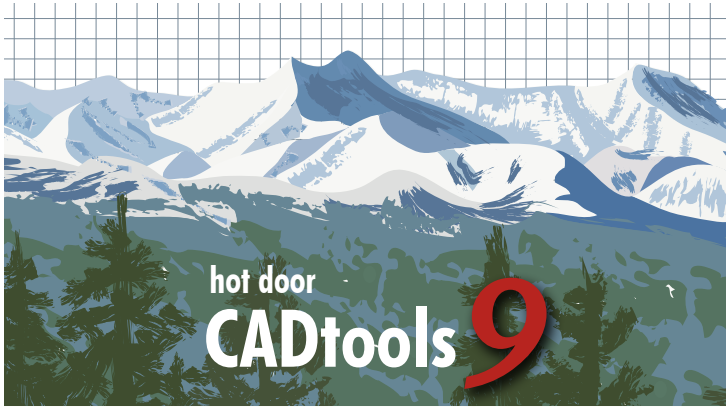

for Adobe® Illustrator® CS5/CS6/CC/CC 2014/CC 2015

Precision drawing, labeling and
dimensioning for professional design
within Adobe® Illustrator®

USER GUIDE

Table of Contents

This user guide is designed for use as a product tutorial or reference guide, with topics organized to follow the process of a typical project. Click on the triangles below to jump to pages. For FAQ and in-depth video tutorials on many features, visit **hotdoor.com**.

About CADtools 9 ..... 5-7 ▶
Updating or installing CADtools ..... 8 ▶
Activation and support ..... 9 ▶
Working with older versions of Illustrator ..... 10 ▶
Overview of the interface ..... 11-12 ▶
CADtools preferences ..... 13 ▶
Setting up the document
- **CADscale panel and Scale calculator** ..... 14-17 ▶
- **CADguides panel** ..... 18 ▶
- **CADunits panel** ..... 19-21 ▶
- **CADcontrol bar** ..... 21 ▶

2D CAD drawing tools ..... 22-27 ▶
- **CAD wall, door and window tools** ..... 28-34 ▶

Drawing and tool selection with keyboard shortcuts ..... 35 ▶
Dimensioning control
- **CADdimensions panel** ..... 36-40 ▶

Dimensioning tools ..... 41-52 ▶
Dimensioning shortcuts
- **CADshortcuts with automatic dimensioning** ..... 53 ▶
- **CADshortcuts panel with presets** ..... 53-54 ▶
- **Keyboard shortcuts** ..... 55 ▶
- **CADtools Select menu** ..... 55 ▶

Axonometric drawing
- **CADaxonometric panel** ..... 56-58 ▶
- **Axonometric drawing tools** ..... 59-63 ▶

Axonometric dimensioning tools ..... 64-70 ▶
Labeling
- **CADlabels panel** ..... 71-73 ▶
- **Labeling tools** ..... 74-80 ▶

Table and title block tools ..... 81-83 ▶
Precision control
- **CADtracker Geometry** ..... 84 ▶
- **CADtracker Transform** ..... 85 ▶
- **CADtracker Area Transform** ..... 86 ▶
- **CADtracker Move** ..... 87 ▶
- **CADrepeat panel** ..... 88 ▶

CAD editing tools ..... 89-96 ▶
Quick reference ..... 97-99 ▶
Advanced topics ..... 100-102 ▶
Index ..... 103-104 ▶

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About CADtools 9

Welcome to Hot Door CADtools, a full-featured CAD plug-in for **Adobe Illustrator CS5, CS6, and CC**. CADtools offers an easy and elegant solution for designers who need the precision of CAD within the flexible, creative environment of Adobe Illustrator. CADtools 9 does not require a subscription.

New features in CADtools 9

- **Universal Dimension tool** recognizes horizontal, vertical, inclined, and axonometric lines, circles, and labels with one tool
- **Bézier Length Dimension tool** dimensions distance between points along a curve
- **CADrepeat panel** supports objects repeating around circle
- **CAD Polygon tool** creates multi-sided objects
- **CAD Axonometric Rounded Rectangle tool** creates rounded rectangles in axonometric view
- **Keyboard input** while dragging dimensions, labels, doors/windows, polygons, and rounded rectangles quickly edits format, terminators, font size, label styles, label shapes, etc. (in Illustrator CS6 or later)
- **Compact fractions** supported through the CADunits panel

  9 1/2" standard fraction 9 1/2" compact fraction

- **Label tool improvements**, including diamond shape and fill color support
- **New door styles** support accordion, pocket, and sliding styles
- **CADpresets** are saved as separate files for easy sharing with colleagues
- **Language preference** allows independent use of other languages within CADtools
- **Numerous minor additions and improvements** to panels, auto-dimensions, and user interaction
- **Hot Door CORE™** - Ongoing development of Hot Door's COde REsource architecture increases CADtools performance and facilitates rapid development of upgrades and other productivity plug-ins. This technology is now available for use by other plug-in developers at **hotdoorcore.com**.

Major features of CADtools 9

CADtools includes 81 drawing, dimensioning, labeling and editing tools organized in eight groups under the Illustrator tools. Eleven panels are available from the **Window > CADtools** menu. CADtools panels edit document scale, objects, dimension and label styles, and provide shortcuts.

Drawing

- Precision drawing tools for 2D and axonometric/isometric objects
- Keyboard input while dragging adjusts polygons, rounded rectangles, doors and windows (available in CS6 or later)
- On-screen info while dragging objects in scale with optional full-screen cursors
- Standard or custom scale defined per document or per Illustrator layer, including a scale calculator
- Integration of scaled Illustrator grids and rulers
- Wall tools with sliding editability and door/window insertion
- Customizable title blocks and tables

Dimensioning

- Universal Dimension tool recognizes horizontal, vertical, inclined, and axonometric lines and circles without changing tools
- Linear, curvilinear, angular and radial dimension tools measure points, lines, or datums
- Live dimensions and labels attach to objects and respond to artwork changes
- Dimensions show measurement, numbers, letters, or custom text
- Keyboard input while dragging adjusts format, terminator style, and font size (available in CS6 or later)
- Automatic dimensioning quickly measures objects
- Dual dimensioning and tolerancing
- Chain and datum dimension tools

Editing and measurement

- Scaled move, transform and repeat in grid or circle
- Instant calculation of area, perimeter, length of path(s)
- Area transform
- Corner Profile tool
- Path division for cutting or marking any path
- Measure Scale tool - similar to a map's scale
- Measure Distance tool
- Proportion tool - resize an object to another's dimensions
- Smart Trim and Extend tools

Major features of CADtools 9 (cont.)

Labeling

- Auto-labeling offers text, numbers, alphabet or object geometry
- Custom dimension and label styles create custom text values
- Keyboard input while dragging adjusts format, font size, leaders and shapes (available in CS6 or later)

Shortcuts and presets

- Optional shortcuts globally control all CADtools units
- Globally save and load CADtools panel settings as presets
- New language settings in CADtools preferences and CADunits

Using CADtools with Adobe CC memberships

Adobe Creative Cloud (CC) is time-based, membership access to the latest versions of Adobe Illustrator and other Adobe programs. While Hot Door does not offer subscriptions for use of CADtools, the plug-in remains compatible with both traditional and subscription-based versions of Adobe Illustrator. When using Adobe Illustrator CC, the Adobe software is installed directly on the computer as before but requires online access every 30 days to update membership and obtain minor software updates. CADtools 9 follows the traditional model, running directly on the computer hard drive. On launch, CADtools 9 uses the Internet to check for compatibility with Illustrator and allows for automatic updates to ensure seamless workflow. **CADtools requires online access every seven days to validate activation.**

Free updates for CADtools 9

Software *updates* feature minor bug fixes and enhancements between major *upgrades* of the software. Major upgrades are numbered releases such as 8, 9 or 10. Updates are dot releases such as 9.1, 9.2 or 9.3. CADtools 9.x updates will be available for free at www.hotdoor.com, while upgrades such as version 10 will require purchase. This policy is adopted by most software companies including Adobe.

CORE technology in CADtools 9

The new Hot Door CORE™ (**COde REsource)** architecture dramatically increases performance and allows for rapid integration of new features and enhancements. CORE™ is now available to other plug-in developers for creating products that extend the power of Adobe Illustrator. Visit **www.hotdoorcore.com**.

Updating or installing CADtools

On Mac OS X

Mac Step 1. If Adobe Illustrator is currently running, quit the application.

Mac Step 2. If CADtools has been downloaded, the file will be zipped. Double-click **CADtools9.dmg.zip** to unzip it.

Mac Step 3. Double-click **CADtools9.dmg**. Follow the on-screen instructions to install the file for your version of Adobe Illustrator. Drag the icon named **CADtools.aip** into the Adobe Illustrator > Plug-ins > Tools folder. This will replace any older files with the same name. **Then proceed to step 4 below.**

On Windows

CADtools 9 installs differently on 32-bit and 64-bit Windows machines. If the C drive has two folders called Program Files and Program Files x86, then the system is 64-bit. The 64-bit version of Adobe Illustrator will be installed in Program Files, and the 32-bit version will be installed in Program Files x86. If there is only a Program Files folder, then the system is 32-bit. Follow instructions below to complete installation.

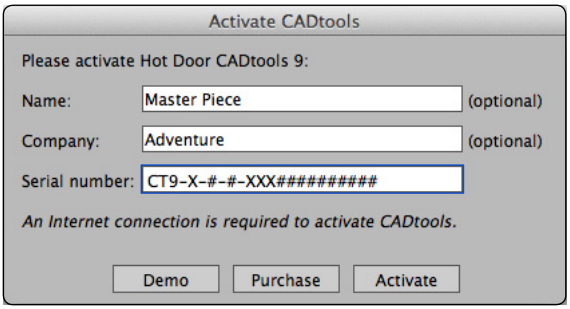
Win Step 1. If Adobe Illustrator is currently running, quit the application.

Win Step 2. If CADtools was downloaded online, the file will be zipped. Double-click **CADtools9.zip** to unzip it.

Win Step 3. Double-click **Install Hot Door CADtools.exe**. Follow the on-screen instructions to install the file named **CADtools** into the Adobe Illustrator > Plug-ins > Tools folder.

Mac/Win Step 4. When launching the Adobe Illustrator application again, a CADtools Activation dialog will appear. For purchased upgrades, enter the new CADtools 9 upgrade serial number, and then enter the CADtools **6, 7 or 8** serial number when prompted. For purchased full versions, enter the new CADtools 9 full version serial number. **An Internet connection is required to activate.**

Activation and support



Depending on the time after first use, the Demo button will enable the demo or trial version. For 7 days after first use, the CADtools demo is a fully-functional trial version. After 7 days, the trial will convert to a functionally-limited demo. In the demo, CADtools will function for an unlimited time period but limits drawing and dimensioning to 1:3 scale with access to only the top tool in six of the eight tool groups. The labels are limited to a curved leader and a circular border, and all label values will read "Demo."

To purchase the full version of CADtools from the Hot Door website, click the Purchase button.

Mac/Win Step 5. Illustrator will open and CADtools icons will appear at the bottom of the Illustrator tool panel. *The CADtools icons have red point markings.* After installing CADtools, the plug-in will automatically check for updates using an Internet connection. Manual checking for updates is achieved by selecting **Window > CADtools > Check for Updates.**

Technical support online:
CADtools users are entitled to free email or phone technical support. Get fast, friendly help from people in California by calling toll-free at **1-888-236-9540.** Choose Window > CADtools > Technical Support to link directly to the tech support web page.

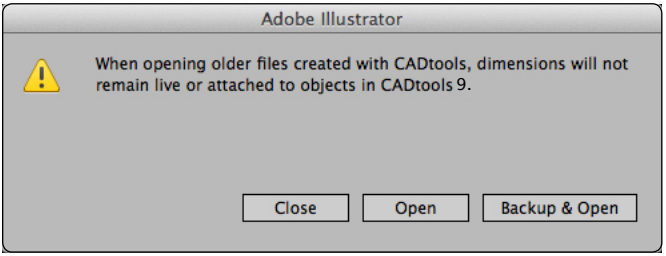
Online tutorials:
Choose Window > CADtools > Online tutorials... to view video demonstrations and tool animations.

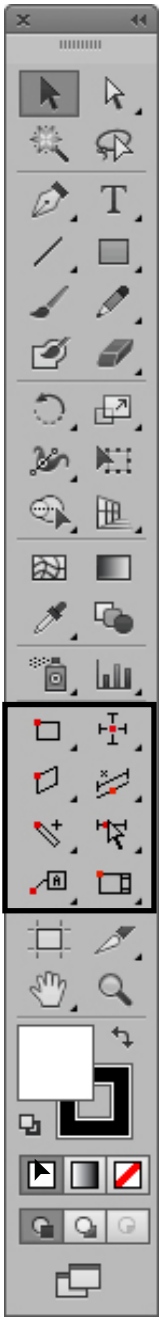
To reinstall CADtools, download the demo version from the CADtools > Free Demos section at www.hotdoor.com. Serial numbers can be retrieved from the website using the email address from the original order.

Working with older versions of CADtools

Using files created with older versions of CADtools

When opening older files created with CADtools, scale will be retained but dimensions will not remain live or attached in CADtools 9.





Overview of the CADtools interface

Finding the tools

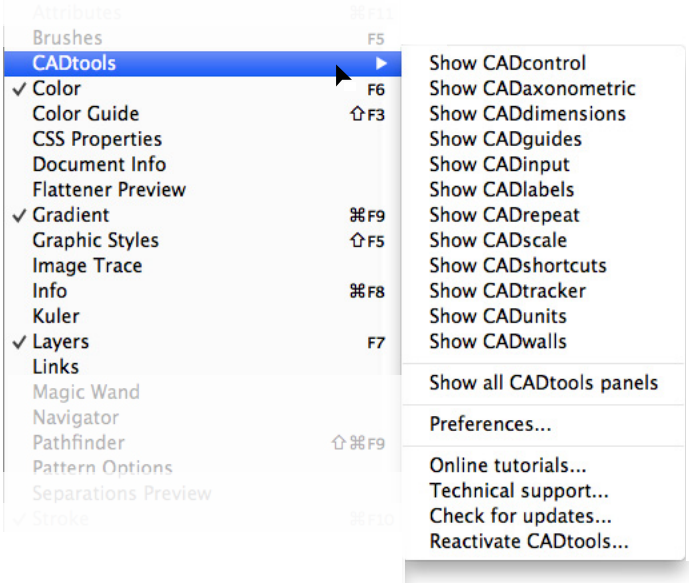
After properly installing CADtools and launching Adobe Illustrator, new CADtools drawing and dimensioning tools will appear in the tools panel of Adobe Illustrator. Within the ten tool groups in the toolbox, there are 81 popout tools. Select the small arrows on the right of the tool icons and drag to highlight other tools. The tool groups can be separated by dragging the tearoff icon at the end of each set of hidden tools.

