Alt.


Shortcut Keys

Press the new shortcut key:

CTRL+SHIFT+R

Currently assigned to:

Currently Assigned To displays any current assignments for the entered key combination. If you do not want to replace the current key assignment, use a different key combination.

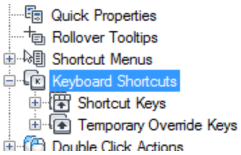
7 Click OK to assign the key combination and close the Shortcut Keys dialog box.

8 In the Customize User Interface Editor, click Apply.

To print a list of shortcut keys or temporary override keys

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customizations In <*file name*> pane, click the Keyboard Shortcuts node.

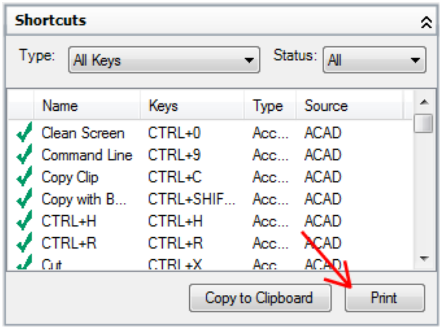


3 In the Shortcuts pane, filter the type and status of keyboard shortcuts to print.

- In the Type drop-down list, select the type of keyboard shortcuts to display in the list. Choices include All Keys, Accelerator Keys, or Temporary Override Keys.

- In the Status list, select the status of keyboard shortcuts displayed in the list. Choices include All, Active, Inactive, and Unassigned.

4 In the Shortcuts pane, click Print.



Type: All Keys Status: All

	Name	Keys	Type	Source
✓	Clean Screen	CTRL+0	Acc...	ACAD
✓	Command Line	CTRL+9	Acc...	ACAD
✓	Copy Clip	CTRL+C	Acc...	ACAD
✓	Copy with B...	CTRL+SHIF...	Acc...	ACAD
✓	CTRL+H	CTRL+H	Acc...	ACAD
✓	CTRL+R	CTRL+R	Acc...	ACAD
✓	Cut	CTRL+X	Acc...	ACAD

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

System Variables

TOOLTIPS

Controls the display of tooltips on the ribbon, toolbars, and other user interface elements.

Examples of Shortcut Keys

The CUIx file that ships with AutoCAD defines the default shortcut keys. You can use the default shortcut keys as examples when creating your own shortcut keys.

The following table lists the default actions for shortcut keys.

Shortcut Key Assignments

Shortcut Key	Description
ALT+F11	Displays the Visual Basic Editor
ALT+F8	Displays the Macros dialog box
CTRL+0	Toggles Clean Screen
CTRL+1	Toggles Properties palette
CTRL+2	Toggles DesignCenter
CTRL+3	Toggles the Tool Palettes window
CTRL+4	Toggles Sheet Set Manager
CTRL+6	Toggles dbConnect Manager
CTRL+7	Toggles Markup Set Manager
CTRL+8	Toggles the QuickCalc palette
CTRL+9	Toggles the Command Line window
CTRL+A	Selects all the objects in drawing that are not locked or frozen
CTRL+SHIFT+A	Toggles Groups
CTRL+B	Toggles Snap
CTRL+C	Copies objects to the Windows Clipboard
CTRL+SHIFT+C	Copies objects to the Windows Clipboard with Base Point
CTRL+D	Toggles Dynamic UCS
CTRL+E	Cycles through isometric planes

Shortcut Key Assignments

Shortcut Key	Description
CTRL+F	Toggles running object snaps
CTRL+G	Toggles Grid
CTRL+H	Toggles PICKSTYLE
CTRL+SHIFT+H	Toggles the display of palettes with HIDEPALETTES and SHOWPALETTES
CTRL+I	Toggles the Coordinates display
CTRL+J	Repeats last command
CTRL+K	Inserts a hyperlink
CTRL+L	Toggles Ortho mode
CTRL+M	Repeats last command
CTRL+N	Creates a new drawing
CTRL+O	Opens an existing drawing
CTRL+P	Plots the current drawing
CTRL+SHIFT+P	Toggles the Quick Properties interface
CTRL+Q	Quits AutoCAD
CTRL+R	Cycles through the viewports on the current layout
CTRL+S	Saves current drawing
CTRL+SHIFT+S	Displays up the Save As dialog box
CTRL+T	Toggles Tablet mode
CTRL+V	Pastes data from the Windows Clipboard

Shortcut Key Assignments

Shortcut Key	Description
CTRL+SHIFT+V	Pastes data from the Windows Clipboard as a Block
CTRL+X	Cuts objects from the current drawing to the Windows Clipboard
CTRL+Y	Cancels the preceding Undo action
CTRL+Z	Reverses the last action
CTRL+[	Cancels current command
CTRL+\	Cancels current command
CTRL+PAGE UP	Moves to the next layout tab to the left of the current tab
CTRL+PAGE DOWN	Moves to the next layout tab to the right of the current tab
F1	Displays Help
F2	Toggles Text Window
F3	Toggles OSNAP
F4	Toggles TABMODE
F5	Toggles ISOPLANE
F6	Toggles UCSDETECT
F7	Toggles GRIDMODE
F8	Toggles ORTHOMODE
F9	Toggles SNAPMODE
F10	Toggles Polar Tracking

Shortcut Key Assignments

Shortcut Key	Description
F11	Toggles Object Snap Tracking
F12	Toggles Dynamic Input

NOTE In the Customize User Interface (CUI) Editor, you can view, print, or copy a list of shortcut keys, temporary override keys, or both. The shortcut keys and temporary override keys in the list are those keys used by the CUIx files that are loaded in the program.

Temporary Override Keys

Temporary override keys allow you to execute a command or change a setting when a key combination is pressed, and then restore settings changed or execute a command when a key combination is released.

Overview of Temporary Override Keys

Temporary override keys are used to temporarily turn on or off drafting settings. For example, holding down the Shift key toggles the current setting of Ortho mode. The following table shows the Object Snap Override: Endpoint temporary override key properties as they appear in the Properties pane.

The creation of a temporary override key does not start with a command from the Commands List pane like a shortcut key does. Instead, you create a new temporary override key like you do a toolbar or ribbon panel, and that is by right-clicking over the Temporary Override Keys node and clicking New Temporary Override Key. Once a temporary override key is created you use the Properties pane to define its key up and key down behavior, and assign it a key combination.

The following table shows the properties of the Object Snap Override : Endpoint temporary override key as they appear in the Properties pane.

Properties for the Object Snap Override : Endpoint Temporary Override Key

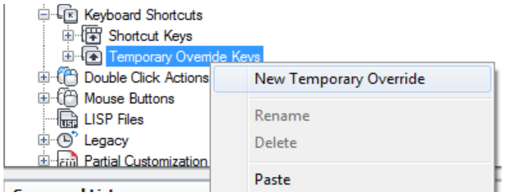
Properties pane item	Description	Example
Name	String that is only used in the CUI Editor and is not displayed in the user interface.	Object Snap Override : Endpoint

Properties for the Object Snap Override : Endpoint Temporary Override Key

Properties pane item	Description	Example
Description	Text used to describe the element; does not appear in the user interface.	Object Snap Override : Endpoint
Keys	Specifies the keystroke combination that is used to execute the temporary override. Click the [ ] button to open the Shortcut Keys dialog box.	SHIFT+E
Macro1 (Key Down)	Specifies the macro that should be executed when the keystroke combination is held down by the user.	^P'_.osmode 1 $(if,$(eq,$(getvar, osnapoverride),'_.osnapoverride 1)
Macro2 (Key Up)	Specifies the macro that should be executed when the keystroke combination is released by the user. If left blank, AutoCAD restores any variables to their previous state.	

To create a temporary override key

1. Click Manage tab ➤ Customization panel ➤ User Interface.
2. In the Customize User Interface Editor, Customize tab, click the plus sign (+) next to Keyboard Shortcuts to expand it.
3. In the Customizations In <*file name*> pane, right-click Temporary Override Keys. Click New Temporary Override.



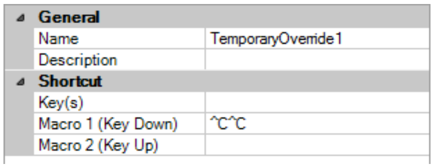
A new temporary override (named TemporaryOverride1) is placed at the bottom of the Temporary Override Keys tree.

4. Do one of the following:
   - Enter a new name over the default name TemporaryOverride1.

- Right-click TemporaryOverride1. Click Rename. Enter a new temporary override name.
- Click TemporaryOverride1, wait, and click again over the temporary override's name again to edit its name in-place.

5 Select the new temporary override in the tree view, and update the Properties pane:

- In the Description box, enter a description for the temporary override key.
- In the Key(s) box, click the [ ] button to open the Shortcut Keys dialog box. In the Shortcut Keys dialog box, click in the Press New Shortcut Key box to ensure the box has focus, and press a key. Valid modifier keys include function (F*n* keys) with no modifiers, Shift+letter, or Shift+number key.
- In the Macro 1 (Key Down) box, enter a macro to be executed when the temporary override key is pressed. When no value is assigned, the default macro is ^c^c.
- In the Macro 2 (Key Up) box, enter a macro to be executed when the temporary override key is released. When no value is defined, key up restores the application to its previous state (before the temporary override was executed).



General	
Name	TemporaryOverride1
Description	
Shortcut	
Key(s)	
Macro 1 (Key Down)	^C^C
Macro 2 (Key Up)	

NOTE For information about creating a macro, see Create Macros on page 151.

6 Click Apply.

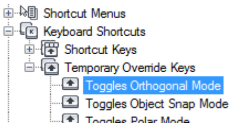
To modify a temporary override key

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, click the plus sign (+) next to Keyboard Shortcuts to expand it.

3 Click the plus sign (+) next to Temporary Override Keys to expand it.

4 In the Customizations In <*file name*> pane, click the temporary override key you want to modify.



- Shortcut Menus
- Keyboard Shortcuts
  - Shortcut Keys
  - Temporary Override Keys
    - Toggles Orthogonal Mode
    - Toggles Object Snap Mode
    - Toggles Polar Mode

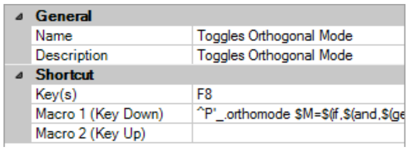
5 Update the Properties pane as necessary:

- In the Description box, enter a description for the temporary override key.

- In the Key(s) box, click the [ ] button to open the Shortcut Keys dialog box. In the Shortcut Keys dialog box, click in the Press New Shortcut Key box to ensure the box has focus, and press a key. Under the Press New Shortcut Key box, Currently Assigned To displays any current assignments for the key. If a key you select is not already assigned, click OK.

- In the Macro 1 (Key Down) box, enter a macro to be executed when the temporary override key is pressed. When no value is assigned, the default macro is ^c^c.

- In the Macro 2 (Key Up) box, enter a macro to be executed when the temporary override key is released. When no value is defined, key up restores the application to its previous state (before the temporary override was executed).



General	
Name	Toggles Orthogonal Mode
Description	Toggles Orthogonal Mode
Shortcut	
Key(s)	F8
Macro 1 (Key Down)	^P'_.orthomode $M=$(if,$(and,$(ge
Macro 2 (Key Up)	

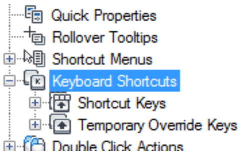
NOTE For information about creating a macro, see Create Macros on page 151.

6 Click Apply.

To print a list of shortcut keys or temporary override keys

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customizations In <*file name*> pane, click the Keyboard Shortcuts node.

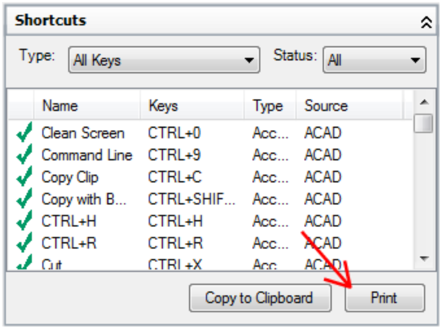


3 In the Shortcuts pane, filter the type and status of keyboard shortcuts to print.

- In the Type drop-down list, select the type of keyboard shortcuts to display in the list. Choices include All Keys, Accelerator Keys, or Temporary Override Keys.

- In the Status list, select the status of keyboard shortcuts displayed in the list. Choices include All, Active, Inactive, and Unassigned.

4 In the Shortcuts pane, click Print.



Type: All Keys

Status: All

	Name	Keys	Type	Source
✓	Clean Screen	CTRL+0	Acc...	ACAD
✓	Command Line	CTRL+9	Acc...	ACAD
✓	Copy Clip	CTRL+C	Acc...	ACAD
✓	Copy with B...	CTRL+SHIF...	Acc...	ACAD
✓	CTRL+H	CTRL+H	Acc...	ACAD
✓	CTRL+R	CTRL+R	Acc...	ACAD
✓	Cut	CTRL+X	Acc	ACAD

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

System Variables

TOOLTIPS

Controls the display of tooltips on the ribbon, toolbars, and other user interface elements.

TEMPOVERRIDES

Turns temporary override keys on and off.

Examples of Temporary Override Keys

The CUIx file that ships with AutoCAD defines the default temporary override keys. You can use the default temporary override keys as examples when creating your own temporary override keys.

The following table lists the default actions for temporary override keys on an English U.S. keyboard. For more information about default temporary override keys on other keyboards, see Override Object Snap Settings in the *User's Guide*.

Temporary Override Key Assignments

Temporary Override Key	Description
F3	Toggles OSNAP
F6	Toggles UCSDETECT
F8	Toggles ORTHOMODE
F9	Toggles SNAPMODE
F10	Toggles Polar Tracking
F11	Toggles Object Snap Tracking
F12	Toggles Dynamic Input
SHIFT	Toggles ORTHOMODE
SHIFT+'	Toggles OSNAP
SHIFT+,	Object Snap Override: Center

Temporary Override Key Assignments

Temporary Override Key	Description
SHIFT+.	Toggles Polar Tracking
SHIFT+/	Toggles UCSDETECT
SHIFT+;	Enables Object Snap Enforcement
SHIFT+]	Toggles Object Snap Tracking
SHIFT+A	Toggles OSNAP
SHIFT+C	Object Snap Override: Center
SHIFT+D	Disable All Snapping and Tracking
SHIFT+E	Object Snap Override: Endpoint
SHIFT+L	Disable All Snapping and Tracking
SHIFT+M	Object Snap Override: Midpoint
SHIFT+P	Object Snap Override: Endpoint
SHIFT+Q	Toggles Object Snap Tracking
SHIFT+S	Enables Object Snap Enforcement
SHIFT+V	Object Snap Override: Midpoint
SHIFT+X	Toggles Polar Tracking
SHIFT+Z	Toggles UCSDETECT

NOTE In the Customize User Interface (CUI) Editor, you can view, print, or copy a list of shortcut keys, temporary override keys, or both. The shortcut keys and temporary override keys in the list are those keys used by the CUIx files that are loaded in the program.

Double Click Actions

You can create a double click action which starts an editing command when the cursor is positioned over an object in a drawing and a double-click event is registered from a pointing device.

Overview of Double Click Actions

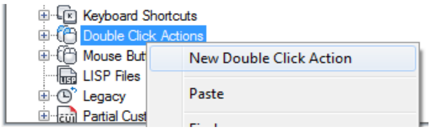
Double click actions execute a command that displays either the Properties palette or a specialized editor that is more powerful, convenient, or frequently used for the object type that is double-clicked in a drawing. The following table shows the definition of the Attribute Block double click action in the CUI Editor.

Properties for the Attribute Block double click action

Properties pane item	Description	Example
Name	String used to identify the double click action in the CUI Editor.	Attribute Block
Description	Text used to describe the element in the CUI Editor.	
Object Name	Determines the type of object the double click action is associated to. For information on the object names that can be used, see Double Click Action Object Names on page 327.	ATTBLOCKREF
Element ID	Uniquely identifies a double click action in the CUI Editor.	DC_0002

To create a double click action

1. Click Manage tab ➤ Customization panel ➤ User Interface.
2. In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, right-click Double Click Actions. Click New Double Click Action.



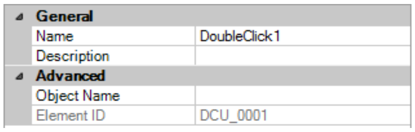
The new double click action (named DoubleClick1) is placed at the bottom of the Double Click Actions tree.

3 Do one of the following:

- Enter a new name over the default name DoubleClick1.
- Right-click DoubleClick1. Click Rename. Enter a new double click action name.
- Click DoubleClick1, wait, and click again over the double click action's name again to edit its name in-place.

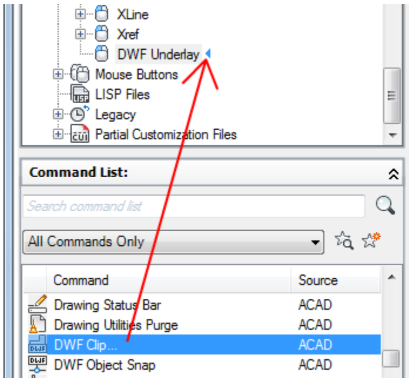
4 In the Properties pane, do the following:

- In the Description box, enter a description for the double click action.
- In the Object Name box, enter a DXF name or one of the special object names used for an insert, surface, or underlay object. The value will automatically be converted to uppercase after the box loses focus.



General	
Name	DoubleClick1
Description	
Advanced	
Object Name	
Element ID	DCU_0001

5 In the Command List pane, drag the command you want to add to the double click action in the Customizations In <*file name*> pane.



Command	Source
Drawing Status Bar	ACAD
Drawing Utilities Purge	ACAD
DWF Clip...	ACAD
DWF Object Snap	ACAD

NOTE Only a single command can be associated with a double click action at a time.

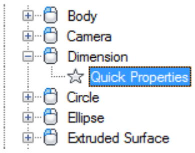
6 Click Apply.

To modify a double click action

1 Click Manage tab ➤ Customization panel ➤ User Interface.

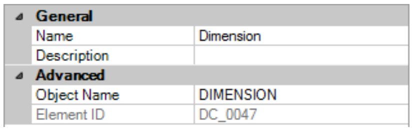
2 In the Customize User Interface Editor, Customize tab, click the plus sign (+) next to Double Click Actions to expand it.

3 Click a double click action.



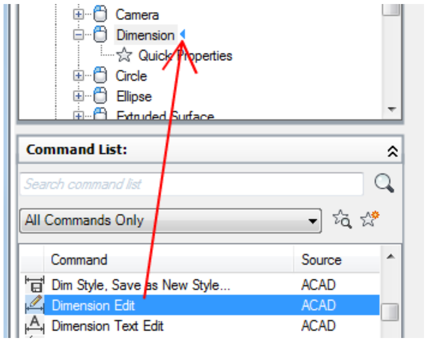
In the Properties pane, the properties for the double click action you selected are displayed.

4 In the Object Name box, enter a DXF name or one of the special object names used for an insert, surface, or underlay object.



General	
Name	Dimension
Description	
Advanced	
Object Name	DIMENSION
Element ID	DC_0047

5 If you want to replace the current command assigned to the double click action, click in the Command List pane and drag a different command to the selected double click action in the Customizations In *<file name>* pane.



6 Click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

OPTIONS

Customizes the program settings.

System Variables

DBLCLKEDIT

Controls the double click editing behavior in the drawing area.

PICKFIRST

Controls whether you select objects before (noun-verb selection) or after you issue a command.

Double Click Action Object Names

The Object Name property of a double click action must be a valid drawing interchange format (DXF™) name, or a special name for insert objects.

There are some exceptions as to when the DXF name is not used for the Object Name property of a double click action. These exceptions apply to objects that use the INSERT DXF names. For example, the double click action named

“Attribute Dynamic Block” in the *acad.cuix* file uses the object name ATTDYNBLOCKREF. which is used for insert objects that contain attributes and dynamic actions.

The following table shows the DXF names for many of the objects commonly found in a drawing. In most cases, the DXF name and the object name are the same value with the exception of the INSERT DXF name.

DXF Names for Commonly Used Objects

DXF Name	Description
3DFACE	3D face
3DSOLID	3D solid (primitive and complex 3D solids)
ACAD_PROXY_ENTITY	Object of an unknown type
ARC	3-point arc
ARRAY	Associative array
ATTDEF	Attribute definition that is not defined in a block
ATTRIB	Attribute defined in a block
BODY	Body
CAMERA	Camera
CIRCLE	Circle
DGNUNDERLAY	DGN file underlay
DIMENSION	Dimensions (all dimension objects)
DWFUNDERLAY	DWF file underlay
ELLIPSE	Ellipse and elliptical arc
EXTRUDEDSURFACE	3D extruded surface
HATCH	Hatch and gradient fill
HELIX	2D or 3D spiral

DXF Names for Commonly Used Objects

DXF Name	Description
IMAGE	Raster image
INSERT	The Object Names for the different types of block reference objects are as follows: **ATTBLOCKREF** Block reference with attributes **ATTDYNBLOCKREF** Dynamic block reference with attributes **BLOCKREF** Block reference without attributes **DYNBLOCKREF** Dynamic block reference without attributes **XREF** External reference (xref)
LEADER	Legacy leader
LIGHT	Point light, spotlight, web light, and distant light
LINE	Line
LOFTEDSURFACE	3D lofted surface
LWPOLYLINE	Lightweight polyline
MLEADER	Multileader
MLINE	Multiline
MTEXT	Multiline text
PDFUNDERLAY	PDF file underlay
PLANESURFACE	Planar surface
POINT	Point
POLYLINE	2D or 3D polyline

DXF Names for Commonly Used Objects

DXF Name	Description
RAY	Ray
REGION	2D region
REVOLVEDSURFACE	3D revolved surface
SECTIONOBJECT	Section object
SHAPE	Shape insert
SOLID	2D solid
SPLINE	B-spline curve
SWEPTSURFACE	3D swept surface
TABLE	Table
TEXT	Single-line text
TOLERANCE	Geometric tolerance
VIEWPORT	Floating viewport
WIPEOUT	Wipeout
XLINE	Construction line

NOTE If more than one object is selected or if an object type is not associated with a double click action, the default command used is QUICKPROPERTIES.

Examples of Double Click Actions

The CUIx file that ships with AutoCAD defines the default double click actions. You can use the default double click actions as examples when creating your own double click actions.

The following table shows some of the object names that are set up in the *acad.cuix* file. Expand the Double Click Actions node in the Customize User Interface (CUI) Editor for a complete listing of all the actions that are defined.

Double click action assignments

Object Type	**Command (Macro)**
ATTDEF	DDEDIT
ATTRIB	ATTIPEDIT
ATTBLOCKREF	EATTEDIT
ATTDYNBLOCKREF	EATTEDIT
BLOCKREF	PROPERTIES or BEDIT based on the current value of BLOCKEDIT-LOCK
DIMENSION	TEDIT
DYNBLOCKREF	PROPERTIES or BEDIT based on the current value of BLOCKEDIT-LOCK
IMAGE	IMAGEADJUST
LWPOLYLINE	PEDIT
MLINE	MLEDIT
MTEXT	MTEDIT
POLYLINE	PEDIT
SECTIONOBJECT	LIVESECTION
SPLINE	SPLINEDIT
TEXT	DDEDIT
XREF	REFEDIT

NOTE Double click actions cannot be created for OLE and VIEWPORT objects.

Mouse Buttons

You can change the standard behavior of pointing devices in the program.

Overview of Mouse Buttons

Mouse buttons define how a Windows system pointing device functions. You can customize the behavior of a mouse or other pointing device in the Customize User Interface (CUI) Editor. If a pointing device has more than two buttons, you can change the behavior of the second and third buttons. The first button on any pointing device cannot be changed in the Customize User Interface (CUI) Editor.

By using the Shift and Ctrl keys, you can create a number of combinations to suit your needs. Your pointing device can recognize as many commands as it has assignable buttons. The Mouse Buttons section of the tree node is organized by keyboard combination such as Click, Shift+Click, Ctrl+Click, and Ctrl+Shift+Click. The tablet buttons are numbered sequentially. Drag a command to assign the command to a mouse button. Create additional buttons by dragging commands to a Click node.

The following table shows the Click mouse button properties as they appear in the Properties pane.

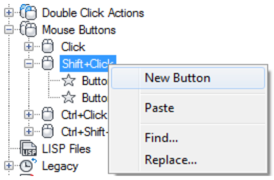
Properties for the Click Mouse Button

Properties Pane Item	Description	Example
Aliases	Specifies the aliases for the mouse button. Click the [ ] button to open the Aliases dialog box. Each alias in the CUIx file should be unique and it is used to reference the mouse button programmatically.	AUX1

To add a mouse button combination

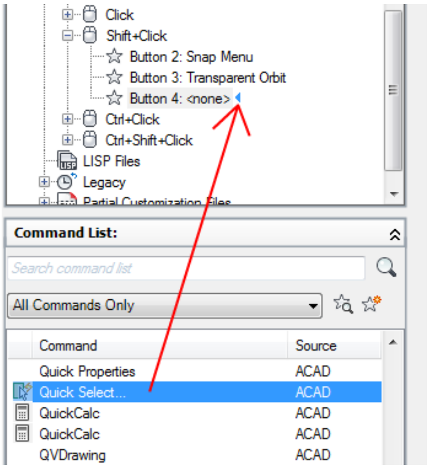
1. Click Manage tab ➤ Customization panel ➤ User Interface. CUI
2. In the Customize User Interface Editor, click the Customize tab.
3. In the Customizations In *<file name>* pane, click the plus sign (+) next to Mouse Buttons to expand the list.

4 Right-click a mouse button section. Click New Button.



A new mouse button (named Button*n*) is placed at the bottom of the selected list.

5 In the Command List pane, drag the command you want to add to the mouse button in the Customizations In <*file name*> pane.



6 Click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

System Variables

MBUTTONPAN

Controls the behavior of the third button or wheel on the pointing device.

Accept Coordinate Entry in Button Menus

When you click one of the buttons on a multi-button pointing device, the program reads not only the button number but also the coordinate of the crosshairs at the time you click. By carefully constructing macros, you can choose to either ignore the coordinate or use it with the command activated by the button.

As described in Pause for User Input in Macros on page 156, you can include a backslash (\) in a command to pause for user input. For the Mouse and Digitize Buttons menus, the coordinate of the crosshairs is supplied as user input when the button is clicked. This occurs only for the first backslash in the command; if the item contains no backslashes, the crosshairs coordinate is not used. Consider the following commands:

```
line
line \
```

The first button starts the LINE command and displays the Specify First Point prompt in the normal fashion. The second button also starts the LINE command, but the program uses the current crosshairs location at the Specify First Point prompt and displays the Specify Next Point prompt.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

Legacy Interface Elements

The term “legacy” refers to those user interface elements that are not commonly used with the current version of the program, but are still supported because some users prefer them to alternative user interface elements that are now provided.

Create Tablet Menus

You can configure up to four areas of your digitizing tablet as menu areas for command input.

The nodes in the Customize User Interface (CUI) Editor are labeled Tablet Menu 1 through Tablet Menu 4 and define the macros associated with tablet selections.

The tablet menu areas that you define with the Cfg option of the TABLET command are divided into equal-sized menu selection boxes, which are determined by the number of columns and rows you specify in each area. These tablet menu selection boxes correspond directly with the lines that follow the Tablet section labels from left to right and top to bottom (whether or not they contain text).

For example, if you configure a menu area for five columns and four rows, the command on the line immediately following the Row label corresponds to the left-most selection box in the top row. The program can recognize up to 32,766 commands in each tablet section, which should be more than enough for any tablet menu.

You can add your own macros to the Macros cell in the Properties pane. The command labels in this area correspond to the 225 boxes at the top of your tablet template (rows A through I and columns 1 through 25). You can add a macro using standard command syntax. The following table shows the Click mouse button properties as they appear in the Properties pane.

Properties for the Tablet Menu 1

Properties pane item	Description	Example
Aliases	Specifies the aliases for the tablet menu. Click the [ ] button to open the Aliases dialog box. Each alias in the CUIx file should be unique and it is used to reference the tablet menu programmatically.	TABLET1, TABLET1STD
Rows	Number of rows that can be customized for the tablet menu.	9
Columns	Number of columns that can be customized for the tablet menu.	25

To define rows and columns in a tablet menu

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2. In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Legacy to expand it.
3. Click the plus sign (+) next to Tablet Menus to expand it.
4. Click the plus sign (+) next to a tablet menu to expand it.
5. Click the row that you want to define.
6. In the Command List pane, locate the command you want to add.
7. Drag the command to a column.
8. Click Apply.

To clear a tablet menu assignment

1. Click Manage tab ➤ Customization panel ➤ User Interface. CUI
2. In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Legacy to expand it.
3. Click the plus sign (+) next to Tablet Menus to expand it.
4. Click the plus sign (+) next to a tablet menu to expand it.
5. Right-click the row or column that you want to clear. Click Clear Assignment.
6. Click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

TABLET

Calibrates, configures, and turns on and off an attached digitizing tablet.

Customize Tablet Buttons

To customize tablet buttons, you follow the same procedures as for customizing mouse buttons.

Tablet buttons are the buttons that are found on the pointing device, also known as a puck, used with a digitizer tablet. Pucks come in a variety of shapes, sizes, and button configurations. You can customize all the buttons on a puck except for the first button.

Some hardware manufacturers utilize a slightly different button layout from one puck to another. One might start with the first button in the upper-left corner and count across and down from 1 through F, while another might start in the upper-left corner and have a different numbering scheme.

NOTE It is important to test your button assignments as they are assigned to ensure the proper button is being mapped. You may need to refer to your owners manual that came with your puck for how the buttons are laid out.

To customize tablet buttons, you follow the same procedures as for customizing mouse buttons.

For more information about customizing tablet buttons, see Mouse Buttons on page 332.

Quick Reference

Commands

CUI

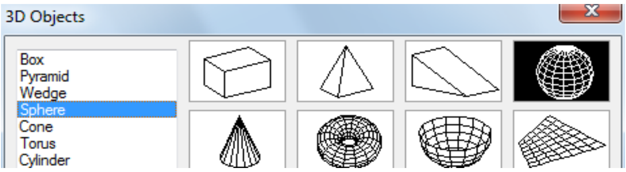
Manages the customized user interface elements in the product.

Create Image Tile Menus

The purpose of an image tile menu is to provide an image that can be selected instead of text. You can create, edit, or add image tiles and image tile slides.

An image tile dialog box displays images in groups of 20, along with a scrolling list box on the left that displays the associated slide file names or related text. If an image tile dialog box contains more than 20 slides, the additional slides are added to a new page. Next and Previous buttons are activated so that you can browse the pages of images.

The following is an example of an image tile menu.



You define an image tile menu in the Customize User Interface (CUI) Editor. The following table shows the properties for an image tile menu.

Properties for the Tiled Viewport Layout image tile menu

Properties pane item	Description	Example
Name	String that is used only in the CUI Editor and is not displayed in the user interface.	Tiled Viewport Layout
Description	Text that describes the element and does not appear in the user interface.	
Aliases	Specifies the aliases for the image tile menu. Click the [ ] button to open the Aliases dialog box. Each alias in the CUIx file should be unique and it is used to reference the image tile menu programmatically.	image_vporti

The following table shows the properties for an image tile slide.

Properties of the Four: Equal tile slide on the Tiled Viewport Layout image tile menu

Properties pane item	Description	Example
Name	String displayed in the list box on the left side of the image tile menu dialog box. The string must include alphanumeric characters with no punctuation other than a hyphen (-) or an underscore (_).	Four: Equal
Command Name	The name of the command as it appears in the Command List pane.	Tiled Viewports, Four: Equal
Description	Text that describes the element; does not appear in the user interface.	

Properties of the Four: Equal tile slide on the Tiled Viewport Layout image tile menu

Properties pane item	Description	Example
Macro	The command macro. It follows the standard macro syntax.	^C^C-vports 4
Element ID	Tag that uniquely identifies a command.	MM_0427
Slide library	A file that is made up of multiple slides and created using the file slidelib.exe.	acad
Slide label	Name of a slide contained in the slide library file or a slide image that is stored separately.	vport-4

You can use any slide generated by AutoCAD as an image. Keep the following suggestions in mind as you prepare slides for an image tile menu.

- **Keep the image simple.** When an image tile menu is displayed, you must wait for all images to be drawn before making a selection. If you show numerous complex symbols, use simple, recognizable images rather than full renditions.
- **Fill the box.** When making a slide for an image, be sure to fill the screen with the image before starting MSLIDE. If the image is very wide and short, or long and thin, the image tile menu will look best if you use PAN to center the image on the screen before making the slide.
  Images are displayed with an aspect ratio of 3:2 (3 units wide by 2 units high). If your drawing area has a different aspect ratio, it can be difficult to produce image slides that are centered in the image tile menu. If you work within a layout viewport that has an aspect ratio of 3:2, you can position the image and be assured that it will look the same when it is displayed in the image tile menu.
- **Remember the purpose of the images.** Do not use images to encode abstract concepts into symbols. Image tiles are useful primarily for selecting a graphic symbol.

To create an image tile slide

1. In AutoCAD, draw the geometry that you want to appear in the slide.
2. Click View tab ➤ Navigate panel ➤ Zoom drop-down ➤ Center.

3 At the Command prompt, enter **mslide**.

4 In the Create Slide File dialog box, specify the file name.

5 Click Save, and add it to a slide library file if desired. You can associate this image slide to a new image tile.

To view an image tile slide

1 At the Command prompt, enter **vslide**.

2 In the Select Slide File dialog box, browse to and select the slide file you want to view.

3 Click Open.

The slide file should be displayed in the drawing window. Perform a Regen on the drawing to clear the slide file from the display.

To create an image tile slide library

1 Place all your slides in a single folder location that you want to add to a slide library.

2 Click Start menu ➤ (All) Programs ➤ Accessories ➤ Command Prompt.

3 At the DOS prompt, enter **CD** <**folder location of slides**>.

As an example: **CD "c:\slides"**

4 While in the location of the slide files, enter **dir *.sld /b** > <**file name**>.

As an example: **dir *.sld /b** > **"myslides"**

A text file will be created with the names of the slide files contained in the current folder.

5 With the text file created of all the slide files in the current folder, enter <**AutoCAD Install folder**>**\slidelib.exe** <**slide library file name**> < <**text file with slide names**>.

As an example: **"C:\Program Files\AutoCAD 2012\slidelib.exe""myslidelib"** < **"myslides"**

6 When you finish, close the DOS window.

WARNING After you create the slide library, place the individual slide files in a safe place so they do not accidently get deleted. This is important if you need to rebuild the slide library one day.

To create an image tile menu and assign an image tile slide

1. Click Manage tab ➤ Customization panel ➤ User Interface.
2. In the Customize User Interface Editor, Customize tab, in the Customizations In *<file name>* pane, click the plus sign (+) next to Legacy to expand the list.
3. In the Legacy list, right-click Image Tile Menu. Click New Image Tile Menu.

   A new image tile menu (named ImageTileMenu1) is placed at the bottom of the Image Tile Menus tree.
4. Do one of the following:
   - Enter a new name over the default name ImageTileMenu1.
   - Right-click ImageTileMenu1. Click Rename. Then, enter a new image tile name.
   - Click ImageTileMenu1, wait, and click again over the image tile's name again to edit its name in-place.
5. In the Command List pane, drag a command to the new image tile menu in the Customizations In *<file name>* pane.
6. In the Properties pane, enter the properties for the new image tile slide as follows:
   - In the Name box, enter the text to display in the list box for the image tile.
   - In the Description box, enter a description for the image tile.
   - In the Slide library box, enter the name of the image tile slide library that contains the slide for the image tile. The image tile slide library must be in one of the folders that defines the Support File Search Path. If you do not have a slide library, but rather an image tile slide file, you enter its name in the image tile slide library box.
   - In the Slide label box, enter the name of the image tile slide file contained in the image tile slide library listed in the Slide library box.
7. Click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

MSLIDE

Creates a slide file of the current model viewport or the current layout.

VSLIDE

Displays an image slide file in the current viewport.

Load an AutoLISP File

AutoLISP (LSP or MNL) files contain programs that add custom commands and functions which can be used as part of the user interface. You can load AutoLISP files into a CUIx file using the Customize tab of the Customize User Interface (CUI) Editor.

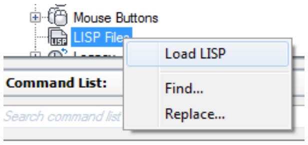
For more information about using AutoLISP, see AutoLISP and Visual LISPAutoLISP on page 433.

TIP MNL files with the same name and location as your main, enterprise, or partial CUIx files are loaded automatically. These files cannot be unloaded once loaded into AutoCAD.

To load an AutoLISP file in the Customize User Interface Editor

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, in the Customizations In *<file name>* pane, right-click LISP Files. Click Load LISP.



3 In the Load LISP Files dialog box, locate and select the AutoLISP file you want to load. Only files with the extension LSP can be selected.

TIP Even though files with the LSP extension can only be loaded using this method, you can still load other types of custom program files. Use AutoCAD commands such as NETLOAD, VBALOAD, or ARX to load other types of custom program files.

4 Click Open.

5 In the Customize User Interface Editor, click Apply.

Quick Reference

Commands

APPLOAD

Loads and unloads applications and defines which applications to load at startup.

ARX

Loads, unloads, and provides information about ObjectARX applications.

CUI

Manages the customized user interface elements in the product.

NETLOAD

Loads a .NET application.

VBALOAD

Loads a global VBA project into the current work session.

Customize Workspaces

You can customize workspaces to create a drawing environment that displays only those commands on the Quick Access toolbar, toolbars, menus, ribbon tabs, and palettes that you select.

Overview of Workspace Customization

Customization options for workspaces include creating a workspace using the Customize User Interface (CUI) Editor, changing the properties of a workspace, and displaying a toolbar in all workspaces.

Create or Modify a Workspace Outside the Customize User Interface Editor

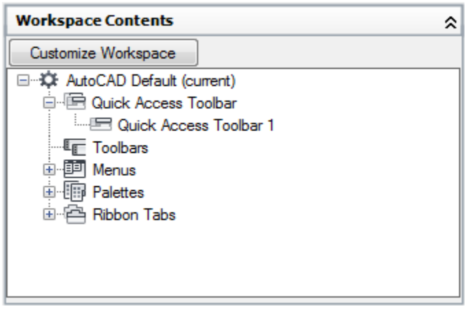
The easiest way to create or modify user interface elements in a workspace is by customizing them in the application window. From the application window, you can control the display and appearance of several of the most commonly used user interface elements.

Once you customize the workspace, you can save the changes to an existing or new workspace using the WSSAVE command. Once saved, you can access the workspace any time you need to draw within that workspace environment. For more information about customizing workspaces without the Customize User Interface Editor, see Control User Interface Elements Outside the CUI Editor on page 357.

Create or Modify a Workspace Using the Customize User Interface Editor

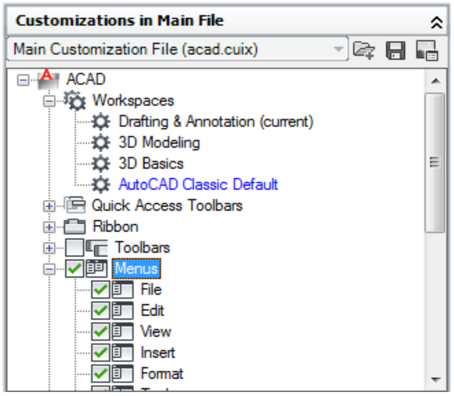
In the Customize User Interface (CUI) Editor, you can create or modify workspaces with precise properties associated with the application and drawing windows, and user interface elements (Quick Access toolbar, toolbars, menus, ribbon tabs, and palettes).

You customize a workspace by selecting a workspace from the Workspaces node in the Customizations In pane. The Workspace Contents and Properties panes are displayed. To modify a workspace, you click the Customize Workspace button in the Workspace Contents pane.



For more information about customizing workspaces with the Customize User Interface Editor, see Control User Interface Elements in the CUI Editor on page 360.

After you click Customize Workspace in the Workspace Contents pane, the Customizations In <*file name*> pane lists the user interface elements that can be added to the workspace that is currently being modified. Check boxes are displayed next to each user interface element in the loaded CUIx files. You use the check boxes to add or remove user interface elements from a workspace.



Change the Properties of a Workspace

In the Customize User Interface (CUI) Editor, you can define workspace properties, such as the workspace name, description, whether the Model or layout tab is displayed or not, and so on. The following table shows the AutoCAD Classic workspace properties as they appear in the Properties pane.

Properties for the AutoCAD Classic Workspace

Properties Pane Item	Description	Example
Name	String displayed in the drop-down box on the Workspaces toolbar, at the command prompt for the WORKSPACE command, under the Workspaces menu item in the Tools menu, and in the CUI Editor.	AutoCAD Classic
Description	Text that describes the workspace; does not appear in the user interface.	
Start On	Determines if the Model tab, last active layout tab, or the current active tab in the drawing is displayed when the workspace is restored or set current.	Model
Menu bars	Determines if the menu bar is displayed or not when the workspace is restored or set current.	On
Status bars	Determines if the status bars for the drawing window or application are displayed or not when the workspace is restored or set current. The available options are	Application only

Properties for the AutoCAD Classic Workspace

Properties Pane Item	Description	Example
	Application Only, All Off, All On, or Drawing Status Bar Only.	
Model/Layout tabs	Determines if the Model/layout tabs are visible or not in the drawing window when the workspace is restored or set current.	On
Scroll bars	Determines if the scroll bars are visible or not when the workspace is restored or set current.	On

Import a Workspace to a Main CUIx File

You can import a workspace to the main CUIx file using the Transfer tab of the Customize User Interface (CUI) Editor. Workspaces in partially loaded CUIx files must be transferred to the main CUIx file if you want to set that workspace current.

Set the Default Workspace

Workspaces in a CUIx file can be marked as default. This identifies which workspace in the CUIx file should be restored when the CUIx file is loaded into the program the first time, or after the CUIx file has been loaded with the CUILOAD command.

Set a Workspace Current

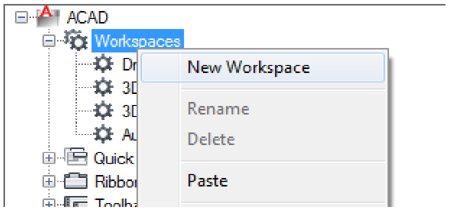
Once a workspace is created or modified, it must be set current before the workspace can be used to control the current display of the user interface. You set workspaces current through the user interface or the Customize User Interface (CUI) Editor. From the user interface, you can set a workspace current with the Workspaces toolbar, Workspace Switching button on the status bar, Tools menu on the menu bar, and the WORKSPACE command.