Color icons and tool behavior

CADtools icons are distinguished by their red point markings. The **red points indicate the position of mouse-click(s) in relationship to the artwork created.** Tool icons that have only one red point require only one mouse-click or click-and-drag. Tool icons which have two red points require two mouse-clicks positioned on artwork as shown in the icon. For most of these tools, drag the mouse after the second click. The fillet, chamfer, trim, extend and proportion tools do not require dragging after the second click.

Window > CADtools panels

Use the Window menu to access eleven CADtools panels, CADtools Preferences, and CADtools web pages for tutorials, tech support, and updates.



Overview of the CADtools interface (cont.)

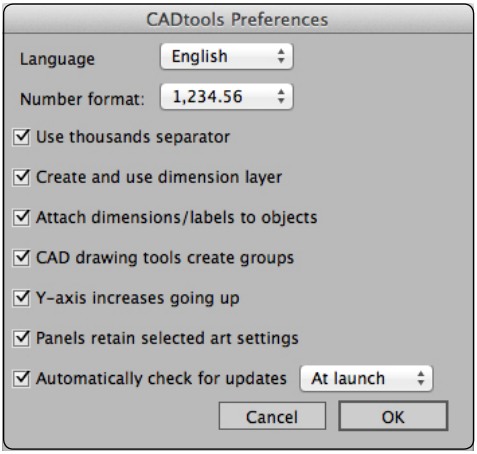
The eleven panels in CADtools are essential for controlling the appearance and creation of CAD artwork. To view and select one of these panels, choose **Window > CADtools**.

CADcontrol	Control panel displays for quick access to settings for current tool.
CADaxonometric	Controls isometric/axonometric angles and allows one-click projection and flattening of artwork between 2D and axonometric views.
CADdimensions	Sets the appearance and text options for dimensions (formerly CADtext and CADstyles).
CADguides	Provides control of CADgrid and CADruler settings as well as full-screen cursors.
CADlabels	Sets the appearance of labels and options for automatic labeling including custom text, alpha or numeric increments, and object geometry data.
CADrepeat	Repeats objects in grid or circular path.
CADscale	Defines document-wide or layer-based scale. Set any number of custom scales.
CADshortcuts	Loads and saves CADtools panel settings as presets and applies automatic dimensioning.
CADtracker	Displays geometric data for CADtools artwork (including location, length, perimeter and area), transforms objects/area in scale, moves objects in scale.
CADunits	Defines all units including dimensions, numeric input, CADrulers, and panel fields.
CADwalls	Sets the thickness of walls and how they are measured (from inside, center or outside).

Dock or stack CADtools panels similar to other Illustrator panels. CADcontrol can be docked above or below Illustrator's control bar.

Setting up the CADtools preferences

Before working with CADtools, check CADtools Preferences and define settings that affect the behavior of tools. Choose **Window > CADtools > Preferences...**



- Language loads CADtools in the selected language
- Comma or decimal number format applies to all dimension text and numeric input.
- The thousands separator shows the comma in dimensions.
- A dimension layer organizes dimensions in their own layer.
- Attached dimensions/labels can attach to objects and follow them if they are relocated or resized. See details below.
- CAD drawing tools create groups with paths in Layers instead of paths alone.
- Y axis increases going down to follow Illustrator unless this is checked.
- Panel settings retain the settings of selected artwork similar to Illustrator. If unchecked, panel settings will return to their original state after art is deselected.
- Automatically check for free updates for the installed version of CADtools at different times – at launch, daily, weekly, or monthly.

Using attached dimensions/labels

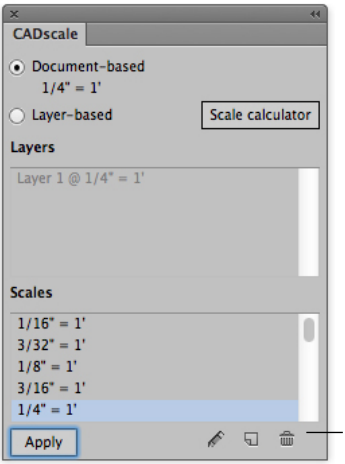
Dimensions that have been created with **Attach dimensions/labels to objects** checked will automatically follow their attached objects as they change in scale and location. Dimensions can be attached to a placed image by dimensioning points along or within its bounding box. Attached dimensions and labels can be edited with the CADdimensions, CADlabels, and CADunits panels. **Dimensions created with this option unchecked cannot be reattached or edited with CADtools panels, but they can be edited with Illustrator's tools.**

To detach a dimension, select it and click the Detach button in the CADdimensions panel. To detach a label, select it and click the Detach button in the CADlabels panel. Dimensions and labels are also detached from their objects when dimension artwork is ungrouped.

To duplicate an object with attached dimensions, copy and paste the object ***with its dimensions.*** If the dimension layer is locked and objects with attached dimensions are moved, then the affected dimensions will be detached from their objects.

Setting up the document: Scale

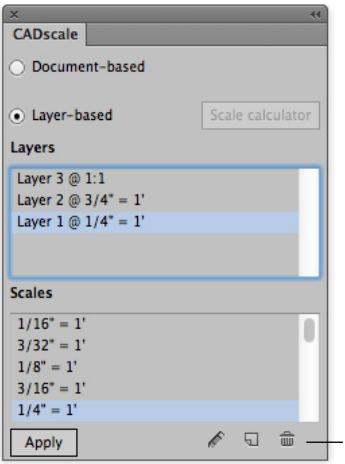
Using CADscale
CADtools drawing and dimensioning tools can create artwork using scale so that larger or smaller-than-life drawings are easily represented on screen or paper. To set the scale for the document or individual layers choose **Window > CADtools > Show CADscale**.



Document-based scale
Choose Document-based scale for scale that affects artwork on all layers of the document.

1. Select a Scale from the scrolling Scales list. Scales are arranged as architectural, engineering and custom scales in the scrolling list. The Scale Calculator can be used to determine the best scale as needed.
2. Click Apply to set the scale.

• Edit, new custom scale and delete buttons help manage scales in the list.



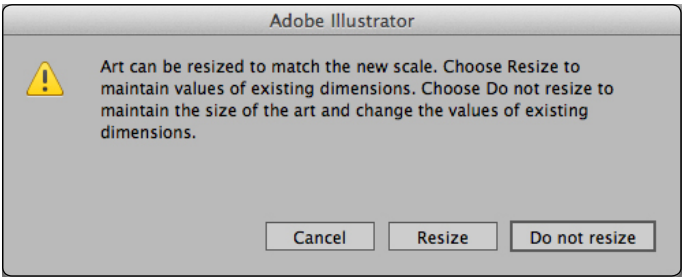
Layer-based scale
Choose Layer-based scale to define a scale for each layer of the document.
1. Select the layer from the Layers list in the CADscale panel.
2. Select a Scale from the scrolling Scales list.
3. Click Apply to set the scale.

• Edit, new custom scale and delete buttons help manage scales in the list.

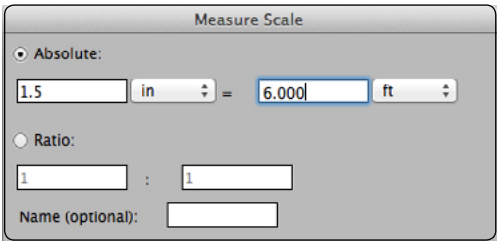
Note about drawing with scale: *Since scale affects only CADtools drawing, editing, labeling and dimensioning tools, remember to use the CADrulers, CADgrids, and CADtracker to monitor values in scale. Object artwork is not affected by changes in scale - only dimensions and measurements are affected by scale.*

Setting up the document: Scale (cont.)

If there is any art on the document when applying a new scale, a dialog will appear that simplifies the choice of resizing existing artwork or dimension values during the scaling process. **When artwork is resized, dimensions will retain their values. When artwork is not resized, dimension values will change to match the new scale.**



To add a new custom scale
1. Select the new scale icon at the bottom of the CADscale panel.
2. Enter an **Absolute** scale equation or a **Ratio** scale equation. The Scales menu supports an unlimited number of custom scales.
3. Click Apply to set the selected scale.

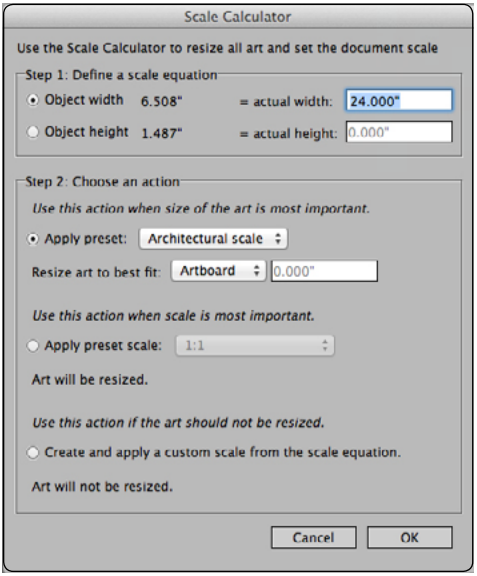


To delete a custom scale
1. Select the scale in the CADscale menu.
2. Click the delete button in the CADscale panel.

To edit a custom scale
1. Select a custom scale from the bottom of the CADscale list.
2. Click the edit button in the CADscale panel and change the scale equation to a new custom scale.
3. If the new custom scale should be applied to the entire document, choose document-based scale and click Apply to set the scale.
4. If the custom scale should be applied to a layer, choose layer-based scale and select the desired layer in the CADscale menu. Click Apply to set the custom scale for that layer.

Setting up the document: Scale (cont.)

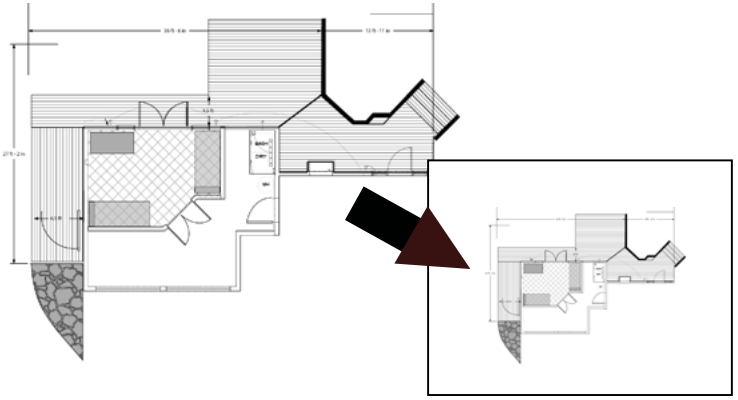
Using the Scale calculator
When using Document-based scale, use the Scale calculator to create a custom or 'best fit' scale and resize artwork based on a selected object's dimensions. Before using the Scale calculator, make sure **Document-based scale** is selected in the CADscale panel. **Select the object used as a reference for the scale calculation,** then click the Scale calculator button.



In **Step 1** of the Scale Calculator dialog, choose the selected object's width or height as the reference value, then enter a desired real-world value on the right.

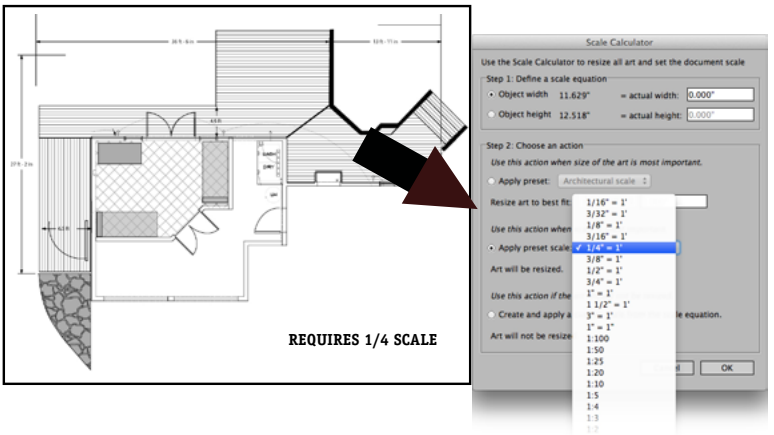
In **Step 2** of the Scale calculator, choose how the new scale will affect the art and scale.
Option 1: To let the Scale calculator determine a preset scale that best fits the scale equation, choose **Apply preset**. Select Architectural scale or Engineering scale based on the type of project. Then select an option to resize the artwork to best fit the artboard, a specified width or a specified height. If choosing width or height, enter a value in the adjacent field.
Option 2: To select a preset scale, choose **Apply preset scale**. Artwork will be resized.
Option 3: If the artwork should not be resized, choose **Create and apply a custom scale from the scale equation**. A new custom scale will appear in the CADscale panel, and artwork will not be resized. This option may be useful for fitting artwork on a certain size of paper.

Apply preset and resize art when a standard scale *and* size of art are most important:



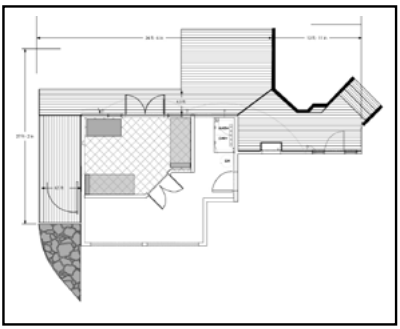
May not fit in artboard perfectly, but scale is standard

Use preset scale when a *specific scale value* is most important:



Resizes art to match preset scale

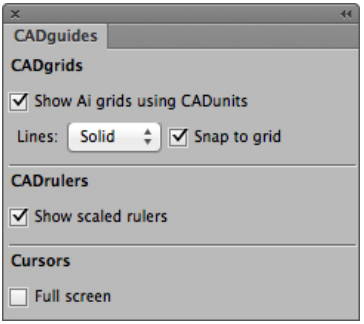
Use custom scale from equation *if the art should not be resized*:



Scale can be any value, which may be useful for fitting the artwork perfectly inside the artboard

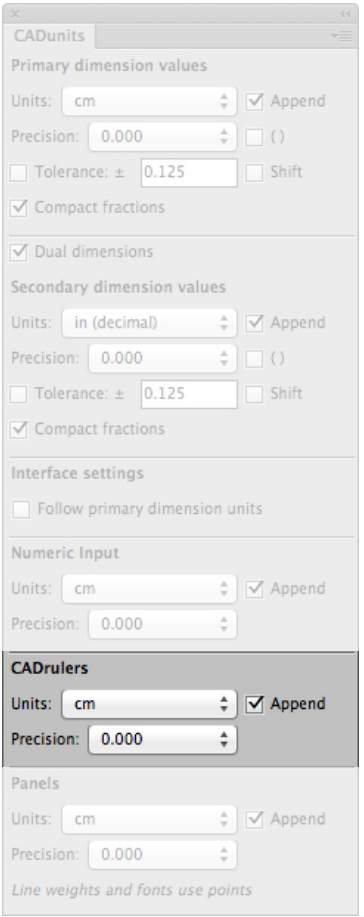
Setting up the document: CADguides

The CADguides panel establishes special grid and ruler settings for use with CADtools. The origin for CADrulers is defined by the Illustrator's ruler origin. The origin is unique to each artboard.



- Show CADgrids and Show CADrulers display special scaled grids and rulers for use with CADtools.
- **Snap to grid** to snap the cursor to grid lines and intersections while using CADtools drawing tools
- Show **Full screen** cursors for easy precision drawing with CADtools.

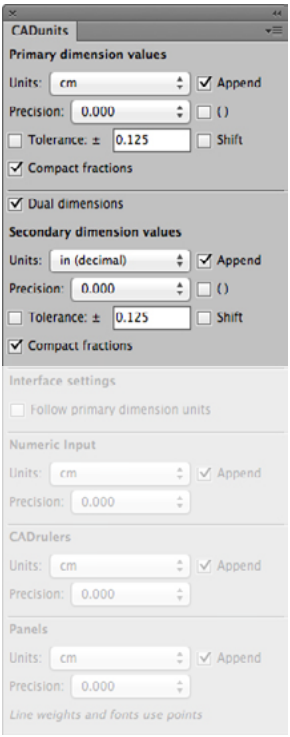
Hot Tip! *Use* ***both CADtools full screen cursors and Adobe Illustrator Smart Guides*** *to create, edit and transform CADtools objects with precision.*



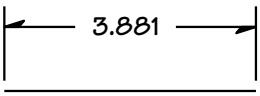
- Units and precision settings for CADrulers are set in the CADunits panel.

Setting up the document: CADunits

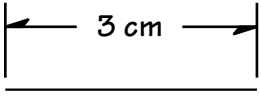
Use the CADunits panel to set up units and precision for all dimension values and interface settings like numeric input, CADrulers and CADpanel options. Choose **Window > CADtools > CADunits**. Dimension values follow the first two panel sections:



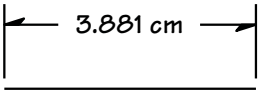
- Set units, precision, and tolerance for dimension measurement values.
- Check Append to show the units after the dimension value (see sample below)
- Select the ( ) option to show reference dimensions within parentheses (as approximations).
- Check Shift to display tolerance as a smaller font size shifted up from the baseline.
- If Compact fractions is checked, fractions will appear compressed in dimensions
- If Dual dimensions is checked, dimensions will display an upper and lower value that is useful for displaying measurement in two different formats. Units, precision and tolerance also will be definable for the lower, secondary dimension values.



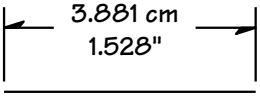
No options selected



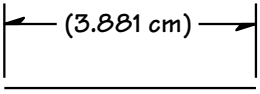
Precision set to 0



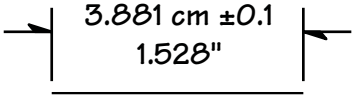
Append selected



Dual dimension selected



( ) selected



Tolerance also selected

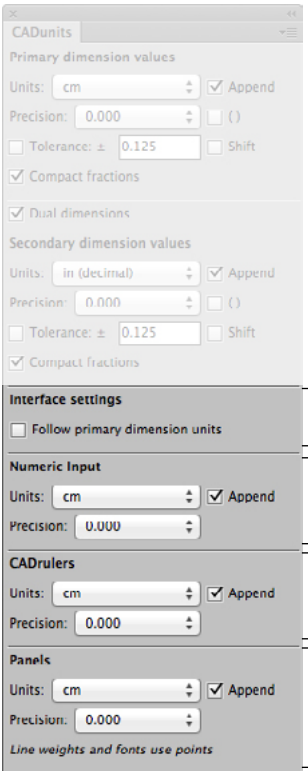
9 1/2"

Compact fraction checked

9 1/2"

Compact fraction unchecked

Setting up the document: CADunits (cont.)



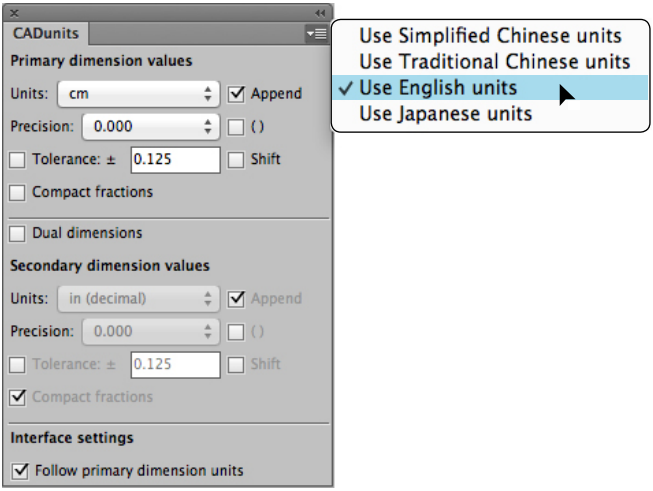
If Follow primary dimension units is unchecked, specific units can be defined below:

- If this is checked, interface settings including numeric input, CADrulers, and other CADpanels fields will follow the units set for primary dimension values.
- Set units and precision for default numeric input values in dialog boxes.
- Set units for CADrulers to show the units after the dimension value.
- Set default units for other fields inside CADtools panels. All line weights and fonts default to points.

CADtools supports these units:
Points: *pt*
Pixels: *px*
Picas: *p*
Millimeters: *mm*
Centimeters: *cm*
Meters: *m*
Kilometers: *km*
Mils: *mil*
Decimal inches with symbol: X.X"
Fractional inches with symbol: X X/X"
Decimal inches with units: X.X *in*
Fractional inches with units: X X/X *in*
Decimal feet and inches with symbol: X' X.X"
Fractional feet and inches with symbol: X' X/X"
Decimal feet and inches with units: X *ft* X.X *in*
Fractional feet and inches with units: X *ft* X/X *in*
Decimal feet with symbol: X.X'
Decimal feet with units: X.X *ft*
Miles: *mi*
Nautical miles: *nmi*

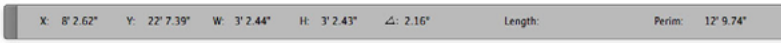
Setting up the document: CADunits (cont.)

The CADunits pop-out menu provides options for displaying units in different languages.



Setting up the document: CADcontrol

Similar to the Illustrator Control panel, **CADcontrol** displays CADtools options for the current tool. Choose **Window > CADtools > CADcontrol**. CADcontrol changes contextually depending on the tool selected.



While using CAD drawing tools...

While drawing CADwalls...

While using dimensioning tools...

While creating CADlabels...

The CADcontrol panel can be dragged to dock to the top or bottom of the workspace. To detach the CADcontrol panel, drag the bar on the left side of the panel.

CAD drawing tools

Orthographic drawing tool group:

Click once on the document to input values numerically.

CAD Rectangle - Click and drag to create the shape.

CAD Centered Rectangle - Click and drag to create the shape.

CAD Ellipse - Click and drag to create the shape.

CAD Centered Ellipse - Click and drag to create the shape.

CAD Centered Polygon - Click and drag to create the shape.

CAD 3-point Circle - Click three points to create the circle.

CAD Arc by Radius - Click origin point, then click and drag another point to define the endpoint and radius of the arc. Click the second point without dragging to input values numerically.

CAD Arc by Points - Click origin point, then click and drag another point to define the endpoints and curvature of the arc. Click the second point without dragging to input values numerically.

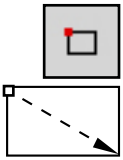
CAD Line - Click and drag to create the line. Click and drag from the endpoint of a line path to continue the line. Shift-drag to constrain to 45° angles. Control-drag after starting the line to constrain the line to the current angle. Click once with this tool on the document to enter line values numerically, including rise and run. Double-click the CAD Line tool icon to define settings that automatically connect paths and draw only at constrained angles.

Tangent & Perpendicular Line - Click a curved path or ellipse and drag out to create a constrained line that is tangent or perpendicular to the path.

Offset - Click a path and drag to create a scaled offset at the distance displayed while dragging. Scale is defined in the CADscale panel and displayed units are defined in the CADunits panel.

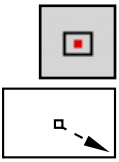
Hot Tip! *Choose View > Smart Guides to help create CADtools objects with more precision. Use CADgrids, CADrulers and CADtracker panels to finely control object size and placement.*

CAD drawing tools (cont.)

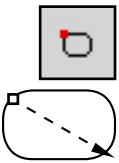


CAD Rectangle
Select the CAD Rectangle tool and place the cursor at the desired corner of the rectangle. Click and drag from one edge of the rectangle to the opposite edge. Hold down the shift key while dragging to create a square.

Note: To quickly toggle between the Rectangle and Centered Rectangle, use the alt/option key. To numerically create a rectangle in scale, click once on the document.

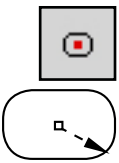


CAD Centered Rectangle
Select the CAD Centered Rectangle tool and place the cursor at the desired center of the rectangle. Click and drag from the center of the rectangle to the edge. Hold down the shift key while dragging to create a square.

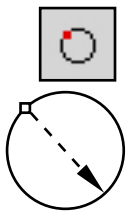


CAD Rounded Rectangle
Select the CAD Rounded Rectangle tool and place the cursor at the desired corner of the rectangle. Click and drag from one edge of the rectangle to the opposite edge. Hold down the shift key while dragging to create a square.

Note: To quickly toggle between the Rounded Rectangle and Centered Rounded Rectangle, use the alt/option key. To numerically create a rectangle in scale, click once on the document.



CAD Centered Rounded Rectangle
Select the CAD Centered Rounded Rectangle tool and place the cursor at the desired center of the rectangle. Click and drag from the center of the rectangle to the edge. Hold down the shift key while dragging to create a square.

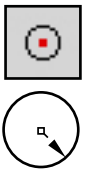


CAD Ellipse
Select the CAD Ellipse tool and place the cursor at the desired edge of the ellipse. Click and drag from one edge of the ellipse to the opposite edge. Hold down the shift key while dragging to create a circle.

Note: To quickly toggle between Ellipse and Centered ellipse, use the alt/option key. To numerically create an ellipse in scale, click once with the CAD Ellipse or Centered Ellipse tool.

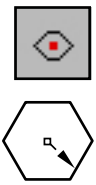
CAD drawing tools (cont.)

CAD Centered Ellipse

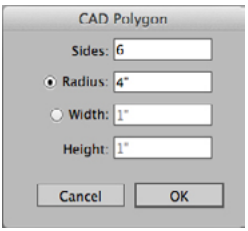


Select the CAD Centered Ellipse tool and place the cursor at the desired center of the ellipse. Click and drag from the center of the ellipse to the edge. Hold down the shift key while dragging to create a circle.

CAD Centered Polygon

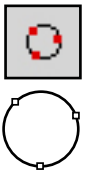


Select the CAD Centered Polygon tool and place the cursor at the desired center of the polygon. Click and drag to create a regular polygon (equiangular and equilateral). Hold down the shift key while dragging to place the bottom edge of the polygon along the horizon. Hold down the control key to create an irregular polygon. Hold down control+shift keys to force an irregular polygon into a square bounding box.



To numerically create a polygon in scale:
1) Click once on the document to define the center of the polygon
2) Enter three or more number of sides
3) Create a polygon by radius, or create a polygon by width and height.

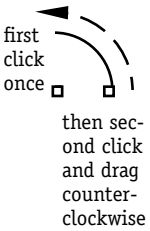
CAD 3-point Circle



Select the CAD 3-point Circle tool and click three points to define the boundary of the desired circle. Any circle can be defined by three points. The third point can also be dragged.

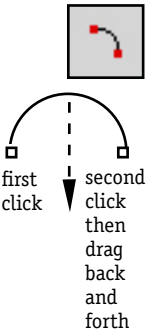
CAD Arc (by Radius)

Select the CAD Arc (by Radius) tool and position the cursor at the desired center of the arc. Click the mouse button once and release. Then position the cursor where the arc should begin, which will be the length of the arc radius. Click and drag *counterclockwise* to create the arc. Hold down the control key while dragging to draw the opposite arc.



Note: To quickly toggle between Arc (by Radius) and Arc (by Points), use the alt/option key. To numerically create an arc (by radius) in scale:
1) Click once to begin the arc
2) Click once anywhere on the document
3) Enter the values and units for the arc

CAD drawing tools (cont.)



CAD Arc (by Points)

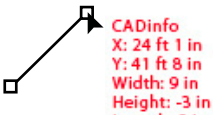
Select the CAD Arc (by Points) tool and position the cursor to begin the arc. If this is an anchor point, the cursor will change to ( ). Click the mouse button once and release the mouse button. Position the cursor where the arc should end. Click and drag back and forth to create the arc. Hold down the control key while dragging to create the opposite arc.