You can also use the /w command line switch to set a workspace current when you double-click the desktop shortcut to start AutoCAD. For more information about command line switches, see Customize Startup in the *User's Guide*.

To create a workspace using the CUI Editor

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, right-click the Workspaces tree node, and select New Workspace.

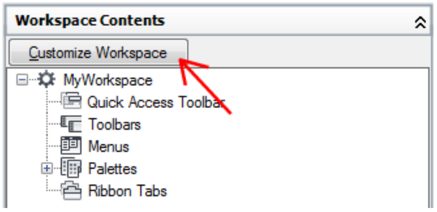


A new, empty workspace (named Workspace1) is placed at the bottom of the Workspaces tree node.

3 Do one of the following to rename the workspace:

- Enter a new name over the default name Workspace1.
- Right-click Workspace1. Click Rename. Then, enter a new workspace name.
- Click Workspace1, wait, and click again over the workspace's name again to edit its name in-place.

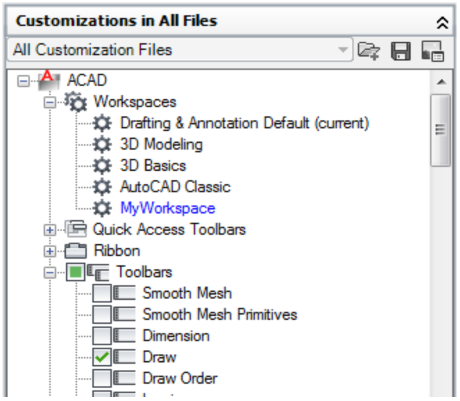
4 In the Workspace Contents pane, click Customize Workspace.



5 In the Customizations In <*file name*> pane, click the plus sign (+) next to the tree nodes to expand them.

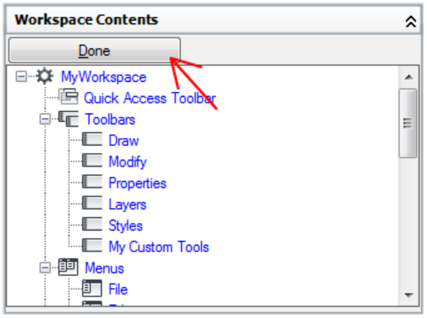
NOTE The Quick Access toolbars, ribbon tabs, toolbars, menus, and partial CUIx file nodes now display check boxes next to them so you can easily add elements to the workspace.

6 Click the check box next to each user interface element that you want to add to the workspace.



The selected user interface elements are added to the workspace.

7 In the Workspace Contents pane, click Done.



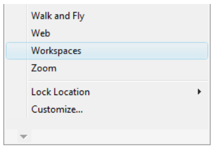
8 Click Apply.

To save or create a workspace from the user interface

Do one of the following:

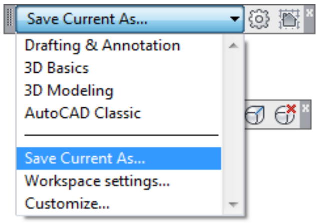
- **To save a workspace from the Workspaces toolbar**

  1 Right-click over one of the visible toolbars that is currently displayed in the user interface and click Workspaces.

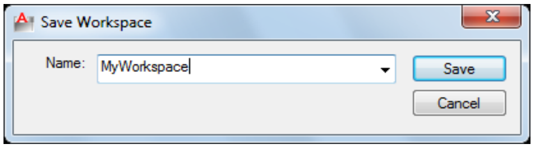


A check mark is displayed to the left of any toolbar that is currently displayed.

2 On the Workspaces toolbar, click the drop-down list and select Save Current As.



3 In the Save Workspace dialog box, Name box, enter a name to create a new workspace or select an existing workspace from the drop-down list to overwrite it.

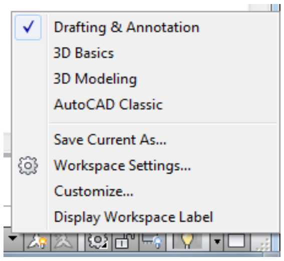


Name: MyWorkspace

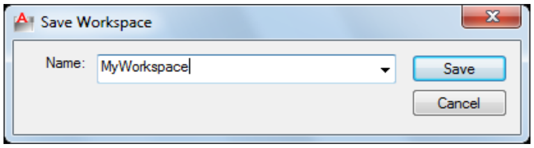
4 Click Save to create or modify the workspace.

■ To save a workspace from the status bar

1 On the status bar, click Workspace Switching. Then click Save Current As.



2 In the Save Workspace dialog box, Name box, enter a name to create a new workspace or select an existing workspace from the drop-down list to overwrite it.


Save Workspace

Name: MyWorkspace

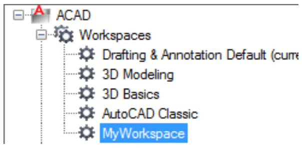
3 Click Save to create or modify the workspace.

NOTE You can also save a workspace from the Quick Access toolbar.

To change the properties of a workspace

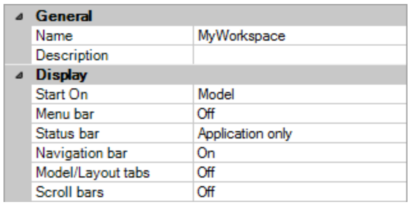
1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the workspace whose properties you want to change.


ACAD
Workspaces
Drafting & Annotation Default (curre
3D Modeling
3D Basics
AutoCAD Classic
MyWorkspace

3 In the Properties pane, do any of the following:

- In the Name box, enter a name for the workspace.
- In the Description box, enter a description.
- In the Start On box, select an option (Model, Layout, Do Not Change).
- In the Menu Bar box, select an option (Off, On).
- In the Status Bar box, select an option (Application Only, All Off, All On, Drawing Status Bar Only).
- In the Model/Layout Tab box, select an option (On, Off, Do Not Change).
- In the Scroll Bars box, select an option (On, Off, Do Not Change).



General	
Name	MyWorkspace
Description	
Display	
Start On	Model
Menu bar	Off
Status bar	Application only
Navigation bar	On
Model/Layout tabs	Off
Scroll bars	Off

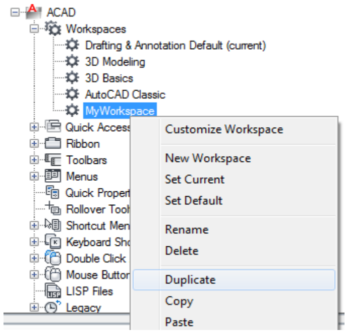
4 Click Apply.

To duplicate a workspace

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Workspaces to expand it.

3 Right-click the workspace you want to duplicate. Click Duplicate.



A duplicate of the workspace (named Copy of <*workspace name*>) is placed at the bottom of the Workspaces tree node).

4 Do one of the following to rename the duplicate workspace:

- Enter a new name over the default name Copy Of <*workspace name*>.
- Right-click Copy Of <*workspace name*>. Click Rename. Enter a new name for the workspace.
- Click Copy Of <*workspace name*>, wait, and click again over the workspace's name again to edit its name in-place.

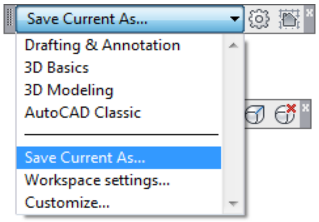
5 Modify the workspace as necessary.

6 Click Apply.

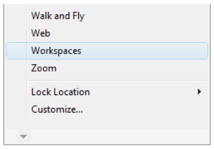
To set a workspace current from the user interface

Do one of the following:

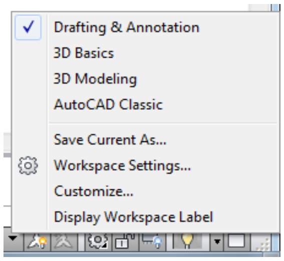
- **To set a workspace current from the Workspaces toolbar**
  - On the Workspaces toolbar, click the drop-down list and select the workspace you want to set current.



If the Workspaces toolbar is not displayed, right-click over one of the visible toolbars that is currently displayed in the user interface and click Workspaces.



- **To set a workspace current from the status bar**
  - On the status bar, click Workspace Switching. Then click the workspace you want to set current

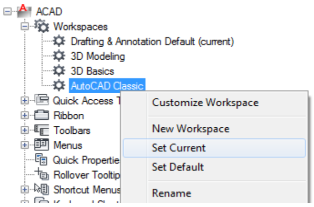


NOTE You can also set a workspace from the Quick Access toolbar.

- **To set a workspace current from the Tools menu on the menu bar**
  - On the menu bar, click Tools menu ➤ Workspaces ➤ select the workspace you want to set current.

To set a workspace current from the CUI Editor

1. Click Manage tab ➤ Customization panel ➤ User Interface.
2. In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Workspaces to expand it.
3. Right-click the workspace you want to set current. Click Set Current.



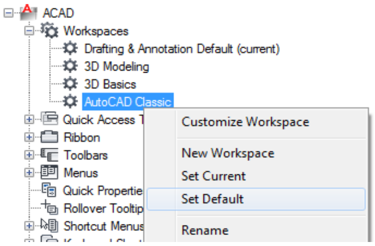
4. Click Apply.

To restore the “classic” workspace

- From the status bar, click Workspace Switching. Click AutoCAD Classic.

To set a workspace as default

1. Click Manage tab ➤ Customization panel ➤ User Interface.
2. In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to Workspaces to expand it.
3. Right-click the workspace you want to set as default. Click Set Default.

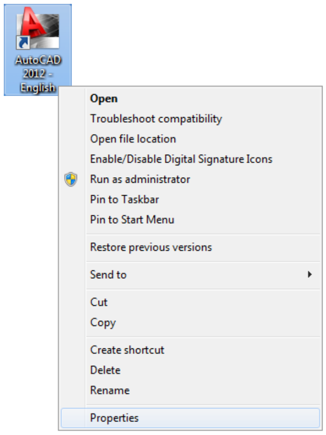


4 Click Apply.

NOTE In the Network Deployment Wizard, the main and enterprise CUIx files can be specified. If the main CUIx file has a default workspace set, the default workspace will be set as the current workspace when the file is loaded into AutoCAD the first time.

To restore a workspace with a command line switch

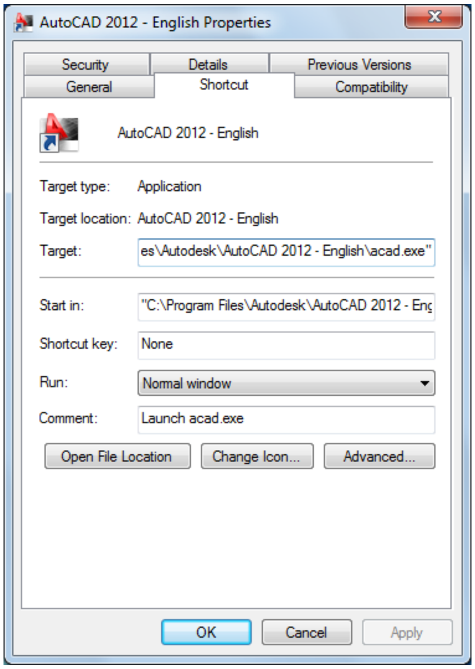
1 Right-click the program icon on the Windows desktop. Click Properties.



2 In the AutoCAD Properties dialog box, Shortcut tab, in the Target box, edit the parameters for the switch using the following syntax:

“*drive*:\pathname\acad.exe” [/*switch* “*name*”]

For Example, enter “**d:**\AutoCAD 2012\acad.exe” **/w “MyWorkspace”**



AutoCAD 2012 - English

Target type: Application

Target location: AutoCAD 2012 - English

Target: es\Autodesk\AutoCAD 2012 - English\acad.exe"

Start in: "C:\Program Files\Autodesk\AutoCAD 2012 - Eng

Shortcut key: None

Run: Normal window

Comment: Launch acad.exe

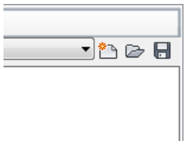
3 Click OK.

To import a workspace to a main CUIx file

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

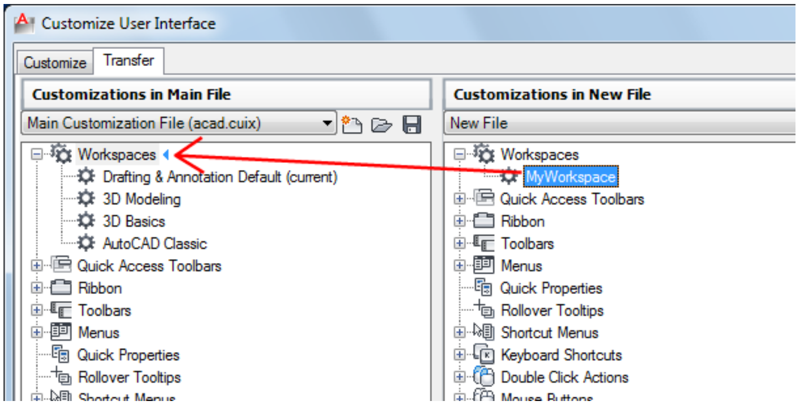
The Transfer tab is displayed, with the main CUIx file displayed in the Customizations In <*file name*> pane (left side).

2 In the Customize User Interface Editor, Transfer tab, in the Customizations In <*file name*> pane (right side), click the Open Customization File button.



3 In the Open dialog box, locate and select the customization file that contains the workspace you want to add to the main CUIx file.

4 In the Customizations In <*file name*> pane (right side), drag the workspace from the CUIx file to the Workspaces node of the main CUIx file in the Customizations In <*file name*> pane (left side).



5 Click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

CUIEXPORT

Exports customized settings from the main CUIx file to an enterprise or partial CUIx file.

CUIIMPORT

Imports customized settings from an enterprise or partial CUIx file to the main CUIx file.

CUILOAD

Loads a CUIx file.

CUIUNLOAD

Unloads a CUIx file.

WORKSPACE

Creates, modifies, and saves workspaces and makes a workspace current.

WSSAVE

Saves a workspace.

System Variables

WSCURRENT

Returns the current workspace name at the Command prompt and sets a workspace to current.

Control User Interface Elements Outside the CUI Editor

Workspaces can be created and modified from the user interface with some limitations.

With the CUI Editor, you can customize the following user interface elements with a workspace:

- Quick Access toolbar
- Ribbon tabs
- Toolbars
- Palettes

Control the Display of the Quick Access Toolbar

Customization of the Quick Access toolbar outside the Customize User Interface Editor is limited to controlling the placement of the Quick Access toolbar in relation to the ribbon, and adding or removing commands. To place and customize the Quick Access toolbar, you right-click the Quick Access toolbar or click the Customize button located on the far right end of the Quick Access toolbar.

The Customize button displays a menu where you add or remove the commands currently assigned to the Quick Access toolbar. You can also add buttons on the ribbon to the Quick Access toolbar. With the CUI Editor, you can create new Quick Access toolbars, which you can assign to a workspace. To create a new Quick Access toolbar, see Quick Access Toolbars on page 194.

Control the Display of the Ribbon Panels and Tabs on the Ribbon

You can control the display of ribbon panels and tabs from the ribbon shortcut menu. You can display one of the ribbon tabs assigned to the current workspace or one of the ribbon panels assigned to the active ribbon tab. To control which ribbon tabs and panels are assigned to the current workspace, see Control User Interface Elements in the CUI Editor on page 360.

Control the Display of Toolbars

You can display toolbars with the toolbar shortcut menu and the Tools menu on the menu bar. You select the toolbar you want to display. On the Tools menu, the Toolbars submenu contains all the toolbars in the loaded CUIx files.

With the CUI Editor, you can create new toolbars, which can be assigned to and displayed with a workspace. Along with creating new toolbars, you can also modify existing toolbars to display the commands you frequently use. For information about creating and modifying toolbars, see Create and Edit Toolbars on page 248.

Control the Display of Palettes

Palettes are displayed using the ribbon, the Tools menu on the menu bar, or by entering a command. Once a palette is displayed, you can control many of the visual aspects of a palette from the application window. You can specify the position, size, transparency, and docking of a palette. For information about controlling the display of a palette, see Specify the Behavior of Dockable Windows in the *User's Guide*.

See also:

- Control User Interface Elements in the CUI Editor on page 360

To display the Quick Access toolbar above or below the ribbon from the user interface

1. Right-click on the Quick Access toolbar.
2. Do one of the following:
   - Click Show Quick Access Toolbar Below the Ribbon to display the Quick Access toolbar below the ribbon.
   - Click Show Quick Access Toolbar Above the Ribbon to display the Quick Access toolbar above the ribbon.

To display toolbars from the user interface

Do one of the following:

- On the menu bar, click Tools menu ➤ Toolbars, and click one of the listed toolbars.
  If the menu bar is not displayed, on the Quick Access toolbar, click the Customize button. Click Show Menu Bar.
- Right-click a visible toolbar, and click one of the listed toolbars.

To control the display of ribbon tabs and panels on the ribbon from the user interface

1. Right-click on the ribbon.
2. Do one of the following:
   - Click Tabs, and click the ribbon tab to display or hide.
   - Click Panels, and click the ribbon panel to display or hide.

To display palettes from the user interface

Do one of the following:

- On the ribbon, View tab ➤ Palettes panel, and click the buttons to display the desired palette.
- On the menu bar, click Tools menu ➤ Palettes, and click the desired palette.
  - At the Command prompt, enter the command to display the desired palette and press Enter.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

System Variables

MENUBAR

Controls the display of the menu bar.

Control User Interface Elements in the CUI Editor

The Customize User Interface (CUI) Editor provides a wide range of options to create and modify all the content that can be displayed with a workspaces.

With the CUI Editor, you can customize the following user interface elements with a workspace:

- Application and drawing windows
- Quick Access toolbar
- Ribbon tabs
- Toolbars
- Menus
- Palettes

Control the Display of User Interface Elements on the Application and Drawing Windows

Workspaces control the display of user interface elements such as toolbars and the menu bar. While a workspace primarily provides toolbars, menus, ribbon tabs, and palettes, you can also use a workspace to control user interface elements for the application and drawing windows. A workspace can control the following:

- Which layout tab is set current when a drawing is opened
- Display of the menu bar
- Display of the application and drawing status bars
- If layout tabs are displayed along the bottom of the drawing window.
- Display of scroll bars in the drawing window

Control the Display of the Quick Access Toolbar

The Quick Access toolbar that is displayed on the application window is controlled by the current workspace. While a workspace does not directly control which commands are displayed on the Quick Access toolbar, it does control which Quick Access toolbar in the loaded CUIx files is displayed. For information about creating and editing Quick Access toolbars, see Quick Access Toolbars on page 194.

Control the Display of Ribbon Tabs and Panels on the Ribbon

The display and order of ribbon tabs and panels on the ribbon are controlled through workspaces. You add and specify the order of ribbon tabs and their associated panels in the Workspace Contents pane. You add ribbon panels to a ribbon tab through the Customizations In <*file name*> pane.

After you assign ribbon tabs to a workspace, you can control the default display and behavior of both ribbon tabs and panels through the Properties pane. From the Properties pane, you can set the Tool Palette Group for a ribbon tab and orientation and resize order for a ribbon panel. For information about creating and editing ribbon content, see Ribbon on page 201 under Customize User Interface Elements on page 192.

Control the Display of Toolbars

You can control which toolbars are displayed and how they are positioned in the application window (if they are floating or docked, and where they are in the application window). You add the toolbars through the Workspace Contents pane, and control the appearance of the toolbars in the Properties pane. For information about creating and editing toolbars, see Toolbars on page 248 under Customize User Interface Elements on page 192.

Control the Display of Menus on the Menu Bar

Menus and the order in which they are displayed on the menu bar can only be controlled through the Workspace Contents pane. By default the menu bar is not displayed when the ribbon is. Set the system variable MENUBAR to 1 to display the menu bar above the ribbon. You can also set the Menu Bar property for a workspace to On to display the menu bar each time a workspace is set current. For information about creating and editing pull-down menus, see Pull-down and Shortcut Menus on page 270 under Customize User Interface Elements on page 192.

Control the Display of Palettes

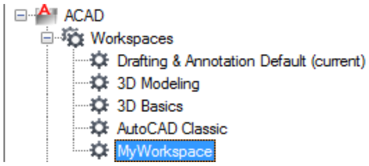
You set up a workspace to control the display, position, and appearance of palettes in the application window. They can be floating or docked. Unlike ribbon panels, ribbon tabs, and menus, palettes are available in any workspace. You can turn palettes on or off with a workspace. The display properties of palettes are modified through the Workspace Contents and Properties pane. For information about controlling palettes with workspaces, see Control the Appearance of Palettes on page 375.

To display a Quick Access toolbar

1 Click Manage tab ➤ Customization panel ➤ User Interface.

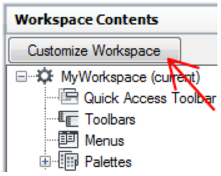
2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Workspaces node to expand it.

3 Select the workspace that you want to modify.



ACAD
Workspaces
Drafting & Annotation Default (current)
3D Modeling
3D Basics
AutoCAD Classic
MyWorkspace

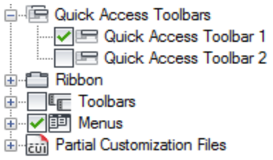
4 In the Workspace Contents pane, click Customize Workspace.



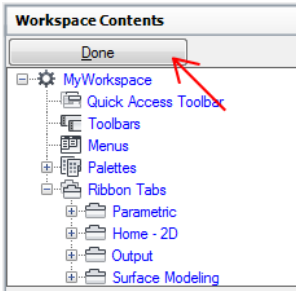
Workspace Contents
Customize Workspace
MyWorkspace (current)
Quick Access Toolbar
Toolbars
Menus
Palettes

5 In the Customizations In <*file name*> pane, click the plus sign (+) next to the Quick Access Toolbars tree node or Partial Customization Files tree node to expand it.

6 Click the check box next to the Quick Access toolbar to add it to the workspace.



7 In the Workspace Contents pane, click Done.



NOTE Make sure to set the workspace current to ensure the changes are displayed.

---

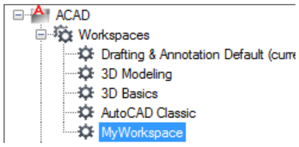
8 Click Apply.

To display the Quick Access toolbar above or below the ribbon from the CUI Editor

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Workspaces node to expand it.

3 Select the workspace that you want to modify.



4 In the Workspace Contents pane, click the Quick Access Toolbar tree node.

5 In the Properties pane, click the Orientation box and select Above or Below from the drop-down list.

Above displays the Quick Access Toolbar above the ribbon, while below sets the Quick Access Toolbar below the ribbon.

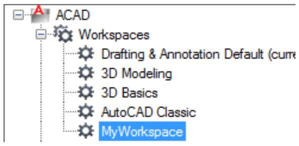
6 Click Apply.

To display ribbon tabs from the CUI Editor

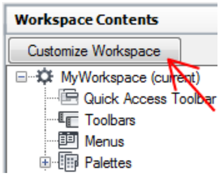
1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Workspaces node to expand it.

3 Select the workspace that you want to modify.

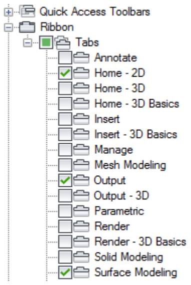


4 In the Workspace Contents pane, click Customize Workspace.



5 In the Customizations In <*file name*> pane, click the plus sign (+) next to the Ribbon Tabs tree node or Partial Customization Files tree node to expand it.

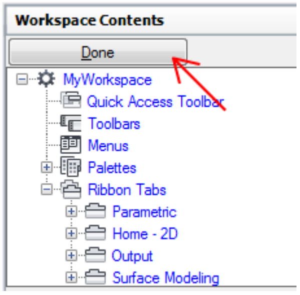
6 Click the check box next to each ribbon tab that you want to add to the workspace.



Quick Access Toolbars
Ribbon
Tabs
☐ Annotate
☑ Home - 2D
☐ Home - 3D
☐ Home - 3D Basics
☐ Insert
☐ Insert - 3D Basics
☐ Manage
☐ Mesh Modeling
☑ Output
☐ Output - 3D
☐ Parametric
☐ Render
☐ Render - 3D Basics
☐ Solid Modeling
☑ Surface Modeling

In the Workspace Contents pane, the selected elements are added to the workspace.

7 In the Workspace Contents pane, click Done.



NOTE Make sure to set the workspace current to ensure the changes are displayed.

8 Click Apply.

To reposition a ribbon tab on the ribbon

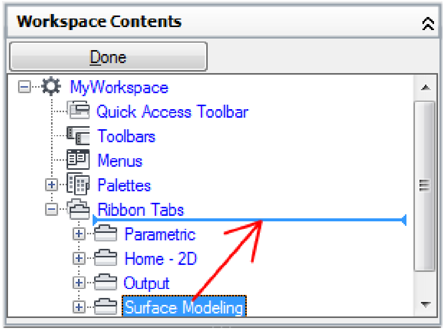
1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Workspaces node to expand it.

3 Select the workspace that has the ribbon tab you want to reposition.

4 In the Workspace Contents pane, click the plus sign (+) next to the Ribbon Tabs tree node to expand it.

5 Drag the ribbon tab into the new location.



A splitter bar shows the new location for the ribbon tab.

6 Once the splitter bar is in the place where you want to insert the ribbon tab, release the pointing device button.

NOTE Make sure to set the workspace as current to ensure the changes are displayed.

7 Click Apply.

To reposition a ribbon panel on a ribbon tab

1 Click Manage tab ➤ Customization panel ➤ User Interface.

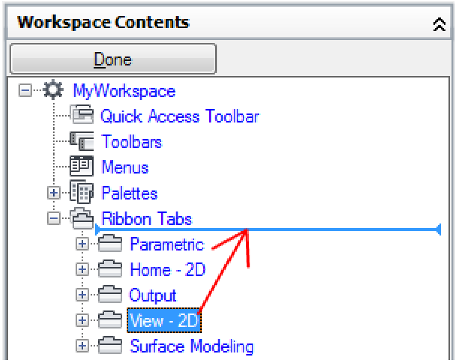
2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Workspaces node to expand it.

3 Select the workspace that you want to modify.

4 In the Workspace Contents pane, click the plus sign (+) next to the Ribbon Tabs tree node to expand it.

5 Click the plus sign (+) next to the ribbon tab with the ribbon panel that you want to reposition to expand it.

6 Drag the ribbon panel into the new location.



A splitter bar shows the new location for the ribbon panel.

7 Once the splitter bar is in the place where you want to insert the ribbon panel, release the pointing device button.

NOTE Make sure to set the workspace as current to ensure the changes are displayed.

8 Click Apply.

To control the display of ribbon tabs on the ribbon

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Workspaces node to expand it.

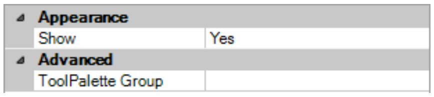
3 Select the workspace that has the ribbon tab you want to change.

4 In the Workspace Contents pane, click the plus sign (+) next to the Ribbon Tabs tree node to expand it.

5 Select the ribbon tab that you want to change.

6 In the Properties pane, do any of the following:

- In the Show box, select an option (Yes or No).
- In the ToolPalette Group box, select one of the listed tool palette groups.



Appearance

Show: Yes

Advanced

ToolPalette Group:

7 Click Apply.

To control the display of ribbon panels for a ribbon tab

1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Workspaces node to expand it.

3 Select the workspace that has the ribbon tab for which you want to change the properties of the ribbon panels.

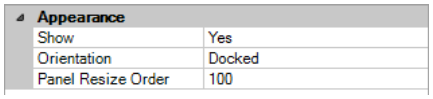
4 In the Workspace Contents pane, click the plus sign (+) next to the Ribbon Tabs tree node to expand it.

5 Click the plus sign (+) next to the ribbon tab for which you want to change the properties of the ribbon panels.

6 Select the ribbon panel that you want to change.

7 In the Properties pane, do any of the following:

- In the Show box, select an option (Yes or No).
- In the Orientation box, select an option (Docked or Floating).



Appearance

Show: Yes

Orientation: Docked

Panel Resize Order: 100

8 Click Apply.

To associate a tool palette group with a ribbon tab

1 At the Command prompt, enter **toolpalettes**.

2 Click Manage tab ➤ Customization panel ➤ User Interface.

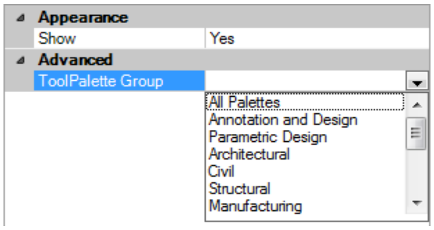
3 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Workspaces node to expand it.

4 Select the workspace that has the ribbon tab for which you want to assign a tool palette group.

5 In the Workspace Contents pane, click the plus sign (+) next to the Ribbon Tabs node to expand it.

6 Select the ribbon tab that you want to assign a tool palette group.

7 In the Properties pane, in the ToolPalette Group box, click the down arrow and select the tool palette group you want to assign to the ribbon tab.



Appearance	
Show	Yes
Advanced	
ToolPalette Group	

All Palettes
Annotation and Design
Parametric Design
Architectural
Civil
Structural
Manufacturing

NOTE The Tool Palettes window must be displayed before you can assign a tool palette group to a ribbon tab.

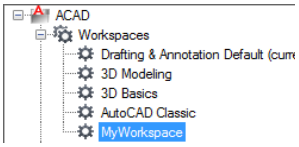
8 Click Apply.

To display toolbars using the CUI Editor

1 Click Manage tab ➤ Customization panel ➤ User Interface.

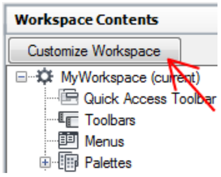
2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Workspaces tree node to expand it.

3 Select the workspace that you want to modify.



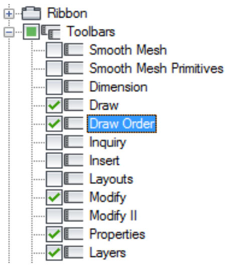
ACAD
Workspaces
Drafting & Annotation Default (curre
3D Modeling
3D Basics
AutoCAD Classic
MyWorkspace

4 In the Workspace Contents pane, click Customize Workspace.



5 In the Customizations In <*file name*> pane, click the plus sign (+) next to the Toolbars tree node, or Partial Customization Files tree node to expand it.

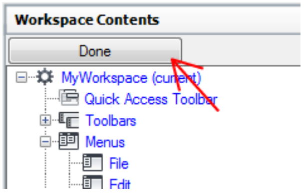
6 Click the check box next to each toolbar that you want to add to the workspace.



☐ Smooth Mesh
☐ Smooth Mesh Primitives
☐ Dimension
☑ Draw
☑ Draw Order
☐ Inquiry
☐ Insert
☐ Layouts
☑ Modify
☐ Modify II
☑ Properties
☑ Layers

In the Workspace Contents pane, the selected elements are added to the workspace.

7 In the Workspace Contents pane, click Done.



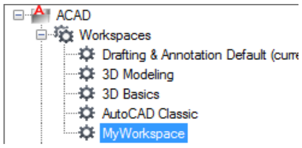
NOTE Make sure to set the workspace current to ensure the changes are displayed.

8 Click Apply.

To change the properties of a toolbar

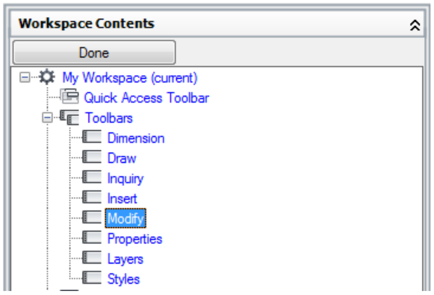
1 Click Manage tab ➤ Customization panel ➤ User Interface.

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the workspace that contains the toolbar you want to modify.



3 In the Workspace Contents pane, click the plus sign (+) next to the Toolbars tree node to expand it.

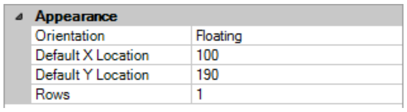
4 Select the toolbar that you want to modify.



5 In the Properties pane, do any of the following:

- In the Orientation box, select an option (Floating, Top, Bottom, Left, or Right).
- In the Default X Location box, enter a number. A value of 0 starts the location of the toolbar at the left edge of the screen, as the number increases the further from the left the toolbar is placed. (Available only if Orientation is set to Floating.)
- In the Default Y Location box, enter a number. A value of 0 starts the location of the toolbar at the top edge of the screen, as the number increases the further from the top the toolbar is placed. (Available only if Orientation is set to Floating.)

- In the Rows box, enter a number. Enter a number to have the buttons on the toolbar wrap around to create the number of rows if possible. 0 is the default value. (Available only if Orientation is set to Floating.)



Appearance	
Orientation	Floating
Default X Location	100
Default Y Location	190
Rows	1

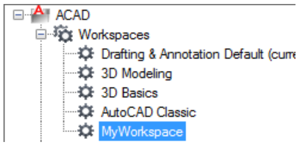
6 Click Apply.

To display menus on the menu bar

1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

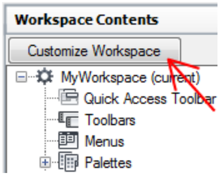
2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Workspaces node to expand it.

3 Select the workspace that you want to modify.



ACAD
Workspaces
Drafting & Annotation Default (curre
3D Modeling
3D Basics
AutoCAD Classic
MyWorkspace

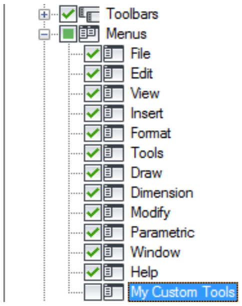
4 In the Workspace Contents pane, click Customize Workspace.



Workspace Contents
Customize Workspace
MyWorkspace (current)
Quick Access Toolbar
Toolbars
Menus
Palettes

5 In the Customizations In <*file name*> pane, click the plus sign (+) next to the Menus tree node, or Partial Customization Files tree node to expand it.

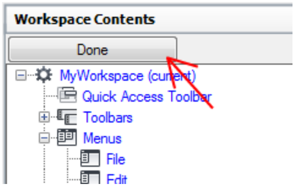
6 Click the check box next to each menu that you want to add to the workspace.



- ☑ Toolbars
- ■ Menus
  - ☑ File
  - ☑ Edit
  - ☑ View
  - ☑ Insert
  - ☑ Format
  - ☑ Tools
  - ☑ Draw
  - ☑ Dimension
  - ☑ Modify
  - ☑ Parametric
  - ☑ Window
  - ☑ Help
  - □ My Custom Tools

In the Workspace Contents pane, the selected elements are added to the workspace.

7 In the Workspace Contents pane, click Done.



NOTE Make sure to set the workspace current to ensure the changes are displayed.

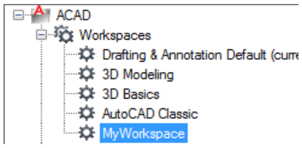
8 Click Apply.

To reposition menus on the menu bar

1 Click Manage tab ➤ Customization panel ➤ User Interface.

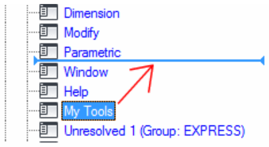
2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Workspaces node to expand it.

3 Select the workspace that you want to modify.



4 In the Workspace Contents pane, click the plus sign (+) next to the Menus node to expand it.

5 Drag the pull-down menu into the new location.


Dimension
Modify
Parametric
Window
Help
My Tools
Unresolved 1 (Group: EXPRESS)

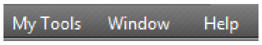
A splitter bar shows the new location for the pull-down menu.

6 Once the splitter bar is in the place where you want to insert the menu, release the pointing device button.

NOTE Make sure to set the workspace current to ensure the changes are displayed.

---

7 Click Apply.

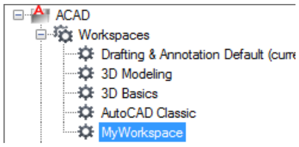

My Tools Window Help

To display a palette using the CUI Editor

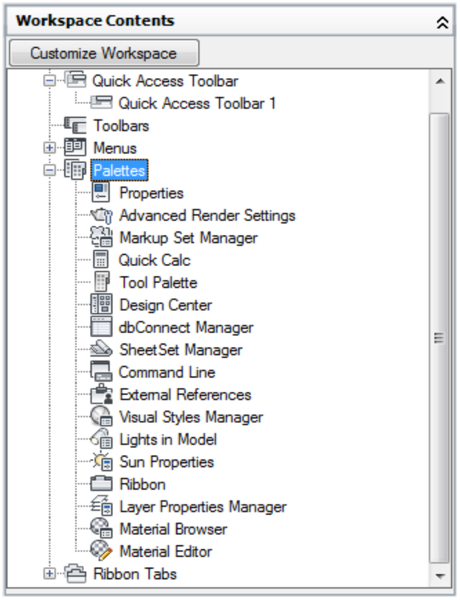
1 Click Manage tab ➤ Customization panel ➤ User Interface. CUI

2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the plus sign (+) next to the Workspaces node to expand it.

3 Select the workspace that you want to modify.


ACAD
Workspaces
Drafting & Annotation Default (curre
3D Modeling
3D Basics
AutoCAD Classic
MyWorkspace

4 In the Workspace Contents pane, click the plus sign (+) next to the Palettes node to expand it.



5 Select the palette you want to display.

6 In the Properties pane, under Appearance, Show box, click the drop-down list and select Show.

7 Click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

Control the Appearance of Palettes

You can use workspaces to control the display and appearance of palettes.

Many windows, known as palettes, can be set to be docked, anchored, or floated in t6he application window. You can define the size, location, or appearance of these windows by changing their properties in the Workspace

Contents pane of the Customize User Interface (CUI) Editor. These dockable windows include:

- Command Line
- DesignCenter
- External References
- Layer Properties Manager
- Markup Set Manager
- Properties
- QuickCalc
- Ribbon
- Tool Palette
- Advanced Render Settings
- dbConnect Manager
- Lights in Model
- Materials
- Sheet Set Manager
- Sun Properties
- Visual Styles Manager

The following table shows the properties as they appear in the Properties pane for a palette in the CUI Editor and as an example, the default values of the Tool Palettes window in the AutoCAD Classic workspace.

Properties for the Tool Palettes window under the AutoCAD Classic workspace

Properties pane item	Description	Example
Show	Visibility state of the palette. The available options are No, Yes, or Do Not Change. Do Not Change keeps the last used state of the palette when the workspace is restored or set current.	Yes
Orientation	The on screen docking or floating state of the palette. The available options are Floating, Top, Bottom, Left, Right, or Do Not Change. Do Not Change keeps the last used state of the palette when the workspace is restored or set current. Some palettes like the Command Line also support a dock location of Top and Bottom.	Floating
Allow Docking	Controls if the user can dock the palette by dragging it to one of the designated docking areas. The available options are No, Yes, or Do Not Change. Do Not Change maintains the last used setting for the palette when the workspace is restored or set current.	Yes

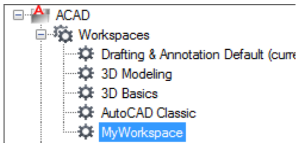
Properties for the Tool Palettes window under the AutoCAD Classic workspace

Properties pane item	Description	Example
Auto Hide	Controls if the palette rolls up when not in use. The available options are On, Off, or Do Not Change. Do Not Change maintains the last used setting for the palette when the workspace is restored or set current.	Off
Use Transparency	Controls if the palette appears transparent. The available options are No, Yes, or Do Not Change. Do Not Change maintains the last used setting for the palette when the workspace is restored or set current.	No
Transparency Amount	Controls how opaque the palette is displayed. The valid range is 0 through 100.	0
Default Group	Controls which of the user defined palette groups should be displayed.	All Palettes
Height	Determines how tall the palette is when it is floating.	598
Width	Determines how wide the palette is when it is floating.	172

To change the properties of a palette

1 Click Manage tab ➤ Customization panel ➤ User Interface.

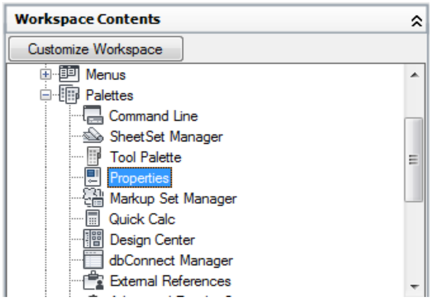
2 In the Customize User Interface Editor, Customize tab, in the Customizations In <*file name*> pane, click the workspace that contains the palette you want to modify.



ACAD
Workspaces
Drafting & Annotation Default (curr
3D Modeling
3D Basics
AutoCAD Classic
MyWorkspace

3 In the Workspace Contents pane, click the plus sign (+) next to Palettes to expand the list.

4 Click the palette that you want to modify.

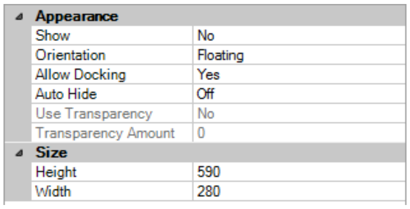


5 In the Properties pane, do any or all of the following:

- In the Show box, select an option (No, Yes, or Do Not Change).
- In the Orientation box, select an option (Floating, Top, Bottom, Left, or Right).
- In the Allow Docking box, select an option (No, Yes, or Do Not Change).

  NOTE To specify that a window should be anchored, set Orientation to Left, Right, Top, or Bottom, and set Auto Hide to On.

- In the Auto Hide box, select an option (On, Off, or Do Not Change).
- In the Use Transparency box, select an option (No, Yes, or Do Not Change).
- In the Transparency Amount box, enter a number (if applicable).
- In the Default Group box, select a Tool Palette group (Tool Palettes window only).
- In the Height box, enter a number. A value of 0 is equivalent to Do Not Change.
- In the Width box, enter a number. A value of 0 is equivalent to Do Not Change.



Appearance	
Show	No
Orientation	Floating
Allow Docking	Yes
Auto Hide	Off
Use Transparency	No
Transparency Amount	0
Size	
Height	590
Width	280

6 Click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

Transfer and Migrate Customization

You can transfer and migrate data from a customization or menu file from an earlier release using the Customize User Interface (CUI) Editor and the Migrate Custom Settings dialog box.

Transfer Customization

The Customize User Interface (CUI) Editor can be used to transfer data in a CUI, MNU, or MNS file to a CUIx file without modifying the original customization or menu file. The new customization file that is created has the same name as the original file, but with a *.cuix* extension.