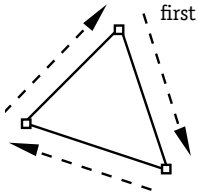
To numerically create an arc (by points) to scale:
1) Click once to begin the arc
2) Click once where the arc should end
3) Enter the values and units for the arc radius

CAD Line

The CAD Line tool displays the line while dragging to create it and join it to other lines. View Illustrator's Smart Guides for snapping and aligning CAD lines with other paths and objects. To view geometry while dragging, check *Show geometry while dragging* in the CADtracker panel.

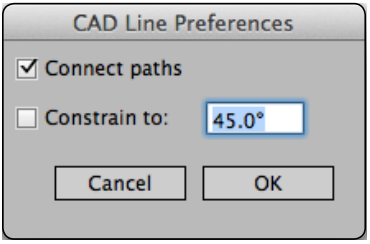
Select the CAD Line tool and position the cursor at the start of the line. Click and drag to position the line, then release the mouse button to create the line. Hold down the shift keys while dragging to constrain the tool to multiples of 45°. Control-drag after starting the line to constrain the line to the current angle.





To create polygons with the line tool, create a line, then position the mouse over an endpoint of the line. When the ( ) cursor appears, begin dragging to create a new line joined at that endpoint. Release the mouse button when the line is positioned and continue the process as needed. To close the path, click and drag the final line until the cursor is over the first anchor point of the polygon. When the ( ) cursor appears, release the mouse button and the polygon will close itself.

CAD drawing tools (cont.)

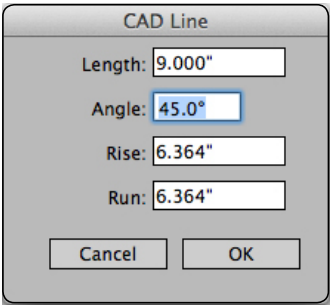


To draw lines connected, double-click the CAD Line tool and select Connect paths (checked by default). Lines will connect while drawing, which is unlike Illustrator's Line tool. To draw lines with segments that are not connected, uncheck this option.

For persistent constrained lines, double-click the CAD Line tool and set the angle of constraint in the CAD Line Settings dialog. All lines will constrain to this angle and its opposite angle. Hold down the control key to draw any angle, and hold down control+shift to constrain to increments of 45°.

For dynamically constrained lines, double-click the CAD Line tool, uncheck the Constrain setting in the CAD Line Settings dialog, and select OK. Then select the CAD Line tool and start dragging a line at any angle. To constrain that angle, hold down the **control** key after dragging.

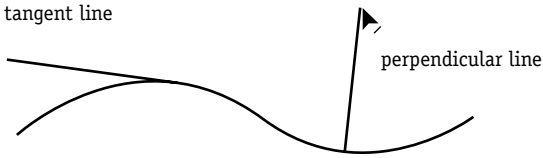
For draw lines numerically, including rise/run: To numerically create a line in scale, click once on the document with the CAD Line tool. Enter values in Rise or Run fields to automatically calculate the angle.



CAD drawing tools (cont.)

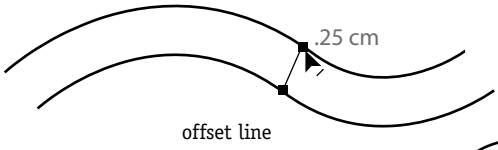
Tangent & Perpendicular Line

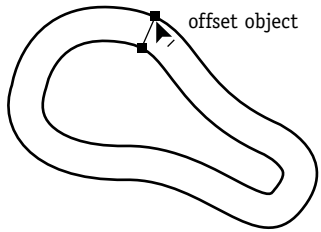
To create a line tangent or perpendicular to a path, select the Tangent & Perpendicular Line tool and position the cursor over the path at the desired location. When the ( ) cursor appears, click and drag in the direction the line should appear. The line will constrain to tangent or perpendicular angles to the path.



Offset

To offset any path, select the Offset tool and position the cursor over the path. When the ( ) cursor appears, click and drag in the direction the offset should appear. The offset distance will appear while dragging the offset. The distance will be a scaled value using the scale set in the CADscale panel, and the units set in the CADunits panel. Click once on a path without dragging to access the numeric input dialog box to numerically create the offset in scale.





To see offset distance while dragging, check *Show geometry while dragging* in the CADtracker panel. Some shapes will not be able to offset beyond a certain distance without distortion.

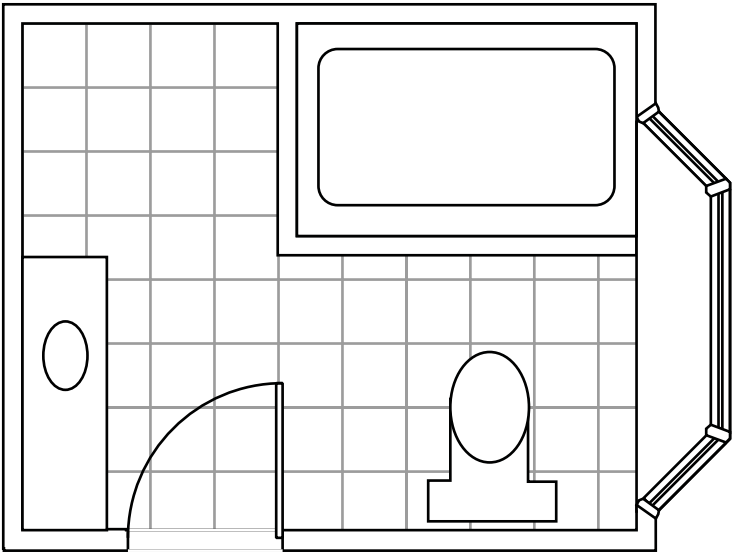
Type must be outlined inside of Adobe Illustrator and the compound paths must be released prior to using the Offset tool. Select the text, choose Type > Create Outlines, then Object > Compound Path > Release.

Offset distance cannot be calculated under 5 pts (.07 in at 1:1 scale).

CAD wall tools

CADwalls tool group:

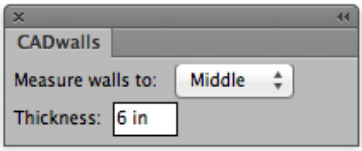
Add Wall - Click and drag on the side or end of a wall to create a new wall. Click once on the document to input values numerically.
Remove Wall - Click a wall that is free of dependent walls to remove it.
Move Wall - Click and drag a wall to adjust its location.
Door Insertion - Click on a wall to insert a door. Define the options for width, angle and style.
Window Insertion - Click on a wall to insert a window. Define the options for width, walls, framing and style.

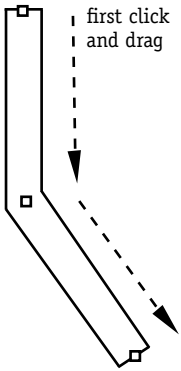


CAD wall tools (cont.)

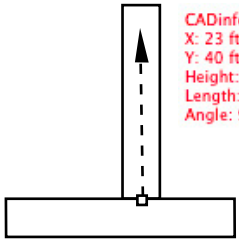
Add Wall

The Add Wall tool works like the CAD Line tool, creating rectangles (representing walls) with a thickness defined in the numeric input dialog box of the CADwalls panel. Before drawing walls, open the CADwalls panel and set the wall thickness and measurement reference. Choose **Window > CADtools > Show CADwalls.** ***Double-clicking the Add Wall tool will also open the CADwalls panel.*** Enter any unit value or use the default units defined in the Numeric input section of the CADunits panel.

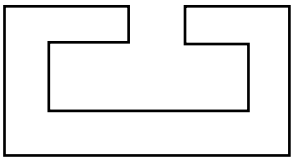




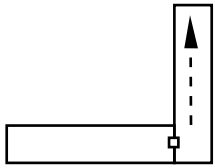
release mouse button, click endpoint, then drag



to add a new section, click the side of the wall and drag out or click once to create the wall section numerically

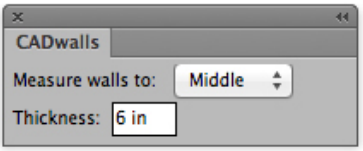


CADwalls cannot create complete enclosures, so be sure to leave openings while drawing spaces

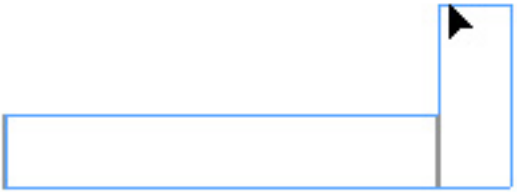


to create a corner on a wall, click on the end of the wall (not the corner points) and drag to either side

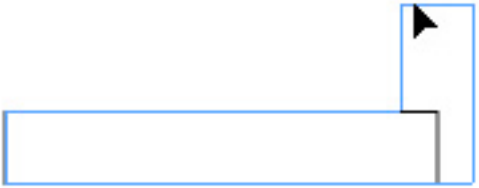
CAD wall tools (cont.)



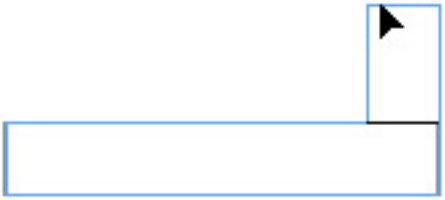
If Measure walls to the *inside* is selected, additional wall segments will be joined like this:



If Measure walls to the *middle* is selected, additional wall segments will be joined like this:



If Measure walls to the *outside* is selected, additional wall segments will be joined like this:



Click and drag on the document to create a wall, or click once to access the numeric input dialog box to numerically create a wall.

CAD wall tools (cont.)

Add Wall (cont.)
To draw a wall, select the Add Wall tool and position the cursor at the end of the desired wall. Click and drag to position the wall. Release the mouse button to create it. Hold down the shift key while dragging to constrain the wall to 45° increments. **Hold down the alt/option key while dragging to snap the wall to the nearest unit increment.**

To view wall measurements while dragging, make sure that *Show geometry while dragging* is checked in the CADtracker panel.

To create an additional wall joined to the end or side of an existing wall, position the cursor over the wall path at the desired location until the (▶) cursor appears. Then click on the path of the wall and begin dragging. Release the mouse button to complete the new wall addition. *Walls can only be added when this cursor appears, indicating an underyling wall line.*

The Add Wall tool does not create curved walls, but the CADtools Offset tool can simulate curved walls.

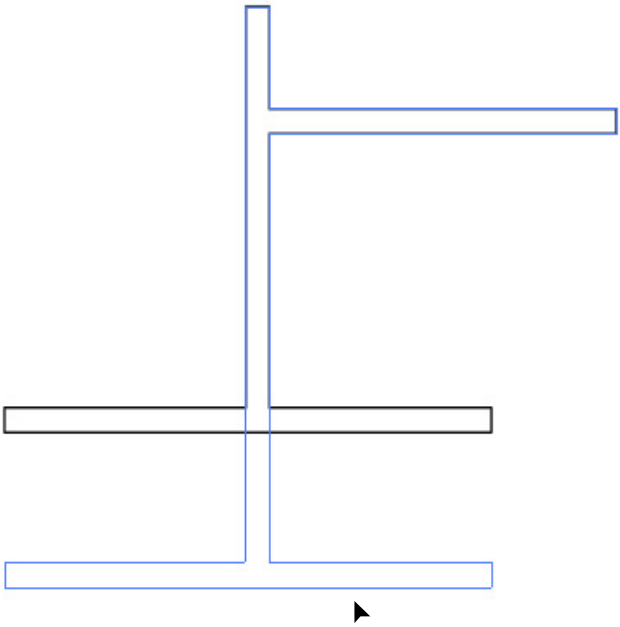
Remove Wall
To remove a wall, select the Remove Wall tools and position the cursor over the path of the wall to remove. When the (▶) cursor appears, click to remove the wall extension. *Note: Walls can only be removed if they are not joined to any dependent wall sections.*

Hot Tip!
To obtain the area of a space inside walls, use the CAD Rectangle or CADline tool to create a closed shape over the area. Be sure to lock the underlying artwork before using the CADline to avoid connecting paths. View the area in the CADtracker panel.

CAD wall tools (cont.)

Move Wall

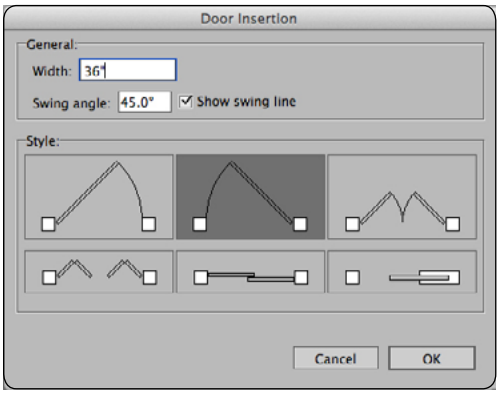
To move a dependent wall along a primary wall, select the Move Wall tool and position the cursor over the wall to adjust. Click and drag to slide the wall along the primary wall to the desired location.



CAD wall tools (cont.)

Door Insertion

To insert a door into a CADwall, select the Door Insertion tool and position the cursor over the line of a wall drawn with the Add Wall tool. Click and drag to position the door along the wall, or click once at the desired door edge. A dialog will appear prompting the setting of width, angle and style:



A door will be created independently of the CADwall with grouped lines and objects that can be edited with Illustrator's selection tools. To delete the door, simply select it and click the delete button.

If prompted that there is not enough space available for the door, try the following steps:

1. If click-dragging on the wall to position the door, drag along with wall until the door preview appears. If this is difficult, drag along the other side of the wall to see the preview. The door cannot be inserted until there is enough space for it to swing open.

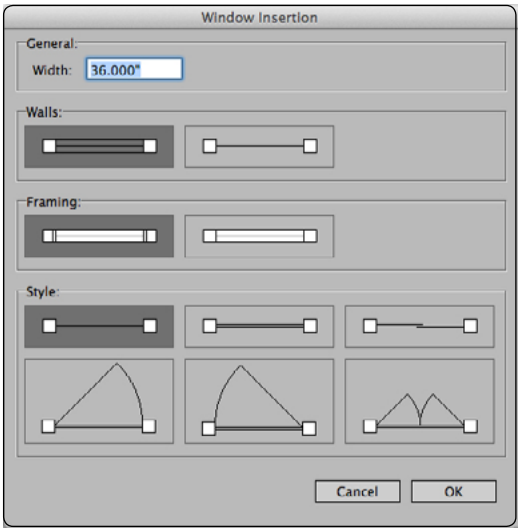
2. Check the thickness of the CADwall. The thickness of walls is set in the CADwalls panel under Window > CADtools > Show CADwalls. If the thickness (in scale) is too small for the width of the door, it cannot be created.

3. Click once on the CADwall line to view the Door Insertion Settings. Make sure the door width setting is reasonable for the size of the wall.

CAD wall tools (cont.)

Window Insertion

To insert a window into a CADwall, select the Window Insertion tool and position the cursor over the line of a wall drawn with the Add Wall tool. Click and drag to position the window along the wall, or click once at the desired window edge. A dialog will appear prompting the setting of width, walls, framing and style:



A window will be created independently of the CADwall with grouped lines and objects that can be edited with Illustrator's selection tools. To delete the window, simply select it and click the delete button.

If prompted that there is not enough space available for the window, try the following steps:

1. Check the thickness of the CADwall. The thickness of walls is set in the CADwalls panel under Window > CADtools > Show CADwalls. If the thickness (in scale) is too small for the width of the window, it cannot be created.

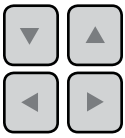
2. Click once on the CADwall line to view the Window Insertion Settings. Make sure the window width setting is reasonable for the size of the wall.

Drawing shortcuts with keyboard

Keyboard input ***while dragging*** dimensions, labels, doors/windows, polygons, and rounded rectangles quickly edits their format and shapes (in CS6 or later).

Polygon sides will change with up and down arrow keys.

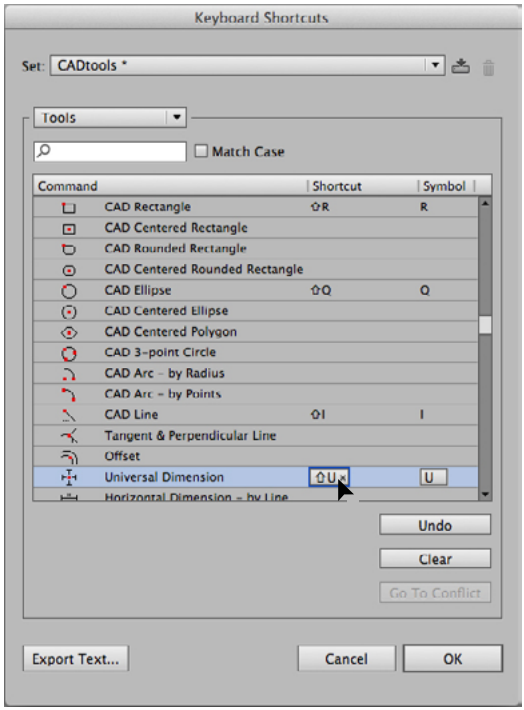
Rounded rectangle radii will change with up and down arrow keys.



Door and window *sizes* change with up and down arrows, while door and window ***styles*** change with right and left arrows.

Tool selection with keyboard

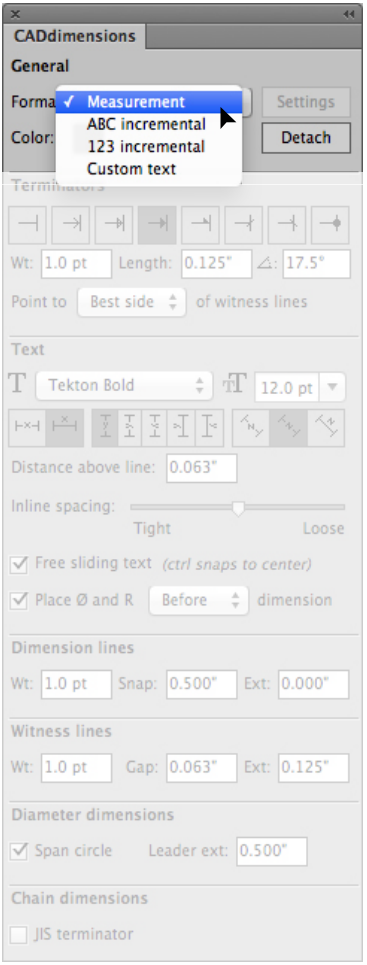
Adobe Illustrator can assign keyboard shortcuts to CADtools. Choose **Edit > Keyboard Shortcuts...** and assign keys where desired.



Dimensioning control: CADdimensions

Before dimensioning objects, open the CADdimensions panel to define attributes for CADtools dimensions. Choose **Window > CADtools > Show CADdimensions.** ***Double-clicking any dimension tool will also open the CADdimensions panel.*** To change the attributes of attached dimensions after they are created, select them and make changes in this panel.

Note: Any dimension values edited with the Illustrator Type tool will be retained as custom text.



Under the **General** section, choose **Format** and color for dimensions:

- **Measurement** is the most common dimension format and determines numeric value of object lines and distances between points. With Measurement selected, choose units and precision in the CADunits panel.

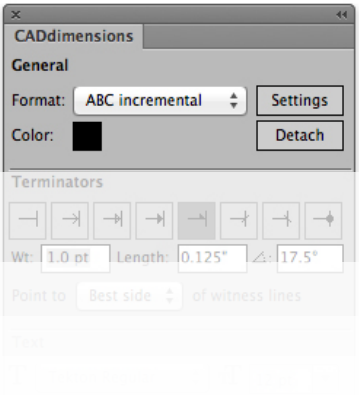
- **ABC Incremental** creates text dimensions that automatically increment alphabetically. To force the next letter, enter the desired value in the Next field. Use the Settings button to select options.

- **123 Incremental** creates text dimensions that automatically increment numerically. To force the next number, enter the desired value in the Next field. Use the Settings button to select options.

- **Custom text** creates dimensions that can be edited text or number values. Use the Settings button to select options.

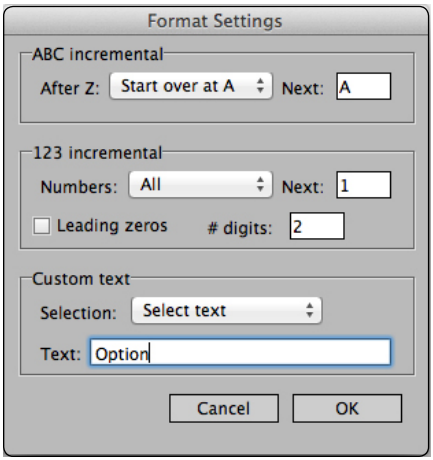
Dimensioning control: CADdimensions (cont.)

Use the **Settings** button in the CADdimensions panel to control the behavior of each type of format excluding measurement. Use the Detach button to unlink selected dimensions from their associated paths and objects. Dimensions are attached to objects if **Attach dimensions/labels** is selected under **Window > CADtools > Preferences...**



General:

- Change the dimension text and line color with the color picker.
- Use the **Detach** button to unlink dimensions from their associated objects. **First select the dimension** and then click the Detach button. If a dimension was not created over a point or path, this feature will not perform any action. Detached dimensions can no longer be edited with CADtools panels but can be edited with Illustrator's tools.

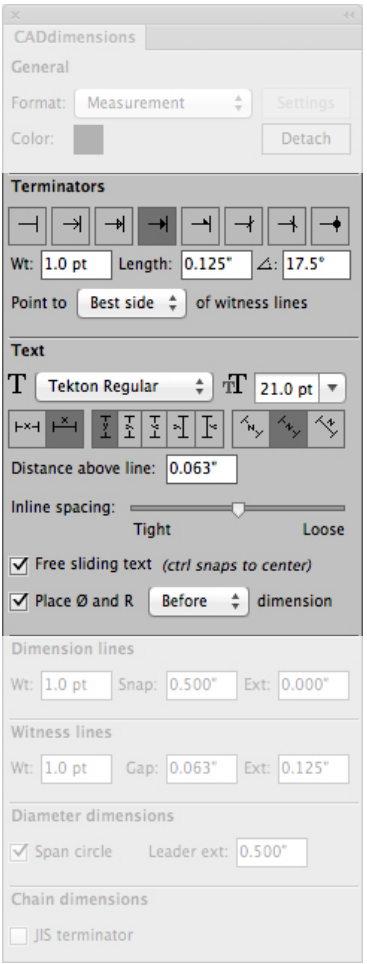


For **ABC Incremental** format, select how to increment and control the next letter.

For **123 Incremental** format, choose if numbers will increment as all, even, or odd values. Control the next number, option for leading zeroes, and digits.

For the **Custom text** format, control if text will automatically select and display a custom text value.

Dimensioning control: CADdimensions (cont.)

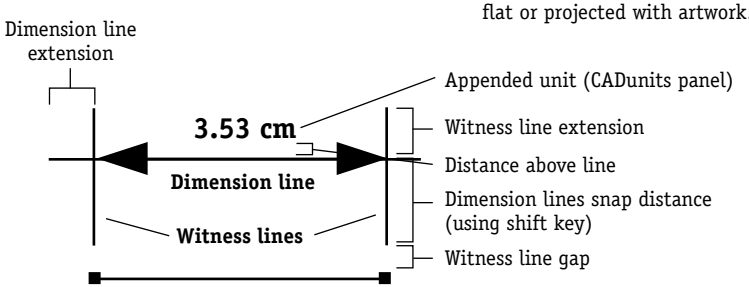


Terminators:

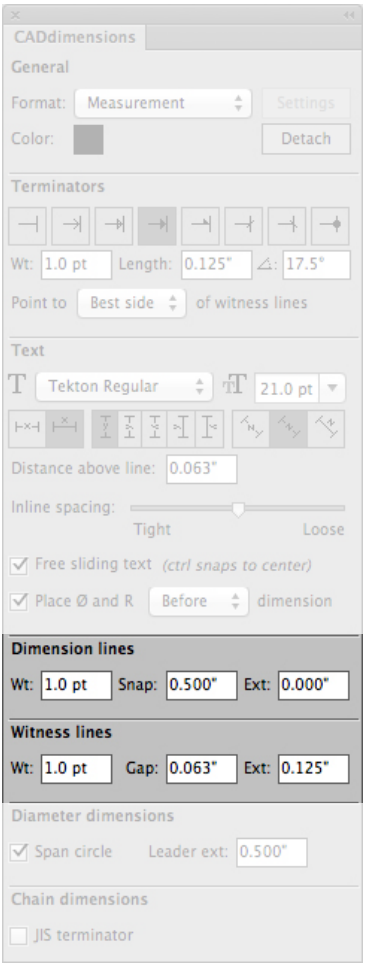
- Select from several terminator types and adjust stroke weight, length, and angle of arrowhead with field values.
- Choose if the terminators will point inside, outside, or the best interpreted side of witness lines

Text:

- Use the icons to set the location of dimension text inline or above line for horizontal, vertical, and inclined dimensions.
- Enter a value for text distance above the dimension line (see sample below).
- Adjust the spacing between the dimension line and text with the Inline spacing slider.
- Check Free sliding text to adjust the placement of the dimension inside the dimension line while dragging (use the control key while dragging to snap the dimension to center).
- Diameter or radius symbols can appear before or after dimension text.
- Choose to show axonometric text as flat or projected with artwork.

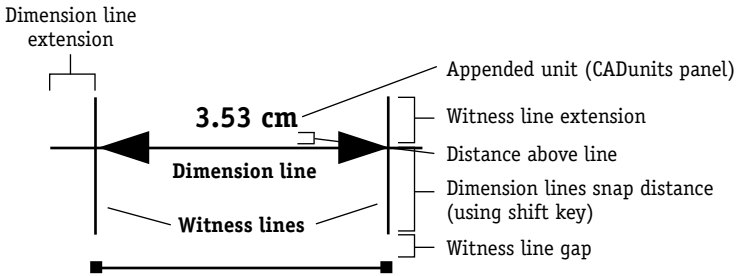


Dimensioning control: CADdimensions (cont.)

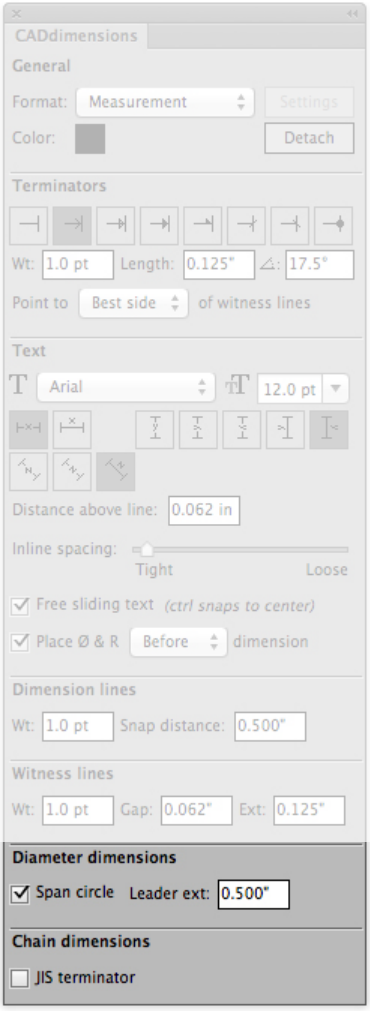


Dimension lines:
• Dimension line weight and snap tolerance are set with field values. Snap distance sets the increment value when using the shift key to snap dimensions away from objects. Extension sets the length of the dimension line beyond the witness line.

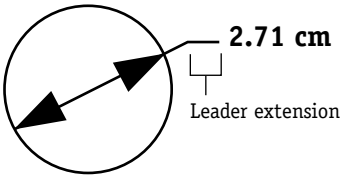
Witness lines:
• Use field values to set the witness line weight, extension beyond the dimension line, and gap from object (see sample below).



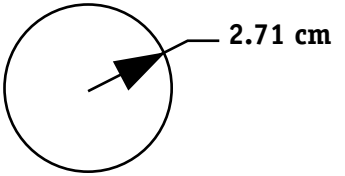
Dimensioning control: CADdimensions (cont.)