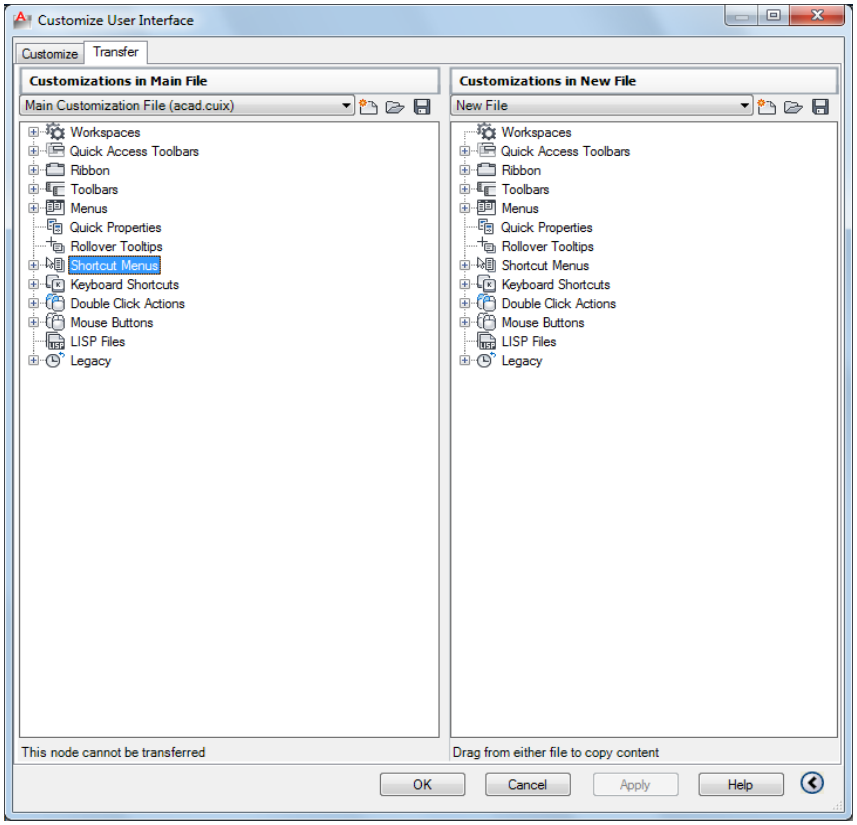
You can also transfer customization information between files. For example, you can transfer toolbars from a partial CUIx file to the main CUIx file so that the program can display the toolbar information. In addition, you can move customizations from the main CUIx file to partial CUIx files, or from a partial CUIx file to another partial CUIx file.

NOTE All elements can be transferred between two CUIx files with the exception of the property settings defined under the Quick Properties and Rollover Tooltips nodes.

If you transfer user interface elements that reference other user interface elements, such as a flyout, all the relevant information for that interface element is also transferred. For example, if you transfer the Draw toolbar, which references the Insert toolbar, the Insert toolbar is also transferred.

NOTE Button images may not appear in the program when you transfer a toolbar, pull-down menu, or ribbon panel from a CUIx file. If the images are loaded from an image file, those images must reside in a folder that is defined in the Options dialog box, Files tab under Support File Search Path or Custom Icon Location. If the images come from a third-party resource DLL, contact the party who created the resource DLL.

The following is an example of the Customize User Interface (CUI) Editor, Transfer tab. You use this tab to transfer user interface customization.



This node cannot be transferred

Drag from either file to copy content

Migrate Customization

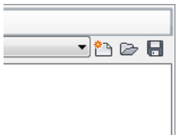
As you make changes to the customization in a CUIx file, the changes are automatically tracked. The tracked changes are used when migrating customization from release to release with the Migrate Custom Settings dialog box. In the Migrate Custom Settings dialog box, you can migrate any changes made to the standard CUIx files that come with the program with the new shipping versions of the files with the same name. You can avoid manually migrating customization, which might result in the loss of customization.

NOTE The Migrate Custom Settings dialog box can be used to migrate user interface customization from previous releases. To access the Migrate Custom Settings dialog box, click Start menu (Windows) ➤ All Programs (or Programs) ➤ Autodesk ➤ *AutoCAD 2012* ➤ Migrate Custom Settings.

To transfer customizations

1 Click Manage tab ➤ Customization panel ➤ Import Customizations.

2 In the Customize User Interface Editor, Transfer tab, in the left pane, click the Open Customization File button.



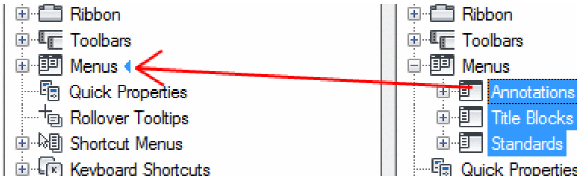
3 In the Open dialog box, locate the customization file (MNU, MNS, CUI, or CUIx) from which you want to import customizations, and select it. Click Open.

4 In the right pane, click the Open Customization File button.

5 In the Open dialog box, locate the customization file (MNU, MNS, CUI, or CUIx) to which you want to export customizations, and select it. Click Open.

6 In the left pane, click the plus sign (+) next to an interface element node to expand it. Expand the corresponding node in the right pane.

7 Drag interface elements from the right pane to the appropriate location in the left pane.



NOTE Interface elements can be dragged in either direction, from the left to the right pane or the right to the left pane.

8 Click Apply.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

CUIEXPORT

Exports customized settings from the main CUIx file to an enterprise or partial CUIx file.

CUIIMPORT

Imports customized settings from an enterprise or partial CUIx file to the main CUIx file.

Customize User Interface (CUI) Editor FAQs

FAQs will help you to find answers to some of the most commonly asked questions about using the Customize User Interface (CUI) Editor.

Migrating/Upgrading

How do I get my menu customization from a previous release to work in the new release?

In past releases this had to be done through a text editor, such as Notepad. With the CUI Editor, you use the Transfer tab to browse and select your MNS/MNU, CUI, or CUIx file that contains your menu customization. Once the previous customization file has been selected, you drag the user interface elements between two CUIx files. See To transfer customizations on page 381 for more information.

Commands

How do I create a new command and add it to a user interface element, such as a pull-down menu?

Commands are created and managed through the Command List pane located in the lower-left corner of the Customize tab of the CUI Editor. See To create a command on page 144 for more information.

Once the command has been created, it can be added to or used to create a number of different user interface elements. To add the command to a menu for example, expand the menu under the Menus node in the Customizations In <*file name*> pane that you want to add the command to and then drag the command under the menu. See To create a pull-down menu on page 272 for more information.

Menus

Why doesn’t my menu display on the menu bar?

Workspaces are used to control the display of menus on the menu bar. See To display menus on the menu bar on page 372 for more information.

How do I change the order of a pull-down menu?

Workspaces are used to control the positioning of menus on the menu bar. See To reposition menus on the menu bar on page 373 for more information.

Toolbars

Why do my toolbars not stay in the same place after I close and restart AutoCAD 2012?

This happens because of the way menus are loaded into AutoCAD at startup. This problem only happens when partial and enterprise CUIx files are used. To resolve this problem, you can use the new /w command line switch. This causes AutoCAD 2012 to re-initialize the workspace upon startup and place the toolbars in their correct locations. See To restore a workspace with a command line switch on page 354 for more information.

Why do my icons on a toolbar display as a cloud with a question mark after I migrate them using the Transfer tab in the CUI Editor?

This happens because the images for the custom icons are not located in the AutoCAD support file paths. Locate the images using Windows Explorer and add the images location to the Support File Search Path node under the Files tab of the Options dialog box, or copy them into the folder:

(Windows XP) *<drive>:\Documents and Settings\<user profile name>\Application Data\Autodesk\<product name>\<release number>\<language>\Support\Icons*

(Windows Vista) *<drive>:\Users\<user profile name>\AppData\Autodesk\<product name>\<release number>\<language>\Support\Icons*

Why does my toolbar flyout not work?

A flyout might not work for a few different reasons. There might not be any commands currently assigned to the toolbar that it is referencing or a control is part of the toolbar that is being referenced for the toolbar flyout. Launch the CUI Editor and verify that there are commands on the toolbar that is being referenced and if there are, make sure there are no controls on the toolbar such as the Layer list control.

Why do I get an AutoCAD message box when I try to use a toolbar flyout?

The AutoCAD message box is displayed because the toolbar that is being referenced for the toolbar flyout is not found. AutoCAD can't find the toolbar because it no longer exists, is not currently loaded because the partial CUIx file it is in is not loaded, or the alias for the toolbar has been changed.

Launch the CUI Editor and select the flyout on the toolbar that currently is not working properly. In the Properties pane look at the Source Toolbar property. Use the Find option to look for a toolbar element with an alias that matches the text string in the Source Toolbar property of the flyout that does not work. If one is not located, remove the flyout from the toolbar and drag the toolbar that you want to reference as a flyout on the toolbar. Close the CUI Editor. The flyout should now work correctly once again.

Double Click Actions

When I double-click an object nothing happens. Why is this happening?

There are a few different reasons why when double-clicking on an object in the drawing nothing happens. The first and most common problem is with the system variable PICKFIRST is set to 0. PICKFIRST must be set to a value of 1 in order for double-click editing to work. The next possible solution is that double-click editing has been disabled. Double-click editing is controlled by the system variable DBLCLKEDIT. If it is set to 0 it is currently turned off. DBLCLKEDIT should be set to 1.

Workspaces

Why do my changes not appear after I click Apply?

This happens because the workspace that you made changes to is not the current workspace. To resolve this problem, you need to set the workspace current and then when changes are applied they will appear. See To set a workspace current from the CUI Editor on page 353 for more information.

Enterprise CUIx Files

How do I edit an enterprise CUIx file if it is read-only in the CUI Editor?

An enterprise CUIx file can only be edited when it is loaded as the main CUIx file or as a partial CUIx file to the main CUIx file. It is recommended that you load it as the main CUIx file when you need to make edits. If you are creating a workspace that needs to include user interface elements from the CUIx file that is normally designated as the main CUIx file, load the main CUIx file as the enterprise CUIx file. Make edits to the enterprise CUIx file. See To modify an enterprise CUIx file on page 133 for more information.

Quick Reference

Commands

CUI

Manages the customized user interface elements in the product.

CUIEXPORT

Exports customized settings from the main CUIx file to an enterprise or partial CUIx file.

CUIIMPORT

Imports customized settings from an enterprise or partial CUIx file to the main CUIx file.

CUILOAD

Loads a CUIx file.

CUIUNLOAD

Unloads a CUIx file.

OPTIONS

Customizes the program settings.

QUICKCUI

Displays the Customize User Interface Editor in a collapsed state.

WORKSPACE

Creates, modifies, and saves workspaces and makes a workspace current.

System Variables

ENTERPRISEMENU

Stores the enterprise customization file name (if defined), including the path for the file name.

MENUNAME

Stores the customization file name, including the path for the file name.

WSCURRENT

Returns the current workspace name at the Command prompt and sets a workspace to current.

DIESEL

5

You can use DIESEL to alter the AutoCAD® status line through the MODEMACRO system variable. You can also use DIESEL in menu items as a macro language instead of AutoLISP®. DIESEL expressions accept strings and generate string results.

Because DIESEL expressions handle strings exclusively, the USERS1-5 system variables are useful for passing information from an AutoLISP routine to a DIESEL expression. DIESEL expressions are evaluated by AutoLISP routines through the use of the AutoLISP *menucmd* function.

Customize the Status Line

You can use the MODEMACRO system variable to display information on the status line.

Overview of the MODEMACRO System Variable

The status line can provide the user with important information without interrupting the work flow. The MODEMACRO system variable controls the user-defined area on the status line. The calculated value of the MODEMACRO system variable is displayed in a left-aligned panel in the status bar at the bottom of the AutoCAD® window. This variable is set to the null string when you start AutoCAD. Its value is not saved in the drawing, the configuration file, or anywhere else.

The number of characters displayed on the status line is limited only by the size of the AutoCAD window (and your monitor). The default panels move to the right as the content of the MODEMACRO panel grows. It is possible to push the default panels completely off the screen (if you want to).

You can use the MODEMACRO system variable to display, in the status line, most data known to AutoCAD. With its calculation, decision, and editing facilities you can compose the status line to your precise specifications.

MODEMACRO is a user-string variable. It can be set to any string value. The maximum string value is 4095 characters. You can set MODEMACRO with SETVAR or by entering **modemacro** at the command prompt. If you modify the MODEMACRO setting, you can experiment with various status line formats; however, the maximum number of characters you can enter in this manner is 255.

If you set MODEMACRO to the null string by entering a period (.), AutoCAD displays the standard status line.

Quick Reference

Commands

SETVAR

Lists or changes the values of system variables.

System Variables

MODEMACRO

Displays a text string on the status line, such as the name of the current drawing, time/date stamp, or special modes.

Set MODEMACRO Values

You can use text strings and DIESEL to display messages in the user-defined section of the status line.

The value of MODEMACRO determines what is displayed in the mode status line. The simplest (and least useful) MODEMACRO consists of constant text. For example, to display a company name in the status line, you enter the following:

```
Command: modemacro
New value for MODEMACRO, or . for none <"">: Greg's Bank and Grill
```

This MODEMACRO value always displays the same text; the status line does not reflect changes to the AutoCAD internal state. It doesn't change until you change MODEMACRO.

To make the status line reflect the AutoCAD current state, enter macro expressions using the DIESEL language in the following format:

```
$(somefun, arg1, arg2, ...)
```

In the macro expression, `somefun` is the name of the DIESEL function (similar to an AutoLISP function name) and *arg1*, *arg2*, and so on, are arguments to the function, interpreted according to the function's definition. Unlike AutoLISP, DIESEL macro expressions have only one data type: strings. Macros that operate on numbers express the numbers as strings and convert back and forth as required.

For descriptions of the DIESEL functions, see Catalog of DIESEL Functions on page 396.

Now define a more interesting status line (for example, one that shows the current text style name):

Command: **modemacro**
New value for MODEMACRO, or . for none <"">: **Style: $(getvar, textstyle)**

- **Style:** is a text string to be displayed on the status line.
- **$(getvar,textstyle)** is a DIESEL function (`getvar`) and argument that retrieves the current value of the TEXTSTYLE system variable.

NOTE The examples in this topic may show the MODEMACRO string as more than one line of text. You enter it as one long string at the prompt.

You can retrieve any system variable by entering **$(getvar, *varname*)**. The current setting of the system variable replaces the macro expression on the status line. Then, when you switch text styles, for example, MODEMACRO is reevaluated. If it changes, the new text style name is displayed on the status line.

Expressions can be nested, and they can be as complex as you want. The example that follows displays the current snap value and angle (in degrees) in the status line. It uses nested expressions to convert the snap angle from radians to degrees and truncates the value to an integer.

Command: **modemacro**
New value for MODEMACRO, or . for none <"">: **Snap: $(getvar, snapunit) $(fix,$(*,$(getvar,snapang),$(/,180,3.14159)))**

You can also display the values in the current linear and angular units modes.

Command: **modemacro**
New value for MODEMACRO, or . for none <"">: **Snap: $(rtos,$(index,0,**

$(getvar,snapunit))),$(rtos,$(index,1,$(getvar,snapunit))) $(angtos, $(getvar,snapang))

DIESEL copies its input directly to the output until it comes to the dollar sign character (`$`) or a quoted string. You can use quoted strings to suppress evaluation of character sequences that would otherwise be interpreted as DIESEL functions. You can include quotation marks in quoted strings by using two adjacent quotation marks. In the following example, the current layer is set to LAYOUT, and MODEMACRO is set to the string.

Command: **modemacro**
New value for MODEMACRO, or . for none <"">: "**$(getvar,clayer)=**
"""**$(getvar,clayer)**""""

The status line displays the following:

$(getvar,clayer)="LAYOUT"

Quick Reference

Commands

SETVAR

Lists or changes the values of system variables.

System Variables

MODEMACRO

Displays a text string on the status line, such as the name of the current drawing, time/date stamp, or special modes.

Set MODEMACRO with AutoLISP

Another way to set MODEMACRO values is to use AutoLISP.

You can save the code samples shown here as ASCII format text files and load them with the AutoLISP *load* function.

The following AutoLISP command defines a MODEMACRO string that provides similar information to that in the built-in status line. Because AutoLISP cannot continue strings from line to line, you use the AutoLISP *strcat* function to assemble the complete MODEMACRO string from shorter component strings.

```
(defun C:ACADMODE ( )
            (setvar "modemacro"
                 (strcat
                  "Layer $(substr,$(getvar,clayer),1,8)"
                  "$(if,$(getvar,orthomode), Ortho)"
                  "$(if,$(getvar,snapmode), Snap)"
                  "$(if,$(getvar,tabmode), Tablet)"
                  "$(if,$(=,$(getvar,tilemode),0),"
                  "$(if,$(=,$(getvar,cvport),1), P)"
                  ")"
                 )
            )
)
```

Save this AutoLISP routine in a file called *acadmode.lsp*. When you load the routine and execute it, it displays information on the status line. This is not the most useful application of this feature; it is provided only as an example.

The following sample *acad.lsp* file uses the *S::STARTUP* function to set the MODEMACRO variable to a string defined by the AutoLISP file *mode1.lsp*.

```
;;; Sample acad.lsp file that uses S::STARTUP to load the
;;; file MODE1.LSP which defines a MODEMACRO string
(defun S::STARTUP ( )
            (load "mode1")
            (princ)
)
;;; Additional AutoLISP files can also be defined or
;;; loaded here
```

When the AutoLISP file *(mode1.lsp)* is loaded, it uses the MODEMACRO system variable to define a status line that displays *L:* followed by the first eight characters of the layer name, the drawing name and a portion of the path, and the first letter of each name of the currently active modes. The position of the drawing name remains constant, regardless of the length of the layer name.

```
;;; MODE1.LSP
;;;
(setvar "modemacro"
  (strcat
    "L:$(substr,$(getvar,clayer),1,30)"
    "$(substr,        ,1,$(-,30,$(strlen,$(getvar,clayer)))) "
;;            ^^^^^^^^ Note the 8 spaces here
    "<.."
      "$(if,$(eq,$(getvar,dwgname),UNNAMED),UNNAMED,"
        "$(substr,$(getvar,dwgname),"
          "$(if,$(>,$(strlen,$(getvar,dwgprefix)),29),"
            "$(-,$(strlen,$(getvar,dwgprefix)),29),1"
          "),"
          "$(strlen,$(getvar,dwgname))"
        ")"
      ")"
    ">"
    "$(if,$(getvar,orthomode), O, )"
    "$(if,$(getvar,snapmode), S, )"
    "$(if,$(getvar,tabmode), T, )"
    "$(if,$(and,"
    "$(=,$(getvar,tilemode),0),$(=,$(getvar,cvport),1)),P)"
  )
)
```

Indenting code improves the readability of AutoLISP files and DIESEL strings.

Quick Reference

Commands

SETVAR

Lists or changes the values of system variables.

System Variables

MODEMACRO

Displays a text string on the status line, such as the name of the current drawing, time/date stamp, or special modes.

DIESEL Expressions in Macros

You can use DIESEL string expressions in customization (CUI) files as an additional method of creating macros.

These expressions can return string values (text strings) in response to standard AutoCAD commands, AutoLISP and ObjectARX® routines, and other macros. They can also return string values to the menu itself, thereby altering the appearance or content of a menu label.

A DIESEL expression that you use in a menu item must follow the `$section=submenu` format where the section name is `M` and the submenu is the DIESEL expression you want. Frequently, you can implement a macro more easily with AutoLISP.

The following examples show two menu items that produce the same result; one uses DIESEL, and the other uses AutoLISP.

This menu item uses the DIESEL expression:

```
^C^C^P$M=$(if,$(=,$(getvar,cvport),1),mspace,pspace)
```

This menu item uses the AutoLISP expression:

```
^C^C^P(if (= (getvar "cvport") 1)(command "mspace")+
(command "pspace"))(princ) ^P
```

Both menu items provide a way to switch between paper space and model space (if TILEMODE is set to 0), but the DIESEL expression is shorter and is evaluated transparently, not requiring the call to the AutoLISP *`princ`* function. If the special character `^P` (which switches MENUECHO on and off) is omitted in both cases, the DIESEL expression displays only the issued command, whereas the AutoLISP expression displays the entire line of code.

Because the value returned by a DIESEL expression is a text string, it can be used in response to an AutoLISP *`getxxx`* function call. This functionality enables menu items to evaluate current drawing conditions and to return a value to an AutoLISP routine.

The next example is based on these assumptions:

- The AutoLISP routine is loaded into memory.
- The CUI excerpt is included in the current customization file.
- The symbols to insert are one unit high by one unit wide.

- The DIMSCALE variable is set to the drawing's scale factor (that is, a drawing to be plotted at a scale of 1" = 10' would have a scale factor of 120, or a 1/4" = 1' scale drawing would have a scale factor of 48).

If you load and execute the sample AutoLISP routine, AutoCAD inserts the symbol at the size and location you have specified. When plotted, the symbols are the specified size (if the drawing is plotted at the same scale as that specified by DIMSCALE).

The following is a sample AutoLISP routine.

```
(defun C:SYMIN ( )
  (setq sym
    (getstring
      "\nEnter symbol name: ")  ; Prompts for a symbol name
  )
  ; Display the custom toolbar named Symsize
  (command "._-toolbar" "SymSize" "_show")
  (setq
    siz (getreal
          "\nSelect symbol size: ")  ; Prompts for a symbol size
    p1 (getpoint
          "\nInsertion point: ")  ; Prompts for insertion point
  )
  (command "._insert"            ; Issues the INSERT command
           sym                  ; using the desired symbol
           p1 siz siz 0)        ; insertion point, and size
  ; Hide the custom toolbar named Symsize
  (command "._-toolbar" "SymSize" "_hide")
  (princ)                       ; Exits quietly
)
```

NOTE An AutoLISP routine that you use regularly should include error checking to verify the validity of user input.

The DIESEL expressions in the following example multiply the current value of DIMSCALE by the specified value, and return an appropriate scale factor.

This cannot be done with similar AutoLISP code; a value returned by an AutoLISP expression cannot typically be used as a response to a *getxxx* function call (such as, the *getreal* function in the preceding sample).

```
$M=$(*,$(getvar,dimscale),0.375)
$M=$(*,$(getvar,dimscale),0.5)
$M=$(*,$(getvar,dimscale),0.625)
```

DIESEL expressions can also return string values to pull-down menu item labels, so that you can make menus unavailable or otherwise alter the way they are displayed. To use a DIESEL expression in a pull-down menu label, make sure that the first character is the `$` character.

In the next example, the current layer is set to BASE and the following DIESEL expression is used as the label.

```
$(eval,"Current layer: " $(getvar,clayer))
```

The result is that the appropriate pull-down menu is displayed and updated whenever the current layer changes.

Current Layer: BASE

You can also use this method to interactively change the text displayed in a pull-down menu. You use an AutoLISP routine that sets the USERS1-5 system variables to the selected text, which can be retrieved by a DIESEL macro in a menu label.

NOTE The width of pull-down and shortcut menus is determined when the customization file is being loaded. Menu labels generated or changed by DIESEL expressions after a menu is loaded are truncated to fit within the existing menu width.

If you anticipate that a DIESEL-generated menu label will be too wide, you can use the following example to ensure that the menu width will accommodate your labels. This example displays the first 10 characters of the current value of the USERS3 (USERS1-5) system variable.

```
$(eval,"Current value: " $(getvar,users3))+
 $(if, $(eq,$(getvar,users3),""), 10 spaces )^C^Cusers3
```

You cannot use trailing spaces in a menu label to increase the menu width, because trailing spaces are ignored while the menu is being loaded. Any spaces you use to increase the width of a menu label must be within a DIESEL expression.

The next example uses the same DIESEL expression as the label and a portion of the menu item. It provides a practical way to enter the current day and date into a drawing.

```
$(edtime,$(getvar,date),DDD", "D MON YYYY)^C^Ctext +
\\\ $M=$(edtime,$(getvar,date),DDD", "D MON YYYY);
```

Also, you can use a DIESEL macro to mark pull-down menu labels or make them unavailable. The following pull-down menu label displays an unavailable

ERASE while a command is active. The text is displayed normally when a command is not active.

```
$(if,$(getvar,cmdactive),~)ERASE
```

You can use a similar approach to place a mark beside a pull-down menu item or to interactively change the character used for the mark.

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

USERS1-5

Provides storage and retrieval of text string data.

Catalog of DIESEL Functions

Status retrieval, computation, and display are performed by DIESEL functions. All functions have a limit of 10 parameters, including the function name itself. If this limit is exceeded, you get a DIESEL error message.

+ (addition)

Returns the sum of the numbers *`val1`*, *`val2`*, …, *`val9`*.

```
$(+, val1 [, val2, …, val9])
```

If the current thickness is set to 5, the following DIESEL string returns 15.

```
$(+, $(getvar,thickness),10)
```

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

- (subtraction)

Returns the result of subtracting the numbers *val2* through *val9* from *val1*.

```
$(-, val1 [, val2 , …, val9])
```

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

* (multiplication)

Returns the result of multiplying the numbers *val1*, *val2*, …, *val9*.

```
$(*, val1 [, val2, …, val9])
```

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

/ (division)

Returns the result of dividing the number *val1* by *val2*, …, *val9*.

```
$(/, val1 [, val2, …, val9])
```

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

= (equal to)

If the numbers *val1* and *val2* are equal, the string returns 1; otherwise, it returns 0.

```
$(=, val1, val2)
```

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

< (less than)

If the number *val1* is less than *val2*, the string returns 1; otherwise, it returns 0.

```
$(< , val1, val2)
```

The following expression gets the current value of HPANG; if the value is less than the value stored in the system variable USERR1, it returns 1. If the value 10.0 is stored in USERR1 and the current setting of HPANG is 15.5, the following string returns 0.

```
$(<, $(getvar,hpang),$(getvar,userr1))
```

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

> (greater than)

If the number *val1* is greater than *val2*, the string returns 1; otherwise, it returns 0.

```
$(>, val1, val2)
```

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

!= (not equal to)

If the numbers *val1* and *val2* are not equal, the string returns 1; otherwise, it returns 0.

```
$(!=, val1, val2)
```

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

<= (less than or equal to)

If the number *val1* is less than or equal to *val2*, the string returns 1; otherwise, it returns 0.

```
$(<=, val1, val2)
```

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

>= (greater than or equal to)

If the number *val1* is greater than or equal to *val2*, the string returns 1; otherwise, it returns 0.

```
$(>=, val1, val2)
```

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

and

Returns the bitwise logical AND of the integers *val1* through *val9*.

```
$(and, val1 [, val2,…, val9])
```

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

angtos

Returns the angular value in the format and precision specified.

```
$(angtos, value [, mode, precision])
```

Edits the given *value* as an angle in the format specified by the *mode* and *precision* as defined for the analogous AutoLISPfunction. (The values for *mode* are shown in the following table.) If *mode* and *precision* are omitted, it uses the current values chosen by the UNITS command.

Angular units values

Mode value	String format
0	Degrees
1	Degrees/minutes/seconds
2	Grads
3	Radians
4	Surveyor's units

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

edtime

Returns a formatted date and time based on a given picture.

```
$(edtime, time, picture)
```

Edits the AutoCAD Julian date given by *time* (obtained, for example, from *$(getvar,date)* according to the given *picture*). The *picture* consists of format phrases replaced by specific representations of the date and time. Characters not interpretable as format phrases are copied literally into the result of *$(edtime)*. Format phrases are defined as shown in the following table. Assume that the date and time are Saturday, 5 September 1998 4:53:17.506.

edtime format phrases

Format	Output	Format	Output
D	5	H	4

edtime format phrases

Format	Output	Format	Output
DD	05	HH	04
DDD	Sat	MM	53
DDDD	Saturday	SS	17
M	9	MSEC	506
MO	09	AM/PM	AM
MON	Sep	am/pm	am
MONTH	September	A/P	A
YY	98	a/p	a
YYYY	1998		

Enter the entire `AM/PM` phrase as shown in the preceding table; if `AM` is used alone, the `A` will be read literally and the `M` will return the current month.

If any `AM/PM` phrases appear in the picture, the `H` and `HH` phrases edit the time according to the 12-hour civil clock (12:00-12:59 1:00-11:59) instead of the 24-hour clock (00:00-23:59).

The following example uses the date and time from the preceding table. Notice that the comma must be enclosed in quotation marks because it is read as an argument separator.

```
$(edtime, $(getvar,date),DDD"," DD MON YYYY - H:MMam/pm)
```

It returns the following:

Sat, 5 Sep 1998 - 4:53am

If *`time`* is 0, the time and date at the moment that the outermost macro was executed is used. This avoids lengthy and time-consuming multiple calls on `$(getvar,date)` and guarantees that strings composed with multiple `$(edtime)` macros all use the same time.

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

eq

If the strings *`val1`* and *`val2`* are identical, the string returns 1; otherwise, it returns 0.

```
$(eq, val1, val2)
```

The following expression gets the name of the current layer; if the name matches the string value stored in the USERS1 (USERS1-5) system variable, it returns 1. Assume the string `"PART12"` is stored in USERS1 and the current layer is the same.

```
$(eq, $(getvar,users1),$(getvar,clayer))Returns 1
```

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

eval

Passes the string *`str`* to the DIESEL evaluator and returns the result of evaluating it.

```
$(eval, str)
```

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

fix

Truncates the real number *value* to an integer by discarding any fractional part.

```
$(fix, value)
```

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

getenv

Returns the value of the environment variable *varname*.

```
$(getenv, varname)
```

If no variable with that name is defined, it returns the null string.

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

getvar

Returns the value of the system variable with the given *varname*.

```
$(getvar, varname)
```

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

if

Conditionally evaluates expressions.

```
$(if, expr, dotrue [, dofalse])
```

If `expr` is nonzero, it evaluates and returns `dotrue`. Otherwise, it evaluates and returns `dofalse`. Note that the branch not chosen by `expr` is not evaluated.

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

index

Returns the specified member of a comma-delimited string.

```
$(index, which, string)
```

Assumes that the `string` argument contains one or more values delimited by the macro argument separator character, the comma. The `which` argument selects one of these values to be extracted, with the first item numbered 0. This function is most frequently used to extract *X*, *Y*, or *Z* coordinate values from point coordinates returned by `$(getvar)`.

Applications can use this function to retrieve values stored as comma-delimited strings from the USERS1-5 system variables.

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

nth

Evaluates and returns the argument selected by *which*.

```
$(nth, which, arg0 [, arg1,…, arg7])
```

If *which* is 0, `nth` returns *arg0*, and so on. Note the difference between *$(nth)* and *$(index)*; *$(nth)*returns one of a series of arguments to the function, while *$(index)* extracts a value from a comma-delimited string passed as a single argument. Arguments not selected by *which* are not evaluated.

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

or

Returns the bitwise logical OR of the integers *val1* through *val9*.

```
$(or, val1 [, val2,…, val9])
```

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

rtos

Returns the real value in the format and precision specified.

```
$(rtos, value [, mode, precision])
```

Edits the given *value* as a real number in the format specified by the *mode* and *precision* as defined by the analogous AutoLISP function. If *mode* and *precision* are omitted, it uses the current values selected with the UNITS command.

Edits the given *value* as a real number in the format specified by *mode* and *precision.* If *mode* and *precision* are omitted, it uses the current values selected with the UNITS command.

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

strlen

Returns the length of *string* in characters.

```
$(strlen, string)
```

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

substr

Returns the substring of *string*, starting at character *start* and extending for *length* characters.

```
$(substr, string, start [, length])
```

Characters in the string are numbered from 1. If *length* is omitted, it returns the entire remaining length of the string.

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

upper

Returns the *string* converted to uppercase according to the rules of the current locale.

```
$(upper, string)
```

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

xor

Returns the bitwise logical XOR of the integers *val1* through *val9*.

```
$(xor, val1 [, val2,…, val9])
```

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

DIESEL Error Messages

Generally, if you make a mistake in a DIESEL expression, what went wrong will be obvious. Depending on the nature of the error, DIESEL embeds an error indication in the output stream.

DIESEL error messages

Error message	Description
$?	Syntax error (usually a missing right parenthesis or a runaway string)
$*(func,??)*	Incorrect arguments to *func*
$*(func)??*	Unknown function *func*
$(++)	Output string too long—evaluation truncated

Quick Reference

System Variables

MENUECHO

Sets menu echo and prompt control bits.

Slides and Command Scripts

6

Slides are snapshots of drawing files that can be used for giving presentations, for creating image tile menus, and for viewing another drawing while you work.

A script reads and executes commands from a text file. You can run a script when you start AutoCAD®, or you can run a script from within AutoCAD using the SCRIPT command. A script provides an easy way to create continuously running displays for product demonstrations and trade shows.

Create Slides

Slides are snapshots of drawing files. You can use slides for giving presentations, creating custom image tile menus, and viewing an image of another drawing while you work.

Overview of Slides

A slide is a snapshot of a drawing. Although it contains a picture of the drawing at a given instant, it is not a drawing file.

You cannot import a slide file into the current drawing, nor can you edit or print a slide. You can only view it.

You can use slide files in the following ways:

- For making presentations within AutoCAD®
- For viewing a snapshot of a drawing while working on a different drawing
- For creating menus of image tiles within a dialog box

You create a slide by saving the current view in slide format. A slide created in model space shows only the current viewport. A slide created in paper space shows all visible viewports and their contents. Slides show only what was visible. They do not show objects on layers that were turned off or frozen or objects in viewports that were turned off.

When you view a slide file, it temporarily replaces objects on the screen. You can draw on top of it, but when you change the view (by redrawing, panning, or zooming), the slide file disappears, and AutoCAD redisplays only what you drew and any preexisting objects.

You can display slides one by one or use a script to display slides in sequence. Slides also can be used in custom menus. For example, if you create scripts that insert blocks containing mechanical parts you use frequently, you can design a custom image tile menu that displays a slide of each part. When you click the slide image on the menu, AutoCAD inserts the block into the drawing.

A slide library is a file containing one or more slides. Slide library files are used for creating custom image tile menus and for combining several slide files for convenient file management.

You cannot edit a slide. You must change the original drawing and remake the slide. If you use a low-resolution graphics monitor when creating a slide file and later upgrade to a high-resolution monitor, you can still view the slide. AutoCAD adjusts the image accordingly; however, the slide does not take full advantage of the new monitor until you remake the slide file from the original drawing.

To make a slide

1. Display the view you want to use for the slide.
2. At the command prompt, enter **mslide**.
3. In the Create Slide File dialog box, enter a name and select a location for the slide.

   AutoCAD offers the current name of the drawing as a default name for the slide and automatically appends the *.sld* file extension.
4. Click Save.

   The current drawing remains on the screen, and the slide file is saved in the folder that you specified.

Quick Reference

Commands

MSLIDE

Creates a slide file of the current model viewport or the current layout.

REDRAW

Refreshes the display in the current viewport.

VSLIDE

Displays an image slide file in the current viewport.

System Variables

FILEDIA

Suppresses display of file navigation dialog boxes.

Utilities

SLIDELIB

Compiles slide files listed in an ASCII file into a slide library file.

View Slides

You can view slides individually using VSLIDE. To view a series of slides for a presentation, use a script file.

Be careful about using editing commands while you view a slide, which looks like an ordinary drawing. Editing commands affect the current drawing underneath the slide but not the slide itself.

Some commands may force redrawing, which removes the slide from display.

To view a slide

1. At the command prompt, enter **vslide**.
2. In the Select Slide File dialog box, select a slide to view and click OK.

   The slide image is displayed in the drawing area.
3. Click View menu ➤ Redraw.

   The slide image disappears.

Quick Reference

Commands

REDRAW

Refreshes the display in the current viewport.

VSLIDE

Displays an image slide file in the current viewport.

Create and View Slide Libraries

A slide library is a file containing one or more slides. Slide library files are used for creating custom image tile menus and for combining several slide files for convenient file management.

You can create slide libraries from slide files using the SLIDELIB utility. After you have set up a slide library, you can view slides by specifying the name of the slide library and the slide.

Do not delete the original slides after creating the slide library. The SLIDELIB utility cannot update a slide library once it is created. If you want to add or delete a slide, update the slide list file and remake the library with SLIDELIB. When you remake the slide library, all the slide files that you intend to include must be available.

To create a slide library

1 Use a Windows ASCII text editor to create a list of slide files to include in the library. The file would look similar to this example:

```
entrance.sld

hall.sld

stairs.sld

study.sld

balcony.sld
```

2 Name and save the file as a text file with a *.txt* file extension.

3 Click Start menu (Windows) ➤ All Programs (or Programs) ➤ Accessories ➤ Command Prompt.

4 In the Command Prompt window, at the prompt, enter **CD** <**folder location of slides**> to change folders.

As an example: **CD "c:\slides"**

5. At the prompt, enter the following syntax to create the slide library:

   ```
   slidelib libraryname < list.txt
   ```

   For example, if you named your text file *areas.txt*, you could create a library called *house.slb* by entering **slidelib house < areas.txt**. The SLIDELIB utility appends the file extension *.slb* to the slide library file.

To view a slide in a slide library

1. At the command prompt, enter **filedia**.
2. Enter **0** and press ENTER.
3. At the command prompt, enter **vslide**.
4. Enter **library(slidename)** to specify the slide.

   For example, enter **house** (**balcony**) to open the *balcony* slide, which is stored in the *house* slide library file.
5. To remove the slide from the display, click View menu ➤ Redraw.

Quick Reference

Commands

MSLIDE

Creates a slide file of the current model viewport or the current layout.

REDRAW

Refreshes the display in the current viewport.

VSLIDE

Displays an image slide file in the current viewport.

Utilities

SLIDELIB

Compiles slide files listed in an ASCII file into a slide library file.

Create Command Scripts

A script is a text file that contains a series of commands. Common uses for scripts are to customize startup and to run slide shows.

Overview of Command Scripts

A script is a text file with one command on each line.

You can invoke a script at startup, or you can run a script during a work session by using the SCRIPT command. A script also provides an easy way to create continuously running displays for product demonstrations and trade shows.

The BACKGROUNDPLOT system variable must be set to 0 before a script can plot multiple jobs.

You create script files outside the program using a text editor (such as Microsoft® Windows® Notepad) or a word processor (such as Microsoft Word) that can save the file in ASCII format. The file extension must be *.scr*.

Each line of the script file contains a command. Each blank space in a script file is significant because SPACEBAR is accepted as a command or data field terminator. You must be very familiar with the sequence of prompts to provide an appropriate sequence of responses in the script file.

NOTE Keep in mind that prompts and command names may change in future releases, so you may need to revise your scripts when you upgrade to a later version of this program. For similar reasons, avoid the use of abbreviations; future command additions might create ambiguities.

A script can execute any command at the command prompt except a command that displays a dialog box. In most cases, a command that displays a dialog box has an alternative version of the command that displays command prompts instead of a dialog box.

Script files can contain comments. Any line that begins with a semicolon (;) is considered a comment, and it is ignored while the script file is being processed. The last line of the file must be blank.

All references to long file names that contain embedded spaces must be enclosed in double quotes. For example, to open the drawing *my house.dwg* from a script, you must use the following syntax:

```
open "my house"
```

The following commands are useful in scripts:

'DELAY Provides a timed pause within a script (in milliseconds)

'GRAPHSCR Switches from the text window to the drawing area

RESUME Continues an interrupted script

RSCRIPT Repeats a script file

'TEXTSCR Switches to the text window

When command input comes from a script, it is assumed that the settings of the PICKADD and PICKAUTO system variables are 1 and 0, respectively; therefore, you do not have to check the settings of these variables.

A script is treated as a group, a unit of commands, reversible by a single U command. However, each command in the script causes an entry in the undo log, which can slow script processing. If you like, you can use UNDO Control None to turn off the undo feature before running the script, or you can write it at the beginning of the script itself. Remember to turn it back on (UNDO Control All) when the script is finished.

The script that is running stops when another script command is invoked.

To create a script that changes settings in a drawing

This script turns on the grid, sets the global linetype scale to 3.0, and sets layer 0 as the current layer with red as the color.

1 In a text editor, enter **grid on**.

2 On the next line, enter **ltscale 3.0**.

3 On the next line, enter **layer set 0 color red 0**.

4 Add a blank line.

5 Save the file as ASCII text (TXT file), with a file extension of *.scr*.
The script file may contain comments, as follows:

```
; Turn grid on
grid on
; Set scale for linetypes
ltscale 3.0
; Set current layer and its color
layer set 0 color red 0

; Blank line above to end LAYER command
```

Quick Reference

Commands

DELAY

Provides a timed pause within a script.

GRAPHSCR

Switches from the text window to the drawing area.

RESUME

Continues an interrupted script.

RSCRIPT

Repeats a script file.

SCRIPT

Executes a sequence of commands from a script file.

TEXTSCR

Opens the text window.

VSLIDE

Displays an image slide file in the current viewport.

Run Scripts at Startup

A script that runs at startup can open a drawing and change its settings.

Suppose that every time you begin a new drawing, you turn on the grid, set the global linetype scale to 3.0, and set layer 0 as your current layer, with red as the color. You can do this using a drawing template, but you could do it instead with the following script and store it in a text file called *setup.scr*.

```
grid on
ltscale 3.0
layer set 0 color red 0
```

The first line turns on the grid. The second line sets the global scale for linetypes. The third line sets the current layer to layer 0 and sets its default color to red. AutoCAD assumes that in a script you want to use the version of LAYER command that displays command prompts rather than the palette version. The result is equivalent to entering **-layer** at the command prompt. The fourth line is blank, ending LAYER.

NOTE VBA and AutoLISP® scripts that run at startup should check for whether the AutoCAD process is visible or invisible. If the process is invisible, the script should not execute, because the process may be performing background plotting or publishing operations. To check for whether the AutoCAD process is visible or invisible, you can use the Visible property of the Application object in the AutoCAD Object Model.

You could run a script at startup to open a drawing by using the following syntax in the Run dialog box:

```
ACAD drawing_name /b setup
```

All file names that contain embedded spaces must be enclosed in double quotes, for example, `“guest house”`.

You can also specify the view that is displayed when the drawing opens by using the /v switch and the view name. The /b switch and the script file must be the last parameter listed.

Including the file extensions *.exe*, *.dwg*, *.dwt*, and *.scr* is optional. If AutoCAD cannot find the script file, AutoCAD reports that it cannot open the file.