Span circle checked



Span circle unchecked

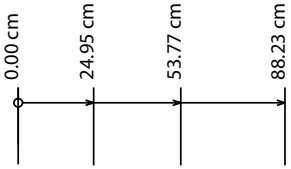


Diameter dimensions:

- Choose to span diameter dimensions across the circle or from the circle center (see sample above).
- Define a leader line length for diameter and radius dimensions.

Chain dimensions:

- Select chain datum for dimensioning segments cumulatively from a reference point (datum); JIS terminator complies with Japanese Industrial Standards.



JIS terminator

Dimensioning tools

Universal Dimension - Click and drag on any type of line or circle to create dimensions. Click points in space to create labels.
Horizontal Dimension (by Line) - Click and drag out any horizontal segment to dimension the distance between two anchor points.
Horizontal Dimension (by Points) - Click multiple points anywhere on the document and drag to dimension their horizontal distances.
Horizontal Datum Dimension - Click a point of origin, then click multiple points and drag to dimension the horizontal distances from the origin.
Horizontal Chain Datum Dimension - Click a point of origin, then click multiple points and drag to dimension the distance in chain style.
Vertical Dimension (by Line) - Click and drag any vertical segment to dimension the vertical distance between two anchor points.
Vertical Dimension (by Points) - Click multiple points anywhere on the document and drag to dimension their vertical distances.
Vertical Datum Dimension - Click a point of origin, then click multiple points and drag to dimension their vertical distances from the origin.
Vertical Chain Datum Dimension - Click a point of origin, then click multiple points and drag to dimension the vertical distance in chain style.
Inclined Dimension (by Line) - Click and drag any inclined segment to dimension the inclined distance between two anchor points.
Inclined Dimension (by Points) - Click multiple points anywhere on the document and drag to dimension their inclined distances.
Inclined Datum Dimension - Click a point of origin, then click multiple points and drag to dimension their inclined distances from the origin.
Inclined Chain Datum Dimension - Click a point of origin, then click multiple points and drag to dimension their inclined distances from the origin in chain style.
Angle Dimension - Click a line of origin, then click and drag a nonparallel line to dimension the angle between the lines.
Bézier Length Dimension - Click a point of origin on a Bézier (curved) path or arc, then click and drag another point on the same path to dimension the length along the path between the points.
Diameter Dimension - Click and drag a point on a circle to dimension its diameter.
Radius Dimension - Click and drag a point on a circle to dimension its radius.
Fillet Radius Dimension - Click and drag *directly over* an arc or fillet to display the radius of the arc or fillet at the cursor location.
Bézier Curvature Dimension - Click and drag *directly over* a curved line to display the radius of the curve at the cursor location.
Tangent Dimension - Click and drag *directly over* a curved line to display the tangent of the curve at the cursor location. Use alt/option key to display the normal/perpendicular line. Use shift to diplay the normal and tangent lines. Use control to toggle normal placement.
Center line - Click and drag to create the line.
Object center - Click within an object to mark the center of its bounding box.

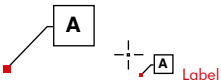
Dimensioning tools (cont.)

The versatile Universal Dimension tool creates horizontal, vertical, inclined, and axonometric dimensions on lines, diameter or radius dimensions on circles, and labels on points in space.

Universal Dimension tool for lines
Select the Universal Dimension tool and position the cursor over the line to dimension. When the ( ) cursor appears, click the line and drag to position the dimension line. Hold down the shift key while dragging to offset the dimension line in increments. The offset increment value is set in the Snap distance field in the Dimension lines section of the CADdimensions panel. If Free sliding text is checked in the CADdimensions panel, use the control key to center the dimension text.

Universal Dimension tool for circles
Select the Universal Dimension tool and position the cursor over the path of a circle. When the ( ) cursor appears, click and drag to position the diameter dimension. Hold down the shift key while dragging to constrain the tool to multiples of 45°. Hold down the control key while dragging to toggle the placement of the diameter dimension text. Hold down the alt/option key while dragging to create a radius.

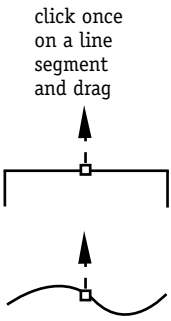
Universal Dimension tool for *unattached* labels
Select the Universal Dimension tool and position the cursor away from a path. Click and drag to position the label according to settings in the CADlabels panel. Refer to the Labeling section in this user guide for details on using the CADlabels panel.



Note: Keyboard input ***while dragging*** dimensions and labels will adjust format ("F" key), terminators ("T" key), and font size (up and down arrow keys) (available in CS6 or later).

Dimensioning tools (cont.)

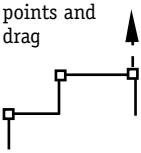
Horizontal Dimension (by Line)
The Horizontal Dimension (by Line) tool will dimension horizontal line segments. A line segment is a path between two anchor points in Adobe Illustrator.



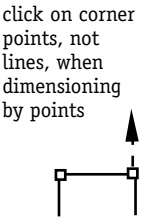
Select the Horizontal Dimension (by Line) tool and position the cursor over the line to dimension. When the ( ) cursor appears, click the horizontal line and drag to position the dimension line. Hold down the shift key while dragging to offset the horizontal dimension line in increments. The offset increment value is set in the Snap distance field in the Dimension lines section of the CADdimensions panel.

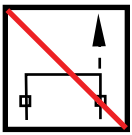
Note: To quickly toggle between Horizontal Dimension (by Line) and Vertical Dimension (by Line), use the alt/option key.

Horizontal Dimension (by Points)
The Horizontal Dimension (by Points) tool will dimension the horizontal distance between multiple points. Define the location of these points anywhere on the document.



Select the Horizontal Dimension (by Points) tool and position the cursor at one end of the horizontal distance to dimension. If this is an anchor point, the cursor will change to ( ) . Then click the mouse button once and release the mouse button. Position the cursor at the next point along the horizontal distance to dimension. Continue clicking on points along the horizontal distance until the last point is clicked, then drag to position the dimension line. Use the shift key while dragging to place the dimension line at a set distance from the object. The offset increment value is set in the Snap distance field in the Dimension lines section of the CADdimensions panel.

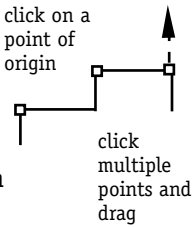




Note about changing tools: *To quickly toggle between Horizontal Dimension (by Points) and Vertical Dimension (by Points), use the alt/option key.*

Dimensioning tools (cont.)

Horizontal Datum Dimension

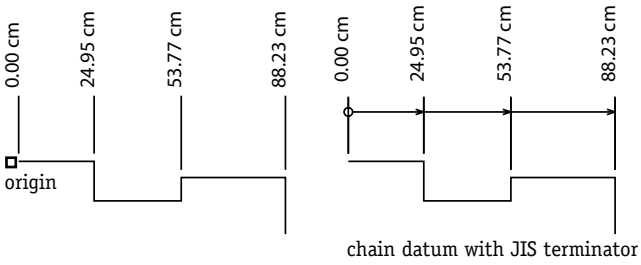


The Horizontal Datum Dimension tool will dimension the horizontal distances between a point of origin and other points. Define the location of these points anywhere on the document.

Select the Horizontal Datum Dimension tool and position the cursor at the origin on one end of the horizontal distance to dimension. If this is an anchor point, the cursor will change to ( ) . Then click the mouse button once and release the mouse button. Position the cursor at the next point along the horizontal distance to dimension. Continue clicking on points along the horizontal distance until the last point is clicked, then drag to position the dimension line. Use the shift key while dragging to place the dimension line at a set distance from the object. The offset increment value is set in the Snap distance field in the Dimension lines section of the CADdimensions panel.

Horizontal Chain Datum Dimension

The Horizontal Chain Datum Dimension tool will make a datum dimension line appear as a linear chain of dimensions rather than stacked dimensions. Follow the instructions for Horizontal Datum Dimension.

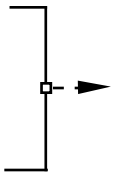


To change the datum dimension terminator to a JIS terminator, check JIS terminator in the CADdimensions panel.

Note about changing tools: *To quickly toggle between Horizontal Datum Dimension and Vertical Datum Dimension tools, use the alt/option key.*

Dimensioning tools (cont.)

click once on a line segment and drag

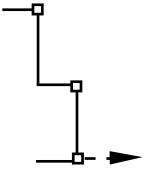


Vertical Dimension (by Line)
The Vertical Dimension (by Line) tool will dimension vertical line segments. A line segment is a path between two anchor points in Adobe Illustrator.

Select the Vertical Dimension (by Line) tool and position the cursor over the line to dimension. When the ( ) cursor appears, click the vertical line and drag to position the dimension line. Hold down the shift key while dragging to offset the vertical dimension line in increments. The offset increment value is set in the Snap distance field in the Dimension lines section of the CADdimensions panel.

Note about changing tools: *To quickly toggle between Vertical Dimension (by Line) and Horizontal Dimension (by Line), use the alt/option key.*

click on multiple points and drag



Vertical Dimension (by Points)
The Vertical Dimension (by Points) tool will dimension the vertical distance between multiple points. Define the location of these points anywhere on the document.

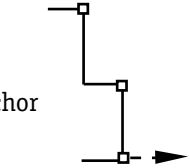
Select the Vertical Dimension (by Points) tool and position the cursor at one end of the vertical distance to dimension. If this is an anchor point, the cursor will change to ( ) . Then click the mouse button once and release the mouse button. Position the cursor at the next point along the vertical distance to dimension. Continue clicking on points along the vertical distance until the last point is clicked, then drag to position the dimension line. Use the shift key while dragging to place the dimension line at a set distance from the object. The offset increment value is set in the Snap distance field in the Dimension lines section of the CADdimensions panel.

Note about changing tools: *To quickly toggle between Vertical Dimension (by Points) and Horizontal Dimension (by Points), use the alt/option key.*

Dimensioning tools (cont.)

Vertical Datum Dimension

The Vertical Datum Dimension tool will dimension the vertical distances between a point of origin and other points. Define the location of these points anywhere on the document.



Select the Vertical Datum Dimension tool and position the cursor at the origin on one end of the vertical distance to dimension. If this is an anchor point, the cursor will change to ( ). Then click the mouse button once and release the mouse button. Position the cursor at the next point along the vertical distance to dimension. Continue clicking on points along the vertical distance until the last point is clicked, then drag to position the dimension line. Use the shift key while dragging to place the dimension line at a set distance from the object. The offset increment value is set in the Snap distance field in the Dimension lines panel of the CADdimensions panel.

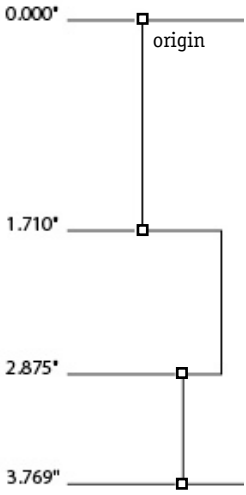
Note about changing tools: *To quickly toggle between Horizontal Datum Dimension and Vertical Datum Dimension tools, use the alt/option key.*

Vertical Chain Datum Dimension

The Vertical Chain Datum Dimension tool will make a datum dimension line appear as a linear chain of dimensions rather than stacked dimensions. Follow the instructions for Vertical Datum Dimension.

To change the datum dimension terminator to a JIS terminator, check JIS terminator in the CADdimensions panel.

Note about changing tools: *To quickly toggle between Vertical Chain Datum Dimension and Horizontal Chain Datum Dimension tools, use the alt/option key.*

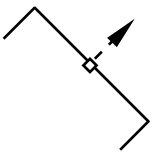


Dimensioning tools (cont.)

Inclined Dimension (by Line)

The Inclined Dimension (by Line) tool will dimension angled or "inclined" line segments. A line segment is a path between two anchor points in Illustrator.

click once on a line segment and drag

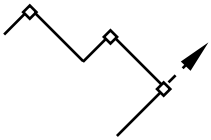


Select the Inclined Dimension (by Line) tool and position the cursor over the inclined line to dimension. When the ( ) cursor appears, click the line and drag to position the dimension line. Use the shift key while dragging to place the dimension line at a set distance from the object. The offset increment value is set in the Snap distance field in the Dimension lines section of the CADdimensions panel.

Inclined Dimension (by Points)

The Inclined Dimension (by Points) tool will dimension the inclined, absolute distance between multiple points along any axis. Define the location of these points anywhere on the document.

click on multiple points and drag



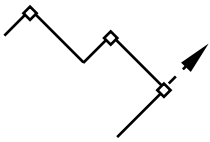
Select the Inclined Dimension (by Points) tool and position the cursor at one end of the inclined distance to dimension. If this is an anchor point, the cursor will change to ( ). Then click the mouse button once and release the mouse button. Position the cursor at the opposite end of the inclined distance to dimension. If this is an anchor point, the cursor will change to ( ). Then click and drag to position the dimension line. Use the shift key while dragging to place the dimension line at a set distance from the object. The offset increment value is set in the Snap distance field in the Dimension lines section of the CADdimensions panel.

Note about dimensioning on inclines:
To prevent errors in measuring nonlinear inclined segments, the inclined chain dimension tool will only measure multiple segments contained within a reasonable angle.

Dimensioning tools (cont.)

Inclined Datum Dimension

The Inclined Datum Dimension tool will dimension the inclined distances between a point of origin and other points. Define the location of these points anywhere on the document.

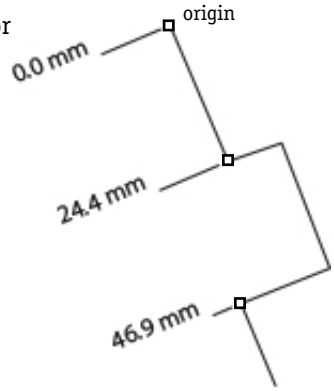


Select the Inclined Datum Dimension tool and position the cursor at the origin on one end of the inclined distance to dimension. If this is an anchor point, the cursor will change to ( ). Then click the mouse button once and release the mouse button. Position the cursor at the next point along the inclined distance to dimension. Continue clicking on points along the inclined distance until the last point is clicked, then drag to position the dimension line. Use the shift key while dragging to place the dimension line at a set distance from the object. The offset increment value is set in the Snap distance field in the Dimension lines section of the CADdimensions panel.