To run the same script at startup but create a new drawing using the *MyTemplate.dwt* file as the template, enter the following in the Run dialog box:

```
ACAD /t MyTemplate /b setup
```

This command creates a new drawing and issues a sequence of setup commands from the *setup.scr* file. When the script has finished running, the command prompt is displayed.

If you want to use the default template for the new drawing, you can omit the /t switch and the template file name.

NOTE You can no longer use this method to start a new drawing and give it a name. Name the drawing when you save it.

To run a script at startup

1 Click Start menu (Windows) ➤ Run.

2 In the Run dialog box, enter **acad drawing_name /b script_name**.

   To start a new file, instead of a drawing file name, enter the /t switch and the name of a template file: **/t template_drawing**.

   To open a drawing file to a particular view, follow the drawing name with the /v switch and the name of the view: **/v view_name**.

The name of the script file must be the last parameter listed. The file extensions are optional.

3 Click OK.

AutoCAD opens the drawing and executes the commands in the script file. When the script has been completed, the command prompt is displayed.

Run Slide Shows from Scripts

Scripts are useful for creating slide shows.

Scripts are useful for creating slide shows. Ordinarily, the speed with which you can display slides is limited by the number of times AutoCAD must access the disk to read the slide file. You can, however, preload the next slide from disk into memory while your audience is viewing the current slide and then quickly display the new slide from memory.

To preload a slide, place an asterisk before the file name in VSLIDE. The next VSLIDE command detects that a slide has been preloaded and displays it without asking for a file name.

The disk-access time to load the next slide overlaps with the viewing time for the current slide. You can specify additional delays with the DELAY command. Each delay unit is equal to one millisecond.

To stop a repeating script press ESC. You can resume the script with RESUME.

If the script will run for a long time, it is recommended that you use UNDO Control None to turn off the Undo log file.

To run slide shows from scripts

1 Create the slide library file as described in To create a slide library on page 414.

2 Create a script file using an ASCII text editor, as shown in To create a script that preloads slides on page 421.

3 At the command prompt, enter **script**.

4 In the Select Script File dialog box, select a script file and click Open.

To create a script that preloads slides

In this example of a script that displays three slides (files *slide1.sld*, *slide2.sld,* and *slide3.sld*), the time it takes to access the disk drive and load the next slide into memory overlaps with the viewing time for the current slide.

1. On the first line of the script, enter **vslide slide1**.

   The first line begins the slide show and loads *slide1*.

2. On the second line, enter **vslide *slide2**.

   The asterisk (*) preceding the slide name on the second line preloads *slide2*.

3. On the third line, enter **delay 2000**.

   The third line specifies a delay of 2000 milliseconds to allow the audience to view *slide1*.

4. On the fourth line, enter **vslide**. On the fifth line, enter **vslide *slide3**. On the sixth line, enter **delay 2000**.

   The fourth, fifth, and sixth lines display *slide2*, preload *slide3*, and specify a delay for viewing *slide2*.

5. On the seventh line, enter **vslide**. On the eighth line, enter **delay 3000**.

   The seventh and eighth lines display *slide3* and specify a delay for viewing *slide3*.

6. On the last line, enter **rscript** to repeat the script.
7. To stop a repeating script press ESC. To continue the script, enter **resume**.

The script may contain comments, as follows:

```
; Begin slide show, load SLIDE1
VSLIDE SLIDE1
; Preload SLIDE2
VSLIDE *SLIDE2
; Let audience view SLIDE1
DELAY 2000
; Display SLIDE2
VSLIDE
; Preload SLIDE3
VSLIDE *SLIDE3
; Let audience view SLIDE2
DELAY 2000
; Display SLIDE3
VSLIDE
; Let audience view SLIDE3
DELAY 3000
; Cycle
RSCRIPT
```

Quick Reference

Commands

DELAY

Provides a timed pause within a script.

GRAPHSCR

Switches from the text window to the drawing area.

RESUME

Continues an interrupted script.

RSCRIPT

Repeats a script file.

SCRIPT

Executes a sequence of commands from a script file.

TEXTSCR

Opens the text window.

VSLIDE

Displays an image slide file in the current viewport.

Introduction to Programming Interfaces

7

The programming interfaces introduced here are ActiveX® Automation, VBA (Visual Basic® for Applications), AutoLISP®, Visual LISP™ , ObjectARX™ , and .NET. The type of interface you use depends on your application needs and programming experience.

ActiveX Automation

ActiveX Automation is a technology developed by Microsoft® and is based on the COM (component object model) architecture. You can use it to customize AutoCAD, share your drawing data with other applications, and automate tasks.

Overview of ActiveX

You can create and manipulate AutoCAD objects from any application that serves as an Automation controller. Thus, Automation enables macro programming across applications, a capability that does not exist in AutoLISP.

Through Automation, AutoCAD exposes programmable objects, described by the AutoCAD Object Model, that can be created, edited, and manipulated by other applications. Any application that can access the AutoCAD Object Model is an Automation controller, and the most common tool used for manipulating another application using Automation is Visual Basic for Applications (VBA). VBA is found as a component in many Microsoft Office applications. You can use these applications, or other Automation controllers, such as Visual Basic, .NET, and Delphi, to drive AutoCAD.

The advantage of implementing an ActiveX interface for AutoCAD is twofold:

- Programmatic access to AutoCAD drawings is opened up to many more programming environments. Before ActiveX Automation, developers were limited to an AutoLISP or C++ interface.
- Sharing data with other Windows applications, such as Microsoft Excel and Microsoft Word, is made dramatically easier.

For detailed information about using VBA to control AutoCAD ActiveX Automation, see the *ActiveX and VBA Developer's Guide* and *ActiveX and VBA Reference* in the Help system. To display Developer Help, on the InfoCenter toolbar, to the right of the Help button, click the drop-down arrow. From the menu, click Additional Resources ➤ Developer Help.

For example, you might want to prompt for input, set preferences, make a selection set, or retrieve drawing data. You can decide on the controller to use, depending on the type of manipulation.

Using Automation, you can create and manipulate AutoCAD objects from any application that serves as an Automation controller. Thus, Automation enables macro programming across applications, a capability that does not exist in AutoLISP. With Automation you can combine the features of many applications into a single application.

The displayed objects are called *Automation objects*. Automation objects make methods, properties, and events available. *Methods* are functions that perform an action on an object. *Properties* are functions that set or return information about the state of an object. *Events* are user-initiated actions or occurrences to which a program responds.

Virtually any type of application can access the displayed Automation objects within AutoCAD. These applications can be stand-alone executables, dynamic linked library (DLL) files, and macros within applications such as Microsoft Word or Microsoft Excel. The most common of these is most likely the stand-alone executable. If you are using applications from application developers, follow their instructions for installation and use of their product.

See also:

- Overview of AutoCAD VBA on page 428

Define a Command to Start Your Application

You can use the acad.pgp file to define a new AutoCAD command that runs an external command to start your application.

You can use the acad.pgp file to define a new AutoCAD command that runs an external command to start your application. The following example defines the RUNAPP1 command, which runs the application *app1.exe* in the *c:\vbapps\* directory. (Add this code to the external commands section of your acad.pgp file.)

```
RUNAPP1, start c:\vbapps\app1, 0
```

If your application requires command line parameters, you can use the following code:

```
RUNAPP2, start c:\vbapps\app2, 0, *Parameters: ,
```

This example defines the RUNAPP2 command, which prompts you for parameters and then passes them to your application.

You can also use the AutoLISP *startapp* function to start an application that makes use of Automation. Once AutoLISP starts the external application, it has no control over its actions. You can, however, use AutoLISP to locate and run different applications based on certain parameters.

Start an Application from a Menu or Toolbar

After defining a new command to start your application, you can make that command available from a menu or toolbar.

The macro can be called from an interface element in the customization (CUI) file. If you use only one or two applications, you can add them to one of the standard pull-down menus. If you have a group of applications, you can add your own pull-down menu or toolbar that is specifically dedicated to those applications. For information about creating, editing, and loading customization files, see User Interface Customization on page 87.

Quick Reference

Commands

CUILOAD

Loads a CUIx file.

AutoCAD VBA

Microsoft Visual Basic for Applications (VBA) is an object-based programming environment designed to provide rich development capabilities. The main difference between VBA and VB (Visual Basic 6) is that VBA runs in the same process space as AutoCAD, providing an AutoCAD-intelligent and very fast programming environment.

Overview of AutoCAD VBA

VBA provides application integration with other VBA-enabled applications. This means that AutoCAD, using other application object libraries, can be an Automation controller for other applications such as Microsoft Word or Excel.

NOTE Microsoft® Visual Basic® for Applications software (VBA) is no longer installed with AutoCAD. For more information, visit *http://www.autodesk.com/vba-download*.

The stand-alone development editions of Visual Basic 6, which must be purchased separately, complement AutoCAD VBA with additional components such as an external database engine and report-writing capabilities.

Develop with AutoCAD VBA

VBA sends messages to AutoCAD by the AutoCAD ActiveX Automation Interface. AutoCAD VBA permits the Visual Basic environment to run simultaneously with AutoCAD and provides programmatic control of AutoCAD through the ActiveX Automation Interface. This linking of AutoCAD, ActiveX Automation, and VBA provides an extremely powerful interface. It not only controls AutoCAD objects, but it also sends data to or retrieves data from other applications.

The integration of VBA into AutoCAD provides an easy-to-use visual tool for customizing AutoCAD. For example, you can create an application that extracts attribute information automatically, inserts the results directly into an Excel spreadsheet, and performs any data transformations you need.

Three fundamental elements define VBA programming in AutoCAD. The first is AutoCAD itself, which has a rich set of objects that include AutoCAD entities, data, and commands. AutoCAD is an open-architecture application with multiple levels of interface. To use VBA effectively, familiarity with AutoCAD programmability is highly desirable. However, you will find that the VBA object-based approach is quite different from that of AutoLISP.

The second element is the AutoCAD ActiveX Automation Interface, which establishes messages (communication) with AutoCAD objects. Programming in VBA requires a fundamental understanding of ActiveX Automation. A description of the AutoCAD ActiveX Automation Interface can be found in the *ActiveX and VBA Developer's Guide* in the Help system. To display Developer Help, on the InfoCenter toolbar, to the right of the Help button, click the drop-down arrow. From the menu, click Additional Resources ➤ Developer Help.

The third element that defines VBA programming is VBA itself. It has its own set of objects, keywords, constants, and so forth, that provide program flow, control, debugging, and execution. The Microsoft extensive Help system for VBA is included with AutoCAD VBA.

The AutoCAD ActiveX/VBA interface provides several advantages over other AutoCAD API environments:

- *Speed.* Running in-process with VBA, ActiveX applications are faster than AutoLISP applications.
- *Ease of use.* The programming language and development environment are easy-to-use and come installed with AutoCAD.
- *Windows interoperability.* ActiveX and VBA are designed to be used with other Windows applications and provide an excellent path for communication of information across applications.
- *Rapid prototyping.* The rapid interface development of VBA provides the perfect environment for prototyping applications, even if those applications will be developed eventually in another language.
- *Programmer base.* Programmers already use Visual Basic 6. AutoCAD ActiveX/VBA opens up AutoCAD customization and application development to these programmers as well as those who will learn Visual Basic 6 in the future.

Quick Reference

Commands

VBAIDE

Displays the Visual Basic Editor.

VBALOAD

Loads a global VBA project into the current work session.

VBAMAN

Manages VBA project operations using a dialog box.

VBARUN

Runs a VBA macro.

VBASTMT

Executes a VBA statement at the AutoCAD Command prompt.

VBAUNLOAD

Unloads a global VBA project.

Use AutoCAD VBA Applications

You load a VBA project with the VBALOAD command. Once loaded, its modules and macros are available in the Macros dialog box.

Although Microsoft applications store VBA projects, macros, and programs inside a specific document, AutoCAD uses a separate file with the *.dvb* extension. In this way, VBA interfaces with AutoCAD in much the same way that AutoLISP and ObjectARX do. Because VBA projects are stored in a separate file, a VBA project can open and close different AutoCAD drawings during an AutoCAD session.

NOTE AutoCAD VBA projects are not binary compatible with stand-alone Visual Basic 6 projects (VBP files). However, forms, modules, and classes can be exchanged between dissimilar projects using the IMPORT and EXPORT VBA commands in the VBA integrated development environment (IDE).

You load a VBA project with the VBALOAD command. Once loaded, its modules and macros are available in the Macros dialog box. To run the VBA module you use the VBARUN command. If no VBA project is loaded, the options are unavailable. Procedures listed in the Macro Name box use the following syntax:

module.macro

In the Macros dialog box you choose the Macro Scope and select from the listed modules.

Use the Command Prompt to Run a VBA Macro

The -VBARUN command can be used to run a macro from the command prompt. This allows you to run VBA macros from the command prompt, scripts, and other AutoCAD programming environments. The only argument for the command is the module name using the *module.macro* syntax. The syntax looks like this:

```
-vbarun <module.macro>
```

Because macros with the same name can be duplicated in modules, the *module.macro* syntax differentiates the macro and allows for unique selection.

Quick Reference

Commands

VBAIDE

Displays the Visual Basic Editor.

VBALOAD

Loads a global VBA project into the current work session.

VBAMAN

Manages VBA project operations using a dialog box.

VBARUN

Runs a VBA macro.

VBASTMT

Executes a VBA statement at the AutoCAD Command prompt.

VBAUNLOAD

Unloads a global VBA project.

Automatically Load and Execute VBA Projects

You can load VBA projects automatically each time you run AutoCAD.

As you build up a number of VBA projects, you can load them automatically each time you run AutoCAD. The macros they contain are immediately available. Additionally, the APPLOAD command provides a Startup Suite option that automatically loads the specified applications.

acvba.arx — Automatically Load VBA

You cannot load VBA until an AutoCAD VBA command is issued. If you want to load VBA automatically every time you start AutoCAD include the following line in the *acad.rx* file:

```
acvba.arx
```

You can automatically run a macro in the *acad.dvb* file by naming the macro AcadStartup. Any macro in your *acad.dvb* file called AcadStartup automatically executes when VBA loads.

acad.dvb — Automatically Load a VBA Project

The *acad.dvb* file is useful if you want to load a specific VBA project that contains macros you want each time you start AutoCAD. Each time you start a new AutoCAD drawing session, AutoCAD searches for the *acad.dvb* file and loads it.

If you want a macro in your *acad.dvb* file to run each time you start a new drawing or open an existing one, add the following code to your *acaddoc.lsp* file:

```
(defun S::STARTUP()
 (command "_-vbarun" "updatetitleblock")
)
```

The project name in the example is `updatetitleblock`.

Quick Reference

Commands

APPLOAD

Loads and unloads applications and defines which applications to load at startup.

VBAIDE

Displays the Visual Basic Editor.

VBALOAD

Loads a global VBA project into the current work session.

VBAMAN

Manages VBA project operations using a dialog box.

VBARUN

Runs a VBA macro.

VBASTMT

Executes a VBA statement at the AutoCAD Command prompt.

VBAUNLOAD

Unloads a global VBA project.

AutoLISP and Visual LISP

AutoLISP is based on the LISP programming language, which is simple to learn and very powerful. Because AutoCAD has a built-in LISP interpreter, you can enter AutoLISP code at the command prompt or load AutoLISP code from external files. Visual LISP (VLISP) is a software tool designed to expedite AutoLISP program development.

Overview of AutoLISP and Visual LISP

AutoLISP has been enhanced with Visual LISP (VLISP), which offers an integrated development environment (IDE) that includes a compiler, debugger, and other development tools to increase productivity. VLISP adds more capabilities and extends the language to interact with objects using ActiveX. VLISP also enables AutoLISP to respond to events through object reactors.

Unlike in ObjectARX, or VBA, each document opened in the Multiple Design Environment (MDE) has its own Visual LISP *namespace* and environment. A namespace is an insulated environment keeping AutoLISP routines that are specific to one document from having symbol or variable name and value conflicts with those in another document. For example, the following line of code sets a different value to the symbol `a` for different documents.

```
(setq a (getvar "DWGNAME"))
```

Visual LISP provides mechanisms for loading symbols and variables from one namespace to another. More information about namespaces can be found in the *AutoLISP Developer's Guide* in the Help system. To display Developer Help, on the InfoCenter toolbar, to the right of the Help button, click the drop-down arrow. From the menu, click Additional Resources ➤ Developer Help.

AutoLISP applications or routines can interact with AutoCAD in many ways. These routines can prompt the user for input, access built-in AutoCAD commands directly, and modify or create objects in the drawing database. By creating AutoLISP routines you can add discipline-specific commands to AutoCAD. Some of the standard AutoCAD commands are actually AutoLISP applications.

Visual LISP provides three file format options for AutoLISP applications:

- Reading an LSP file (*.lsp*)—an ASCII text file that contains AutoLISP program code.
- Reading an FAS file (*.fas*)—a binary, compiled version of a single LSP program file.
- Reading a VLX file (*.vlx*)—a compiled set of one or more LSP and/or dialog control language (DCL) files.

NOTE Like-named AutoLISP application files are loaded based on their Modified time stamp; the LSP, FAS, or VLX file with the most recent time stamp is loaded unless you specify the full file name (including the file name extension).

Because AutoCAD can read AutoLISP code directly, no compiling is required. While Visual LISP provides an IDE, you may choose to experiment by entering code at the command prompt, which allows you to see the results immediately. This makes AutoLISP an easy language to experiment with, regardless of your programming experience.

Even if you are not interested in writing AutoLISP applications, your AutoCAD package includes many useful routines. Routines are also available as shareware through third-party developers. Knowing how to load and use these routines can enhance your productivity.

NOTE When command input comes from the AutoLISP *command* function, the settings of the PICKADD and PICKAUTO system variables are assumed to be 1 and 0, respectively. This preserves compatibility with previous releases of AutoCAD and makes customization easier (because you don't have to check the settings of these variables).

For information about AutoLISP programming, see the *AutoLISP Developer's Guide*, and for information about AutoLISP and Visual LISP functions, see the *AutoLISP Reference* in the Help system. To display Developer Help, on the InfoCenter toolbar, to the right of the Help button, click the drop-down arrow. From the menu, click Additional Resources ➤ Developer Help. AutoLISP programs can use dialog boxes with their applications. Programmable dialog boxes are described only in the *AutoLISP Developer's Guide*.

Quick Reference

Commands

VLISP

Displays the Visual LISP interactive development environment.

System Variables

PICKADD

Controls whether subsequent selections replace the current selection set or add to it.

PICKAUTO

Controls automatic windowing for object selection.

Use AutoLISP Applications

See also:

- Overview of File Organization on page 4

AutoLISP applications are stored in ASCII text files that you can edit. Before you can use an AutoLISP application, it must first be loaded.

AutoLISP applications are stored in ASCII text files with the *.lsp* extension. These files generally have a header portion that describes a routine, its use, and any specific instructions. This header might also include comments that document the author and the legal information regarding the use of the routine. Comments are preceded by a semicolon (;). You can view and edit these files with a text editor or word processor that can produce an ASCII text file.

Before you can use an AutoLISP application, it must first be loaded. You can use the APPLOAD command or the AutoLISP `load` function to load an application. Loading an AutoLISP application loads the AutoLISP code from the LSP file into your system's memory.

Loading an application with the `load` function involves entering AutoLISP code at the command prompt. If the `load` function is successful, it displays the value of the last expression in the file at the command prompt. This is usually the name of the last function defined in the file or instructions on using the newly loaded function. If `load` fails, it returns an AutoLISP error message. A `load` failure can be caused by incorrect coding in the file or by entering the wrong file name at the command prompt. The syntax for the `load` function is

```
(load filename [onfailure])
```

This syntax shows that the load function has two arguments: *filename*, which is required, and *onfailure*, which is optional. When loading an AutoLISP file at the command prompt, you typically supply only the *filename* argument. The following example loads the AutoLISP file *newfile.lsp*.

Command: **(load "newfile")**

The *.lsp* extension is not required. This format works for any LSP file in the current library path.

To load an AutoLISP file that is not in the library path, you must provide the full path and file name as the *filename* argument.

Command: **(load "d:/files/morelisp/newfile")**

NOTE When specifying a directory path, you must use a slash (/) or two backslashes (\\) as the separator, because a single backslash has a special meaning in AutoLISP.

Quick Reference

Commands

APPLOAD

Loads and unloads applications and defines which applications to load at startup.

Automatically Load and Run AutoLISP Routines

You can load AutoLISP routines each time you run AutoCAD. You can also execute certain commands or functions at specific times during a drawing session.

Overview of AutoLISP Automatic Loading

See also:

- Load an AutoLISP File on page 342

- S::STARTUP Function: Postinitialization Execution on page 442

AutoCAD loads the contents of three user-definable files automatically: *acad.lsp*, *acaddoc.lsp*, and the MNL file that accompanies your current customization file.

By default, the *acad.lsp* file is loaded only once, when AutoCAD starts, whereas *acaddoc.lsp* is loaded with each individual document (or drawing). This lets you associate the loading of the *acad.lsp* file with application startup, and the *acaddoc.lsp* file with document (or drawing) startup. The default method for loading these startup files can be modified by changing the setting of the ACADLSPASDOC system variable.

If one of these files defines a function of the special type *S::STARTUP*, this routine runs immediately after the drawing is fully initialized. The *S::STARTUP* function is described in S::STARTUP Function: Postinitialization Execution on page 442. As an alternative, the APPLOAD command provides a Startup Suite option that loads the specified applications without the need to edit any files.

The *acad.lsp* and *acaddoc.lsp* startup files are not provided with AutoCAD. It is up to the user to create and maintain these files.

Command Autoloader

When you load an AutoLISP file, the command definitions in the file take up memory whether or not you actually use the commands. The AutoLISP *autoload* function makes a command available without loading the entire routine into memory. Adding the following code to your *acaddoc.lsp* file automatically loads the commands CMD1, CMD2, and CMD3 from the *cmds.lsp* file and the NEWCMD command from the *newcmd.lsp* file.

```
(autoload "CMDS" '("CMD1" "CMD2" "CMD3"))
(autoload "NEWCMD" '("NEWCMD"))
```

The first time you enter an automatically loaded command at the command prompt, AutoLISP loads the entire command definition from the associated file. AutoLISP also provides the *autoarxload* function for ObjectARX applications. See *autoload* and *autoarxload* in the *AutoLISP Reference*.

NOTE Like-named AutoLISP startup files are loaded based on their Modified time stamp; the LSP file with the most recent time stamp is loaded unless you specify the full file name (including the file name extension).

Quick Reference

Commands

APPLOAD

Loads and unloads applications and defines which applications to load at startup.

System Variables

ACADLSPASDOC

Controls whether the acad.lsp file is loaded into every drawing or just the first drawing opened in a session.

The ACAD.LSP File

See also:

- Overview of File Organization on page 4
- Prevent AutoLISP Errors When Loading Startup Files on page 441

You can create an *acad.lsp* file if you regularly use specific AutoLISP routines. When you start AutoCAD, it searches the support file search path for an *acad.lsp* file. If an *acad.lsp* file is found, it is loaded into memory.

The *acad.lsp* file is loaded at each drawing session startup when AutoCAD is launched. Because the *acad.lsp* file is intended to be used for application-specific startup routines, all functions and variables defined in an *acad.lsp* file are only available in the first drawing. You will probably want to move routines that should be available in all documents from your *acad.lsp* file into the *acaddoc.lsp* file.

The recommended functionality of *acad.lsp* and *acaddoc.lsp* can be overridden with the ACADLSPASDOC system variable. If the ACADLSPASDOC system variable is set to 0 (the default setting), the *acad.lsp* file is loaded just once: upon application startup. If ACADLSPASDOC is set to 1, the *acad.lsp* file is reloaded with each new drawing.

The *acad.lsp* file can contain AutoLISP code for one or more routines, or just a series of `load` function calls. The latter method is preferable, because modification is easier. If you save the following code as an *acad.lsp* file, the files *mysessionapp1.lsp*, *databasesynch.lsp*, and *drawingmanager.lsp* are loaded every time you start AutoCAD.

```
(load "mysessionapp1")
(load "databasesynch")
(load "drawingmanager")
```

WARNING Do not modify the reserved *acad2012.lsp* file. Autodesk provides the *acad2012.lsp* file, which contains AutoLISP defined functions that are required by AutoCAD. This file is loaded into memory immediately before the *acad.lsp* file is loaded.

Quick Reference

Commands

APPLOAD

Loads and unloads applications and defines which applications to load at startup.

System Variables

ACADLSPASDOC

Controls whether the acad.lsp file is loaded into every drawing or just the first drawing opened in a session.

The ACADDOC.LSP File

See also:

- Overview of File Organization on page 4
- Prevent AutoLISP Errors When Loading Startup Files on page 441

The *acaddoc.lsp* file is intended to be associated with each document (or drawing) initialization. This file is useful if you want to load a library of AutoLISP routines to be available every time you start a new drawing (or open an existing drawing).

Each time a drawing opens, AutoCAD searches the library path for an *acaddoc.lsp* file. If it finds one, it loads the file into memory. The *acaddoc.lsp* file is always loaded with each drawing regardless of the settings of ACADLSPASDOC.

Most users will have a single *acaddoc.lsp* file for all document-based AutoLISP routines. AutoCAD searches for an *acaddoc.lsp* file in the order defined by the library path; therefore, with this feature, you can have a different *acaddoc.lsp* file in each drawing directory, which would load specific AutoLISP routines for certain types of drawings or jobs.

The *acaddoc.lsp* file can contain AutoLISP code for one or more routines, or just a series of *`load`* function calls. The latter method is preferable, because modification is easier. If you save the following code as an *acaddoc.lsp* file, the files *mydocumentapp1.lsp*, *build.lsp*, and *counter.lsp* are loaded every time a new document is opened.

```
(load "mydocumentapp1")
(load "build")
(load "counter")
```

WARNING Do not modify the reserved *acad2012doc.lsp* file. Autodesk provides the *acad2012doc.lsp* file, which contains AutoLISP-defined functions that are required by AutoCAD. This file is loaded into memory immediately before the *acaddoc.lsp* file is loaded.

Quick Reference

Commands

APPLOAD

Loads and unloads applications and defines which applications to load at startup.

System Variables

ACADLSPASDOC

Controls whether the acad.lsp file is loaded into every drawing or just the first drawing opened in a session.

The MNL File for an AutoLISP Menu

When AutoCAD loads a customization file, it searches for an MNL file with a matching file name. If it finds the file, it loads the file into memory. This function ensures that AutoCAD loads the AutoLISP functions that are needed for proper operation of a menu.

This function ensures that AutoCAD loads the AutoLISP functions that are needed for proper operation of a menu. For example, the default AutoCAD customization file, *acad.cui*, relies on the file *acad.mnl.* This file defines numerous AutoLISP functions used by the menu. The MNL file is loaded after the *acaddoc.lsp* file.

NOTE If a customization file is loaded with the AutoLISP *`command`* function—with syntax similar to `(command "menu" "newmenu")`—the associated MNL file is not loaded until the entire AutoLISP routine has run.

In this example, calls to the *`princ`* function can be used to display status messages. The first use of *`princ`* displays the following at the command prompt:

Newmenu utilities… Loaded.

The second call to *`princ`* exits the AutoLISP function. Without this second call to *`princ`*, the message would be displayed twice. As mentioned previously, you can include the *`onfailure`* argument with calls to the *`load`* function as an extra precaution.

Prevent AutoLISP Errors When Loading Startup Files

See also:

- S::STARTUP Function: Postinitialization Execution on page 442

If an AutoLISP error occurs while you are loading a startup file, the remainder of the file is ignored and is not loaded.

Files specified in a startup file that do not exist or that are not in the AutoCAD library path generally cause errors. Therefore, you may want to use the *`onfailure`* argument with the *`load`* function. The following example uses the *`onfailure`* argument:

```
(princ (load "mydocapp1" "\nMYDOCAPP1.LSP file not loaded."))
(princ (load "build" "\nBUILD.LSP file not loaded."))
(princ (load "counter" "\nCOUNTER.LSP file not loaded."))
(princ)
```

If a call to the *`load`* function is successful, it returns the value of the last expression in the file (usually the name of the last defined function or a message regarding the use of the function). If the call fails, it returns the value of the `onfailure` argument. In the preceding example, the value returned by the `load` function is passed to the `princ` function, causing that value to be displayed at the command prompt.

For example, if an error occurs while AutoCAD loads the *mydocapp1.lsp* file, the `princ` function displays the following message and AutoCAD continues to load the two remaining files:

MYDOCAPP1.LSP file not loaded.

If you use the `command` function in an *acad.lsp*, *acaddoc.lsp,* or MNL file, it should be called only from within a `defun` statement. Use the `S::STARTUP` function to define commands that need to be issued immediately when you begin a drawing session.

S::STARTUP Function: Postinitialization Execution

You can define an S::STARTUP function to perform any needed setup operations after the drawing is initialized.

The startup LISP files (*acad.lsp*, *acaddoc.lsp*, and MNL) are all loaded into memory before the drawing is completely initialized. Typically, this does not pose a problem, unless you want to use the `command` function, which is not guaranteed to work until after a drawing is initialized.

If the user-defined function `S::STARTUP` is included in an *acad.lsp*, *acaddoc.lsp,* or MNL file, it is called when you enter a new drawing or open an existing drawing. Thus, you can include a definition of `S::STARTUP` in the AutoLISP startup file to perform any setup operations.

For example, if you want to override the standard HATCH command by adding a message and then switching to the BHATCH command, use an acaddoc.lsp file that contains the following:

```
(defun C:HATCH ( )
 (alert "Using the BHATCH command!")
 (princ "\nEnter OLDHATCH to get to real HATCH command.\n")
 (command "BHATCH")
 (princ)
)
(defun C:OLDHATCH ( )
 (command ".HATCH")
 (princ)
)
(defun-q S::STARTUP ( )
 (command "undefine" "hatch")
 (princ "\nRedefined HATCH to BHATCH!\n")
)
```

Before the drawing is initialized, new definitions for HATCH and OLDHATCH are defined with the *defun* function. After the drawing is initialized, the *S::STARTUP* function is called and the standard definition of HATCH is undefined.

NOTE To be appended, the *S::STARTUP* function must have been defined with the *defun-q* function rather than *defun*.

Because an *S::STARTUP* function can be defined in many places (an *acad.lsp*, *acaddoc.lsp*, or MNL file or any other AutoLISP file loaded from any of these), it's possible to overwrite a previously defined *S::STARTUP* function.

The following example shows one method of ensuring that your startup function works with other functions.

```
(defun-q MYSTARTUP ( )
```

... your startup function ...

```
)
(setq S::STARTUP (append S::STARTUP MYSTARTUP))
```

The previous code appends your startup function to that of an existing *S::STARTUP* function and then redefines the *S::STARTUP* function to include your startup code. This works properly regardless of the prior existence of an *S::STARTUP* function.

ObjectARX

ObjectARX technology provides the foundation for design software applications to share intelligent object data. You can run third-party ObjectARX application programs or write your own.

Overview of ObjectARX

ObjectARX® (AutoCAD Runtime Extension) is a compiled-language programming environment for developing AutoCAD applications. The ObjectARX programming environment allows you to load and run your compiled projects in the same address space as AutoCAD. This allows your programs to operate directly with core AutoCAD data structures and code.

The ObjectARX libraries allow you to take advantage of the AutoCAD open architecture, providing direct access to the AutoCAD database structures, graphics system, and AutoCAD geometry engine to extend AutoCAD classes and capabilities at runtime. Additionally, you can define new commands that operate exactly the same way as native AutoCAD commands.

You can use ObjectARX libraries in conjunction with other AutoCAD programming interfaces, such as AutoLISP or ActiveX, enabling cross-API integration.

The ObjectARX programming environment is described in the *ObjectARX Developer's Guide*. The documentation is part of the ObjectARX Software Development Kit (SDK), which can be downloaded from the Development Tools section of the Autodesk website.

For more information, on the InfoCenter toolbar, to the right of the Help button, click the drop-down arrow. From the menu, click Additional Resources ➤ Developer Help. Click ObjectARX once the Help systems opens.

Use ObjectARX Applications

See also:

- Overview of File Organization on page 4

To load an ObjectARX application, you use the Load option of the ARX command. After loading, all commands defined by this application are available at the command prompt.

Some ObjectARX applications use large amounts of system memory. If you are finished using an application and want to remove it from memory, use the Unload option of ARX.

You can also load an ObjectARX application with the *arxload* AutoLISP function. The syntax for the *arxload* function is almost identical to that of the *load* function used with AutoLISP files. If the *arxload* function loads the ObjectARX program successfully, it returns the program name. The syntax for the *arxload* function is as follows:

```
(arxload filename [onfailure])
```

The two arguments for the *arxload* function are *filename* and *onfailure*. As with the *load* function, the *filename* argument is required and must be the complete path name description of the ObjectARX program file to load. The *onfailure* argument is optional and typically not used when you load ObjectARX programs from the command prompt. The following example loads the ObjectARX application *myapp.arx*.

```
(arxload "myapp")
```

As with AutoLISP files, AutoCAD searches the library path for the specified file. If you need to load a file that is not in the library path, you must provide the full path name description of the file.

NOTE When specifying a directory path, you must use a slash (/) or two backslashes (\\) as the separator, because a single backslash has a special meaning in AutoLISP.

Attempting to load an application that has previously been loaded results in an error. Before using *arxload* you should use the *arx* function to check the currently loaded applications.

To unload an application with AutoLISP, use the *arxunload* function. The following example unloads the *myapp* application.

```
(arxunload "myapp")
```

Using the *arxunload* function not only removes the application from memory but also removes the command definitions associated with that application.

Quick Reference

Commands

ARX

Loads, unloads, and provides information about ObjectARX applications.

Automatically Load ObjectARX Applications

See also:

- Overview of AutoLISP Automatic Loading on page 436

Some ObjectARX samples contain an *acad.rx* file, which lists ObjectARX program files that are loaded automatically when you start AutoCAD.

You can create or edit this file with a text editor or word processor that produces files in ASCII text format, adding to or deleting from its contents to make the appropriate ObjectARX programs available for use. As an alternative, the APPLOAD command provides a Startup Suite option that loads the specified applications without the need to edit any files.

Because AutoCAD searches for the *acad.rx* file in the order specified by the library path, you can have a different *acad.rx* file in each drawing directory. This makes specific ObjectARX programs available for certain types of drawings. For example, you might keep 3D drawings in a directory called *AcadJobs/3d_dwgs*. If that directory is set up as the current directory, you could copy the *acad.rx* file into that directory and modify it in the following manner:

```
myapp1
otherapp
```

If you place this new *acad.rx* file in the *AcadJobs/3d_dwgs* directory and you start AutoCAD with that as the current directory, these new ObjectARX programs are then loaded and are available from the AutoCAD command prompt. Because the original *acad.rx* file is still in the directory with the AutoCAD program files, the default *acad.rx* file will be loaded if you start AutoCAD from another directory that does not contain an *acad.rx* file.

You can load ObjectARX programs from an MNL file using the `arxload` function. This ensures that an ObjectARX program, required for proper operation of a menu, will be loaded when the menu file is loaded.

You can also autoload many ObjectARX-defined AutoCAD commands. See Overview of AutoLISP Automatic Loading on page 436 and autoarxload in the *AutoLISP Reference* in the Help system.

To display Developer Help, on the InfoCenter toolbar, to the right of the Help button, click the drop-down arrow. From the menu, click Additional Resources ➤ Developer Help.

Quick Reference

Commands

APPLOAD

Loads and unloads applications and defines which applications to load at startup.

.NET

With the Microsoft .NET Framework, you can create applications that interoperate with AutoCAD using programming languages like VB .NET and C#.

Overview of .NET

The .NET Framework is a language-neutral programming environment developed by Microsoft. In addition to the run-time environment, the Framework provides class libraries that facilitate development of Windows- and Web-based applications that are interoperable and secure.

AutoCAD supports .NET application development with ObjectARX managed wrapper classes. See the “AutoCAD Managed Class Reference” and the “ObjectARX Managed Wrapper Classes” sections of the *ObjectARX Developer's Guide*, both in the ObjectARX SDK, for a complete list of the managed wrapper classes that are available. For more information about the .NET Framework, see the Microsoft documentation.

Managed wrapper classes are provided for most of the ObjectARX SDK, enabling you to write applications in any language that is supported by the .NET Framework, including VB .NET and C#. The managed classes implement database functionality and enable you to write applications that read and write drawing format (DWG) files. They also provide access to AutoCAD user interface elements, including the command prompt and feature dialog boxes, the AutoCAD editor, and the publishing and plotting components.

Loading Managed Applications in AutoCAD

To load a managed application, enter NETLOAD at the AutoCAD command prompt and browse to the desired DLL file. Managed applications are unloaded only when AutoCAD exits.

Quick Reference

Commands

NETLOAD

Loads a .NET application.

Install and Uninstall Plug-In Applications

The plug-in auto loader mechanism allows for the easy deployment of custom applications using a package format.

The package format is a common folder structure than contains the extension *.bundle* in its name and has an XML file that defines the various components of the plug-in. By deploying custom applications as a BUNDLE, it makes it easier to target multiple operating systems and product releases since the parameters of your plug-in are defined in the XML file of the package. A BUNDLE can be used as a replacement to creating complex installer scripts when deploying a plug-in.

The plug-in defined by each package is loaded into AutoCAD by placing it in one of the *ApplicationPlugins* folders on your local drive. There are two different *ApplicationPlugins* folders that you can use:

Product Install folder

- *<drive>:\Program Files\Autodesk\ApplicationPlugins*

User Profile folder

- (Windows XP) *<drive>:\Documents and Settings\<user name>\Application Data\Autodesk\ApplicationPlugins*
- (Windows Vista or Windows 7) *<drive>:\Users\<user name>\AppData\Roaming\Autodesk\ApplicationPlugins*

When AutoCAD starts, both *ApplicationPlugins* folders are checked for plug-in applications. The packages found are automatically registered and loaded based on the metadata in the XML file of each package.

Install Plug-in Packages

A package can be deployed using an installer, such as MSI, or manually copying the files and folder structure to the *ApplicationPlugins* folder. For AutoCAD Connect downloads, deployment of the package is done using an MSI installer.

Loading Plug-ins

By default, plug-ins are automatically registered with AutoCAD and when a new plug-in is installed during the current session. The load behavior for plug-ins is controlled with the APPAUTOLOAD system variable. When APPAUTOLOAD is set to 0, no plug-ins are loaded unless the APPAUTOLOADER command is used.

Uninstall Plug-in Packages

A package can be uninstalled by removing the appropriate folder with a .bundle extension from the *ApplicationPlugins* folder. This can be accomplished by offering an uninstall option with the original installer or to manually delete the .bundle folder.

NOTE A plug-in downloaded from the Apps tab on Autodesk Exchange can also be unistalled by going to Apps and then re-downloading the plug-in. When the download completes, you are prompted to uninstall the plug-in.

Quick Reference

Commands

APPAUTOLOADER

Lists or reloads all plug-ins in the application plug-in folder.

System Variables

APPAUTOLOAD

Controls when plug-in applications are loaded.

PackageContents.xml Format

The *PackageContents.xml* file contains information about the application package, including information about the developer that authored it.

The information contained in the file can be used to specify which AutoCAD-based products and releases the plug-in can be loaded into, their supported Operating System, and how the application should be loaded, such as load on startup or when a command is invoked.

The following elements are used to define and describe the plug-in:

- ApplicationPackage on page 452
- CompanyDetails on page 454
- Components on page 455

PackageContents.xml for Download versus Local Deployment

How you plan to deploy your plug-in determines what should be in the PackageContents.xml file. You need to supply more information when providing a plug-in for download versus a local deployment. The following table explains which elements and attributes are required, optional, or recommended for the deployment you want to use.

	For Download from the Apps tab on Autodesk Exchange	For Local Deployment
ApplicationPackage element		
SchemaVersion	Required	Required
AppVersion	Required	Required
Author	Required	Optional
Name	Required	Recommended
Description	Required	Recommended
Icon	Required	Recommended
Helpfile	Required	Recommended
ProductCode	Required	Required
UpgradeCode	Required	Optional
CompanyDetails element		

	For Download from the Apps tab on Autodesk Exchange	For Local Deployment
Name	Required	Optional
Phone	Optional	Optional
URL	Optional	Optional
Email	Required	Optional
RuntimeRequirements element – Required, if Components element present		
OS	Optional	Optional
Platform	Optional	Optional
SeriesMin	Optional	Optional
SeriesMax	Optional	Optional
SupportPath	Optional	Optional
ComponentEntry element – Required, if Components element present		
AppName	Required	Required
AppDescription	Optional	Optional
AppType	Optional	Optional
ModuleName	Required	Required
PerDocument	Optional	Optional
LoadReasons	Optional	Optional
Commands element		
GroupName	Required	Optional
Command element – Required, if Commands element present		

	For Download from the Apps tab on Autodesk Exchange	For Local Deployment
Global	Required	Required
Local	Required	Required

ApplicationPackage Element

Each *PackageContents.xml* file must contain an ApplicationPackage element. The ApplicationPackage element, in the form of XML Attributes, contains general information about the plug-in. It also encapsulates other the element types that help to define the contents of the plug-in.

An ApplicationPackage element can have any of the following attributes attached to it:

Attribute	Description
SchemaVersion	PackageContents.xml format version number. The value should always be 1.0 until a newer version of the schema is introduced.
AppVersion	Application version number. AutoCAD uses this value to determine if the installed version is the latest version. If an updated version is available, the user is informed and able to download and install the latest version. It is recommended to use an application version that includes major and minor values, such as "1.0.0.0".
Author	Name of the plug-in author.
Name	Plug-in name. A localized plug-in name can be specified by combining Name with a locale code. See Supported Locale Codes on page 461 for a full list of supported locale codes.
Description	Short description of the plug-in. Localized descriptions can be specified by combining Description with a locale code. See Supported Locale

Attribute	Description
	Codes on page 461 for a full list of supported locale codes.
Icon	Icon for the plug-in; used in the installer and the Apps tab on Autodesk Exchange. The icon should be 32x32 pixels in size and support 32-bit (Truecolor) color depth. Recommend using a BMP or ICO file format. **NOTE** All path specifiers are '/' and not '\', and paths are relative to the root *.bundle* folder.
Helpfile	Help file that explains how to use the plug-in and provides additional information about the plug-in. It is recommended to place a How To section that explains how to use the plug-in. The file can be an ASCII text file, an HTML document, or PDF that contains all the full documentation for the plug-in or contains a set of redirects to where the content might be located online. Localized help files can be specified by combining Helpfile with a locale code. See Supported Locale Codes on page 461 for a full list of supported locale codes. **NOTE** All path specifiers are '/' and not '\', and paths are relative to the root *.bundle* folder.
ProductCode	Unique GUID for the plug-in. A GUID must be generated for each unique plug-in, and is used for first run notifications and as the installer ID for Add/Remove Programs in Windows when installed from the Apps tab on Autodesk Exchange. ProductCode should be updated if the AppVersion is changed. This is so upgrade installs work properly and a notification is displayed for the upgrade when loaded into AutoCAD. On Windows, you can use the MSI installer ProductCode or generate a GUID using an application such as GuidGen.exe. There are also websites that allow you to generate a GUID.

Attribute	Description
UpgradeCode	Unique GUID for the plug-in that must never be changed. The GUID is used by the Apps tab on Autodesk Exchange to allow for upgrading from an old version to a newer version of a plug-in without the need to uninstall the plug-in first. **NOTE** You must increment AppVersion in order to allow for proper upgrading of a plug-in.

An ApplicationPackage element can contain, or encapsulate, the following elements:

- CompanyDetails on page 454
- Components on page 455

CompanyDetails Element

The CompanyDetails element is used to specify information about the company that created the plug-in.

NOTE The CompanyDetails element is required when releasing a plug-in through the Apps tab on Autodesk Exchange. You must also populate each of the attributes for the CompanyDetails element.

A CompanyDetails element can have any of the following attributes attached to it:

Attribute	Description
Name	Name of the developer or company that authored the plug-in.
Phone	Phone number of the developer or company of the plug-in. International phone numbers can be specified by combining Phone with a locale code. See Supported Locale Codes on page 461 for a full list of supported locale codes.
URL	Web site for the developer or company of the plug-in.

Attribute	Description
	Localized Web site can be specified by combining URL with a locale code. See Supported Locale Codes on page 461 for a full list of supported locale codes.
Email	Developer or company contact email address for the plug-in. An international contact email address can be specified by combining Email with a locale code. See Supported Locale Codes on page 461 for a full list of supported locale codes.

Components Element

The Components element is used to specify the components that make up one version of the plug-in.

More than one Components elements can be used to identify the components for a plug-in; each Components element can identify one or more components. Platform and product information for a Components element is defined by the RuntimeRequirements element on page 455.

For example, one Components element might define the 32-bit version of the plug-in, while another might define the 64-bit Windows or Mac OSX version.

Along with the RuntimeRequirements element, the Components element might contain one or more ComponentEntry elements. The ComponentEntry element on page 457 is used to define the individual files that need to be loaded by AutoCAD when the plug-in is ran.

RuntimeRequirements Element

The RuntimeRequirements element is recommended and is used to control which operating systems, platforms, releases, and languages the components can be used with.

It is also used to define AutoCAD support paths that are required for components in that Components section. You can specify as may sets of components as needed. If not included, it is assumed that all components are compatible with all AutoCAD and AutoCAD-based products, releases, and operating systems.

NOTE Although this element is optional, it is possible that the plug-in might be installed on Mac OSX or another system that the plug-in was not originally tested on. Therefore, it is recommended that the element is used to control when the plug-in can be loaded.

A RuntimeRequirements element can have any of the following attributes attached to it:

Attribute	Description
OS	Target operating system. Supported values are 'Mac', 'Win32', or 'Win64'. If omitted, it is assumed the plug-in supports all operating systems. Multiple operating systems can be specified by separating the values with the '|' symbol. (e.g. OS="Win32|Win64") **NOTE** AutoLISP applications, .NET applications, and CUIx files can be used across multiple operating systems.
Platform	Target AutoCAD or AutoCAD-based products. Should be used when using APIs specific to one of the AutoCAD-based products that might not available in AutoCAD or other AutoCAD-based products. Multiple AutoCAd platforms can be specified by separating the values with the '|' symbol. **NOTE** The initial implementation of plug-ins cannot differentiate AutoCAD from an AutoCAD-based product, so the plug-in should support AutoCAD and all AutoCAD-based products.
SeriesMin	Defines the minimum AutoCAD release number the set of components supports. The value can be a major version number (R18) or a specific version (R18.1). The AutoCAD version number can found in the Windows Registry or obtained with the ACADVER system variable. If this attribute and SeriesMax are not specified, it is assumed all components are compatible with all AutoCAD releases. If you omit this value, any version before that specified by the SeriesMax attribute is allowed.

Attribute	Description
SeriesMax	Defines the maximum AutoCAD release number the set of components supports. If you omit this value, any version after that specified by the SeriesMin attribute is allowed.
SupportPath	List of support paths used by this set of components separated by a semicolon. The support paths should be relative to the plug-in bundle. Localized support paths can be specified by combining SupportPath with a locale code. See Supported Locale Codes on page 461 for a full list of supported locale codes.

ComponentEntry Element

The ComponentEntry element is required and is used to specify details about each individual component in the Components element.

You can specify as many ComponentEntry elements as needed. Component types can be one of the following file formats:

- AutoLISP (LSP)
- AutoLISP Fastload (FAS)
- Visual LISP (VLX)
- Managed or Mixed Mode .NET Assembly (.dll)
- ObjectARX (ARX)
- ObjectDBX (DBX)
- Partial Customization (CUIx)

A ComponentEntry element may contain a Commands element on page 460 if the LoadReasons attribute is set to LoadOnCommandInvocation.

NOTE ComponentEntry elements are loaded in the order they are listed, but from the bottom up. Therefore, any files that other components are dependent on must be lower down the list. For example, if an ObjectARX module is dependent on an ObjectDBX module, then the ObjectARX module will need to appear above the ObjectDBX module in the list.

A ComponentEntry element can have any of the following attributes attached to it:

Attribute	Description
AppName	Optional for AutoLISP; Required for ObjectARX and .NET - Component name; same as AppName in the ObjectARX API AcadAppInfo class.
AppDescription	Component description; same as AppDescription in the ObjectARX API AcadAppInfo class.
AppType	Component type; overrides the type derived from the file extension provided in the ModuleName attribute. The component type can be one of the following: ■ Arx – ObjectARX ■ Cui or CuiX– Partial customization ■ Mnu – Menu customization ■ Dbx – ObjectDBX ■ .Net – Managed or Mixed .NET assembly ■ Lisp or CompiledLisp – AutoLISP ■ Bundle – Bundle package ■ Dependency – Resource DLL (not to be loaded into AutoCAD)
ModuleName	Relative path to component within the bundle; same as ModuleName in the ObjectARX API AcadAppInfo class. The component type is determined from the file extension: ■ *.arx* – ObjectARX ■ *.cuix* – Partial customization ■ *.dbx* – ObjectDBX ■ *.dll* – Managed .NET assembly ■ *.lsp*, *.fas*, or *.vlx* – AutoLISP It your application will handle multiple languages, different versions of a specific component to support different languages can be specified by combining

Attribute	Description
	ModuleName with a locale code. See Supported Locale Codes on page 461 for a full list of supported locale codes. **NOTE** All path specifiers are '/' and not '\', and paths are relative to the root *.bundle* folder.
PerDocument	AutoLISP only - When True, the AutoLISP file is loaded once per document. Default is True.
Loadreasons	Multiple values can be specified - Defines the load behavior parameters for the component with LoadReasons and the exception of the LoadOnCommandInvocation parameter. By default, LoadOnAutoCADStartup, LoadOnAppearance and LoadOnProxy are enabled (set to True) if LoadReasons is not specified. If parameters need to be disabled (set to False), the LoadReasons element must be specified along with the parameters set to False. By default, LoadOnCommandInvocation is disabled, enabling it will disable LoadOnAutoCADStartup and LoadOnAppearance unless they are explicitly enabled. See the ObjectARX Reference Guide for full details on AcadAppInfo LoadReasons. Valid parameter values: ■ True – Parameter is enabled ■ False – Parameter is disabled The following parameters are available: ■ **LoadOnCommandInvocation.** Load only when a custom commands is invoked. When using this parameter, a 'Commands' element must be included. If LoadOnCommandInvocation is enabled, LoadOnAutoCADStartup and LoadOnAppearance are assumed to be disabled unless explicitly enabled. Only applies to ObjectARX and .NET modules.

Attribute	Description
	NOTE For AutoCAD startup performance reasons, it is very important to use this option when your components define commands. ■ **LoadOnAutoCADStartup - (Only applies to ObjectARX and .NET modules.).** Load when AutoCAD starts up. When specified, this parameter has precedence over all other parameters. It is recommended only to use LoadOnAutoCADStartup when none of the other parameters are suitable, disable it (set it to False) whenever possible. If the LoadOnAutoCADStartup parameter is omitted, then it defaults to enabled (set to True) unless LoadOnCommandInvocation is enabled, in which case LoadOnAutoCADStartup defaults to False. ■ **LoadOnProxyDetection.** Load when a proxy for a custom entity is detected. By default, this parameter is enabled unless explicitly disabled (set to False). When enabled (set to True), LoadOnAutoCADStartup should be disabled. Only applies to ObjectDBX files. ■ **LoadOnAppearance.** Load when the product detects the application bundle in one of the ApplicationPlugins folders, thereby supporting instant load on installation with no need to restart AutoCAD. The parameter behaves the same way as LoadOnAutoCADStartup except the load context is relevant to when an application is installed while the product is running, for instance if installed via the Apps tab on Autodesk Exchange.

Commands and Command Element

The Commands element is optional unless the LoadOnCommandInvocation parameter is enabled for the LoadReasons attribute. Used to specify which commands to register for LoadOnCommandInvocation.

You can specify more than one Command element as needed.

A Commands element can have the following attribute attached to it:

Attribute	Description
GroupName	Name used to organize related commands.

Command Element

Specifies the global and local names for each command.

A Command element can have any of the following attributes attached to it:

Attribute	Description
Global	Global command name.
Local	Local command name. Commands can be defined for multiple languages by combining Local with a locale code. See Supported Locale Codes on page 461 for a full list of supported locale codes.

Supported Locale Codes

AutoCAD is localized in a wide range of languages and the structure of the *PackageContents.xml* file supports these different languages with locale codes.

Many of the attributes in the *PackageContents.xml* file support localized languages. Append a locale code to the end of an attribute name to define a localized version of the attribute.

For example, to define a Spanish version of a description in the ApplicationPackage element you would create an attribute named DescriptionEsp.

The following is a full list of all supported locale codes:

- Chs - Chinese (PRC)
- Cht - Chinese (Taiwan)
- Csy - Czech
- Deu - German
- Enu - English

- Esp - Spanish
- Fra - French
- Hun - Hungarian
- Ita - Italian
- Jpn - Japanese
- Kor - Korean
- Plk - Polish
- Rus - Russian

Example of Basic .bundle Folder Structure

Basic example of what a package for a plug-in might contain and how it is structured on disk.

.bundle is not a file, but a folder name with a BUNDLE extension. The following is an example of a plug-in that contains a LSP file as the main program and a DWG support file. The following plug-in example is named OfficeSymbols and its folder structure might look something like; folders are in bold:

OfficeSymbols.bundle

|- PackageContents.xml

|- OfficeSymbolsUtilities.lsp

|- OfficeSymbols.dwg

|- OfficeSymbols.ico

|- OfficeSymbols.htm

File name	Description
OfficeSymbols.bundle	The folder containing the files for a plug-in and has the BUNDLE extension.
PackageContents.xml	XML file that contains metadata about the plug-in.
OfficeSymbolsUtilities.lsp	Example of a custom application file that might define the behavior of the plug-in.

File name	Description
	An application file can be an AutoLISP, ObjectARX, or .NET assembly file.
OfficeSymbols.dwg	DWG file that contains symbols used by the functionality defined in *OfficeSymbolsUtilities.lsp*.
OfficeSymbols.ico	Icon used by the Apps tab on Autodesk Exchange.
OfficeSymbols.htm	Help documentation for the plug-in. Can be a redirect to where the documentation might be stored on the local drive or an online location.

Definition of the PackageContents.xml

```
<?xml version="1.0" encoding="utf-8" ?>
<ApplicationPackage SchemaVersion="1.0" AppVersion="1.0"
    ProductCode="[Add Unique Plug-in GUID Here]"
    Name="Office Symbols"
    Icon="OfficeSymbols.ico"
    Helpfile="OfficeSymbols.htm"
>

  <CompanyDetails
    Name="ABC Indoor CAD, Inc."
    Email="support@abcindoorcad.com"
  />

  <Components>
    <ComponentEntry
      ModuleName="OfficeSymbolsUtilities.lsp"
      PerDocument="True"
    />
  </Components>
</ApplicationPackage>
```

Example of Using Folders to Organize Components

Example of what a package for a plug-in might look like using folders to organize components.

It is recommended to use an organized folder structure for larger applications as this can significantly speed up load times. The following is an example of a plug-in that contains multiple LSP files and resource files. The plug-in in this example is named OfficeSymbols and its folder structure might look something like:

```
OfficeSymbols.bundle
 |- PackageContents.xml
 |- Contents
    |- OfficeSymbolsMain.lsp
    |- OfficeSymbolsUtilities.lsp
    |- Resources
      |- OfficeSymbols.dwg
      |- OfficeSymbols.cuix
      |- OfficeSymbols.ico
    |- Help
      |- OfficeSymbols.htm
```

Definition of the PackageContents.xml

```
<?xml version="1.0" encoding="utf-8" ?>
<ApplicationPackage
    SchemaVersion="1.0"
    AppVersion="1.0"
    Author="ABC Indoor CAD, Inc."
    ProductCode="[Add Unique Plug-in GUID Here]"
    Name="Office Symbols (contains Full version)"
    Icon="./Contents/Resources/OfficeSymbols.ico"
    Helpfile="./Contents/Help/OfficeSymbols.htm"
>

  <CompanyDetails
    Name="ABC Indoor CAD, Inc."
    Phone="1 (555)-415-1234"
    PhoneEsp="34 5554 151234"
    Url="www.abcindoorcad.com"
    UrlEsp="www.abcindoorcad.es"
    Email="support@abcindoorcad.com"
  />

  <Components>
    <RuntimeRequirements SupportPath="./Contents/Support"/>
    <ComponentEntry
      AppName="MainLISP"
      ModuleName="./Contents/OfficeSymbolsMain.lsp"
      PerDocument="True"
    />
    <ComponentEntry
      AppName="UtilitiesLISP"
      ModuleName="./Contents/OfficeSymbolsUtilities.lsp"
      PerDocument="True"
    />
    <ComponentEntry
      ModuleName="./Contents/Resources/OfficeSymbols.cuix"
    />
  </Components>
</ApplicationPackage>
```

Shapes and Shape Fonts 8

With AutoCAD®, you can define shapes to use as drawing symbols and text fonts. This appendix explains how to create and compile your own shape and font files.

Overview of Shape Files

Shapes are objects that you use like blocks. First you use the LOAD command to load the compiled shape file containing the shape definition. Then you use the SHAPE command to insert shapes from the file into your drawing. You can specify the scale and rotation to use for each shape as you add it. AutoCAD SHP fonts are a special type of shape file, and are defined in the same way as shape files.

Blocks are more versatile and easier to use and apply than shapes. However, shapes are more efficient for AutoCAD to store and draw. User-defined shapes are helpful when you must insert a simple part many times and when speed is important.

Compile Shape/Font Files

You enter the description of shapes in a specially formatted text file with a file extension of *.shp*. To create the file, use a text editor or word processor that enables you to save in ASCII format, and then compile the ASCII file. Compiling a shape definition file (SHP) generates a compiled shape file (SHX).

The compiled file has the same name as the shape definition file but with a file type of SHX. If the shape definition file defines a font, you use the STYLE command to define a text style. Then, you use one of the text placement commands (TEXT or MTEXT) to place the characters in the drawing. If the shape definition file defines shapes, you use the LOAD command to load the shape file into the drawing. Then, you use the SHAPE command to place the individual shapes in the drawing (similar in concept to the INSERT command).

Compile PostScript Fonts

To use a Type 1 PostScript font in AutoCAD, you must first compile it into an AutoCAD shape file. The COMPILE command accepts both SHP and PFB files as input and generates an SHX file. Compiled versions of PostScript fonts can take a lot of disk space, so compile only those fonts you use frequently.

AutoCAD cannot compile and load every Type 1 font. The PostScript font facilities in AutoCAD are intended to process a subset of Adobe fonts. If you receive an error while compiling a PostScript font, the resulting SHX file (if one is generated) may not load into AutoCAD.

For more information on the Adobe Type 1 font format, refer to *Adobe Type1 Font Format Version 1.1*. When you've purchased and installed these fonts, you can begin using them with AutoCAD.

NOTE Make sure you understand any copyright that accompanies the PostScript fonts you use. The same copyright restrictions generally apply to the SHX form of fonts you've compiled.

To compile a shape or font file

- At the Command prompt, enter **compile** and press Enter.

In the Select Shape or Font File dialog box, you can select a shape definition file (SHP) or PostScript font file (PFB). After you select the file name, compiling begins. If AutoCAD finds an error in the shape descriptions, a message is displayed telling you the type of error and the line number. When compiling is complete, the following messages are displayed:

Compilation successful.
Output file *name.shx* contains *nnn* bytes.

Quick Reference

Commands

COMPILE

Compiles shape files and PostScript font files into SHX files.

LOAD

Makes shapes available for use by the SHAPE command.

SHAPE

Inserts a shape from a shape file that has been loaded using LOAD.

Create Shape Definition Files

AutoCAD font and shape files (SHX) are compiled from shape definition files (SHP). You can create or modify shape definition files with a text editor or word processor that saves files in ASCII format.

Shape Descriptions

AutoCAD font and shape files (SHX) are compiled from shape definition files (SHP). You can create or modify shape definition files with a text editor or word processor that saves files in ASCII format.

The syntax of the shape description for each shape or character is the same regardless of the final use (shape or font) for that shape description. If a shape definition file is to be used as a font file, the first entry in the file describes the font itself rather than a shape within the file. If this initial entry describes a shape, the file is used as a shape file.

Being able to create your own shape definitions is a valuable skill. Keep in mind, however, that this is a very complex subject to learn and requires patience.

Each line in a shape definition file can contain up to 128 characters. Longer lines cannot be compiled. Because AutoCAD ignores blank lines and text to the right of a semicolon, you can embed comments in shape definition files.

Each shape description has a header line of the following form and is followed by one or more lines containing specification bytes, separated by commas and terminated by a 0.

```
*shapenumber,defbytes,shapename
specbyte1,specbyte2,specbyte3,...,0
```

The following list describes the fields of a shape description:

shapenumber A number, unique to the file, between 1 and 258 (and up to 32768 for Unicode fonts), and preceded by an asterisk (*). Non-Unicode font files use the shape numbers 256, 257, and 258 for the symbolic identifiers Degree_Sign, Plus_Or_Minus_Sign, and Diameter_Symbol. For Unicode fonts these glyphs appear at the U+00B0, U+00B1, and U+2205 shape numbers and are part of the “Latin Extended-A” subset.

Text fonts (files containing shape definitions for each character) require specific numbers corresponding to the value of each character in the ASCII code; other shapes can be assigned any numbers.

defbytes The number of data bytes (`specbytes`) required to describe the shape, including the terminating 0. The limit is 2,000 bytes per shape.

shapename The shape name. Shape names must be uppercase to be recognized. Names with lowercase characters are ignored and are usually used to label font shape definitions.

specbyte A shape specification byte. Each specification byte is a code that defines either a vector length and direction or one of a number of special codes. A specification byte can be expressed in the shape definition file as either a decimal or hexadecimal value. This section uses both decimal and hexadecimal specification byte values for its examples (as do many of the shape definition files). If the first character of a specification byte is a 0 (zero), the two characters that follow are interpreted as hexadecimal values.

Quick Reference

Commands

LOAD

Makes shapes available for use by the SHAPE command.

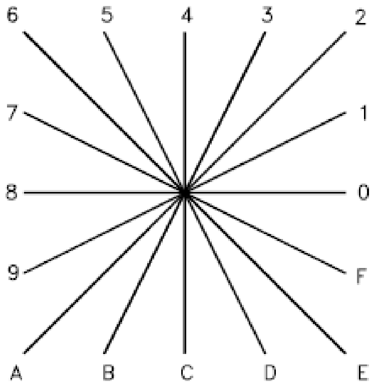
SHAPE

Inserts a shape from a shape file that has been loaded using LOAD.

Vector Length and Direction Code

A simple shape specification byte contains vector length and direction encoded into one specification byte.

A simple shape specification byte contains vector length and direction encoded into one specification byte (one `specbyte` field). Each vector length and direction code is a string of three characters. The first character must be a 0, which indicates to AutoCAD that the next two characters are interpreted as hexadecimal values. The second character specifies the length of the vector in units. Valid hexadecimal values range from 1 (one unit long) through F (15 units long). The third character specifies the direction of the vector. The following figure illustrates the direction codes.



Vector direction codes

All the vectors in the preceding figure were drawn with the same length specification. Diagonal vectors stretch to match the *X* or *Y* displacement of the closest orthogonal vector. This is similar to the action of the snap grid in AutoCAD.

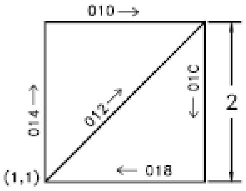
The following example constructs a shape named DBOX with an arbitrarily assigned shape number of 230.

```
*230,6,DBOX
014,010,01C,018,012,0
```

The preceding sequence of specification bytes defines a box one unit high byone unit wide, with a diagonal line running from the lower left to the upper right. After saving the file as *dbox.shp*, use the COMPILE command to generate the *dbox.shx* file. Use the LOAD command to load the shape file containing this definition, and then use the SHAPE command as follows:

Command: **shape**
Enter shape name or [?]: **dbox**
Specify insertion point: **1,1**
Specify height <*current*>: **2**
Specify rotation angle <*current*>: **0**

The resulting shape is shown in the following illustration.



Quick Reference

Commands

LOAD

Makes shapes available for use by the SHAPE command.

SHAPE

Inserts a shape from a shape file that has been loaded using LOAD.

Special Codes

Special codes can be used to create additional geometric forms and specify certain actions.

Use Special Codes

The second character of the three-character string (the vector length specification) must be 0, or you can specify the special code number. For example, 008 and 8 are both valid specifications.

Specification byte codes

Code	Description
000	End of shape definition
001	Activate Draw mode (pen down)
002	Deactivate Draw mode (pen up)
003	Divide vector lengths by next byte
004	Multiply vector lengths by next byte
005	Push current location onto stack
006	Pop current location from stack
007	Draw subshape number given by next byte
008	*X-Y* displacement given by next two bytes

Specification byte codes

Code	Description
009	Multiple *X-Y* displacements, terminated (0,0)
00A	Octant arc defined by next two bytes
00B	Fractional arc defined by next five bytes
00C	Arc defined by *X-Y* displacement and bulge
00D	Multiple bulge-specified arcs
00E	Process next command only if vertical text

Quick Reference

Commands

LOAD

Makes shapes available for use by the SHAPE command.

SHAPE

Inserts a shape from a shape file that has been loaded using LOAD.

Codes 0, 1, and 2: End of Shape and Draw Mode Control

Code 0 marks the end of the shape definition, and Codes 1 and 2 control Draw mode.

Draw is activated at the start of each shape. When Draw mode is turned on (code 1), the vectors cause lines to be drawn. When Draw mode is turned off (code 2), the vectors move to a new location without drawing.

Quick Reference

Commands

LOAD

Makes shapes available for use by the SHAPE command.

SHAPE

Inserts a shape from a shape file that has been loaded using LOAD.

Codes 3 and 4: Size Control

Codes 3 and 4 control the relative size of each vector.

The height specified with the SHAPE command is initially considered the length of a single orthogonal vector (direction 0, 4, 8, or C). Code 3 divides vector lengths by the next byte. Code 4 multiplies vector lengths by the next byte. Codes 3 and 4 are followed by a specification byte containing an integer scale factor (1 through 255).

If you want the shape height to specify the size of the entire shape, and you use 10 vector lengths to draw it, you can use 3,10 to scale the height specification. The scale factor is cumulative within a shape; that is, multiplying by 2 and again by 6 results in a scale factor of 12. Usually, you should reverse the effect of your scale factors at the end of the shape, especially for subshapes and text font shapes. AutoCAD does not reset the scale factor for you.

Quick Reference

Commands

LOAD

Makes shapes available for use by the SHAPE command.

SHAPE

Inserts a shape from a shape file that has been loaded using LOAD.

Codes 5 and 6: Location Save/Restore

Code 5 pushes (saves) and code 6 pops (restores) the current coordinate position while drawing a shape so that you can return to it from a later point in the shape.

You must pop everything you push. The position stack is only four locations deep. If the stack overflows because of too many pushes or too many missing pops, the following message is displayed when the shape is drawn.

Position stack overflow in shape *nnn*

Similarly, if you try to pop more locations than have been pushed onto the stack, the following message is displayed when the shape is drawn.

Position stack underflow in shape *nnn*

Quick Reference

Commands

LOAD

Makes shapes available for use by the SHAPE command.

SHAPE

Inserts a shape from a shape file that has been loaded using LOAD.

Code 7: Subshape

Code 7 draws the subshape number given by the next byte.

For a non-Unicode font the specification byte following code 7 is a shape number from 1 to 255. For a Unicode font, code 7 is followed by a Unicode shape number from 1 to 65535. Unicode shape numbers should be counted as two bytes (for specific information about the differences between Unicode and non-Unicode fonts, see Unicode Font Descriptions on page 542).

The shape with that number (in the same shape file) is drawn at this time. Draw mode is not reset for the new shape. When the subshape is complete, drawing the current shape resumes.

Quick Reference

Commands

LOAD

Makes shapes available for use by the SHAPE command.

SHAPE

Inserts a shape from a shape file that has been loaded using LOAD.

Codes 8 and 9: X-Y Displacements

With codes 8 and 9 you can draw nonstandard vectors using *X*-*Y* displacements.

Normal vector specification bytes draw only in the 16 predefined directions, and the longest length is 15. These restrictions help make shape definitions efficient but are sometimes limiting. Code 8 specifies the *X-Y* displacement given by the next two bytes. Code 8 must be followed by two specification bytes in the format:

```
8,X-displacement,Y-displacement
```

The *X-Y* displacements can range from -128 to +127. A leading + is optional, and you can use parentheses to improve readability. The following example results in a vector that draws (or moves) 10 units to the left and three units up.

```
8,(-10,3)
```

Following the two displacement specification bytes, the shape returns to Normal Vector mode.

You can use code 9 to draw a sequence of nonstandard vectors. Code 9 specifies any number of *X-Y* displacement pairs. The code sequence is terminated by a (0,0) pair. The following example draws three nonstandard vectors and returns to Normal Vector mode.

```
9,(3,1),(3,2),(2,-3),(0,0)
```

You must terminate the sequence of *X-Y* displacement pairs with a (0,0) pair in order for AutoCAD to recognize any Normal Vectors or special codes that follow.

Quick Reference

Commands

LOAD

Makes shapes available for use by the SHAPE command.

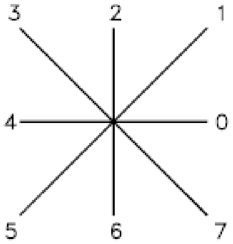
SHAPE

Inserts a shape from a shape file that has been loaded using LOAD.

Code 00A: Octant Arc

Special code 00A (or 10) uses the next two specification bytes to define an arc.

This is called an *octant arc* because it spans one or more 45-degree *octants*, starting and ending on an octant boundary. Octants are numbered counterclockwise from the 3 o'clock position, as shown in the following illustration.



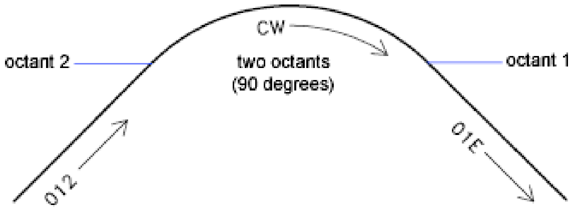
The arc specification is

```
10,radius,(-)0SC
```

The radius can be any value from 1 through 255. The second specification byte indicates the direction of the arc (counterclockwise if positive, and clockwise if negative), its starting octant (*s*, a value from 0 through 7), and the number of octants it spans (*c*, a value from 0 through 7, in which 0 equals eight octants, or a full circle). You can use parentheses to improve readability. For example, consider the following fragment of a shape definition:

```
...012,10,(1,-032),01E,...
```

This code draws a one-unit vector up and to the right, a clockwise arc from octant 3 (with a radius of one unit for two octants), and then a one-unit vector down and to the right, as shown in the following illustration.



Quick Reference

Commands

LOAD

Makes shapes available for use by the SHAPE command.

SHAPE

Inserts a shape from a shape file that has been loaded using LOAD.

Code 00B: Fractional Arc

Special code 00B (11) draws an arc that doesn't necessarily start and end on an octant boundary.

The definition uses five specification bytes.

```
11,start_offset,end_offset,high_radius,radius,(-)0SC
```

The `start_offset` and `end_offset` represent how far from an octant boundary the arc begins or ends. The `high_radius` represents the most significant eight bits of the radius; the high radius will be 0 unless the `radius` is greater than 255 units. Multiply the `high_radius` value by 256 and add that value to the `radius` value to generate an arc radius greater than 255. The `radius` and ending specification byte are the same as for the octant arc specification (code 00A, described previously).

You determine the `startoffset` by calculating the difference in degrees between the starting octant's boundary (a multiple of 45 degrees) and the start of the arc. Then, you multiply this difference by 256 and divide by 45. If the arc starts on an octant boundary, its `start offset` is 0.

The `end offset` is calculated in a similar fashion, but you use the number of degrees from the last octant boundary crossed to the end of the arc. If the arc ends on an octant boundary, its `end offset` is 0.

For example, a fractional arc from 55 degrees to 95 degrees with a 3 unit radius would be coded as follows:

```
11,(56,28,0,3,012)
```

Here is the explanation:

```
start_offset = 56 because ((55 - 45) * 256 / 45) = 56
end_offset = 28 because ((95 - 90) * 256 / 45) = 28
high_radius = 0  because (radius < 255)
radius = 3
starting octant  = 1  because arc starts in the 45 degree octant
ending octant    = 2  because arc ends in the 90 degree octant
```

Quick Reference

Commands

LOAD

Makes shapes available for use by the SHAPE command.

SHAPE

Inserts a shape from a shape file that has been loaded using LOAD.

Codes 00C and 00D: Bulge-Specified Arcs

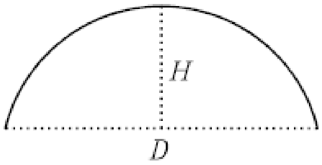
Special codes 00C and 00D (12 and 13) provide another mechanism for including arc segments in shape descriptions.

They are similar to codes 8 and 9 in that you can use them to specify *X-Y* displacements. However, codes 00C and 00D draw arcs by applying a *bulge factor* to the displacement vector. Code 00C draws one arc segment, while code 00D draws multiple arc segments *(polyarcs)* until it is terminated by a (0,0) displacement.

Code 00C must be followed by three bytes describing the arc:

```
0C,X-displacement,Y-displacement,Bulge
```

Both the *X* and *Y* displacement and the bulge, which specifies the curvature of the arc, can range from -127 to +127. If the line segment specified by the displacement has length *D*, and the perpendicular distance from the midpoint of that segment has height *H*, the magnitude of the bulge is ((2* *H* / *D*) * 127). The sign is negative if the arc from the current location to the new location is clockwise.



A semicircle has bulge 127 (or -127) and is the greatest arc that can be represented as a single-arc segment using these codes (use two consecutive arc segments for larger arcs). A bulge specification of 0 is valid and represents a straight-line segment. Note, however, that using code 8 for a straight-line segment saves a byte in the shape description.

The polyarc code (00D, or 13) is followed by 0 or by more arc segment triples, and is terminated by a (0,0) displacement. Note that no bulge is specified after the final displacement. For example, the letter *S* might be defined by the following sequence:

```
13,(0,5,127),(0,5,-127),(0,0)
```

Zero bulge segments are useful within polyarcs to represent straight segments; they are more efficient than terminating the polyarc, inserting one straight segment, and then starting another polyarc.

The number -128 cannot be used in arc segment and polyarc definitions.

Quick Reference

Commands

LOAD

Makes shapes available for use by the SHAPE command.

SHAPE

Inserts a shape from a shape file that has been loaded using LOAD.

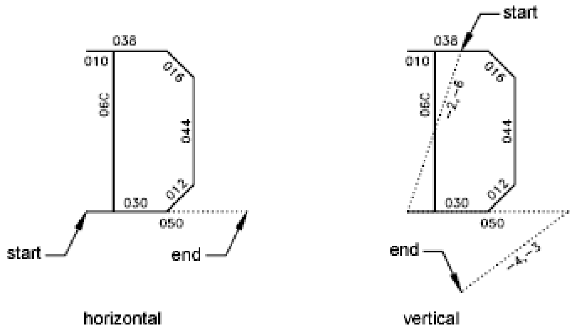
Code 00E: Flag Vertical Text Command

Special code 00E (14) is used only in dual-orientation text font descriptions, where the font is used in both horizontal and vertical orientations.

When this special code is encountered in a character definition, the next code is either processed or skipped, depending on orientation. If the orientation is vertical, the next code is processed; if it is horizontal, the next code is skipped.

In horizontal text, the start point for each character is the left end of the baseline. In vertical text, the start point is assumed to be the top center of the character. At the end of each character, a pen-up segment is normally drawn to position to the next character's start point. For horizontal text, it is to the right; for vertical text, it is downward. The special 00E (14) code is used primarily to adjust for differences in start points and endpoints, permitting the same character shape definition to be used both horizontally and vertically. For instance, the following definition of an uppercase D could be used in either horizontal or vertical text.

```
*68,22,ucd
2,14,8,(-2, 6),1,030,012,044,016,038,2,010,1,06C,2,050,
14,8,(-4,-3),0
```



Quick Reference

Commands

LOAD

Makes shapes available for use by the SHAPE command.

SHAPE

Inserts a shape from a shape file that has been loaded using LOAD.

Text Font Descriptions

Text fonts must include a special shape number 0 that conveys information about the font itself.

AutoCAD is packaged with numerous text fonts. You can use the STYLE command to apply expansion, compression, or obliquing to any of these fonts, thereby tailoring the characters to your needs. You can draw text of any height, at any baseline angle, and with either horizontal or vertical orientation using these fonts.

AutoCAD text fonts are files of shape definitions with shape numbers corresponding to the ASCII code for each character. Codes 1 through 31 are for control characters, only one of which is used in AutoCAD text fonts:

10 (LF) The line feed (LF) must drop down one line without drawing. This is used for repeated TEXT commands, to place succeeding lines below the first one.

```
*10,5,lf
```

```
2,8,(0,-10),0
```

You can modify the spacing of lines by adjusting the downward movement specified by the LF shape definition.

Text fonts must include a special shape number 0 that conveys information about the font itself. The format has the following syntax:

```
*0,4,font-name
above,below,modes,0
```

The `above` value specifies the number of vector lengths above the baseline that the uppercase letters extend, and `below` indicates how far the lowercase letters descend below the baseline. The baseline is similar in concept to the lines on writing paper. These values define the basic character size and are used as scale factors for the height specified in the TEXT command.

The `modes` byte should be 0 for a horizontally oriented font and 2 for a dual-orientation (horizontal or vertical) font. The special 00E (14) command code is honored only when `modes` is set to 2.

The standard fonts supplied with AutoCAD include a few additional characters required for the AutoCAD dimensioning feature.

%%d Degree symbol (°)

%%p Plus/minus tolerance symbol ( )

%%c Circle diameter dimensioning symbol

You can use these and the %%*nnn* control sequences, as described under TEXT in the *Command Reference*.

NOTE AutoCAD draws text characters by their ASCII codes (shape numbers) and not by name. To save memory, specify the shape name portion of each text shape definition in lowercase as shown in the following example. (Lowercase names are not saved in memory.)

```
*65,11,uca
024,043,04d,02c,2,047,1,040,2,02e,0
```

Because the shape name `uca` contains lowercase letters, AutoCAD does not save the name in memory. However, you can use the name for reference when editing the font definition file. In this example, `uca` stands for uppercase A.

Quick Reference

Commands

LOAD

Makes shapes available for use by the SHAPE command.

SHAPE

Inserts a shape from a shape file that has been loaded using LOAD.

STYLE

Creates, modifies, or specifies text styles.

TEXT

Creates a single-line text object.

Sample Files

This topic contains sample files that help extend the font characters provided with AutoCAD.