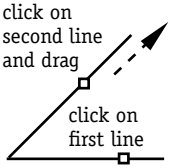
Inclined Chain Datum Dimension

The Inclined Chain Datum Dimension tool will make a datum dimension line appear as an inclined chain of dimensions rather than stacked dimensions.

To change the datum dimension terminator to a JIS terminator, check JIS terminator in the CADdimensions panel.



Dimensioning tools (cont.)

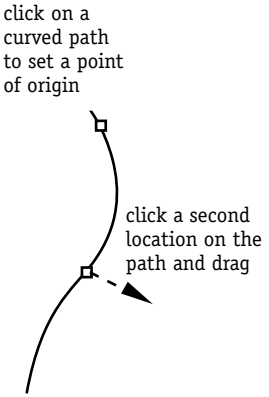


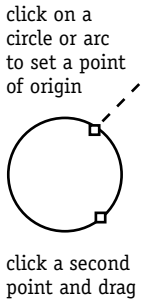
Angle Dimension

The Angle Dimension tool will dimension the angle between any two nonparallel lines. Position the cursor over the first line. When the ( ) cursor appears, click anywhere on the line and release the mouse button. Then position the cursor over the second line. When the ( ) cursor appears, click anywhere on the line and drag to position the angle dimension line. Hold down the control key while dragging to dimension the opposite angle. Hold down the alt/option key while dragging to remove witness lines.

Bézier Length Dimension

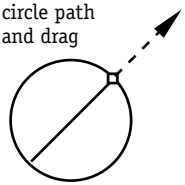
The Bézier Length Dimension tool will dimension any length between two points of a circle, arc, or Bézier (curved) vector path. Position the cursor over the arc or path where the dimension will begin. When the ( ) cursor appears, click once on the path. Then position the cursor over the path where the Bézier length dimension will end. When the ( ) cursor appears, click on the path and drag to position the Bézier length dimension line.





Dimensioning tools (cont.)

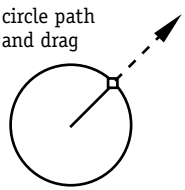
Diameter Dimension



Select the Diameter Dimension tool and position the cursor over the path of a circle. When the ( ) cursor appears, click and drag to position the diameter dimension. Hold down the shift key while dragging to constrain the tool to multiples of 45°. Hold down the control key while dragging to toggle the placement of the diameter dimension text.

Note about changing tools: *To quickly toggle between radius dimension and diameter dimension, use the alt/option key.*

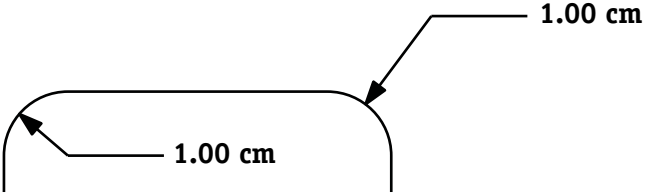
Radius Dimension



Select the Radius Dimension tool and position the cursor over the path of a circle. When the ( ) cursor appears, click and drag to position the radius dimension. Hold down the shift key while dragging to constrain the tool to multiples of 45°. Hold down the control key while dragging to toggle the placement of the radius dimension text.

Fillet Radius Dimension

Click and drag directly over an arc or fillet to display the radius of the arc or fillet at the cursor location. When the ( ) cursor appears, click and drag to position the fillet radius dimension. Hold down the alt/option key while dragging to constrain the tool to the center of the radius. Hold down the control key while dragging to toggle the placement of the fillet radius dimension text.



Dimensioning tools (cont.)

Bézier Curvature Dimension

The Bézier Curvature Dimension tool will automatically display the radius at any point on a Bézier curve. Select the Bézier Curvature Dimension tool and position the cursor *directly* over a Bézier curve. When the ( ) cursor appears, click and drag along the Bézier curve. While dragging along the curved path, view a radius and its arc at every point. To create the Bézier curvature dimension at any point, release the mouse button at that point. To hide the arc, hold down the control key while dragging.

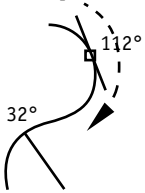
click and drag directly over the curved path

Note about the tool limitations: *Circles and arcs created within Illustrator are constructed with Bézier curves. The approximation of their radius may reveal up to 5% difference in value using the Bézier Curvature Dimension tool.*

Tangent Dimension

The Tangent Dimension tool will automatically display the tangent line and its angle at any point along a Bézier curve. Select the Tangent Dimension tool and position the cursor directly over a Bézier curve. When the ( ) cursor appears, click and drag along the Bézier curve. While dragging along the curved path, view a tangent line at every point. To create the tangent line, release the mouse button at that point. Use alt/option key to display the tangent's normal and its angle. Use control to toggle normal placement on either side of the path.

click and drag directly over the curved path



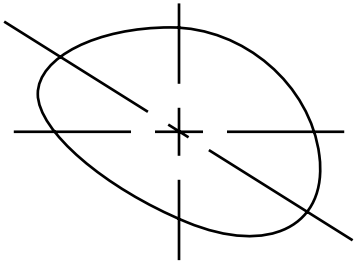
Hot Tip!

Letters can be more accurately dimensioned after converting the text to outlines, so that cursors can snap to segment points and paths while dimensioning.

Dimensioning tools (cont.)

Center Line

The Center Line tool creates a center line. Select the Center Line tool and click and drag to position the line, releasing the mouse button to create the line. Hold down the shift key while dragging to constrain the tool to multiples of 45°.

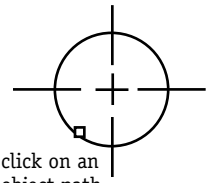


Hot Tip!

To place a center line over a shape, first click the object with the object center tool. Then select the center line tool and drag over one of the circle center lines.

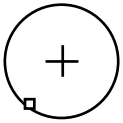
Object Center

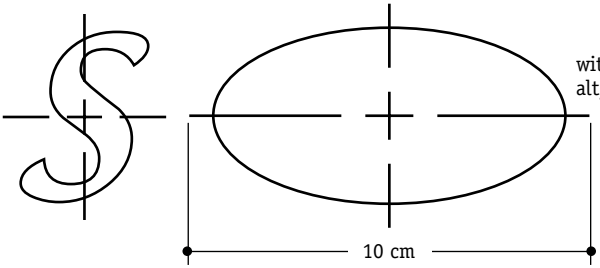
Select the Object Center tool and position the cursor over the path of an object. When the ( ) cursor appears, click once and release the mouse button. Hold down the alt/option key while clicking to create a smaller object center mark.



Use the object center tool to find the center of any shape or path. The center is determined by the invisible bounding box enclosing the artwork.

To apply object centers to text, create outlines before applying the Object Center tool.

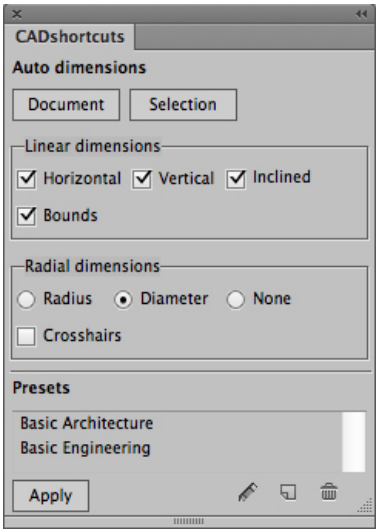




Dimensions and labels can be attached to center lines and object centers.

Dimensioning shortcuts: CADshortcuts

The CADshortcuts panel automatically dimensions objects and easily controls CADtools panel settings (except scale) with presets.



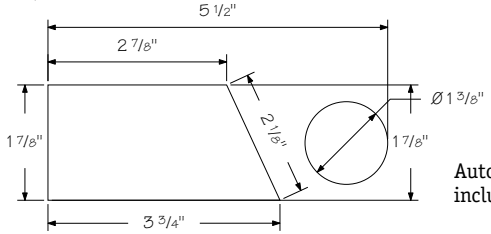
Auto dimensions:
• Apply dimensions to all objects on the document or selected artwork by clicking the Document or Selection buttons. Choose types of dimensions from the linear and radial dimension checkboxes. Check Crosshairs to add them to circle centers.

Presets:
• Define presets for all CADtools panel settings. Select and apply a preset from the list or create new presets with current CADtools panels settings. **Click Apply to set the preset.**

• Edit, new preset and delete buttons help define presets in the list. Presets are saved as unique CADpresets files.

Automatic dimensions

To apply dimensions to the document or selected artwork, first use the checkboxes at the bottom of the CADshortcuts panel to select the type of linear or radial dimensions. Select Crosshairs to show circle center marks. To apply the settings to all objects in the document, select the Document button. To apply settings to all selected objects, choose the Selection button.



Auto dimensions including bounds

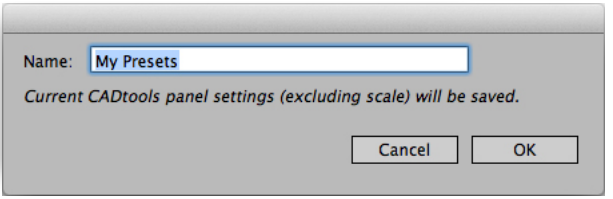
CADtools presets

Presets are automatically saved into a file with the same name as the preset. To locate these files, Mac users can use the Finder's Window > Go > Go to Folder... menu and type: **~/Library/Preferences/Hot Door/CADtools 9/Presets**. On Windows XP, CADpresets is located in **C:\Documents and Settings\yourusername\Application Data\Hot Door\CADtools 9\Presets**. On Windows 7 and Vista, CADpresets is located in **C:\Users\yourusername\AppData\Local\Hot Door\CADtools 9\Presets.** These preset files may be shared with others using CADtools 9.

Dimensioning shortcuts: CADshortcuts (cont.)

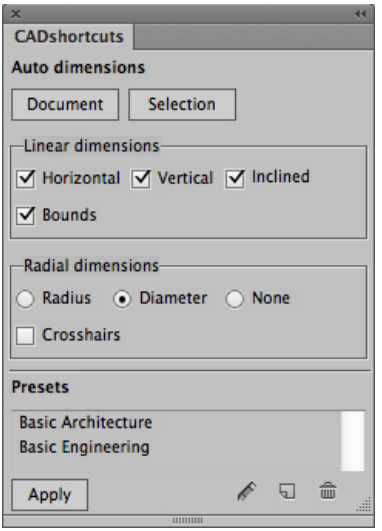
Defining presets

To define a new CADtools preset, first set up the CADtools panels as desired. Click the new preset icon at the bottom of the CADshortcuts panel and enter a name for the preset in the dialog box.



Applying presets

To apply an existing preset, select a preset from the scrolling Presets list. Choose from Basic Architecture and Basic Engineering presets or select a custom preset. **Click Apply to set the preset.** Notice how settings such as terminator appearance, units and precision will change inside the CADtools panels.



Editing presets

To rename or delete a preset, first set up the CADtools panels as desired. Then select an existing preset name in the scrolling list and click the edit button at the bottom of the CADshortcuts panel. Rename the preset, click OK, and then **click Apply to set the preset.** To delete a preset, select an existing preset name in the scrolling list and click the delete button at the bottom of the CADshortcuts panel.

Dimensioning shortcuts: Keyboard

Keyboard input while dragging

Keyboard input ***while dragging*** dimensions, labels, doors/windows, polygons, and rounded rectangles quickly edits their format and shapes (available in CS6 or later).

F

Dimension format will change between ABC incremental, 123 incremental, Measurement, and Custom text by pressing the "F" key while dragging to create the dimension.

T

Dimension terminator style will change by pressing the "T" key while dragging to create the dimension.

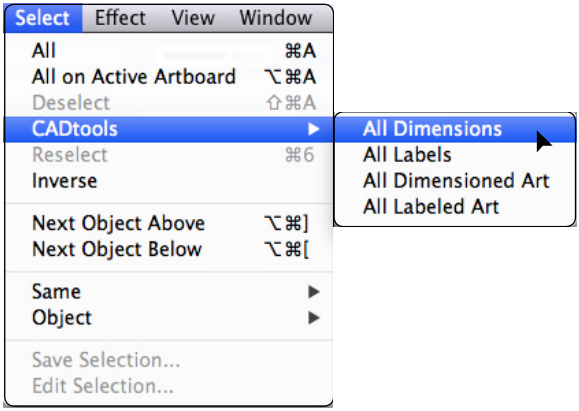
▼ ▲

Dimension font size will change by pressing the up and down arrow keys while dragging to create the dimension.

CADtools Select menu

Select menu options

Dimensions, labels, and their attached artwork can be easily selected using the added CADtools select menu. Choose **Select > CADtools** to see options. If dimensions are visible and not locked, dimensions will be selected.



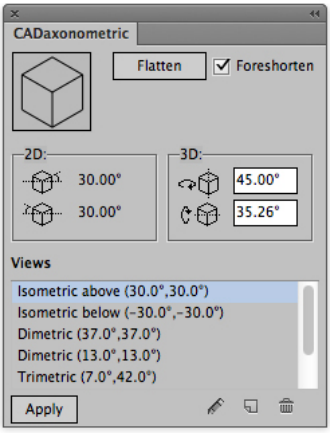
Axonometric drawing: CADaxonometric panel

Axonometric drawing displays objects that are rotated along different axes, visualizing real-world details for engineering and manufacturing. CADtools allows creation and editing of axonometric artwork by projection or drawing. ***Project*** flat artwork to top, front, or side planes with the CADaxonometric panel or ***draw*** axonometric artwork with the CADaxonometric drawing tools. Both of these methods produce artwork that can be dimensioned with CADaxonometric dimensioning tools.