Extended Simplex Roman

```
;;
;; romans.shp - Extended Simplex Roman
;;
;; Copyright 1997 by Autodesk, Inc.
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for
;; any purpose and without fee is hereby granted, provided that
the
;; above copyright notice appears in all copies and that the re
stricted
;; rights notice below appear in all supporting documentation.
;;
;; Use, duplication, or disclosure by the U.S. Government is sub
ject
;; to restrictions set forth in FAR 52.227-19 (Commercial Computer

;; Software - Restricted Rights) and DFAR 252.227-7013(c)(1)(ii)
;; (Rights in Technical Data and Computer Software), as applicable.
;;
*UNIFONT,6,ROMANS Copyright  1997 by Autodesk, Inc.
21,7,2,0,0,0
*0000A,9,lf
2,8,(0,-34),14,8,(30,34),0
*00020,9,spc
2,8,(21,0),14,8,(-21,-30),0
*00021,30,kexc
2,14,8,(-5,-21),14,5,8,(5,21),1,0EC,2,05C,1,01A,01E,012,016,2,
8,(5,-2),14,6,14,8,(5,-9),0
*00022,41,kdblqt
2,14,8,(-8,-25),14,5,8,(6,24),1,01A,016,012,01E,02C,02B,01A,2,
8,(8,5),1,01A,016,012,01E,02C,02B,01A,2,8,(4,-19),14,6,
14,8,(8,-9),0
*00023,57,kns
2,14,3,2,14,8,(-21,-50),14,4,2,14,5,8,(11,25),1,8,(-7,-32),2,
8,(13,32),1,8,(-7,-32),2,8,(-6,19),1,0E0,2,8,(-15,-6),1,0E0,2,
8,(4,-6),14,6,14,3,2,14,8,(21,-32),14,4,2,0
*00024,67,kds
2,14,8,(-10,-25),14,5,8,(8,25),1,8,(0,-29),2,8,(4,29),1,
8,(0,-29),2,8,(5,22),1,026,8,(-3,1),048,8,(-3,-1),02A,02C,02D,
01E,02F,8,(6,-2),02F,01E,02D,03C,02A,8,(-3,-1),048,8,(-3,1),026,
2,8,(17,-3),14,6,14,8,(10,-13),0
*00025,64,kpc
```

```
2,14,8,(-12,-21),14,5,8,(21,21),1,8,(-18,-21),2,8,(5,21),1,02E,
02C,02B,029,028,026,024,023,021,020,02F,8,(3,-1),030,8,(3,1),021,
2,8,(-4,-14),1,029,02B,02C,02E,020,021,023,024,026,028,2,
8,(7,-7),14,6,14,8,(12,-9),0
*00026,67,kand
2,14,8,(-13,-21),14,5,8,(23,12),1,014,016,018,01A,02B,8,(-2,-5),
8,(-2,-3),02A,029,048,027,016,025,024,023,012,8,(7,4),012,023,
024,025,027,029,02B,02C,8,(1,-3),8,(2,-3),8,(5,-7),02E,02F,020,
012,014,2,8,(3,-2),14,6,14,8,(13,-9),0
*00027,29,kapos
2,14,8,(-5,-25),14,5,8,(6,24),1,01A,016,012,01E,02C,02B,01A,2,
8,(6,-19),14,6,14,8,(5,-9),0
*00028,39,klp
2,14,8,(-7,-25),14,5,8,(11,25),1,02A,8,(-2,-3),04B,8,(-1,-5),04C,
8,(1,-5),04D,8,(2,-3),02E,2,8,(3,7),14,6,14,8,(7,-16),0
*00029,39,krp
2,14,8,(-7,-25),14,5,8,(3,25),1,02E,8,(2,-3),04D,8,(1,-5),04C,
8,(-1,-5),04B,8,(-2,-3),02A,2,8,(11,7),14,6,14,8,(7,-16),0
*0002A,37,kas
2,14,8,(-8,-21),14,5,8,(8,21),1,0CC,2,8,(-5,9),1,8,(10,-6),2,064,

1,8,(-10,-6),2,8,(13,-12),14,6,14,8,(8,-9),0
*0002B,31,kpls
2,14,8,(-13,-18),14,5,8,(13,18),1,8,(0,-18),2,096,1,8,(18,0),2,
8,(4,-9),14,6,14,8,(13,-9),0
*0002C,29,kcma
2,14,8,(-5,-2),14,5,8,(6,1),1,01A,016,012,01E,02C,02B,01A,2,
8,(6,4),14,6,14,8,(5,-13),0
*0002D,25,ksub
2,14,8,(-13,-9),14,5,8,(4,9),1,8,(18,0),2,8,(4,-9),14,6,
14,8,(13,-9),0
*0002E,26,kper
2,14,8,(-5,-2),14,5,8,(5,2),1,01A,01E,012,016,2,8,(5,-2),14,6,
14,8,(5,-9),0
*0002F,25,kdiv
2,14,8,(-11,-25),14,5,8,(20,25),1,8,(-18,-32),2,8,(20,7),14,6,
14,8,(11,-16),0
*00030,62,n0
2,14,8,(-10,-21),14,5,8,(9,21),1,8,(-3,-1),8,(-2,-3),8,(-1,-5),
03C,8,(1,-5),8,(2,-3),8,(3,-1),020,8,(3,1),8,(2,3),8,(1,5),034,
8,(-1,5),8,(-2,3),8,(-3,1),028,2,8,(11,-21),14,6,14,8,(10,-9),0
*00031,27,n1
2,14,8,(-10,-21),14,5,8,(6,17),1,021,032,8,(0,-21),2,8,(9,0),
14,6,14,8,(10,-9),0
*00032,37,n2
2,14,8,(-10,-21),14,5,8,(4,16),1,014,023,012,021,040,02F,01E,02D,
02C,02B,8,(-2,-3),0AA,0E0,2,8,(3,0),14,6,14,8,(10,-9),0
*00033,46,n3
2,14,8,(-10,-21),14,5,8,(5,21),1,0B0,8,(-6,-8),030,02F,01E,
8,(1,-3),02C,8,(-1,-3),02A,8,(-3,-1),038,8,(-3,1),016,025,2,
8,(17,-4),14,6,14,8,(10,-9),0
*00034,34,n4
2,14,8,(-10,-21),14,5,8,(13,21),1,8,(-10,-14),0F0,2,8,(-5,14),1,
8,(0,-21),2,8,(7,0),14,6,14,8,(10,-9),0
*00035,52,n5
2,14,8,(-10,-21),14,5,8,(15,21),1,0A8,8,(-1,-9),012,8,(3,1),030,
8,(3,-1),02E,8,(1,-3),02C,8,(-1,-3),02A,8,(-3,-1),038,8,(-3,1),
016,025,2,8,(17,-4),14,6,14,8,(10,-9),0
*00036,68,n6
2,14,8,(-10,-21),14,5,8,(16,18),1,025,8,(-3,1),028,8,(-3,-1),
8,(-2,-3),8,(-1,-5),05C,8,(1,-4),02E,8,(3,-1),010,8,(3,1),022,
8,(1,3),014,8,(-1,3),026,8,(-3,1),018,8,(-3,-1),02A,8,(-1,-3),2,
8,(16,-7),14,6,14,8,(10,-9),0
*00037,31,n7
2,14,8,(-10,-21),14,5,8,(17,21),1,8,(-10,-21),2,8,(-4,21),1,0E0,
2,8,(3,-21),14,6,14,8,(10,-9),0
*00038,66,n8
2,14,8,(-10,-21),14,5,8,(8,21),1,8,(-3,-1),02B,02C,02D,02F,
8,(4,-1),8,(3,-1),02E,02D,03C,02B,01A,8,(-3,-1),048,8,(-3,1),016,

025,034,023,022,8,(3,1),8,(4,1),021,023,024,025,8,(-3,1),048,2,
8,(12,-21),14,6,14,8,(10,-9),0
*00039,68,n9
2,14,8,(-10,-21),14,5,8,(16,14),1,8,(-1,-3),02A,8,(-3,-1),018,
8,(-3,1),026,8,(-1,3),014,8,(1,3),022,8,(3,1),010,8,(3,-1),02E,
8,(1,-4),05C,8,(-1,-5),8,(-2,-3),8,(-3,-1),028,8,(-3,1),025,2,
8,(16,-3),14,6,14,8,(10,-9),0
*0003A,33,kcol
2,14,8,(-5,-14),14,5,8,(5,14),1,01A,01E,012,016,2,0CC,1,01A,01E,
012,016,2,8,(5,-2),14,6,14,8,(5,-9),0
*0003B,38,ksmc
2,14,8,(-5,-14),14,5,8,(5,14),1,01A,01E,012,016,2,8,(1,-13),1,
01A,016,012,01E,02C,02B,01A,2,8,(6,4),14,6,14,8,(5,-13),0
*0003C,28,klt
2,14,8,(-12,-18),14,5,8,(20,18),1,8,(-16,-9),8,(16,-9),2,8,(4,0),
14,6,14,8,(12,-9),0
```

```
*0003D,33,keq
2,14,8,(-13,-12),14,5,8,(4,12),1,8,(18,0),2,8,(-18,-6),1,
8,(18,0),2,8,(4,-6),14,6,14,8,(13,-9),0
*0003E,28,kgt
2,14,8,(-12,-18),14,5,8,(4,18),1,8,(16,-9),8,(-16,-9),2,8,(20,0),
14,6,14,8,(12,-9),0
*0003F,42,kqm
2,14,8,(-9,-21),14,5,8,(3,16),1,014,023,012,021,040,02F,01E,02D,
02C,02B,01A,049,03C,2,05C,1,01A,01E,012,016,2,8,(9,-2),14,6,
14,8,(9,-9),0
*00040,93,kea
2,14,3,2,14,8,(-27,-42),14,4,2,14,5,8,(18,13),1,025,027,038,029,
01A,02B,03C,02D,01E,02F,030,021,023,2,084,1,0AC,01E,020,022,
8,(1,3),024,8,(-1,3),025,026,027,8,(-3,1),038,8,(-3,-1),029,02A,
02B,8,(-1,-3),03C,8,(1,-3),02D,02E,02F,8,(3,-1),030,8,(3,1),021,
012,2,8,(6,-3),14,6,14,3,2,14,8,(27,-18),14,4,2,0
*00041,39,uca
2,14,8,(-9,-21),14,5,8,(9,21),1,8,(-8,-21),2,8,(8,21),1,
8,(8,-21),2,8,(-13,7),1,0A0,2,8,(4,-7),14,6,14,8,(9,-9),0
*00042,70,ucb
2,14,3,2,14,8,(-21,-42),14,4,2,14,5,8,(4,21),1,8,(0,-21),2,
8,(0,21),1,090,8,(3,-1),01E,02D,02C,02B,01A,8,(-3,-1),2,098,1,
090,8,(3,-1),01E,02D,03C,02B,01A,8,(-3,-1),098,2,8,(17,0),14,6,
14,3,2,14,8,(21,-18),14,4,2,0
*00043,55,ucc
2,14,3,2,14,8,(-21,-42),14,4,2,14,5,8,(18,16),1,025,026,027,048,
029,02A,02B,8,(-1,-3),05C,8,(1,-3),02D,02E,02F,040,021,022,023,2,
8,(3,-5),14,6,14,3,2,14,8,(21,-18),14,4,2,0
*00044,61,ucd
2,14,3,2,14,8,(-21,-42),14,4,2,14,5,8,(4,21),1,8,(0,-21),2,
8,(0,21),1,070,8,(3,-1),02E,02D,8,(1,-3),05C,8,(-1,-3),02B,02A,
8,(-3,-1),078,2,8,(17,0),14,6,14,3,2,14,8,(21,-18),14,4,2,0
*00045,55,uce
2,14,3,2,14,8,(-19,-42),14,4,2,14,5,8,(4,21),1,8,(0,-21),2,
8,(0,21),1,0D0,2,8,(-13,-10),1,080,2,8,(-8,-11),1,0D0,2,8,(2,0),
14,6,14,3,2,14,8,(19,-18),14,4,2,0
*00046,37,ucf
2,14,8,(-9,-21),14,5,8,(4,21),1,8,(0,-21),2,8,(0,21),1,0D0,2,
8,(-13,-10),1,080,2,8,(6,-11),14,6,14,8,(9,-9),0
*00047,60,ucg
2,14,3,2,14,8,(-21,-42),14,4,2,14,5,8,(18,16),1,025,026,027,048,
029,02A,02B,8,(-1,-3),05C,8,(1,-3),02D,02E,02F,040,021,022,023,
034,2,058,1,050,2,8,(3,-8),14,6,14,3,2,14,8,(21,-18),14,4,2,0
```

```
*00048,39,uch
2,14,8,(-11,-21),14,5,8,(4,21),1,8,(0,-21),2,8,(14,21),1,
8,(0,-21),2,8,(-14,11),1,0E0,2,8,(4,-11),14,6,14,8,(11,-9),0
*00049,25,uci
2,14,8,(-4,-21),14,5,8,(4,21),1,8,(0,-21),2,8,(4,0),14,6,
14,8,(4,-9),0
*0004A,37,ucj
2,14,8,(-8,-21),14,5,8,(12,21),1,8,(0,-16),8,(-1,-3),01A,029,028,

027,016,8,(-1,3),024,2,8,(14,-7),14,6,14,8,(8,-9),0
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*000C7,65,uc‡
2,14,3,2,14,8,(-21,-42),14,4,2,14,5,8,(18,16),1,025,026,027,048,
029,02A,02B,8,(-1,-3),05C,8,(1,-3),02D,02E,02F,040,021,022,023,2,
8,(-9,-11),1,01E,030,012,024,016,028,034,2,0A0,14,6,14,3,2,
14,8,(21,-32),14,4,2,0
*000C8,53,uc^
2,14,3,2,14,8,(-19,-50),14,4,2,14,5,8,(6,25),1,8,(9,-4),2,
8,(2,-2),1,0D8,8,(0,-19),0D0,2,8,(-13,10),1,080,2,8,(7,-10),14,6,
14,3,2,14,8,(19,-18),14,4,2,0
*000C9,53,uc^
2,14,3,2,14,8,(-19,-50),14,4,2,14,5,8,(6,21),1,8,(9,4),2,
8,(2,-6),1,0D8,8,(0,-19),0D0,2,8,(-13,10),1,080,2,8,(7,-10),14,6,
14,3,2,14,8,(19,-18),14,4,2,0
*000CA,53,uc^
2,14,3,2,14,8,(-19,-50),14,4,2,14,5,8,(6,23),1,041,010,04F,2,
8,(2,-2),1,0D8,8,(0,-21),0D0,2,8,(-13,11),1,080,2,8,(7,-11),14,6,
14,3,2,14,8,(19,-18),14,4,2,0
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*000CB,61,uc^
2,14,3,2,14,8,(-19,-50),14,4,2,14,5,8,(6,24),1,01E,012,016,01A,2,
070,1,01E,012,016,01A,2,8,(4,-3),1,0D8,8,(0,-21),0D0,2,
8,(-13,11),1,080,2,8,(7,-11),14,6,14,3,2,14,8,(19,-18),14,4,2,0
*000CC,29,uc^
2,14,8,(-4,-25),14,5,8,(4,23),1,026,2,04D,1,8,(0,-21),2,8,(4,0),
14,6,14,8,(4,-9),0
*000CD,29,uc^
2,14,8,(-4,-25),14,5,8,(4,23),1,022,2,04B,1,8,(0,-21),2,8,(4,0),
14,6,14,8,(4,-9),0
*000CE,30,uc^
2,14,8,(-4,-25),14,5,8,(2,23),1,022,02E,2,02A,1,8,(0,-21),2,
8,(4,0),14,6,14,8,(4,-9),0
*000CF,41,uc^
2,14,8,(-4,-25),14,5,8,(1,24),1,01E,012,016,01A,2,040,1,01E,012,
016,01A,2,8,(-1,-3),1,8,(0,-21),2,8,(4,0),14,6,14,8,(4,-9),0
*000D1,41,uc
2,14,8,(-11,-25),14,5,040,1,8,(0,19),8,(14,-19),8,(0,19),2,
8,(-13,3),1,032,010,8,(4,-3),010,032,2,8,(5,-25),14,6,
14,8,(11,-9),0
*000D2,44,uc^
2,14,8,(-11,-25),14,5,8,(6,25),1,08F,2,8,(-6,-2),1,029,02A,04B,
05C,04D,02E,02F,040,021,022,043,054,045,026,027,048,2,8,(13,-19),
14,6,14,8,(11,-9),0
*000D3,42,uc^
2,14,8,(-11,-25),14,5,8,(6,21),1,081,2,06A,1,029,02A,04B,05C,04D,
02E,02F,040,021,022,043,054,045,026,027,048,2,8,(13,-19),14,6,
14,8,(11,-9),0
*000D4,57,uc^
2,14,8,(-11,-25),14,5,8,(6,23),1,041,04F,2,8,(-6,-2),1,029,02A,
02B,8,(-1,-3),05C,8,(1,-3),02D,02E,02F,040,021,022,023,8,(1,3),
054,8,(-1,3),025,026,027,048,2,8,(13,-21),14,6,14,8,(11,-9),0
*000D5,66,uc^
2,14,8,(-11,-25),14,5,8,(6,22),5,1,023,10,(2,-50),01E,10,(2,82),
023,2,6,8,(3,-1),1,029,02A,02B,8,(-1,-3),05C,8,(1,-3),02D,02E,
02F,040,021,022,023,8,(1,3),054,8,(-1,3),025,026,027,048,2,
8,(13,-21),14,6,14,8,(11,-9),0
*000D6,66,uc^
2,14,8,(-11,-25),14,5,8,(6,24),1,01E,012,016,01A,2,080,1,01E,012,
016,01A,2,8,(-5,-3),1,029,02A,02B,8,(-1,-3),05C,8,(1,-3),02D,02E,
02F,040,021,022,023,8,(1,3),054,8,(-1,3),025,026,027,048,2,
8,(13,-21),14,6,14,8,(11,-9),0
*000D8,54,uc›
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2,14,8,(-11,-21),8,(9,21),1,029,02A,02B,8,(-1,-3),05C,8,(1,-3),
02D,02E,02F,040,021,022,023,8,(1,3),054,8,(-1,3),025,026,027,048,
2,8,(-6,-21),1,8,(16,21),2,8,(3,-21),14,8,(-11,-9),0
*000D9,43,uc^
2,14,8,(-11,-25),14,5,8,(15,21),1,087,2,06B,1,0DC,8,(1,-3),02E,
8,(3,-1),020,8,(3,1),022,8,(1,3),0D4,2,8,(4,-19),14,6,
14,8,(11,-9),0
*000DA,45,uc^
2,14,8,(-11,-25),14,5,8,(15,25),1,089,2,8,(-3,-2),1,0DC,8,(1,-3),
02E,8,(3,-1),020,8,(3,1),022,8,(1,3),0D4,2,8,(4,-19),14,6,
14,8,(11,-9),0
*000DB,46,uc^
2,14,8,(-11,-25),14,5,8,(15,23),1,047,049,2,8,(-3,-2),1,0FC,
8,(1,-3),02E,8,(3,-1),020,8,(3,1),022,8,(1,3),0F4,2,8,(4,-21),
14,6,14,8,(11,-9),0
*000DC,55,uc^
2,14,8,(-11,-25),14,5,8,(14,24),1,01E,012,016,01A,2,088,1,01E,
012,016,01A,2,8,(-2,-3),1,0FC,8,(1,-3),02E,8,(3,-1),020,8,(3,1),
022,8,(1,3),0F4,2,8,(4,-21),14,6,14,8,(11,-9),0
*000DD,38,uc^
2,14,8,(-9,-25),14,5,8,(13,25),1,089,2,049,1,8,(8,-9),0AC,2,
8,(8,19),1,8,(-8,-9),2,8,(9,-10),14,6,14,8,(9,-9),0
*000DF,53,kgers
2,14,8,(-9,-21),14,5,030,1,012,8,(0,16),023,012,021,020,02F,01E,
02D,02C,02B,01A,029,028,2,020,1,8,(3,-1),01E,02D,03C,02B,01A,029,
028,027,016,012,01E,2,8,(10,-2),14,6,14,8,(9,-9),0
*000E0,63,lc…
2,14,3,2,14,8,(-19,-42),14,4,2,14,5,8,(5,21),1,8,(8,-4),2,
8,(2,-3),1,0EC,2,0B4,1,026,027,038,029,02A,8,(-1,-3),02C,
8,(1,-3),02E,02F,030,021,022,2,8,(4,-3),14,6,14,3,2,
14,8,(19,-18),14,4,2,0
*000E1,63,lc
2,14,3,2,14,8,(-19,-42),14,4,2,14,5,8,(5,17),1,8,(8,4),2,
8,(2,-7),1,0EC,2,0B4,1,026,027,038,029,02A,8,(-1,-3),02C,
8,(1,-3),02E,02F,030,021,022,2,8,(4,-3),14,6,14,3,2,
14,8,(19,-18),14,4,2,0
*000E2,64,lc^
2,14,3,2,14,8,(-19,-42),14,4,2,14,5,8,(5,18),1,8,(4,3),8,(4,-3),
2,04D,1,0EC,2,0B4,1,026,027,038,029,02A,8,(-1,-3),02C,8,(1,-3),
02E,02F,030,021,022,2,8,(4,-3),14,6,14,3,2,14,8,(19,-18),14,4,2,0

*000E3,63,lcƒ
2,14,3,2,14,8,(-19,-42),14,4,2,14,5,8,(4,18),1,032,010,03E,010,
032,2,07C,1,0EC,2,0B4,1,026,027,038,029,02A,8,(-1,-3),02C,
8,(1,-3),02E,02F,030,021,022,2,8,(4,-3),14,6,14,3,2,
14,8,(19,-18),14,4,2,0
*000E4,71,lc„
2,14,3,2,14,8,(-19,-42),14,4,2,14,5,8,(4,20),1,01E,012,016,01A,2,
090,1,01E,012,016,01A,2,8,(2,-6),1,0EC,2,0B4,1,026,027,038,029,
02A,8,(-1,-3),02C,8,(1,-3),02E,02F,030,021,022,2,8,(4,-3),14,6,
14,3,2,14,8,(19,-18),14,4,2,0
*000E5,63,lc†
2,14,3,2,14,8,(-19,-42),14,4,2,14,5,8,(7,19),1,10,(2,64),2,
8,(8,-5),1,0EC,2,0B4,1,026,027,038,029,02A,8,(-1,-3),02C,
8,(1,-3),02E,02F,030,021,022,2,8,(4,-3),14,6,14,3,2,
14,8,(19,-18),14,4,2,0
*000E6,51,lc
2,14,8,(-10,-14),14,5,8,(10,8),1,070,014,8,(-1,3),026,028,02A,
026,028,02A,8,(-1,-3),04C,8,(1,-3),02E,020,022,02E,020,021,023,2,
8,(-7,11),1,0EC,2,0A0,14,6,14,8,(10,-9),0
*000E7,49,lc‡
2,14,8,(-9,-14),14,5,8,(15,11),1,026,027,038,029,02A,8,(-1,-3),
02C,8,(1,-3),02E,02F,030,021,022,2,8,(-8,-9),1,01E,030,012,024,
016,028,034,2,090,14,6,14,8,(9,-16),0
*000E8,48,lcŠ
2,14,8,(-9,-21),14,5,8,(5,21),1,08F,2,8,(-10,-9),1,0C0,024,025,
016,027,038,029,02A,8,(-1,-3),02C,8,(1,-3),02E,02F,030,021,022,2,
8,(3,-3),14,6,14,8,(9,-9),0
*000E9,48,lc,
2,14,8,(-9,-21),14,5,8,(5,17),1,081,2,8,(-10,-13),1,0C0,024,025,
016,027,038,029,02A,8,(-1,-3),02C,8,(1,-3),02E,02F,030,021,022,2,
8,(3,-3),14,6,14,8,(9,-9),0
*000EA,51,lcˆ
2,14,8,(-9,-21),14,5,8,(5,18),1,8,(4,3),8,(4,-3),2,0AA,1,0C0,024,
025,016,027,038,029,02A,8,(-1,-3),02C,8,(1,-3),02E,02F,030,021,
022,2,8,(3,-3),14,6,14,8,(9,-9),0
*000EB,58,lc‰
2,14,8,(-9,-21),14,5,8,(4,20),1,01E,012,016,01A,2,080,1,01E,012,
016,01A,2,8,(-9,-12),1,0C0,024,025,016,027,038,029,02A,8,(-1,-3),
02C,8,(1,-3),02E,02F,030,021,022,2,8,(3,-3),14,6,14,8,(9,-9),0
*000EC,27,lc_
2,14,8,(-7,-21),14,5,8,(3,21),1,08F,2,04A,1,0DC,2,8,(4,0),14,6,
14,8,(7,-9),0
*000ED,27,lc
2,14,8,(-7,-21),14,5,8,(3,17),1,081,2,08B,1,0DC,2,8,(4,0),14,6,
14,8,(7,-9),0
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*000EE,34,lcŒ
2,14,8,(-7,-21),14,5,8,(3,18),1,8,(4,3),8,(4,-3),2,8,(-4,-5),1,
0DC,2,8,(4,0),14,6,14,8,(7,-9),0
*000EF,39,lc‹
2,14,8,(-7,-21),14,5,8,(3,20),1,01E,012,016,01A,2,060,1,01E,012,
016,01A,2,8,(-2,-7),1,0DC,2,8,(4,0),14,6,14,8,(7,-9),0
*000F1,56,lc
2,14,3,2,14,8,(-19,-42),14,4,2,14,5,8,(4,18),1,032,010,03E,010,
032,2,8,(-11,-7),1,0EC,2,0A4,1,032,021,030,02F,8,(1,-3),0AC,2,
8,(4,0),14,6,14,3,2,14,8,(19,-18),14,4,2,0
*000F2,64,lc•
2,14,3,2,14,8,(-19,-42),14,4,2,14,5,8,(5,21),1,8,(9,-4),2,069,1,
029,02A,8,(-1,-3),02C,8,(1,-3),02E,02F,030,021,022,8,(1,3),024,
8,(-1,3),026,027,038,2,8,(11,-14),14,6,14,3,2,14,8,(19,-18),14,4,
2,0
*000F3,66,lc
2,14,3,2,14,8,(-19,-42),14,4,2,14,5,8,(5,17),1,8,(9,4),2,
8,(-6,-7),1,029,02A,8,(-1,-3),02C,8,(1,-3),02E,02F,030,021,022,
8,(1,3),024,8,(-1,3),026,027,038,2,8,(11,-14),14,6,14,3,2,
14,8,(19,-18),14,4,2,0
*000F4,73,lc‟
2,14,3,2,14,8,(-19,-42),14,4,2,14,5,8,(5,18),3,2,1,8,(9,6),
8,(9,-6),2,4,2,8,(-6,-4),1,029,02A,8,(-1,-3),02C,8,(1,-3),02E,
02F,030,021,022,8,(1,3),024,8,(-1,3),026,027,038,2,8,(11,-14),
14,6,14,3,2,14,8,(19,-18),14,4,2,0
*000F5,68,lc^
2,14,3,2,14,8,(-19,-42),14,4,2,14,5,8,(4,18),1,032,010,03E,010,
032,2,8,(-7,-7),1,029,02A,8,(-1,-3),02C,8,(1,-3),02E,02F,030,021,
022,8,(1,3),024,8,(-1,3),026,027,038,2,8,(11,-14),14,6,14,3,2,
14,8,(19,-18),14,4,2,0
*000F6,74,lc”
2,14,3,2,14,8,(-19,-42),14,4,2,14,5,8,(4,20),1,01E,012,016,01A,2,
090,1,01E,012,016,01A,2,8,(-5,-6),1,029,02A,8,(-1,-3),02C,
8,(1,-3),02E,02F,030,021,022,8,(1,3),024,8,(-1,3),026,027,038,2,
8,(11,-14),14,6,14,3,2,14,8,(19,-18),14,4,2,0
*000F7,41,kto
2,14,8,(-9,-14),14,5,8,(8,13),1,01E,012,016,01A,2,8,(-5,-6),1,
0C0,2,8,(-7,-6),1,01E,012,016,01A,2,8,(10,-1),14,6,14,8,(9,-9),0
*000F8,24,lc›
7,06F,2,8,(-3,14),14,8,(9,9),1,8,(-13,-14),2,8,(17,0),
14,8,(-10,-9),0
*000F9,54,lc—
2,14,3,2,14,8,(-19,-42),14,4,2,14,5,8,(5,21),1,8,(9,-4),2,
8,(-10,-3),1,0AC,8,(1,-3),02F,030,021,032,2,0A4,1,0EC,2,8,(4,0),
14,6,14,3,2,14,8,(19,-18),14,4,2,0
*000FA,54,lc
2,14,3,2,14,8,(-19,-42),14,4,2,14,5,8,(5,17),1,8,(9,4),2,
8,(-10,-7),1,0AC,8,(1,-3),02F,030,021,032,2,0A4,1,0EC,2,8,(4,0),
14,6,14,3,2,14,8,(19,-18),14,4,2,0
*000FB,61,lc-
2,14,3,2,14,8,(-19,-42),14,4,2,14,5,8,(5,18),3,2,1,8,(9,6),
8,(9,-6),4,2,2,8,(-10,-4),1,0AC,8,(1,-3),02F,030,021,032,2,0A4,1,
0EC,2,8,(4,0),14,6,14,3,2,14,8,(19,-18),14,4,2,0
*000FC,62,lc_
2,14,3,2,14,8,(-19,-42),14,4,2,14,5,8,(4,20),1,01E,012,016,01A,2,
090,1,01E,012,016,01A,2,8,(-9,-6),1,0AC,8,(1,-3),02F,030,021,032,
2,0A4,1,0EC,2,8,(4,0),14,6,14,3,2,14,8,(19,-18),14,4,2,0
*000FD,43,lc^
2,14,8,(-8,-14),14,5,8,(2,14),5,032,1,8,(9,4),6,8,(6,-14),2,
8,(6,14),1,8,(-6,-14),04B,02A,029,018,2,8,(15,7),14,6,
14,8,(8,-16),0
*000FF,53,lc˜
2,14,8,(-8,-21),14,5,8,(3,20),1,01E,012,016,01A,2,080,1,01E,012,
016,01A,2,8,(-9,-6),1,8,(6,-14),2,8,(6,14),1,8,(-6,-14),04B,02A,
029,018,2,8,(15,7),14,6,14,8,(8,-16),0
*00104,50,c164
2,14,8,(-9,-21),14,5,8,(9,21),1,8,(-8,-21),2,8,(8,21),1,
8,(8,-21),3,2,10,(5,36),1,10,(5,-100),4,2,2,8,(-13,7),1,0A0,2,
8,(4,-7),14,6,14,8,(9,-9),0
*00105,66,c165
2,14,3,2,14,8,(-19,-28),14,4,2,14,5,8,(15,14),1,0EC,3,2,10,
(5,36),2,10,(5,-100),4,2,2,0B4,1,026,027,038,029,02A,8,(-1,-3),
02C,8,(1,-3),02E,02F,030,021,022,2,8,(4,-3),14,6,14,3,2,
14,8,(19,-18),14,4,2,0
*00106,71,c143
2,14,3,2,14,8,(-21,-42),14,4,2,14,5,3,2,2,8,(18,48),1,8,(8,6),2,
8,(-26,-54),4,2,8,(18,16),1,025,026,027,048,029,02A,02B,
8,(-1,-3),05C,8,(1,-3),02D,02E,02F,040,021,022,023,2,8,(3,-5),
14,6,14,3,2,14,8,(21,-18),14,4,2,0
*00107,54,c134
2,14,8,(-9,-14),14,5,8,(15,11),3,2,8,(-15,10),1,8,(6,4),2,
8,(9,-14),4,2,1,026,027,038,029,02A,8,(-1,-3),02C,8,(1,-3),02E,
02F,030,021,022,2,8,(3,-3),14,6,14,8,(9,-9),0
*0010C,49,c172
2,14,8,(-11,-27),8,(18,16),1,025,026,027,048,029,02A,02B,
8,(-1,-3),05C,8,(1,-3),02D,02E,02F,040,021,022,023,2,8,(-7,18),1,
042,2,04A,1,046,2,8,(14,-27),14,8,(-10,-9),0
*0010D,41,c159
2,14,8,(-9,-20),0F0,0B4,1,026,027,038,029,02A,8,(-1,-3),02C,
8,(1,-3),02E,02F,030,021,022,2,068,0D4,1,042,2,04A,1,046,2,
8,(13,-20),14,09A,0
*0010E,53,c210
2,14,8,(-11,-27),8,(4,21),1,0FC,06C,2,0F4,064,1,070,8,(3,-1),02E,

02D,8,(1,-3),05C,8,(-1,-3),02B,02A,8,(-3,-1),078,2,8,(7,23),1,
042,2,04A,1,046,2,8,(14,-27),14,8,(-10,-9),0
*0010F,46,c212
2,14,8,(-10,-21),8,(15,21),1,0FC,06C,2,0B4,1,026,027,038,029,02A,
8,(-1,-3),02C,8,(1,-3),02E,02F,030,021,022,2,8,(4,18),1,
8,(-3,-4),2,8,(3,-17),14,09A,0
*00118,66,c168
2,14,3,2,14,8,(-19,-42),14,4,2,14,5,8,(4,21),1,8,(0,-21),2,
8,(0,21),1,0D0,2,8,(-13,-10),1,080,2,8,(-8,-11),1,0D0,3,2,10,
(5,36),1,10,(5,-100),4,2,2,8,(2,0),14,6,14,3,2,14,8,(19,-18),
14,4,2,0
*00119,66,c169
2,14,8,(-9,-14),14,5,8,(3,8),1,0C0,024,025,016,027,038,029,02A,
8,(-1,-3),02C,8,(1,-3),02E,02F,030,3,2,10,(5,36),2,10,(5,-100),1,
4,2,021,022,2,3,2,10,(5,36),2,10,(5,-100),4,2,2,8,(3,-3),14,6,
14,8,(9,-9),0
*0011A,43,c183
2,14,8,(-10,-27),8,(4,21),1,0FC,06C,2,0F4,064,1,0D0,2,0D8,0AC,1,
080,2,088,0BC,1,0D0,2,8,(-7,23),1,042,2,04A,1,046,2,8,(13,-27),
14,09A,0
*0011B,44,c216
2,14,8,(-9,-20),030,084,1,0C0,024,025,016,027,038,029,02A,
8,(-1,-3),02C,8,(1,-3),02E,02F,030,021,022,2,068,0D4,1,042,2,04A,

1,046,2,8,(13,-20),14,09A,0
*00141,51,c157
2,14,3,2,14,8,(-17,-42),14,4,2,14,5,8,(3,21),1,8,(0,-21),2,
8,(-1,11),1,8,(7,8),2,8,(-6,-19),1,0C0,2,8,(3,0),14,6,14,3,2,
14,8,(17,-18),14,4,2,0
*00142,33,c136
2,14,8,(-4,-21),14,5,8,(5,21),1,8,(0,-21),2,8,(-1,10),1,8,(4,6),
2,8,(3,-16),14,6,14,8,(4,-9),0
*00143,52,c227
2,14,8,(-11,-21),14,5,8,(4,21),8,(5,3),1,8,(4,3),2,8,(-9,-6),1,
8,(0,-21),2,8,(0,21),1,8,(14,-21),2,8,(0,21),1,8,(0,-21),2,
8,(4,0),14,6,14,8,(11,-9),0
*00144,57,c228
2,14,3,2,14,8,(-19,-28),14,4,2,14,5,8,(4,14),8,(4,2),1,8,(3,2),2,
8,(-7,-4),1,0EC,2,0A4,1,032,021,030,02F,8,(1,-3),0AC,2,8,(4,0),
14,6,14,3,2,14,8,(19,-18),14,4,2,0
*00147,38,c213
2,14,8,(-11,-27),8,(4,21),1,0FC,06C,2,0F4,064,1,8,(14,-21),0F4,
064,2,078,024,1,042,2,04A,1,046,2,8,(15,-27),14,8,(-11,-9),0
*00148,37,c229
2,14,8,(-10,-20),040,0E4,1,0EC,2,0A4,1,032,021,030,02F,8,(1,-3),
0AC,2,8,(-5,16),1,042,2,04A,1,046,2,8,(13,-20),14,09A,0
*00150,58,c138
2,14,8,(-11,-21),14,5,8,(9,21),1,029,02A,02B,8,(-1,-3),05C,
8,(1,-3),02D,02E,02F,040,021,022,023,8,(1,3),054,8,(-1,3),025,
026,027,048,2,034,1,044,2,040,1,04C,2,8,(9,-24),14,6,
14,8,(11,-9),0
*00151,68,c139
2,14,3,2,14,8,(-19,-28),14,4,2,14,5,8,(8,14),1,029,02A,8,(-1,-3),
02C,8,(1,-3),02E,02F,030,021,022,8,(1,3),024,8,(-1,3),026,027,
038,2,8,(4,4),1,044,2,058,1,04C,2,8,(12,-18),14,6,14,3,2,
14,8,(19,-18),14,4,2,0
*00158,53,c252
2,14,8,(-11,-27),8,(4,21),1,0FC,06C,2,0F4,064,1,090,8,(3,-1),01E,

02D,02C,02B,01A,8,(-3,-1),098,2,070,1,8,(7,-11),2,8,(-7,23),1,
042,2,04A,1,046,2,8,(14,-27),14,8,(-10,-9),0
*00159,35,c253
2,14,8,(-7,-20),040,0E4,1,0EC,2,084,1,8,(1,3),022,021,030,2,058,
024,1,042,2,04A,1,046,2,0FD,05D,14,8,(-6,-9),0
*0015A,62,c151
2,14,8,(-10,-21),14,5,8,(17,18),8,(-9,6),1,8,(4,3),2,8,(5,-9),1,
026,8,(-3,1),048,8,(-3,-1),02A,02C,02D,01E,02F,8,(6,-2),02F,01E,
02D,03C,02A,8,(-3,-1),048,8,(-3,1),026,2,8,(17,-3),14,6,
14,8,(10,-9),0
*0015B,71,c152
2,14,3,2,14,8,(-17,-28),14,4,2,14,5,8,(14,11),8,(-7,5),1,8,(3,2),
2,8,(4,-7),1,025,8,(-3,1),038,8,(-3,-1),02B,02D,02F,8,(5,-1),02F,
02D,01C,02B,8,(-3,-1),038,8,(-3,1),025,2,8,(14,-3),14,6,14,3,2,
14,8,(17,-18),14,4,2,0
*00160,57,c230
2,14,8,(-10,-27),8,(17,18),1,026,8,(-3,1),048,8,(-3,-1),02A,02C,
02D,01E,02F,8,(6,-2),02F,01E,02D,03C,02A,8,(-3,-1),048,8,(-3,1),
026,2,8,(7,20),1,042,2,04A,1,046,2,8,(14,-27),14,8,(-10,-9),0
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*00161,52,c231
2,14,8,(-9,-20),0E0,0B4,1,025,8,(-3,1),038,8,(-3,-1),02B,02D,02F,

8,(5,-1),02F,02D,01C,02B,8,(-3,-1),038,8,(-3,1),025,2,060,0D4,1,
042,2,04A,1,046,2,8,(12,-20),14,8,(-8,-9),0
*00164,35,c155
2,14,8,(-8,-27),8,(8,21),1,0FC,06C,2,8,(-7,21),1,0E0,2,078,024,1,
042,2,04A,1,046,2,8,(12,-27),14,8,(-8,-9),0
*00165,36,c156
2,14,8,(-6,-21),8,(5,21),1,0FC,02C,8,(1,-3),02F,020,2,088,0E4,1,
070,2,074,1,8,(-3,-4),2,8,(6,-17),14,8,(-6,-9),0
*0016E,45,c222
2,14,8,(-11,-27),8,(4,21),1,0FC,8,(1,-3),02E,8,(3,-1),020,
8,(3,1),022,8,(1,3),0F4,2,078,024,1,021,024,027,029,02C,02F,2,
8,(11,-23),14,8,(-11,-9),0
*0016F,38,c133
2,14,8,(-10,-20),040,0E4,1,0AC,8,(1,-3),02F,030,021,032,2,0A4,1,
0EC,2,8,(-5,16),1,021,024,027,029,02C,02F,2,8,(9,-16),14,09A,0
*00170,52,c235
2,14,8,(-11,-21),14,5,8,(4,21),1,0FC,8,(1,-3),02E,8,(3,-1),020,
8,(3,1),022,8,(1,3),0F4,2,058,034,1,044,2,048,1,04C,2,8,(9,-2),2,
8,(4,-22),14,6,14,8,(11,-9),0
*00171,60,c251
2,14,3,2,14,8,(-19,-28),14,4,2,14,5,8,(4,14),1,0AC,8,(1,-3),02F,
030,021,032,2,0A4,1,0EC,2,8,(-8,18),1,044,2,050,1,04C,2,
8,(3,-18),2,8,(4,0),14,6,14,3,2,14,8,(19,-20),14,4,2,0
*00179,45,c141
2,14,8,(-10,-21),14,5,8,(17,21),1,8,(-14,-21),2,8,(5,24),1,
8,(4,3),2,8,(-9,-6),1,0E0,2,8,(-14,-21),1,0E0,2,8,(3,0),14,6,
14,8,(10,-9),0
*0017A,58,c171
2,14,3,2,14,8,(-17,-28),14,4,2,14,5,8,(14,14),8,(-7,2),1,8,(3,2),
2,8,(4,-4),1,8,(-11,-14),2,0E4,1,0B0,2,8,(-11,-14),1,0B0,2,
8,(3,0),14,6,14,3,2,14,8,(17,-18),14,4,2,0
*0017B,45,c189
2,14,8,(-10,-21),14,5,8,(17,21),5,3,2,8,(-13,6),1,10,(2,96),4,2,
6,1,8,(-14,-21),0E0,2,8,(-14,21),1,0E0,2,8,(3,-21),14,6,
14,8,(10,-9),0
*0017C,59,c190
2,14,3,2,14,8,(-17,-28),14,4,2,14,5,8,(14,14),5,3,2,8,(-11,5),1,
10,(1,96),4,2,6,8,(-11,-14),2,0E4,1,0B0,2,8,(-11,-14),1,0B0,2,
8,(3,0),14,6,14,3,2,14,8,(17,-18),14,4,2,0
*0017D,42,c166
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2,14,8,(-10,-27),8,(17,21),1,8,(-14,-21),2,0F4,064,1,0E0,2,
8,(-14,-21),1,0E0,2,8,(-7,23),1,042,2,04A,1,046,2,8,(14,-27),
14,8,(-10,-9),0
*0017E,38,c167
2,14,8,(-9,-20),0E2,1,8,(-11,-14),2,0E4,1,0B0,2,0B8,0EC,1,0B0,2,
8,(-5,16),1,042,2,04A,1,046,2,8,(12,-20),14,8,(-8,-9),0
*00410,38,_
2,14,8,(-9,-21),2,8,(4,7),1,9,(10,0),(0,0),2,8,(-13,-7),1,9,
(8,21),(8,-21),(0,0),2,8,(1,0),1,2,14,8,(-9,-9),0
*00411,46,_
2,14,8,(-10,-21),2,8,(15,21),1,9,(-11,0),(0,-21),(9,0),(3,1),
(1,1),(1,2),(0,3),(-1,2),(-1,1),(-3,1),(-9,0),(0,0),2,8,(17,-11),
1,2,14,8,(-11,-9),0
*00412,68,,
2,14,8,(-11,-21),2,8,(13,21),1,9,(-9,0),(0,-21),(9,0),(3,1),
(1,1),(1,2),(0,3),(-1,2),(-1,1),(-3,1),(-9,0),(0,0),2,8,(9,10),1,

9,(3,-1),(1,-1),(1,-2),(0,-2),(-1,-2),(-1,-1),(-3,-1),(0,0),2,
8,(9,-11),1,2,14,8,(-11,-9),0
*00413,28,ƒ
2,14,8,(-8,-21),2,8,(16,21),1,9,(-12,0),(0,-21),(0,0),2,8,(13,0),
1,2,14,8,(-9,-9),0
*00414,50,„
2,14,8,(-12,-21),2,8,(22,-4),1,9,(0,4),(-20,0),(0,-4),(0,0),2,
8,(2,4),1,9,(3,3),(1,2),(1,4),(0,12),(11,0),(0,-21),(0,0),2,
8,(4,0),1,2,14,8,(-12,-13),0
*00415,40,…
2,14,8,(-9,-21),2,8,(17,21),1,9,(-13,0),(0,-21),(13,0),(0,0),2,
8,(-1,11),1,9,(-12,0),(0,0),2,8,(15,-11),1,2,14,8,(-10,-9),0
*00416,66,†
2,14,8,(-12,-21),2,8,(1,0),1,9,(9,12),(0,0),2,8,(2,9),1,9,
(0,-21),(0,0),2,8,(11,21),1,9,(-11,-11),(0,0),2,8,(-11,11),1,9,
(11,-11),(0,0),2,8,(11,-10),1,9,(-9,12),(0,0),2,8,(10,-12),1,2,
14,8,(-12,-9),0
*00417,68,‡
2,14,8,(-9,-21),2,8,(3,20),1,9,(4,1),(3,0),(3,-1),(1,-2),(0,-2),
(-1,-2),(-3,-2),(3,-1),(2,-2),(1,-2),(0,-2),(-1,-2),(-2,-2),
(-3,-1),(-3,0),(-3,1),(-3,2),(0,0),2,8,(9,9),1,9,(-4,0),(0,0),2,
8,(12,-12),1,2,14,8,(-9,-9),0
*00418,30,ˆ
2,14,8,(-11,-21),2,8,(4,21),1,9,(0,-21),(14,21),(0,-21),(0,0),2,
8,(4,0),1,2,14,8,(-11,-9),0
*00419,48,‰
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2,14,8,(-11,-21),2,8,(4,21),1,9,(0,-21),(14,21),(0,-21),(0,0),2,
8,(-11,26),1,9,(1,-1),(2,-1),(2,0),(2,1),(1,1),(0,0),2,8,(7,-26),
1,2,14,8,(-11,-9),0
*0041A,46,Š
2,14,8,(-10,-21),2,8,(18,0),1,9,(-9,12),(0,0),2,8,(9,9),1,9,
(-14,-14),(0,0),2,8,(0,14),1,9,(0,-21),(0,0),2,8,(16,0),1,2,
14,8,(-10,-9),0
*0041B,36,‹
2,14,8,(-10,-21),2,8,(16,0),1,9,(0,21),(-11,0),(0,-17),(-1,-2),
(-1,-1),(-2,-1),(0,0),2,8,(19,0),1,2,14,8,(-10,-9),0
*0041C,32,Œ
2,14,8,(-12,-21),2,8,(20,0),1,9,(0,21),(-8,-15),(-8,15),(0,-21),
(0,0),2,8,(20,0),1,2,14,8,(-12,-9),0
*0041D,46,_
2,14,8,(-11,-21),2,8,(4,21),1,9,(0,-21),(0,0),2,8,(0,11),1,9,
(14,0),(0,0),2,8,(0,-11),1,9,(0,21),(0,0),2,8,(4,-21),1,2,
14,8,(-11,-9),0
*0041E,64,_
2,14,8,(-11,-21),2,8,(9,21),1,9,(4,0),(2,-1),(2,-2),(1,-2),
(1,-3),(0,-5),(-1,-3),(-1,-2),(-2,-2),(-2,-1),(-4,0),(-2,1),
(-2,2),(-1,2),(-1,3),(0,5),(1,3),(1,2),(2,2),(2,1),(0,0),2,
8,(13,-21),1,2,14,8,(-11,-9),0
*0041F,30,_
2,14,8,(-11,-21),2,8,(4,0),1,9,(0,21),(14,0),(0,-21),(0,0),2,
8,(4,0),1,2,14,8,(-11,-9),0
*00420,44,_
2,14,8,(-10,-21),2,8,(4,0),1,9,(0,21),(9,0),(3,-1),(1,-1),(1,-2),
(0,-3),(-1,-2),(-1,-1),(-3,-1),(-9,0),(0,0),2,8,(16,-10),1,2,
14,8,(-10,-9),0
*00421,62,'
2,14,8,(-10,-21),2,8,(18,16),1,9,(-1,2),(-1,1),(-1,1),(-2,1),
(-4,0),(-2,-1),(-1,-1),(-1,-1),(-1,-2),(-1,-3),(0,-5),(1,-3),
(1,-2),(2,-2),(2,-1),(4,0),(2,1),(2,2),(1,2),(0,0),2,8,(2,-5),1,
2,14,8,(-10,-9),0
*00422,36,'
2,14,8,(-8,-21),2,8,(8,21),1,9,(0,-21),(0,0),2,8,(-7,21),1,9,
(14,0),(0,0),2,8,(1,-21),1,2,14,8,(-8,-9),0
*00423,44,“
2,14,8,(-8,-21),2,8,(15,21),1,9,(-7,-17),(-1,-2),(-1,-1),(-2,-1),
(-1,0),(0,0),2,8,(-2,21),1,9,(7,-17),(0,0),2,8,(8,-4),1,2,
14,8,(-8,-9),0
*00424,74,”
2,14,8,(-13,-21),2,8,(11,19),1,9,(4,0),(3,-1),(2,-1),(2,-2),
(1,-2),(0,-4),(-1,-2),(-2,-2),(-2,-1),(-3,-1),(-4,0),(-3,1),
(-2,1),(-2,2),(-1,2),(0,4),(1,2),(2,2),(2,1),(3,1),(0,0),2,
8,(2,2),1,9,(0,-21),(0,0),2,8,(13,0),1,2,14,8,(-13,-9),0
*00425,36,•
2,14,8,(-8,-21),2,8,(15,21),1,9,(-14,-21),(0,0),2,8,(0,21),1,9,
(14,-21),(0,0),2,8,(1,0),1,2,14,8,(-8,-9),0
*00426,40,-
2,14,8,(-11,-21),2,8,(4,21),1,9,(0,-21),(16,0),(0,-4),(0,0),2,
8,(-2,25),1,9,(0,-21),(0,0),2,8,(4,0),1,2,14,8,(-11,-13),0
*00427,44,—
2,14,8,(-10,-21),2,8,(3,21),1,9,(0,-8),(1,-3),(1,-1),(3,-1),
(9,0),(0,0),2,8,(0,13),1,9,(0,-21),(0,0),2,8,(4,0),1,2,
14,8,(-11,-9),0
*00428,40,˜
2,14,8,(-14,-21),2,8,(4,21),1,9,(0,-21),(21,0),(0,21),(0,0),2,
8,(-10,0),1,9,(0,-21),(0,0),2,8,(14,0),1,2,14,8,(-15,-9),0
*00429,50,™
2,14,8,(-14,-21),2,8,(4,21),1,9,(0,-21),(23,0),(0,-4),(0,0),2,
8,(-12,25),1,9,(0,-21),(0,0),2,8,(10,21),1,9,(0,-21),(0,0),2,
8,(4,0),1,2,14,8,(-15,-13),0
*0042A,48,š
2,14,8,(-10,-21),2,8,(1,21),1,9,(4,0),(0,-21),(8,0),(2,0),(2,1),
(1,1),(1,2),(0,4),(-1,2),(-1,1),(-2,1),(-10,0),(0,0),2,
8,(16,-12),1,2,14,8,(-11,-9),0
*0042B,54,›
2,14,8,(-12,-21),2,8,(4,21),1,9,(0,-21),(9,0),(2,1),(1,1),(1,2),
(0,4),(-1,2),(-1,1),(-2,1),(-9,0),(0,0),2,8,(16,9),1,9,(0,-21),
(0,0),2,8,(4,0),1,2,14,8,(-12,-9),0
*0042C,44,œ
2,14,8,(-10,-21),2,8,(4,21),1,9,(0,-21),(10,0),(2,1),(1,1),(1,2),
(0,4),(-1,2),(-1,1),(-2,1),(-10,0),(0,0),2,8,(16,-12),1,2,
14,8,(-10,-9),0
*0042D,64,_
2,14,8,(-9,-21),2,8,(6,11),1,9,(10,0),(0,0),2,8,(-14,7),1,9,
(2,2),(2,1),(4,0),(2,-1),(2,-2),(1,-2),(1,-3),(0,-5),(-1,-3),
(-1,-2),(-2,-2),(-2,-1),(-4,0),(-2,1),(-2,2),(0,0),2,8,(17,-3),1,
2,14,8,(-10,-9),0
*0042E,76,_
2,14,8,(-13,-21),2,8,(14,21),1,9,(4,0),(2,-1),(2,-3),(1,-4),
(0,-5),(-1,-4),(-2,-3),(-2,-1),(-4,0),(-2,1),(-2,3),(-1,4),(0,5),
(1,4),(2,3),(2,1),(0,0),2,8,(-5,-10),1,9,(-5,0),(0,0),2,8,(0,10),
1,9,(0,-21),(0,0),2,8,(22,0),1,2,14,8,(-13,-9),0
*0042F,54,Ÿ
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2,14,8,(-10,-21),2,8,(2,0),1,9,(7,11),(0,0),2,8,(7,-11),1,9,
(0,21),(-9,0),(-3,-1),(-1,-1),(-1,-2),(0,-2),(1,-2),(1,-1),
(3,-1),(9,0),(0,0),2,8,(4,-11),1,2,14,8,(-10,-9),0
*00430,62,
2,14,8,(-9,-14),2,8,(15,3),1,9,(-2,-2),(-2,-1),(-3,0),(-2,1),
(-1,1),(-1,1),(-1,3),(0,2),(1,3),(2,2),(2,1),(3,0),(2,-1),(2,-2),
(0,0),2,8,(0,3),1,9,(0,-14),(0,0),2,8,(4,0),1,2,14,8,(-10,-9),0
*00431,64,
2,14,8,(-9,-21),2,8,(14,21),1,9,(-2,-1),(-5,-1),(-2,-1),(-1,-2),
(0,-12),(1,-2),(1,-1),(2,-1),(3,0),(2,1),(2,2),(1,3),(0,2),
(-1,3),(-1,1),(-1,1),(-2,1),(-3,0),(-2,-1),(-2,-2),(0,0),2,
8,(15,-11),1,2,14,8,(-10,-9),0
*00432,68,
2,14,8,(-9,-21),2,8,(4,11),1,9,(2,2),(2,1),(3,2),(1,2),(-1,2),
(-1,1),(-3,0),(-2,-1),(-1,-1),(0,-15),(1,-2),(1,-1),(2,-1),(3,0),
(2,1),(2,2),(1,3),(0,2),(-1,3),(-2,2),(-2,1),(-3,0),(0,0),2,
8,(11,-14),1,2,14,8,(-10,-9),0
*00433,56,
2,14,8,(-8,-14),2,8,(3,11),1,9,(1,2),(3,1),(3,0),(3,-1),(1,-2),
(-1,-2),(-2,-1),(-5,-1),(-2,-1),(-1,-2),(0,-1),(1,-2),(3,-1),
(3,0),(3,1),(1,2),(0,0),2,8,(3,-3),1,2,14,8,(-9,-9),0
*00434,72,
2,14,8,(-9,-14),2,8,(15,11),1,9,(-1,1),(-1,1),(-2,1),(-3,0),
(-2,-1),(-2,-2),(-1,-3),(0,-2),(1,-3),(2,-2),(2,-1),(3,0),(2,1),
(2,2),(0,0),2,8,(0,11),1,9,(0,-16),(-1,-3),(-1,-1),(-2,-1),
(-3,0),(-2,1),(0,0),2,8,(13,6),1,2,14,8,(-10,-16),0
*00435,56,
2,14,8,(-9,-14),2,8,(3,8),1,9,(12,0),(0,2),(-1,2),(-1,1),(-2,1),
(-3,0),(-2,-1),(-2,-2),(-1,-3),(0,-2),(1,-3),(2,-2),(2,-1),(3,0),
(2,1),(2,2),(0,0),2,8,(3,-3),1,2,14,8,(-9,-9),0
*00436,58,
2,14,8,(-11,-14),2,8,(1,0),1,9,(7,8),(0,0),2,8,(12,6),1,9,
(-9,-9),(-9,9),(0,0),2,8,(9,0),1,9,(0,-14),(0,0),2,8,(3,8),1,9,
(7,-8),(0,0),2,8,(1,0),1,2,14,8,(-11,-9),0
*00437,62,
2,14,8,(-7,-14),2,8,(8,8),1,9,(2,-1),(1,-1),(1,-2),(-1,-2),
(-1,-1),(-2,-1),(-4,0),(-3,1),(0,0),2,8,(0,12),1,9,(3,1),(3,0),
(3,-1),(1,-2),(-1,-2),(-2,-1),(-3,0),(0,0),2,8,(9,-8),1,2,
14,8,(-7,-9),0
*00438,46,
2,14,8,(-9,-14),2,8,(4,14),1,9,(0,-10),(1,-3),(2,-1),(3,0),(2,1),
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14,8,(-10,-9),0
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*00439,64,
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(2,-1),(2,0),(2,1),(1,1),(0,0),2,8,(5,-18),1,2,14,8,(-10,-9),0
*0043A,46,
2,14,8,(-8,-14),2,8,(4,14),1,9,(0,-14),(0,0),2,8,(4,8),1,9,
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14,8,(-8,-9),0
*0043B,44,
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(-2,0),(0,0),2,8,(11,14),1,9,(0,-14),(0,0),2,8,(4,0),1,2,
14,8,(-9,-9),0
*0043C,32,
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*0043D,46,-
2,14,8,(-9,-14),2,8,(4,7),1,9,(11,0),(0,0),2,8,(0,7),1,9,(0,-14),
(0,0),2,8,(-11,14),1,9,(0,-14),(0,0),2,8,(15,0),1,2,
14,8,(-10,-9),0
*0043E,56,
2,14,8,(-9,-14),2,8,(8,14),1,9,(3,0),(2,-1),(2,-2),(1,-3),(0,-2),
(-1,-3),(-2,-2),(-2,-1),(-3,0),(-2,1),(-2,2),(-1,3),(0,2),(1,3),
(2,2),(2,1),(0,0),2,8,(11,-14),1,2,14,8,(-10,-9),0
*0043F,46,
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14,8,(-10,-9),0
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*00441,50,
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14,8,(-14,-9),0
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14,8,(-7,-16),0
*00444,66,
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*00445,36,
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1,2,14,8,(-14,-9),0
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(-2,1),(-1,3),(0,10),(0,0),2,8,(10,0),1,9,(0,-14),(2,0),(0,-3),
(0,0),2,8,(2,3),1,2,14,8,(-14,-12),0
*0044A,64,
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(1,-1),(1,-2),(0,-2),(-1,-2),(-1,-1),(-2,-1),(-4,0),(-2,1),
(-1,1),(0,0),2,8,(-3,12),1,9,(3,0),(0,-14),(0,0),2,8,(14,0),1,2,
14,8,(-9,-9),0
*0044B,72,
2,14,8,(-10,-14),2,8,(4,8),1,9,(1,1),(2,1),(3,0),(1,0),(2,-1),
(1,-1),(1,-2),(0,-2),(-1,-2),(-1,-1),(-2,-1),(-4,0),(-2,1),
(-1,1),(0,0),2,8,(0,12),1,9,(0,-14),(0,0),2,8,(13,14),1,9,
(0,-14),(0,0),2,8,(4,0),1,2,14,8,(-11,-9),0
*0044C,62,
2,14,8,(-9,-14),2,8,(4,8),1,9,(1,1),(2,1),(3,0),(1,0),(2,-1),
(1,-1),(1,-2),(0,-2),(-1,-2),(-1,-1),(-2,-1),(-4,0),(-2,1),
(-1,1),(0,0),2,8,(0,12),1,9,(0,-14),(0,0),2,8,(14,0),1,2,
14,8,(-9,-9),0
*0044D,60,
2,14,8,(-8,-14),2,8,(2,11),1,9,(2,2),(2,1),(3,0),(2,-1),(2,-2),
(1,-3),(0,-2),(-1,-3),(-2,-2),(-2,-1),(-3,0),(-2,1),(-2,2),(0,0),
2,8,(12,4),1,9,(-6,0),(0,0),2,8,(9,-7),1,2,14,8,(-9,-9),0
*0044E,70,
2,14,8,(-12,-14),2,8,(4,14),1,9,(0,-14),(0,0),2,8,(0,7),1,9,
(5,0),(0,1),(1,3),(2,2),(2,1),(2,0),(2,-1),(2,-2),(1,-3),(0,-2),
(-1,-3),(-2,-2),(-2,-1),(-2,0),(-2,1),(-2,2),(-1,3),(0,1),(0,0),
2,8,(15,-7),1,2,14,8,(-12,-9),0
*0044F,54,
2,14,8,(-8,-14),2,8,(3,0),1,9,(4,5),(0,0),2,8,(6,-5),1,9,(0,14),
(-6,0),(-2,-1),(-1,-1),(-1,-2),(0,-1),(1,-2),(1,-1),(2,-1),(6,0),
(0,0),2,8,(4,-5),1,2,14,8,(-9,-9),0
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7,0020AC,0
*020A7,49,kpes
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029,058,2,8,(12,13),1,8,(0,-18),02D,02F,010,2,8,(-6,14),1,060,2,
8,(3,-14),14,6,14,8,(11,-9),0
*020AC,45,keuro
2,14,8,(-10,-21),8,(2,10),5,1,014,00A,(9,-
043),2,6,5,1,01C,00A,(9,043),
2,6,8,(-1,2),5,1,8,(13,0),2,6,04C,1,0B0,2,08C,080,14,8,(-10,-9),0

*02126,53,komega
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8,(1,3),023,022,021,040,02F,02E,02D,8,(1,-3),04C,8,(-1,-3),02B,
03A,01C,040,012,2,8,(3,-1),14,6,14,8,(11,-9),0
*02205,64,kdiam
2,14,3,2,14,8,(-19,-40),14,4,2,14,5,8,(8,17),1,029,02A,8,(-1,-3),
02C,8,(1,-3),02E,02F,030,021,022,8,(1,3),024,8,(-1,3),026,027,
038,2,061,1,8,(-9,-20),2,8,(14,0),14,6,14,3,2,14,8,(19,-18),14,4,

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*0221E,45,kinfin
2,14,8,(-11,-14),14,5,8,(11,11),1,025,027,028,029,02B,01C,02D,
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2,8,(11,-10),14,6,14,8,(11,-9),0
*02264,36,kleq
2,14,8,(-13,-21),14,5,8,(22,21),1,8,(-18,-9),8,(18,-9),2,
8,(-18,-2),1,8,(18,0),2,8,(4,-1),14,6,14,8,(13,-9),0
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14,8,(10,-9),0
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Quick Reference

Commands

LOAD

Makes shapes available for use by the SHAPE command.

SHAPE

Inserts a shape from a shape file that has been loaded using LOAD.

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6,2,2,0,0,0
*0000A,7,lf
2,0AC,14,8,(9,10),0
*00020,7,spc
2,060,14,8,(-6,-8),0
*00021,17,kexc
2,14,06C,1,014,2,014,1,044,2,020,06C,14,8,(-2,-3),0
*00022,20,kdblqt
2,14,8,(-1,-6),044,1,023,2,010,1,02B,2,04C,030,14,8,(-3,1),0
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06D,14,8,(-4,-3),0
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018,014,010,01C,2,020,14,8,(-4,-3),0
*00026,24,kand
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*00027,28,kapos
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*0002E,12,kper
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*00031,18,n1
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*00032,23,n2
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*00034,19,n4
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*00038,32,n8
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2,020,1,01E,01C,01A,028,2,050,14,8,(-4,-3),0
*00039,24,n9
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*0003A,17,kcol
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*0003B,34,ksmc
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020,14,3,2,14,8,(-5,-8),14,4,2,0
*0003C,29,klt
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*0003D,18,keq
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*0003F,36,kqm
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2,14,8,(-2,-6),1,064,2,040,1,03A,018,2,010,1,03E,2,020,
14,8,(-4,-3),0
*0004C,16,ucl
2,14,8,(-2,-6),064,1,06C,040,2,020,14,8,(-4,-3),0
*0004D,17,ucm
2,14,8,(-2,-6),1,064,04D,043,06C,2,020,14,8,(-4,-3),0
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2,14,8,(-2,-6),1,064,8,(4,-6),064,2,06C,020,14,8,(-4,-3),0
*0004F,17,uco
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*00050,19,ucp
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*00051,25,ucq
2,14,8,(-2,-6),022,1,01E,01A,018,016,044,012,020,01E,03C,01A,01E,
2,020,14,8,(-4,-3),0
*00052,23,ucr
2,14,8,(-2,-6),1,064,030,01E,01C,01A,038,2,010,1,03E,2,020,
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*00056,15,ucv
2,14,06B,064,1,06D,063,2,020,06C,14,8,(-5,-3),0
*00057,24,ucw
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*00059,25,ucy
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2,14,8,(-1,-6),1,064,020,2,06C,1,028,2,040,14,03A,0
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*0005E,16,kcaret
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*0005F,11,kundrl
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060,14,8,(-4,-3),0
*00063,17,lcc
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2,14,04B,1,030,012,016,028,016,012,030,2,04D,14,8,(-4,-3),0
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*00075,20,lcu
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*0007C,13,kvbar
2,14,06C,1,064,2,06C,020,14,8,(-2,-3),0
*0007D,18,krbr
2,14,8,(-1,-6),1,012,014,012,016,014,016,2,06C,040,14,03A,0
*0007E,15,ktlde
2,14,04B,034,1,012,02F,012,2,04D,14,8,(-4,-2),0
*00080,4,keuroRef
7,020AC,0
*000A0,7,NoBrkSpc
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*000A1,18,kiexc
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2,021,1,016,018,01A,01E,010,01E,01A,2,8,(3,-2),14,3,2,
14,8,(-7,-6),14,4,2,0
*000AA,36,lcau
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2,14,8,(-2,-5),021,1,026,022,2,020,1,02A,02E,2,02F,14,8,(-4,-2),0

*000B0,19,kdeg
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*000B1,23,kpls-min
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*000B5,24,kmicro
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*000BA,35,lcou
2,14,8,(-1,-6),3,2,2,8,3,12,1,028,01A,02C,01E,020,012,024,016,2,
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2,14,8,(-2,-5),014,1,022,026,2,020,1,02E,02A,2,040,01C,
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14,8,(-9,-6),4,2,0
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2,14,8,(-2,-6),1,024,022,02E,02C,2,8,(-4,1),1,040,2,8,(-2,4),1,
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2,14,8,(-2,-6),1,024,022,02E,02C,2,8,(-4,1),1,040,2,8,(-2,4),1,
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2,14,8,(-2,-6),1,024,022,02E,02C,2,8,(-4,1),1,040,2,8,(-4,3),1,
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*000C3,33,uc^
2,14,8,(-2,-6),1,024,022,02E,02C,2,8,(-4,1),1,040,2,8,(-4,4),1,
012,02F,012,2,8,(2,-6),14,8,(-4,-3),0
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2,14,8,(-2,-6),1,024,043,2,029,1,014,2,040,1,01C,2,027,1,04D,02C,
2,047,1,040,2,02E,14,8,(-4,-3),0
*000C5,25,uc^
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2,14,8,(-2,-6),1,044,040,2,025,1,029,2,01C,030,1,04C,048,2,060,
14,8,(-4,-3),0
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*000D8,29,ucd”
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*000D9,24,uc^
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14,8,(-4,-3),0
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2,14,8,(-2,-6),020,1,018,016,024,012,010,01E,02C,01A,2,012,1,01E,
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*000EA,27,lcˆ
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01A,2,05E,14,8,(-4,-3),0
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*000EE,19,lcŒ
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*000EF,22,lc‹
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14,03A,0
*000F0,30,lc
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2,14,8,(-2,-6),1,044,2,014,1,012,02F,012,2,04A,1,022,010,01E,03C,

2,020,14,8,(-4,-3),0
*000F2,27,lc•
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14,8,(-4,-2),0
*000F8,24,lcd”
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14,8,(-4,-3),0
*000F9,27,lc—
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2,020,14,8,(-4,-3),0
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020,14,8,(-4,-3),0
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060,14,8,(-4,-3),0
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*00106,28,c143
2,14,8,(-2,-6),040,014,1,01A,028,016,044,012,020,01E,2,038,024,1,
021,2,08C,030,14,8,(-4,-3),0
*00107,30,c134
```

```
2,14,04B,042,1,038,01A,02C,01E,030,2,3,2,8,(-5,10),1,021,2,029,
8,(9,-10),4,2,14,8,(-4,-3),0
*0010C,31,c172
2,14,8,(-2,-8),040,014,1,01A,028,016,044,012,020,01E,2,026,1,012,
2,01A,1,016,2,050,08C,14,8,(-4,-3),0
*0010D,29,c159
2,14,8,(-2,-6),042,1,038,01A,02C,01E,030,2,028,054,1,012,2,01A,1,
016,2,050,06C,14,8,(-4,-3),0
*0010E,32,c210
2,14,8,(-2,-8),1,030,012,044,016,038,2,010,1,06C,2,010,074,1,012,
2,01A,1,016,2,050,08C,14,8,(-4,-3),0
*0010F,31,c212
2,14,8,(-2,-6),041,1,02A,018,016,024,012,010,02E,2,044,1,06C,2,
020,064,1,01A,2,010,05C,14,8,(-4,-3),0
*00118,28,c168
2,14,8,(-2,-6),1,064,040,2,048,03C,1,020,2,028,03C,1,040,1,01A,
01E,2,022,14,8,(-4,-3),0
*00119,27,c169
2,14,04B,024,1,030,012,016,028,01A,02C,01E,020,3,2,01A,01E,4,2,2,
014,030,14,8,(-4,-3),0
*0011A,35,c183
2,14,8,(-2,-8),1,064,040,2,048,03C,1,020,2,028,03C,1,040,2,028,
074,1,012,2,01A,1,016,2,050,08C,14,8,(-4,-3),0
*0011B,32,c216
2,14,8,(-2,-6),024,1,030,012,016,028,01A,02C,01E,020,2,018,054,1,
012,2,01A,1,016,2,050,06C,14,8,(-4,-3),0
*00141,29,c157
2,14,8,(-2,-6),064,1,06C,040,2,048,034,1,3,2,8,(4,5),2,8,(8,-11),
4,2,14,8,(-4,-3),0
*00142,47,c136
2,14,3,2,14,8,(-1,-12),14,4,2,064,3,2,010,4,2,1,05C,01E,2,3,2,
8,(-3,5),1,8,(3,4),2,8,(4,-9),4,2,14,3,2,14,8,(-5,-6),14,4,2,0
*00143,24,c227
2,14,8,(-2,-6),1,064,8,(4,-6),064,2,038,014,1,021,2,08C,030,
14,8,(-4,-3),0
*00144,42,c228
2,14,3,2,14,8,(-3,-8),14,4,2,1,044,2,01C,1,012,010,01E,03C,2,
8,(-2,5),1,011,2,019,8,(4,-5),14,3,2,14,8,(-7,-6),14,4,2,0
*00147,27,c213
2,14,8,(-2,-8),1,064,8,(4,-6),064,2,027,1,012,2,01A,1,016,2,050,
08C,14,8,(-4,-3),0
*00148,29,c229
2,14,8,(-2,-6),1,044,2,01C,1,012,010,01E,03C,2,018,054,1,012,2,
01A,1,016,2,040,06C,14,03A,0
*00150,27,c138
2,14,8,(-2,-6),1,064,040,06C,048,2,074,010,1,03C,2,020,1,034,2,
07C,030,14,8,(-4,-3),0
*00151,29,c139
2,14,04B,030,1,028,016,024,012,020,01E,02C,01A,2,074,1,02C,2,028,
1,024,2,07C,050,14,8,(-4,-3),0
*00158,33,c252
2,14,8,(-2,-8),1,064,030,01E,01C,01A,038,2,010,1,03E,2,028,074,1,

012,2,01A,1,016,2,050,08C,14,8,(-4,-3),0
*00159,29,c253
2,14,8,(-2,-6),1,044,2,02C,1,022,010,01E,2,026,1,012,2,01A,1,016,
2,050,06C,14,8,(-4,-3),0
*0015A,27,c151
2,14,8,(-2,-6),014,1,01E,020,012,046,012,020,01E,2,024,038,1,021,
2,08C,030,14,8,(-4,-3),0
*0015B,31,c152
2,14,04B,1,030,012,016,028,016,012,030,2,3,2,8,(-5,2),1,021,2,
029,8,(9,-10),4,2,14,8,(-4,-3),0
*00160,30,c230
2,14,8,(-2,-8),014,1,01E,020,012,046,012,020,01E,2,026,1,012,2,
01A,1,016,2,050,08C,14,8,(-4,-3),0
*00161,29,c231
2,14,8,(-2,-6),1,030,012,016,028,016,012,030,2,027,1,012,2,01A,1,
016,2,050,06C,14,8,(-4,-3),0
*00164,28,c155
2,14,8,(-2,-8),064,1,040,2,028,1,06C,2,074,1,012,2,01A,1,016,2,
050,08C,14,8,(-4,-3),0
*00165,26,c156
2,14,8,(-2,-6),044,1,040,2,026,1,05C,01E,012,2,054,1,01A,2,030,
05C,14,8,(-4,-3),0
*0016E,27,c222
2,14,8,(-2,-9),064,1,05C,01E,020,012,054,2,027,1,012,016,01A,01E,
2,040,07C,14,8,(-4,-3),0
*0016F,31,c133
2,14,8,(-2,-7),044,1,03C,01E,010,022,2,024,1,04C,2,028,054,1,012,

016,01A,01E,2,040,05C,14,8,(-4,-3),0
*00170,28,c235
2,14,8,(-2,-6),064,1,05C,01E,020,012,054,2,016,1,03C,2,028,1,034,
2,07C,050,14,8,(-4,-3),0
*00171,30,uue
```

```
2,14,04B,044,1,03C,01E,010,022,2,024,1,04C,2,074,018,1,02C,2,028,
1,024,2,07C,050,14,8,(-4,-3),0
*00179,25,c141
2,14,8,(-2,-6),064,1,040,8,(-4,-6),040,2,038,074,1,021,2,08C,030,
14,8,(-4,-3),0
*0017A,28,c171
2,14,04B,044,1,040,04A,040,2,3,2,8,(-5,10),1,021,2,029,8,(9,-10),
4,2,14,8,(-4,-3),0
*0017B,32,c189
2,14,8,(-2,-6),064,1,040,8,(-4,-6),040,2,084,028,1,3,4,01A,01E,
012,016,4,4,2,040,08C,14,8,(-4,-3),0
*0017C,34,c190
2,14,04B,044,1,040,04A,040,2,3,2,8,(-4,11),3,4,1,01A,01E,012,016,
4,4,2,8,(8,-11),4,2,14,8,(-4,-3),0
*0017D,29,c166
2,14,8,(-2,-8),064,1,040,8,(-4,-6),040,2,028,074,1,012,2,01A,1,
016,2,050,08C,14,8,(-4,-3),0
*0017E,27,c167
2,14,8,(-2,-6),044,1,040,04A,040,2,028,054,1,012,2,01A,1,016,2,
050,06C,14,8,(-4,-3),0
*00410,21,ucra
2,14,8,(-2,-6),1,024,043,04D,02C,2,047,1,040,2,02E,14,8,(-4,-3),0

*00411,24,ucrb
2,14,8,(-2,-6),1,064,030,01C,014,038,03C,030,01E,01C,01A,038,2,
060,14,8,(-4,-3),0
*00412,29,ucrv
2,14,8,(-2,-6),1,030,012,014,016,028,2,020,1,012,014,016,038,2,
010,1,06C,2,050,14,8,(-4,-3),0
*00413,17,ucrg
2,14,8,(-2,-6),1,064,040,01C,2,05C,020,14,8,(-4,-3),0
*00414,23,ucrd
2,14,8,(-2,-6),01C,1,014,050,064,028,04B,02C,050,01C,2,014,020,
14,8,(-6,-3),0
*00415,25,ucre
2,14,8,(-2,-6),1,064,040,2,048,03C,1,020,2,028,03C,1,040,2,020,
14,8,(-4,-3),0
*00416,22,ucr!
2,14,8,(-2,-6),062,2,038,1,06C,2,038,064,1,06E,2,020,
14,8,(-6,-3),0
*00417,27,ucr!
2,14,8,(-2,-6),014,1,01E,020,012,014,016,018,010,012,014,016,028,
01A,2,060,05C,14,8,(-4,-3),0
```

```
*00418,20,ucri
2,14,8,(-2,-6),1,042,04C,064,2,048,1,06C,2,060,14,8,(-4,-3),0
*00419,24,ucrikr
2,14,8,(-2,-6),1,042,04C,064,2,018,1,028,2,018,1,06C,2,060,
14,8,(-4,-3),0
*0041A,23,ucrk
2,14,8,(-2,-6),1,064,2,040,1,03A,018,2,010,1,03E,2,020,
14,8,(-4,-3),0
*0041B,17,ukrl
2,14,8,(-2,-6),1,010,063,010,06C,2,020,14,8,(-5,-3),0
*0041C,17,ucrm
2,14,8,(-2,-6),1,064,04D,043,06C,2,020,14,8,(-4,-3),0
*0041D,22,ucrn
2,14,8,(-2,-6),1,064,2,03C,1,040,2,034,1,06C,2,020,14,8,(-4,-3),0

*0041E,23,ucro
2,14,8,(-2,-6),014,1,044,012,020,01E,04C,01A,028,016,2,060,01C,
14,8,(-4,-3),0
*0041F,16,ucrp
2,14,8,(-2,-6),1,064,040,06C,2,020,14,8,(-4,-3),0
*00420,19,ucrr
2,14,8,(-2,-6),1,064,030,01E,01C,01A,038,2,06F,14,8,(-4,-3),0
*00421,23,ucrs
2,14,8,(-2,-6),040,014,1,01A,028,016,044,012,020,01E,2,02E,03C,
14,8,(-4,-3),0
*00422,19,ucrt
2,14,8,(-2,-6),064,1,040,2,028,1,06C,2,040,14,8,(-4,-3),0
*00423,23,ucru
2,14,8,(-2,-6),014,1,01E,020,012,054,04C,038,016,034,2,060,06C,
14,8,(-4,-3),0
*00424,25,ucrf
2,14,8,(-2,-6),020,1,064,018,01A,02C,01E,020,012,024,016,018,2,
040,06C,14,8,(-4,-3),0
*00425,22,ucrx
2,14,8,(-2,-6),1,8,(4,6),2,048,1,8,(4,-6),2,020,14,8,(-4,-3),0
*00426,21,ucr!
2,14,8,(-2,-6),1,064,06C,040,064,06C,010,01C,2,014,020,
14,8,(-5,-3),0
*00427,19,ucrch
2,14,8,(-2,-6),064,1,03C,01E,030,044,06C,2,020,14,8,(-4,-3),0
*00428,21,ucrsh
2,14,8,(-2,-6),1,064,06C,030,044,04C,030,064,06C,2,020,
14,8,(-6,-3),0
```

```
*00429,24,ucr!
2,14,8,(-2,-6),1,064,06C,030,044,04C,030,064,06C,010,01C,014,2,
020,14,8,(-7,-3),0
*0042A,23,ucr'
2,14,8,(-2,-6),054,1,014,010,06C,030,012,014,016,038,2,060,03C,
14,8,(-5,-3),0
*0042B,24,ucrs
2,14,8,(-2,-6),1,030,012,014,016,038,03C,064,2,050,1,06C,2,020,
14,8,(-5,-3),0
*0042C,21,ucr]
2,14,8,(-2,-6),1,030,012,014,016,038,03C,064,2,060,06C,
14,8,(-4,-3),0
*0042D,25,ucr'
2,14,8,(-2,-6),014,1,01E,020,012,024,028,020,024,016,028,01A,2,
060,05C,14,8,(-4,-3),00,
*0042E,26,ucr!
2,14,8,(-2,-6),1,064,03C,010,024,012,010,01E,04C,01A,018,016,024,
2,050,03C,14,8,(-4,-3),0
*0042F,22,ucrya
2,14,8,(-2,-6),1,022,020,044,038,01A,02C,01E,030,02C,2,020,
14,8,(-4,-3),0
*00430,25,lcra
2,14,8,(-2,-6),014,1,024,012,020,01E,014,04C,014,01A,028,016,2,
060,01C,14,8,(-4,-3),0
*00431,22,lcrb
2,14,8,(-2,-6),044,030,1,038,04C,030,012,016,038,2,02C,060,
14,8,(-4,-3),0
*00432,24,lcrv
2,14,8,(-2,-6),1,044,020,10,(1,-36),028,030,10,(1,-36),038,2,060,
14,8,(-4,-3),0
*00433,16,lcrg
2,14,8,(-2,-6),1,044,030,2,04C,020,14,8,(-3,-3),0
*00434,24,lcrd
2,14,8,(-2,-6),01C,1,014,010,034,012,010,04C,028,030,01C,2,014,
020,14,8,(-4,-3),00,
*00435,20,lcre
2,14,04B,024,1,030,012,016,028,01A,02C,01E,020,2,030,
14,8,(-4,-3),0
*00436,23,lcrg
2,14,8,(-2,-6),1,042,2,048,1,04E,2,028,1,044,2,040,04C,
14,8,(-4,-3),0
*00437,25,lcrz
2,14,8,(-2,-6),034,1,012,020,01E,01A,018,010,01E,01A,028,016,2,
060,01C,14,8,(-4,-3),0
*00438,17,lcri
2,14,8,(-2,-6),044,1,04C,042,04C,2,020,14,8,(-4,-3),0
*00439,23,lcrii
2,14,8,(-2,-6),044,1,04C,042,04C,2,044,018,1,028,2,050,04C,
14,8,(-4,-3),0
*0043A,19,lcrk
2,14,8,(-2,-6),1,044,02C,020,022,02A,02E,2,020,14,8,(-4,-3),0
*0043B,16,lcrl
2,14,8,(-2,-6),1,043,020,04C,2,020,14,8,(-4,-3),0
*0043C,17,lcrm
2,14,8,(-2,-6),1,044,02E,022,04C,2,020,14,8,(-4,-3),0
*0043D,18,lcrn
2,14,8,(-2,-6),1,044,02C,040,024,04C,2,020,14,8,(-4,-3),0
*0043E,25,lcro
2,14,04B,14,8,(0,-2),014,1,024,012,020,01E,02C,01A,028,016,2,060,
01C,14,8,(-4,-3),0
*0043F,16,lcrp
2,14,8,(-2,-6),1,044,040,04C,2,020,14,8,(-4,-3),0
*00440,20,lcrr
2,14,8,(-2,-6),1,044,030,01E,01C,01A,038,2,060,01C,14,8,(-4,-3),0

*00441,23,lcrs
2,14,8,(-2,-6),040,014,1,01A,028,016,024,012,020,01E,2,020,03C,
14,8,(-4,-3),0
*00442,18,lcrt
2,14,8,(-2,-6),020,1,044,028,040,2,020,04C,14,8,(-4,-3),0
*00443,22,lcru
2,14,8,(-2,-6),014,1,01E,020,012,034,02C,028,026,2,060,04C,
14,8,(-4,-3),0
*00444,25,lcrf
2,14,8,(-2,-6),020,1,044,018,01A,01C,01E,020,012,014,016,018,2,
040,04C,14,8,(-4,-3),0
*00445,20,lcrh
2,14,04B,14,8,(0,-2),1,042,2,048,1,04E,2,020,14,8,(-4,-3),0
*00446,21,lcrc
2,14,8,(-2,-6),044,1,04C,030,044,04C,010,01C,2,014,020,
14,8,(-4,-3),0
*00447,18,lcrch
2,14,8,(-2,-6),044,1,03C,030,034,04C,2,020,14,8,(-3,-3),0
*00448,21,lcrsh
2,14,8,(-2,-6),1,044,04C,020,024,02C,020,044,2,04C,020,
14,8,(-4,-3),0
```

```
*00449,24,lcrshch
2,14,8,(-2,-6),1,044,04C,020,024,02C,020,044,04C,010,01C,2,014,
020,14,8,(-5,-3),0
*0044A,21,lcrtvznak
2,14,8,(-2,-6),044,1,010,04C,020,012,016,028,2,050,02C,
14,8,(-4,-3),0
*0044B,24,lcryyy
2,14,8,(-2,-6),1,044,02C,020,01E,01A,028,2,040,1,044,2,04C,020,
14,8,(-4,-3),0
*0044C,19,lcrmznak
2,14,8,(-2,-6),1,044,02C,020,01E,01A,028,2,050,14,8,(-3,-3),0
*0044D,25,lcreee
2,14,8,(-2,-6),014,1,01E,020,012,014,028,020,014,016,028,01A,2,
060,03C,14,8,(-4,-3),0
*0044E,26,lcryu
2,14,8,(-2,-6),1,044,02C,010,014,012,010,01E,02C,01A,018,016,014,
2,050,02C,14,8,(-4,-3),0
*0044F,22,lcrya
2,14,8,(-2,-6),1,022,018,016,012,030,02C,028,020,02C,2,020,
14,8,(-4,-3),0
*020A0,4,keuroRef2
7,0020AC,0
*020A7,32,kpes
2,14,06B,14,010,1,064,020,01E,01C,01A,028,2,8,(4,3),1,05C,01E,
012,2,025,1,028,2,03E,020,14,8,(-6,-3),0
*020AC,45,keuro
3,2,2,14,8,(-4,-
12),080,024,1,01C,01A,048,026,044,5,044,022,040,01E,01C
6,2,8,(-1,-1),5,1,050,6,2,024,1,060,2,8,(6,-7),14,8,(-8,-6),4,2,0

*02126,24,komega
2,14,8,(-2,-6),1,010,014,025,024,012,020,01E,02C,02B,01C,010,2,
020,14,8,(-4,-3),0
*02205,28,kdiam
2,14,8,(-2,-6),012,1,016,024,012,020,01E,02C,01A,028,2,01B,1,063,
2,010,03D,03C,14,8,(-4,-3),0
*0221E,18,kinfin
2,14,04B,034,1,01E,022,01E,01A,026,01A,2,06F,14,8,(-4,-1),0
*02264,20,kleq
2,14,8,(-2,-6),014,1,040,2,054,1,049,04F,2,02E,14,8,(-4,-2),0
*02302,16,ktri
2,14,04B,1,024,022,02E,02C,048,2,060,14,8,(-4,-3),0
```

Quick Reference

Commands

LOAD

Makes shapes available for use by the SHAPE command.

SHAPE

Inserts a shape from a shape file that has been loaded using LOAD.

Big Font Descriptions

Some languages, such as Japanese, use text fonts with thousands of non-ASCII characters. In order for drawings to contain such text, AutoCAD supports a special form of shape definition file called a *Big Font* file.

Define a Big Font

Special codes in the first line of a Big Font file specify how to read two-byte hexidecimal codes.

A font with hundreds or thousands of characters must be handled differently from a font containing the ASCII set of up to 256 characters. In addition to using more complicated techniques for searching the file, AutoCAD needs a way to represent characters with two-byte codes as well as one-byte codes. Both situations are addressed by the use of special codes at the beginning of a Big Font file.

The first line of a Big Font shape definition file must be as follows:

```
*BIGFONT nchars,nranges,b1,e1,b2,e2,...
```

where *nchars* is the approximate number of character definitions in this set; if it is off by more than about 10 percent, either speed or file size suffers. You can use the rest of the line to name special character codes (escape codes) that signify the start of a two-byte code. For example, on Japanese computers, Kanji characters start with hexadecimal codes in the range 90-AF or E0-FF. When the operating system sees one of these codes, it reads the next byte and combines the two bytes into a code for one Kanji character. In the `*BIGFONT` line, *nranges* tells how many contiguous ranges of numbers are used as escape codes; *b1*, *e1*, *b2*, *e2*, and so on, define the beginning and ending codes in each range. Therefore, the header for a Japanese Big Font file might look like this:

```
*BIGFONT 4000,2,090,0AF,0E0,0FF
```

After the `*BIGFONT` line, the font definition is just like a regular AutoCAD text font, except that character codes (shape numbers) can have values up to 65535.

Quick Reference

Commands

LOAD

Makes shapes available for use by the SHAPE command.

SHAPE

Inserts a shape from a shape file that has been loaded using LOAD.

Define an Extended Big Font File

To reduce the size of composite Kanji characters, you can define an extended Big Font file. Extended big fonts use the subshape code, followed immediately by a 0.

The first line of an extended Big Font file is the same as the regular Big Font file. This is the format for the remaining lines of the file:

```
*0,5,font-name
character-height, 0, modes, character-width,0
 .
 .
 .
*shape-number,defbytes,shape-name
 .
code,0,primitive#,basepoint-x,basepoint-y,width,height,
 .
 .
code,0,primitive#,basepoint-x,basepoint-y,width,height,
 .
terminator
```

The following list describes the fields of a Big Font definition file:

character height Used along with character width to indicate the number of units that define the font characters.

character width Used along with character height to indicate the number of units that define the font characters. The `character-height` and `character-width` values are used to scale the primitives of the font. In this context, primitives are the points, lines, polygons, or character strings of the font geometrically oriented in two-dimensional space. A Kanji character consists of several primitives used repeatedly in different scales and combinations.

modes The *`modes`* byte should be 0 for a horizontally oriented font and 2 for a dual-orientation (horizontal or vertical) font. The special 00E (14) command code is honored only when *`modes`* is set to 2.

shape-number Character code.

defbytes Byte size. It is always 2 bytes, consisting of a hexadecimal or a combination of decimal and hexadecimal codes.

shape-name Character name.

code Shape description special code. It is always 7 so that it can use the subshape feature.

primitive# Reference to the subshape number. It is always 2 bytes.

basepoint-x *X* origin of the primitive.

basepoint-y *Y* origin of the primitive.

width Scale of the width of the primitive.

height Scale of the height of the primitive.

terminator End-of-file indicator for the shape definition. It is always 0.

To arrive at the scale factor, AutoCAD scales down the primitive to a square unit and then multiplies it by the height and width to get the shape of the character. Character codes (shape numbers) in the Big Font shape definition file can have values up to 65535. The following table describes the fields of the extended Big Font file.

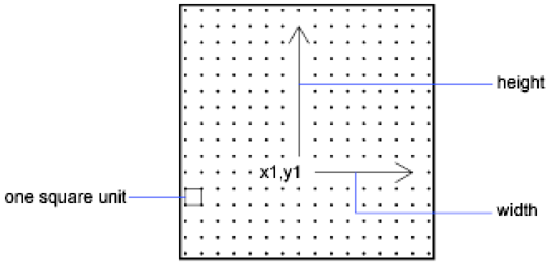
Fields of the extended Big Font file

Variable	Value	Byte size	Description
`shape-number`	xxxx	2 bytes	Character code
`code`	7,0	2 bytes	Extended font definition
`primitive#`	xxxx	2 bytes	Refer to subshape number

Fields of the extended Big Font file

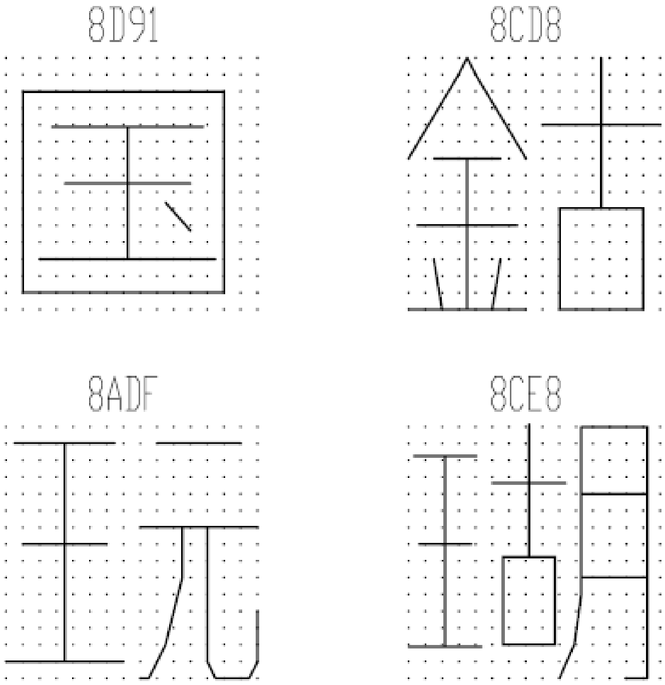
Variable	Value	Byte size	Description
basepoint-x		1 byte	Primitive *X* origin
basepoint-y		1 byte	Primitive *Y* origin
width		1 byte	Scale of primitive width
height		1 byte	Scale of primitive height
terminator	0	1 byte	End of shape definition

The following figure is an example of a 16 x 16 dot matrix that you could use to design an extended Big Font, such as a Kanji character. In the example, the distance between each dot is one unit. The callout points to a square unit.



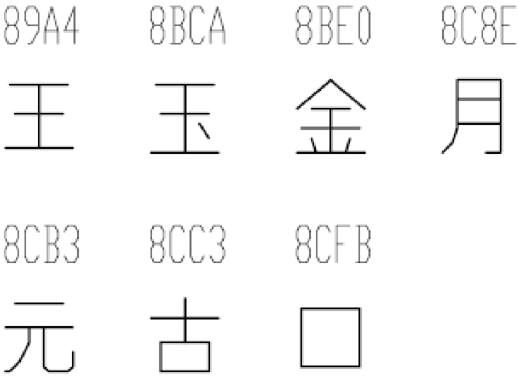
A square matrix for a Kanji character

The following figure shows examples of Kanji characters. Each character occupies an M×N matrix (matrices don't have to be square), similar to the one shown in the previous figure. The numbers above each figure are the associated shape numbers.



Examples of Kanji characters

The following figure shows Kanji primitives.



Examples of Kanji primitives

NOTE Not all fonts are defined in a square matrix; some are defined in rectangular matrices.

Example: Shape Definition File for an Extended Big Font

```
*BIGFONT 50,1,080,09e
*0,5,Extended Font
15,0,2,15,0
*08D91,31,unspecified
2,0e,8,-7,-15,
7,0,08cfb,0,0,16,16,7,0,08bca,2,3,12,9,
2,8,18,0,2,0e,8,-11,-3,0
*08CD8,31,unspecified
2,0e,8,-7,-15,
7,0,08be0,0,0,8,16,7,0,08cc3,8,0,8,16,
2,8,18,0,2,0e,8,-11,-3,0
*08ADF,31,unspecified
2,0e,8,-7,-15,
7,0,089a4,0,0,8,16,7,0,08cb3,8,0,8,16,
2,8,18,0,2,0e,8,-11,-3,0
*08CE8,39,unspecified
2,0e,8,-7,-15,
7,0,089a4,0,1,5,14,7,0,08cc3,5,2,5,14,7,0,08c8e,9,0,7,
16,2,8,18,0,2,0e,8,-11,-3,0
*089A4,39,primitive
2,0e,8,-7,-15,2,8,1,14,1,0c0,
2,8,-11,-6,1,0a0,2,8,-12,-7,1,
0e0,2,8,-7,13,1,0dc,2,8,11,-1,
2,0e,8,-11,-3,0
*08BCA,41,primitive
2,0e,8,-7,-15,2,8,1,14,1,0c0,
2,8,-11,-6,1,0a0,2,8,-12,-8,1,
0e0,2,0e5,1,0ec,2,063,1,8,
2,-3,2,06f,2,0e,8,-11,-3,0
*08BE0,81,primitive
2,0e,8,-7,-15,2,8,3,9,1,080,
2,8,-10,-4,1,0c0,2,8,-13,-5,1,
0e0,2,8,-7,9,1,09c,2,8,-1,14,
1,8,-6,-5,2,8,8,5,1,8,6,-5,
2,8,-11,-6,1,8,1,-3,2,8,7,3,
1,8,-1,-3,2,8,-3,15,1,01a,2,
012,1,01e,2,8,10,-14,2,0e,8,
-11,-3,0
*08C8E,44,primitive
2,0e,8,-7,-15,2,8,3,15,1,090,0fc,038,
2,8,-6,11,1,090,2,8,-9,-5,1,
090,2,096,1,0ac,8,-1,-3,01a,01a,2,8,
18,0,2,0e,8,-11,-3,0
```

```
*08CB3,61,primitive
2,0e,8,-7,-15,2,042,1,02b,02a,018,2,
0d0,1,012,034,2,069,1,01e,040,2,8,
-8,6,1,02b,2,8,4,5,1,08c,2,8,
-3,8,1,03c,2,8,-5,3,1,0e0,2,8,
-12,5,1,0a0,2,8,6,-14,2,0e,8,
-11,-3,0
*08CC3,34,primitive
2,0e,8,-7,-15,2,0c1,1,06c,0a8,064,0a0,2,8,
-5,9,1,09c,2,8,-7,5,1,0e0,2,8,
4,-11,2,0e,8,-11,-3,0
*08CFB,22,primitive
2,0e,8,-7,-15,2,0d2,1,0cc,0c8,0c4,0c0,2,8,
5,-13,2,0e,8,-11,-3,0
```

Quick Reference

Commands

COMPILE

Compiles shape files and PostScript font files into SHX files.

LOAD

Makes shapes available for use by the SHAPE command.

SHAPE

Inserts a shape from a shape file that has been loaded using LOAD.

Use Big Font Text in a Drawing

To use a Big Font for drawing text, you set up a text style and then specify the name of the Big Font file.

To use a Big Font for drawing text, you must set up a text style by using the STYLE command and then specify the name of the Big Font file. The same text style can use a normal ASCII font as well; enter only the two file names, separated by a comma. The following example uses the command prompt version of the STYLE command.

Command: **-style**
Enter name of text style or [?] <*current*>: *style_name*
Specify full font name or font file name (TTF or SHX): **txt,greek**

AutoCAD assumes that the first name is the normal font and that the second is the big font.

If you enter only one name, AutoCAD assumes it is the normal font and removes any associated Big Font.

By using leading or trailing commas when specifying the font file names, you can change one font without affecting the other, as shown in the following table.

Input for changing fonts

Input	**Result**
normal, big	Both normal and Big Font specified
normal,	Normal font only (Big Font unchanged)
,big	Big Font only (normal font unchanged)
normal	Normal font only (if necessary, Big Font removed)
ENTER (null response)	No change

When you use the -STYLE command to list styles or to revise an existing style, AutoCAD displays the normal font file, a comma, and the Big Font file. If the style has only a Big Font file, it is displayed with a leading comma: ,greek.

For each character in a text string, AutoCAD searches the Big Font file first. If the character is not found there, the normal font file is searched.

To enable Big Fonts from the Text Style dialog box, choose the Use Big Font option.

Quick Reference

Commands

STYLE

Creates, modifies, or specifies text styles.

Use a Big Font to Extend a Font

To include special symbols in text strings, you can use a Big Font instead of extending a standard text font.

In some drafting disciplines, many special symbols can appear in text strings. The AutoCAD standard text fonts can be extended to include special symbols. However, extending standard text fonts has several limitations:

- The number of shapes is 255 per font file.
- Standard character set uses almost half the available shape numbers. Only codes 1 through 9, 11 through 31, and 130 through 255 are available.
- Multiple text fonts require duplication of the symbol definitions in each font.
- Special symbols require that you enter **%%nnn**, where *nnn* is the symbol's shape number.

The Big Font mechanism avoids these problems. You can select one or more seldom-used characters, such as the tilde (˜) or the vertical bar (|), as an escape code, and use the next character to select the appropriate special symbol. For instance, you can use the following Big Font file to draw Greek letters by entering a vertical bar (|, ASCII code 124) followed by the equivalent Roman letter. Because the first byte of each character is 124, the character codes are biased by 124 x 256, or 31744.

```
*BIGFONT 60,1,124,124
*0,4,Greek
above, below, modes, 0
*31809,n,uca
. . .   uppercase Alpha definition, invoked by "|A"
*31810,n,ucb
. . .   uppercase Beta definition, invoked by "|B"
*31841,n,lca
. . .   lowercase Alpha definition, invoked by "|a"
*31842,n,lcb
. . .   lowercase Beta definition, invoked by "|b"
*31868,n,vbar
. . .   vertical bar definition, invoked by "||"
. . .
```

Quick Reference

Commands

COMPILE

Compiles shape files and PostScript font files into SHX files.

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Makes shapes available for use by the SHAPE command.

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Inserts a shape from a shape file that has been loaded using LOAD.

Unicode Font Descriptions

A single Unicode font, due to its large character set, is capable of supporting all languages and platforms. Unicode shape definition files are virtually identical in format and syntax to regular AutoCAD shape definition files.

The main difference is in the syntax of the font header as shown in the following code:

```
*UNIFONT,6,font-name
above,below,modes,encoding,type,0
```

The *font-name*, *above*, *below*, and *modes* parameters are the same as in regular fonts. The remaining two parameters are defined as follows:

encoding Font encoding. Uses one of the following integer values.

0 Unicode

1 Packed multibyte 1

2 Shape file

type Font embedding information. Specifies whether the font is licensed. Licensed fonts must not be modified or exchanged. Bitcoded values can be added.

0 Font can be embedded

1 Font cannot be embedded

2 Embedding is read-only

Another important difference is the handling of the code 7 subshape reference. If a shape description includes a code 7 subshape reference, the data following the code 7 is interpreted as a two-byte value. This affects the total number of data bytes (*defbytes*) in the shape description header. For example, the following shape description is found in the *romans.shp* file:

```
*00080,4,keuroRef
7,020AC,0
```

The second field in the header represents the total number of bytes in the shape description. If you are not used to working with Unicode font descriptions, you may be inclined to use three bytes rather than four, but this would cause an error during the compiling of the SHP file. This is true even if the shape number you are referencing is not in the two-byte range (below 255); the compiler always uses two bytes for this value, so you must account for that in the header.

The only other difference between Unifont shape definitions and regular shape definitions is the shape numbers. The Unifont shape definitions that AutoCAD provides use hexadecimal shape numbers as opposed to decimal values. Although hexadecimal numbers are not required, their use makes it easier to cross-reference the shape numbers with the `\U+` control character values.

Quick Reference

Commands

LOAD

Makes shapes available for use by the SHAPE command.

SHAPE

Inserts a shape from a shape file that has been loaded using LOAD.

Superscripts and Subscripts in SHX Files

You can modify shape definition files to improve their ability to display superscripts and subscripts.

The AutoCAD SHX fonts have limited superscript and subscript capabilities. However, it is relatively easy to modify shape definition files to improve superscript and subscript capability.

Creating superscripts and subscripts requires two steps. First, the “imaginary pen” that is creating the text, vector by vector, on your screen needs to be shifted up or down. Then, the font “scale” needs to be reduced. In addition, the reverse process has to take place to return to the normal font. The font needs to recognize four new keys: two for superscripts and two for subscripts. To avoid altering the existing font definitions, you can access these with the numeric keypad on your keyboard.

To add superscript and subscript definitions to a font

This example procedure is based on the AutoCAD Romans font file, although a similar method applies to any AutoCAD font. This procedure adds four new shape definitions to a font: super_on, super_off, sub_on, and sub_off, which control the position and size of the characters that follow. For simplicity, this example replaces the left- and right-bracket characters ([and]) and the left and right curly brace characters ({and}) with the new characters. You may choose to replace other characters or use a shape number in the extended range (ASCII codes 128 through 256). If you use an extended shape number, you need to use the %%*nnn* method (where *nnn* is the ASCII value of the character) for placing the new characters.

1 Edit your SHP file with an ASCII text editor.

2 Search for the shape definitions of the characters you are replacing. To comment out those definitions so the new definitions can take their place, insert a semicolon in front of each line of the shape definition. The shape definition may continue for a number of lines.

   The left- and right-bracket characters have ASCII values of 91 and 93 (05B and 05D hex values, if the font is Unicode). The left and right curly brace characters have ASCII values of 123 and 125 (07B and 07D hex).

3 Add the first and second values on the second line of the definition, and divide the total by 2 as shown in the following example:

```
*UNIFONT,6,Extended Simplex Roman for UNICODE
21,7,2,0 21 + 7 = 28, then 28 / 2 = 14. This number is used
later.
```

4 Add the following lines to the end of the SHP file:

```
*91,8,super_on
2,8,(0,14),003,2,1,0
*93,8,super_off
2,004,2,8,(0,-14),1,0
*123,8,sub_on
2,8,(0,-14),003,2,1,0
*125,8,sub_off
2,004,2,8,(0,14),1,0
```

   Notice the 14 and -14 values in the preceding lines. They are *Y* axis offsets for the imaginary pen. The value 14 is half the maximum height of a character in this font, which is the correct approximation for superscripts and subscripts. This value needs to be calculated for each font file, but you can modify it any way you want.

5 Save the file.

6 Use the COMPILE command to compile the SHP file.

   Once the shape is compiled and an appropriate style is defined, you can access the new pen-up and pen-down commands by entering the [,], {, and } characters. The [character initiates superscript and the] character returns from superscript to normal. The { character initiates subscript and the } character returns from subscript to normal.

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Commands

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Migrate and Transfer Custom Settings and Files

9

In this section, you learn about migrating from previous releases, as well as transferring custom settings and files between workstations running the same release.

If you have a previous version of AutoCAD installed on your system, you can install a newer version of AutoCAD and keep other versions of the program on the same system. This is called a *side-by-side* installation.

If you have purchased an *upgrade* version of AutoCAD, you are required to uninstall the previous version within 120 days of installing your newer product. See your license agreement for more information.

Migrate Custom Settings and Files from Previous Releases

Migrate your custom settings and files from previous releases of AutoCAD to your new release.

The following methods are available:

- Use the Migrate Custom Settings dialog box to automatically migrate user profiles, CUI and CUIx files, and other custom settings and file types. The Migrate Custom Settings dialog box is displayed the first time you start AutoCAD after an upgrade; you can also access it from the Windows Start menu.
- Manually migrate custom settings and files in the following ways:
  - Export and import user profiles
  - Transfer customization elements between CUI files

- Export and import tool palettes and tool palette groups
- Copy custom or changed linetype (LIN), hatch pattern (PAT), or command aliases (PGP) files
- Import the MyMaterials library file

NOTE Migrate your custom settings and files as soon as possible after installing a new product version to avoid overwriting new customization.

Migration Tools

Autodesk offers a range of tools to assist in migrating custom settings and files.

Use the following tools to migrate custom settings from one release of AutoCAD to another, or between like releases on different workstations.

Migrate Between Different Releases

The following tools can be used to migrate customization between different releases:

- **Migrate Custom Settings Dialog Box**. Migrates user profiles, CUI and CUIx files, tool palette (ATC) files, AutoCAD and user-defined linetype (LIN) files, hatch pattern (PAT) files, and the *acad.pgp* file, which contains command aliases. For more information about the Migrate Custom Settings dialog box, see Migrate Custom Settings on page 551.
- **Customize User Interface (CUI) Editor**. Transfer settings between different releases *or* between like releases on different workstations. The CUI Editor converts legacy menu (MNU and MNS) and CUI files to the CUIx format, while leaving the original file unchanged. For more information about the CUIx file format and how to migrate menu and CUI files, see User Interface Customization on page 87.

Transfer Settings Between Workstations

The following tools can be used to transfer customization between different workstations with the same release:

- **Export/Import AutoCAD 2012 Settings**. Provides the simplest way to create a transfer package of all your custom settings to import to another workstation running the *same* release of AutoCAD. You can also use this tool to create a backup of your custom settings. For more information about exporting and importing transfer packages, see Export and Import Custom Settings from the Same Release on page 560.

- **Customize User Interface (CUI) Editor**. Transfers settings between different workstations.

Reset Settings to Default

Resets your AutoCAD configuration to the default state. This is an easy way to undo a migration or to discard customization changes made after installation. For more information on restoring the AutoCAD default settings, see Reset Settings to Default on page 558.

Other Converters

- . Converts DWG files from one release to another. You can also use the DWGCONVERT command from inside AutoCAD.
- **ScriptPro**. Runs a script file across a set of multiple drawings. ScriptPro can be downloaded by visiting *http://www.autodesk.com/migrationtools*.
- **AutoLISP Compatibility Analyzer**. Details AutoCAD compatibility issues found in AutoLISP files and the accompanying menu (MNL) files. When a compatibility issue is found, the tool provides an explanation of the issue and suggestions on how to correct it. The AutoLISP Compatibility Analyzer can be downloaded by visiting *http://www.autodesk.com/migrationtools*.

Determine How to Migrate Custom Settings

Migrating custom settings from a previous release can help you get started with the latest release much sooner.

The Migrate Custom Settings dialog box simplifies the process of migrating custom settings and files from a previous release. For information on the Migrate Custom Settings dialog box, see Migrate Custom Settings on page 551.

For more control over which custom settings, files, or parts of files are migrated, see the following:

- **User Profiles.** All user profiles in the previous release of AutoCAD are migrated when using the Migrate Custom Settings dialog box. If you do not want to migrate all user profiles, you need to use the Profiles tab

(Options dialog box) to export each profile from the previous release and import it into the latest release.
If you export a profile from a previous release, you will likely need to update some of the support paths on the Profiles tab (Options dialog box) with those of the latest release. For information on using profiles, see Save and Restore Interface Settings (Profiles) in the *User's Guide*.

- **Changes to the User Interface.** The Migrate Custom Settings dialog box migrates the MNU, MNS, CUI or CUIx files associated with the user profiles from the previous release. All custom user interface elements are migrated forward and merged with those in the shipping files as needed.

  NOTE Only menu customization files that are part of a user profile or listed as a partial customization file in a CUI or CUIx file are migrated with the Migrate Custom settings dialog box. Any other menu or customization file is not migrated automatically.

  If you want to control which user interface elements are migrated to the new release, you can use the Transfer tab of the Customize User Interface (CUI) Editor. For information on transferring user interface elements with the CUI Editor, see Transfer and Migrate Customization on page 379.

- **Custom Files.** The Migrate Custom Settings dialog box can merge changes that you made to the shipping linetype (LIN), hatch pattern (PAT), program parameter (PGP), and tool palette (ATC) files with the new files that ship with the product.
  If you do not want all the changes made to these files, you need to edit each file individually using an ASCII text editor or the Tool Palettes window.

  LSP, DVB, ACTM, and ARX files are not migrated. These files need to be updated and migrated manually to the new release.

- **Tool Palettes and Tool Palette Groups.** The Migrate Custom Settings dialog box can migrate both tool palettes and tool palette groups to the new release. Custom tool palettes and changes to tool palettes that shipped with AutoCAD 2010 or later are merged with the tool palettes in the new release. If migrating from AutoCAD 2009 or earlier, only user-created tool palettes are migrated (changes made to tool palettes that shipped with the product must be redone).
  If you do not want all tool palettes or tool palette groups from a previous release, you can manually import and export those you want in the new release using the Customize dialog box. In the previous release, display the Customize dialog box and selectively export the tool palettes and tool palette groups that you want to bring into the new release. Then, in the

new release of the product, use the Customize dialog box to import the tool palettes and tool palette groups exported from the previous release.

Migrate Custom Settings

If you install AutoCAD on a computer where a previous release of the product is installed, you can migrate some custom settings from the previous release to the new version.

Migration can be done manually or with the assistance of the Migrate Custom Settings dialog box. For information on which options you can migrate, or how to manually migrate your custom settings and files from a previous release, see Determine How to Migrate Custom Settings on page 549.

The Migrate Custom Settings dialog box includes the following options:

User Profiles

User profiles contains the settings for the drawing environment. These settings include the drawing window color, cursor size, command line window font, and the dictionary to use for checking spelling.

User profiles also include the folders in which AutoCAD searches for support, driver, customization, and other files. If you customized files in a location other than the default AutoCAD location, the path to the location is migrated. The files themselves in those locations do not get migrated.

NOTE If you have made changes to partial plotter configuration (PC3) files that are located in a custom folder, those files are migrated to the *AutoCAD PC3* folder, which is located under your custom *PC3* folder. PC3 files are migrated to a separate folder to maintain backward compatibility with previous AutoCAD releases.

CUI Files The data from these files defines how the user interface elements in AutoCAD 2006 and later were arranged. These elements include: palettes, ribbon panels and tabs, menus, toolbars, and many others. Based on the release from which you are migrating, the Migrate Custom Settings dialog box will be looking for CUI or CUIx files.

NOTE User Profiles must be selected for migration in order to migrate CUI files.

MNU/MNS Files The data from these files defines the user interface elements in AutoCAD 2005 and earlier. These elements include: toolbars, pull-down and image tile menus, and many others. The Migrate Custom Settings dialog box looks for MNS files first, and then MNU files.

NOTE User Profiles must be selected for migration in order to migrate MNU/MNS files.

User-Defined Icons These files are typically referenced by commands stored in a CUI or CUIx file, and stored in the folder defined under the Custom Icon Location node on the Files tab of the Options dialog box.

NOTE User Profiles must be selected for migration in order to migrate user-defined icons.

User-Defined Tool Palette Files/Tool Palette Files These files contain a set of user-defined and standard tools that shipped with AutoCAD.

NOTE User Profiles must be selected for migration in order to migrate tool palettes.

- **User-defined Tool Palette Files.** Custom tool palette files that were created in AutoCAD 2009 and earlier can be migrated. However, tool palettes that are supplied with AutoCAD 2009 and earlier are not migrated.
  If custom tools were added to a tool palette that shipped with AutoCAD 2009 or earlier, the tools are not migrated and need to be added back to the tool palettes that shipped with AutoCAD 2012.
- **Tool Palette Files.** Tool palettes created or edited with AutoCAD 2010 or later can be migrated to AutoCAD 2012.

NOTE It is not recommended to copy tool palette (ATC) files between releases. Copying tool palette files from one release to another can potentially cause problems when migrating to a future release.

When migrating tool palettes, custom tool palette groups are merged with the default tool palette groups that come with AutoCAD.

Tool palette groups are stored in user profiles. You can see the default tool palette groups that ship with AutoCAD by switching to the <<AutoCAD 2012 Unnamed Profile>>.

NOTE Tool palette groups created with AutoCAD 2008 or later are migrated, but references to shipped AutoCAD tool palettes from an earlier release might be lost.

AutoCAD-Defined Line Files

The user-defined linetypes from these LIN files are added to a user-defined section of the file with the same name in the new release.

User-Defined Line Files

These LIN files are copied from the previous release to the new release.

AutoCAD-Defined Hatch Patterns

The user-defined hatch patterns from these PAT files are added to a user-defined section of the file with the same name in the new release.

User-defined Hatch Patterns

These PAT files are copied from the previous release to the new release.

My Material Library File

This file contains user favorite materials. This file represents the My Materials library in the Material Browser. Image files referenced by materials in a library are not moved or copied.

Acad.pgp

The user-defined command aliases from this file are added to the user-defined section of the file with the same name in the new release.

You cannot use the Migrate Custom Settings dialog box to migrate shell commands or comments that you made to your *acad.pgp* file.

List of Migrated Files

The following table lists the files and file types that are migrated with the Migrate Custom Settings dialog box. A description of each file and file details are also listed to help you decide if you want to migrate a file.

Files Migrated with the Migrate Custom Settings Dialog Box

File Name	File Description	Details
FavoriteMaterials.adsklib	Contains materials that are added to the My Materials library.	File is created and managed with the Materials Browser and is migrated.
**.atc*	Defines a tool palette and its tools.	User-defined tool palettes, and new or changed tools on a standard AutoCAD tool palette are migrated if you are migrating from AutoCAD 2010 or later. User-defined tool palettes created in releases prior to AutoCAD 2010 are migrated, but not changes made to the shipping tool palettes.
**.arg*	Used to back up user profile information from the system registry. The ARG file is not migrated. Registry settings are migrated.	Changes you make to your user profiles are stored in the system registry and are migrated.

Files Migrated with the Migrate Custom Settings Dialog Box

File Name	File Description	Details
**.lin*	Stores your user-defined linetypes.	User-defined linetype files are migrated.
acad.lin	Contains standard linetype definitions (an AutoCAD library file).	The file itself is not migrated; however, any linetypes that you created in this file are migrated to the AutoCAD *acad.lin* file, in the *User Defined Linetypes* section of the file.
acadiso.lin	Contains metric linetype definitions (an AutoCAD library file).	The file itself is not migrated; however, any linetypes that you created in this file are migrated to the AutoCAD *acadiso.lin* file, in the *User Defined Linetypes* section of the file.
**.pat*	Stores user-defined hatch patterns.	User-defined hatch pattern files are migrated.
acad.pat	Contains standard hatch pattern definitions (an AutoCAD library file).	The file itself is not migrated; however, any hatch patterns that you created in this file are copied to the AutoCAD *acad.pat* file, in the *User Defined Hatch Patterns* section of the file.
acadiso.pat	Contains metric hatch pattern definitions (an AutoCAD library file).	The file itself is not migrated; however, any metric hatch patterns that you created in this file are copied to the AutoCAD *acadiso.pat* file, in the *User Defined Hatch Patterns* section of the file.
acad.pgp	Stores shell commands and command alias definitions (a program parameters file in ASCII text form).	The file itself is not migrated; however, any command aliases you created in this file are copied to the AutoCAD *acad.pgp* file.
**.mnu*	Contains menu customization from a release prior to AutoCAD 2006.	The file itself is not migrated; a copy of the file is created and converted into a CUIx file with the same name.

Files Migrated with the Migrate Custom Settings Dialog Box		
File Name	File Description	Details
		The new CUIx file is stored in the same folder as the main CUIx file. An MNU file is converted when an MNS file with the same name is not found.
*.*mns*	Contains menu customization from a release prior to AutoCAD 2006.	The file itself is not migrated; a copy of the file is created and converted into a CUIx file with the same name. The new CUIx file is stored in the same folder as the main CUIx file. An MNS file is converted, whether or not an MNU file with the same name is present.
*.*cui*	Contains customization from AutoCAD 2006 through AutoCAD 2009.	The file itself is not migrated; a copy of the file is created and converted into a CUIx file with the same name. The new CUIx file is stored in the same folder as the main CUIx file. Enterprise CUI files are not automatically migrated. You must do so manually.
*.*cuix*	Contains customization from AutoCAD 2010 and later.	If the CUIx file is supplied with the product, the custom changes made to the file are migrated to the newer version of the CUIx file. If the CUIx file is not supplied with the product, the file is migrated and copied to the location of the main CUIx file, unless the CUIx file is in a network location. In that case, the file is migrated but is not copied to the location of the main CUIx file. Enterprise CUIx files are not automatically migrated. You must do so manually.

Before MNU, MNS, CUI, and CUIx files are migrated, a backup copy of each file is saved in the following directory:

- (Windows XP) *<drive>:\Documents and Settings\<user profile>\Application Data\Autodesk\<product version>\<release number>\<language>\Previous Version Custom Files*
- (Windows Vista or Windows 7) *<drive>:\Users\<user profile>\Application Data\Autodesk\<product version>\<release number>\<language>\Previous Version Custom Files*

NOTE Other custom settings and files can be migrated using Autodesk migration tools. For more information, see Migration Tools on page 548.

To migrate custom settings when you start the AutoCAD

1. Start AutoCAD.
2. In the Migrate Custom Settings dialog box, Migrate Settings From drop-down list, select the AutoCAD release from which you want to migrate your custom settings.
3. In the Settings and Files to Migrate box, select the custom files that you want to migrate.
4. Click OK.
5. In the Migrate Custom Settings message, click OK to view the log file, or click No if you do not want to view the log file now.

   NOTE You can view the log file at another time. For information about accessing the log file at another time, see View the Migration Log File on page 557.

Each time the Migrate Custom Settings dialog box is used, AutoCAD resets the program's default CUIx file from the *UserDataCache* folder and then migrates any customization done in a previous release forward.

To migrate custom settings from the Start menu (Windows)

1. Do one of the following:
   - (Windows XP) Click Start menu ➤ Programs ➤ Autodesk ➤ AutoCAD 2012 ➤ Migrate Custom Settings ➤ Migrate From a Previous Release.

- (Windows Vista and Windows 7) Click Start menu ➤ All Programs ➤ Autodesk ➤ AutoCAD 2012 ➤ Migrate Custom Settings ➤ Migrate From a Previous Release.

2 In the Migrate Custom Settings dialog box, Migrate Settings From drop-down list, select the AutoCAD release from which you want to migrate your custom settings.

3 In the Settings and Files to Migrate box, select the custom files that you want to migrate.

4 Click OK.

5 In the Migrate Custom Settings message, click OK to view the log file, or click No if you do not want to view the log file.

NOTE Pull-down menus that are migrated from a MNU/MNS file to a CUIx file need to be added to a workspace.

View the Migration Log File

The migration log file (*migration.xml*) provides specific information about any settings or files that were not successfully migrated to AutoCAD.

The log file shows all the files that were successfully copied from a previous version to the newer AutoCAD. It also provides information about files that were not successfully migrated. Use the log for troubleshooting if there are unwanted or unexpected results in your AutoCAD profiles.

After you use the Migrate Custom Settings dialog box to migrate custom settings and files, a message is displayed from which you open the migration log file. You can view the migration log file at that time. You can also navigate to the file if you want to view the log details another time.

To locate and view the migration log file

1 In Windows Explorer, browse to the following location:

- (Windows XP) *<drive>:\Documents and Settings\<user profile>\Application Data\Autodesk\<product version>\<release number>\<language>\Migration*
- (Windows Vista and Windows 7) *<drive>:\Users\<user profile>\Application Data\Autodesk\<product version>\<release number>\<language>\Migration*

2 Double-click *migration.xml* to open the file, and view the details of your migration.

Restore Profiles After Migrating Files from an Earlier Release

After you migrate your profiles from an earlier AutoCAD release, you can restore the default profile or reset a profile to use the default profile settings of the latest release.

To set the AutoCAD default profile current

1 On the Application menu, click Options.

2 In the Options dialog box, Profiles tab, select <<AutoCAD 2012 Unnamed Profile>> and click Set Current.

3 Click OK.

To reset a user profile to use the default settings

1 On the Application menu, click Options.

2 In the Options dialog box, Profiles tab, select the user profile to reset and click Reset.

3 Click Yes.

The profile is reset to use the default profile settings of the release.

4 Click Set Current to apply it as the current profile. Click OK.

Reset Settings to Default

From the Windows Start menu, reset your AutoCAD configuration to the default state.

This is an easy way to undo a migration or to discard customization changes made after installation.

The following Windows Registry entry is removed during the reset:

- HKEY_CURRENT_USER\Software\Autodesk\AutoCAD\R18.2\ACAD-A001:409 The value A001:409 varies based on which product and language is installed. For example, A001:804 represents the Simplified Chinese version of AutoCAD.

NOTE It is not recommended to edit the Windows Registry directly.

The following user folders are removed during the reset:

- Roaming Root folder
  - (Windows XP) *<drive>:\Documents and Settings\<user name>\Application Data\Autodesk\AutoCAD 2012\<release number>\<language>*
  - (Windows Vista and Windows 7) *<drive>:\Users\<user name>\AppData\Roaming\Autodesk\AutoCAD 2012\<release number>\<language>*
- Local Root folder
  - (Windows XP) *<drive>:\Documents and Settings\<user name>\Local Settings\Application Data\Autodesk\AutoCAD 2012\<release number>\<language>*
  - (Windows Vista and Windows 7) *<drive>:\Users\<user name>\AppData\Local\Autodesk\AutoCAD 2012\<release number>\<language>*

NOTE The Migration folder created by the Migrate Custom Settings dialog box, or the importing of a transfer package is not removed during the reset.

Backup Files

If you choose to backup your custom settings and files before resetting AutoCAD, all files in the Roaming and Local root folders are backed up with the following exceptions:

- **.tmp* – Temporary files
- **.err* – Error files
- **.cache* – Material cache files
- *support.cdc* – DesignCenter cache file
- **.cfg* and **.dhlp* – Autogenerated files
- **.mnr* – Menu resource files

To reset AutoCAD settings to default

1 Do one of the following:

- (Windows XP) Click Start menu ➤ Programs ➤ Autodesk ➤ AutoCAD 2012 ➤ Reset Settings to Default
- (Windows Vista and Windows 7) Click Start menu ➤ All Programs ➤ Autodesk ➤ AutoCAD 2012 ➤ Reset Settings to Default

2 In the Reset Settings – Backup message box, do one of the following:

- Click Back Up and Reset Custom Settings to archive your current custom settings and files before resetting AutoCAD.
  In the Backup Custom Settings dialog box, specify a location and name to save the ZIP file that contains the backup of your custom settings and files. Click Save.
- Click Reset Custom Settings to not create a backup of your current custom settings and files before resetting AutoCAD.

3 In the Reset Settings – Confirmation message box, click OK.

If you chose to back up your custom settings and files, the location and file name you specified is displayed.

4 Customize the product environment as needed.

Export and Import Custom Settings from the Same Release

You can export your custom settings between systems running the same release of an AutoCAD product, or export the custom settings and later re-import them on the same computer if you need to reinstall AutoCAD.

When exporting custom settings, a transfer package is created that contains an XML file. This file contains custom settings, a listing of the custom files from local locations used with AutoCAD, and optionally, custom files in network locations.

The transfer package is a ZIP file archive, so it has the file extension ZIP. During the import process, you select the ZIP file archive that contains the exported custom settings you want to merge onto your computer.

The following table lists the file types that are most commonly included in the transfer package that is created from the Export Custom Settings dialog box.

Most Common File Types Included in the Transfer Package

File Name	File Description
FavoriteMaterials.adsklib	Contains materials that are added to the My Materials library.
*.*atc*	Tools defined in a tool palette and the tool palette catalog.
*.*aws*	Order of the tools as they appear in a tool palette and other local settings. The file is not migrated from release to release, but is migrated from workstation to workstation with the transfer package.
*.*bmp*	Image used for a command in a customization file.
*.*ctb*	Settings used to control the appearance of objects when plotting; the settings are arranged by the colors of the AutoCAD Color Index (ACI) system.
*.*cuix*	Information for commands and user interface elements.
*.*cus*	Custom dictionary entries.
*.*fmp*	Information about font mappings for True Type Fonts used in the In-Place Text Editor.
*.*ini*	Configuration settings for some features.
*.*lin*	Linetype definitions.
*.*mln*	Multiline style definitions.
*.*mnl*	AutoLISP commands and procedures that a customization file is dependent on; must have the same name as a customization file in order to be loaded by the product.
*.*pat*	Hatch pattern definitions.
*.*pc3*	Configuration information for a plotter or printer.

Most Common File Types Included in the Transfer Package	
File Name	**File Description**
*.*pgp*	Shell commands and command alias definitions.
*.*pmp*	Calibration and paper size settings that are used with a PC3 file.
*.*psf*	Information about font substitution when exporting to a Postscript file.
*.*shx*	Information about text characters or shapes used with linetype definitions.
*.*stb*	Settings used to control the appearance of objects when plotting; the settings are grouped into names that can be assigned to a layer or object.
*.*xml*	Information about the user profiles in the product and the original locations of the files in the export package.

The following table lists the file types that are not included in the transfer package that is created from the Export Custom Settings dialog box.

Some of the File Types Not Included in the Transfer Package	
File Name	**File Description**
*.*actm*	Action macro file.
*.*arx*	ObjectARX application file.
*.*dcl*	Definitions for custom dialog boxes used with AutoLISP, ADS, or ObjectARX applications.
*.*dvb*	Visual Basic for Applications project file.
*.*fas*	Fast-load AutoLISP format file.
*.*fdc*	Definitions for fields; should not be modified.
*.*lli*	Landscape library; this file type is no longer supported due to the removal of the LANDSCAPE command.
*.*lsp*	AutoLISP source file that contains definitions for custom commands and functions.

Some of the File Types Not Included in the Transfer Package

File Name	File Description
*.*mli*	Render material library; this file type is no longer supported due to changes to the MATERIALS command.
*.*mnr*	Resource images for a customization file; must have the same name as a customization file in order to be loaded by the product. The file is not included because it is auto-generated by the product when it is not present.
*.*udl*	Data connection settings used with dbConnect.
*.*unt*	Unit definitions used for converting a value from one unit type to another.
*.*vlx*	Visual LISP file that might contain multiple AutoLISP and DCL files compiled into a single file.

Export Custom Settings

When exporting custom settings, the custom files stored locally and all user profiles are exported to a transfer package.

You have the option to include custom files that are stored in network locations. During the creation of the transfer package, you do not have any control over which types of files are included in the transfer package.

The Export Custom Settings dialog box is used to create the transfer package so it can be imported to another computer or the same computer running the same release of the product.

NOTE You must start AutoCAD at least once before you can export custom settings to a transfer package.

To export custom settings

1 Do one of the following:

- (Windows XP) Click Start menu ➤ Programs ➤ Autodesk ➤ AutoCAD 2012 ➤ Migrate Custom Settings ➤ Export AutoCAD Settings.

- (Windows Vista and Windows 7) Click Start menu ➤ All Programs ➤ Autodesk ➤ AutoCAD 2012 ➤ Migrate Custom Settings ➤ Export AutoCAD Settings.

2 In the Export Custom Settings dialog box, select the Include Custom Files in Networked Locations option if you have files in network locations that you want included in the transfer package that is created.

3 Click Export.

4 In the Export Custom Settings standard file selection dialog box, enter a name and specify a location for the transfer package. Click Save.

A new ZIP file is created.

5 In the confirmation message box, click OK.

Import Custom Settings

By importing a transfer package, you can configure AutoCAD in the same way as other computers that are running the same release of the product.

Upon the successful import of the transfer package, a message box is displayed giving you the option of viewing the migration log that is created. If any errors are encountered during the import process, they are logged in the migration log.

If files from a network location were added during the creation of a transfer package, the files are copied to a different location only when the original network locations are not available when importing a transfer package. If the files from a network location are found in the same location on the network, the files are not copied to the network location and are ignored during import.

During the import process, if the user profile <<Unnamed Profile>> exists, the user profile is automatically backed up before the transfer package is imported.

Local paths that exist as part of a user profile in a transfer package are created automatically during the import process, but paths that are on a network drive or a drive that uses removable discs, are not created automatically.

NOTE You must start AutoCAD at least once before you can import a transfer package.

To import custom settings from a computer with the same AutoCAD release

1 Do one of the following:

- (Windows XP) Click Start menu ➤ Programs ➤ Autodesk ➤ AutoCAD 2012 ➤ Migrate Custom Settings ➤ Import AutoCAD Settings.
- (Windows Vista and Windows 7) Click Start menu ➤ All Programs ➤ Autodesk ➤ AutoCAD 2012 ➤ Migrate Custom Settings ➤ Import AutoCAD Settings.

2 In the Import Custom Settings standard file selection dialog box, select the ZIP file that contains the custom settings that were exported. Click Open.

3 In the confirmation message box, click OK.

Optionally, select the Display Log File After Closing This Dialog option before clicking OK to display the log file that was created during the importing of the transfer package.

To view the migration log after importing custom settings

1 In Windows Explorer, navigate to the following locations:

- (Windows XP) *\Documents and Settings\<user profile>\Application Data\Autodesk\<product version>\<release number>\<language>\Migration*
- (Windows Vista or Windows 7) *\Users\<user profile>\AppData\Local\Autodesk\<product version>\<release number>\<language>\Migration*

2 Double-click *migration.xml* to open the file and view the migration details.

Migration and Customization FAQs

This section outlines common migration and customization issues and their solutions.

What are the benefits of selecting task-based tools?

Workspaces control which task-based tools are displayed in the application window and when they are displayed. You can create different workspaces based on the types of drawing. For more information about customizing the user interface and workspaces, see Work with the Customize User Interface (CUI) Editor on page 106 and Customize Workspaces on page 343.

What is a workspace?

Workspaces are sets of menus, toolbars, palettes, ribbon panels, and ribbon tabs that are organized so you can work in a custom, task-oriented drawing environment. When you use a workspace, only the user interface elements that are relevant to a task are displayed. For more information about customizing workspaces, see Customize Workspaces on page 343.

How do I make changes to a workspace at a later time?

Workspaces are used to control many of the tools displayed in the application window of AutoCAD. Modify the current workspace in a limited way from the application window, or use the Customize User Interface (CUI) Editor for full control over all aspects of a workspace. If you make changes to a workspace from the application window, use the WSSAVE command to save the changes. For more information, see Customize Workspaces on page 343.

What is a drawing template file?

A drawing template (DWT) file is used to provide consistency for each new drawing (DWG) file that is created. DWT files can contain named objects, drawing-based settings, and geometric objects. Stored named objects include layers, and text and dimension styles, among others. Along with named objects, a DWT file can hold values for drawing-based system variables, and any geometric object that might be common across multiple drawings, such as a title block. For more information, see Use a Drawing Template File in the *User's Guide*.

How do I modify drawing templates at a later time?

Drawing template (DWT) files are no different than a drawing (DWG) file, with the exception of its file extension. Once a DWT file is opened, you can modify named objects, such as layers, and text and dimension styles, just as you would in a drawing. You open a DWT file with the OPEN command.

To open a drawing template (DWT) file

1 From the Application menu, click Open.

2 In the Select File dialog box, from the Files of Type drop-down list, select Drawing Template (*.*dwt*).

3 Browse to and select the drawing template (DWT) file you want to modify.

4 Click Open.

5 Make the desired changes to the DWT file.

6 From the Application menu, click Save.

What are the benefits of customizing AutoCAD?

Customizing AutoCAD provides many benefits that can increase your productivity and make your drawings have a consistent appearance. Customization can be as simple as creating a block that can be used in many drawings over and over again, such as a title block, or customizing the user interface with the Customize User Interface (CUI) Editor. For more information, see Work with the Customize User Interface (CUI) Editor on page 106.

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