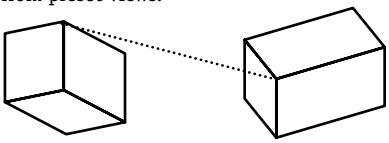
Note: *Copy artwork or save a copy of the document before projecting artwork to preserve original 2D artwork.*

Setting the view for drawing or projection

The **CADaxonometric** panel projects flat artwork in axonometric view and controls the appearance of axonometric artwork. Choose **Window > CADtools > Show CADaxonometric.** ***Double-clicking any axonometric drawing tool will also open the CADaxonometric panel.*** Use the Views list to choose from existing views, or create a custom view by *rotating the cube icon*. To create a view numerically, use the 2D and 3D angle field values.



- Start with an axometric cube on the document to help define a view.
- Adjust the cube icon until the cube appears in the desired view, or choose from preset views.

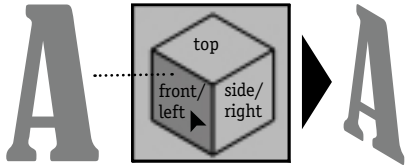


- Check **Foreshorten** to shorten receding lines to approximate realistic views.

Note: CADaxonometric artwork will not update with changes in the CADaxonometric panel.

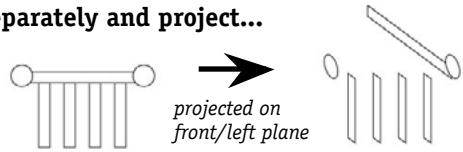
Axonometric drawing: CADaxonometric panel (cont.)

Projecting objects

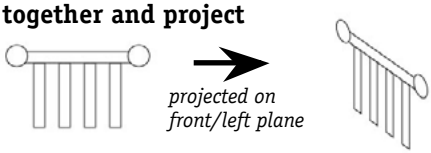


To project 2D artwork on axonometric planes, first draw artwork flat inside Adobe Illustrator. Unattached dimensions can also be projected with the artwork. Select the object and click on a side of the cube icon in the CADaxonometric panel to project it on that plane.

Select art separately and project...



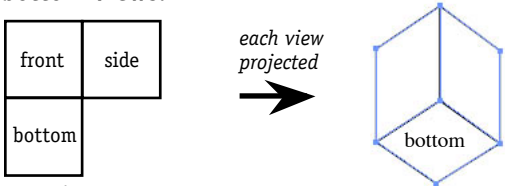
or select art together and project



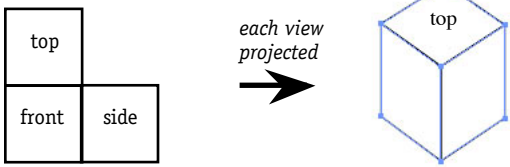
Projecting a three-view layout

If two or three views are drawn for projection, arrange the artwork prior as shown below for best results:

For bottom views:



For top views:

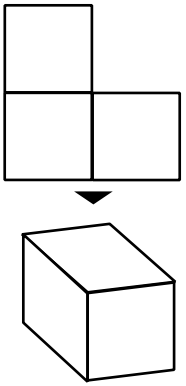


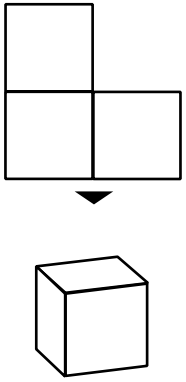
Axonometric drawing: CADaxonometric panel (cont.)

Foreshortening

Some axonometric views appear more realistic when foreshortening is applied. For example, in the Trimetric view below, three squares were projected with and without foreshortening. Before projecting artwork with foreshortening, check the **Foreshorten** button in the CADaxonometric panel.

projected without Foreshorten checked in Trimetric view





projected with Foreshorten checked in Trimetric view

Editing axonometric objects

Flatten to edit projections in 2D - To edit projected axonometric artwork, select the artwork and click the **Flatten** button in the CADaxonometric panel. After making changes, click on the faces of the cube icon to re-project the artwork as top, front and side planes.

Axonometric drawing - Easily create axonometric vector artwork with CADtools axonometric drawing tools. The cube icon in the CADaxonometric panel highlights to indicate the face being drawn. ***The default face is the front/left side. To create a side/right face, drag with the control key. To create a top/bottom face, drag with the alt/option key.***

Axonometric drawing: Tools

Axonometric drawing tool group:
Use the following keys to create front, side or horizontal faces with the CADaxonometric drawing tools:

> **Front (or left side) vertical faces:** No modifier key
> **Side (right) vertical faces:** Hold down the control key *after* beginning to drag with the tool
> **Top/bottom faces:** Hold down the alt/option key *after* beginning to drag with the tool

Axonometric Rectangle - Click and drag to create the shape according to settings in the CADaxonometric panel.

Axonometric Centered Rectangle - Click and drag to create.

Axonometric Rounded Rectangle - Click and drag to create.

Axonometric Centered Rounded Rectangle - Click and drag to create the shape from its center.

Axonometric Ellipse - Click and drag to create the shape.

Axonometric Centered Ellipse - Click and drag to create the shape from its center.

Axonometric Line - Click and drag to create the line. Click and drag from the endpoint of a line path to continue the line. Shift-drag to constrain to the current axonometric angle. Control-drag after starting the line to constrain the line to the current angle. Click once with this tool on the document to enter line values numerically. Double-click the CAD Line tool icon to define settings that automatically connect paths.

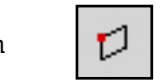
Axonometric Grid - Click and drag to create a grid based on the settings in the CADunits panel.

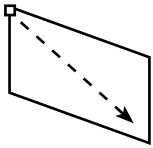
Axonometric Cube - Click and drag to create the front, side or top face (with control for side or alt/option for top or bottom). After releasing the mouse, drag perpendicular to the side to create depth. When the desired depth is reached, click the mouse to finish creating the cube.

Axonometric Cylinder - Click and drag to create the front, side or top face (with control/command key for side or alt/option for top or bottom). After releasing the mouse, drag perpendicular to the side to create depth. When the desired depth is reached, click the mouse to finish creating the cylinder.

Axonometric drawing: Tools (cont.)

Axonometric Rectangle

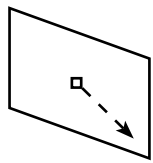




Select the Axonometric Rectangle tool and position the cursor at the corner of the desired rectangle. Click and drag from one edge of the rectangle to the opposite edge. To draw a front face rectangle, click and drag to the opposite edge. To create a side face, hold down the control key after beginning to drag. To create a top or bottom face, hold down the alt/option key after beginning to drag. (Bottom faces can only be created if the axonometric view is rotated so that the bottom view is showing.) Hold down the shift key to create a square in axonometric view. ***The cube icon in the CADaxonometric panel indicates the face being drawn.***

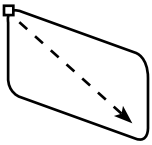
To numerically create the rectangle, click once on the document. The click point will become the top right corner of a front face, the top left corner of a side face, and the bottom corner of a top face.

Axonometric Centered Rectangle



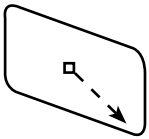
This tool works just like the Axonometric Rectangle tool, except that the initial click point becomes the center of the axonometric rectangle. Hold down the shift key to create a square in axonometric view.

Axonometric drawing: Tools (cont.)



Axonometric Rounded Rectangle
Select the Axonometric Rounded Rectangle tool and position the cursor at the corner of the desired rectangle. Click and drag from one edge of the rectangle to the opposite edge. To draw a front face rectangle, click and drag to the opposite edge. To create a side face, hold down the control key after beginning to drag. To create a top or bottom face, hold down the alt/option key after beginning to drag. (Bottom faces can only be created if the axonometric view is rotated so that the bottom view is showing.) Hold down the shift key to create a square in axonometric view. ***The cube icon in the CADaxonometric panel indicates the face being drawn.***

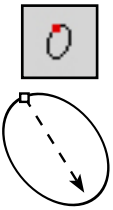
To numerically create the rectangle, click once on the document. The click point will become the top right corner of a front face, the top left corner of a side face, and the bottom corner of a top face.



Axonometric Centered Rounded Rectangle
This tool works just like the Axonometric Rectangle tool, except that the initial click point becomes the center of the axonometric rounded rectangle. Hold down the shift key to create a rounded square in axonometric view.

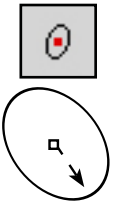
Axonometric drawing: Tools (cont.)

Axonometric Ellipse



Select the Axonometric Ellipse tool, click and drag from one edge of the ellipse to the opposite edge. The cursor is located at the corner of the bounding box of the ellipse - not actually on the ellipse path. To draw a front face ellipse, click and drag to the opposite edge. To create a side face, hold down the control key after beginning to drag. To create a top or bottom face, hold down the alt/option key after beginning to drag. (Bottom faces can only be created if the axonometric view is rotated so that the bottom view is showing.) Hold down the shift key to create a circle in axonometric view. ***The cube icon in the CADaxonometric panel indicates the face being drawn.***

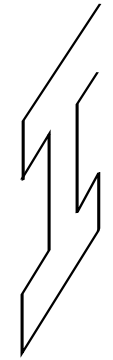
Axonometric Centered Ellipse



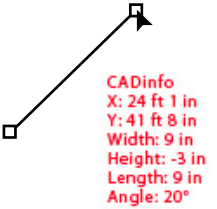
This tool works just like the Axonometric Ellipse tool, except that the initial click point becomes the center of the axonometric ellipse.

Axonometric Line

For axonometric lines, hold down the shift key while dragging to constrain the tool to the current axonometric angle. Axonometric lines will not automatically update with changes to the axonometric view. Set up axonometric view angles with the CADaxonometric panel before creating axonometric artwork.



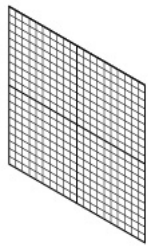
To create polygons with the line tool, create a line, then position the mouse over an endpoint of the line. When the ( ) cursor appears, begin dragging to create a new line joined at that endpoint. Release the mouse button when the line is positioned and continue the process as needed. To close the path, click and drag the final line until the cursor is over the first anchor point of the polygon. When the ( ) cursor appears, release the mouse button and the polygon will close itself.



To view geometry while dragging, check *Show geometry while dragging* in the CADtracker panel.

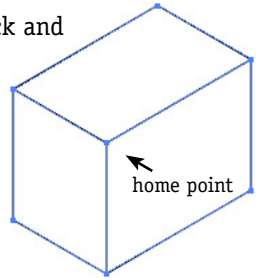
Axonometric drawing: Tools (cont.)

Axonometric Grid



Select the Axonometric Grid tool and position the cursor at the corner of the desired grid. Click and drag from one edge of the grid to the opposite edge. Hold down the shift key while dragging to create a square grid. To increase the number of grid lines, use the up arrow key while dragging. To decrease the number of gride lines, use the down arrow key while dragging.

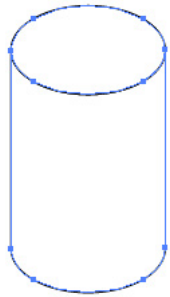
Axonometric Cube



Select the Axonometric Cube tool and click and drag a front, side or top face similar to drawing an axonometric rectangle. After releasing the mouse, immediately drag along the axonometric angle *without clicking* to preview the cube depth. When the desired depth is reached, click the mouse to create the cube according to the current axonometric view angle. Cubes are automatically grouped when created.

Single-click on the document to create a cube numerically. The cube's central 'home point' will be placed at the click point.

Axonometric Cylinder



Select the Axonometric Cylinder tool, click and drag a front, side, or top face similar to drawing an axonometric ellipse. After releasing the mouse, immediately drag along the axonometric angle *without clicking* to preview the cylinder's depth. When the desired depth is reached, click the mouse to create it. The exact drag point (top or bottom) differs based upon how the cylinder was created. Cylinders are automatically grouped when created.

Single-click on the document to create a cylinder numerically. The cylinder face's center point will be placed at the click point.

Axonometric dimensioning: Tools

Axonometric dimension tool group:

Horizontal Axonometric Dimension (By Line) - Click and drag out any horizontal segment projected in axonometric view to dimension the distance between two anchor points.

Horizontal Axonometric Dimension (By Points) - Click multiple horizontal points in axonometric view and drag to dimension the distance between two or more anchor points.

Horizontal Axonometric Datum Dimension - Click a point of origin, then click multiple horizontal points in axonometric view and drag to dimension the distances from the origin.

Vertical Axonometric Dimension (By Line) - Click and drag out any vertical segment projected in axonometric view to dimension the distance between two anchor points.

Vertical Axonometric Dimension (By Points) - Click multiple vertical points in axonometric view and drag to dimension the distance between two or more anchor points.

Vertical Axonometric Datum Dimension - Click a point of origin, then click multiple vertical points in axonometric view and drag to dimension the distances from the origin.

Axonometric Diameter Dimension - Click and drag a point on an axonometric circle to dimension its diameter.

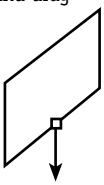
Axonometric Radius Dimension - Click and drag a point on an axonometric circle to dimension its radius.

Axonometric Center line - Shift-click and drag to create the line in axonometric view.

Axonometric Object center - Click on an object line to mark the center of its bounding box in axonometric view.

Axonometric dimensioning: Tools (cont.)

click once on a line segment and drag

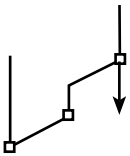


Horizontal Axonometric Dimension (by Line)

The Horizontal Axonometric Dimension (by Line) tool will dimension horizontal line segments in axonometric view.

Select the Horizontal Axonometric Dimension (by Line) tool and position the cursor over the line to dimension. When the ( ) cursor appears, click the horizontal line and drag to position the dimension line. Hold down the shift key while dragging to offset the dimension line in increments. The offset increment value is set in the Snap distance field in the Dimension lines section of the CADdimensions panel.

click on multiple points and drag



Horizontal Axonometric Dimension (by Points)

The Horizontal Axonometric Dimension (by Points) tool will dimension the horizontal distance between multiple points in axonometric view. Define the location of these points anywhere on the document.

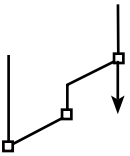
Select the Horizontal Axonometric Dimension (by Points) tool and position the cursor at one end of the horizontal distance to dimension. If this is an anchor point, the cursor will change to ( ). Then click the mouse button once and release the mouse button. Position the cursor at the next point along the horizontal distance to dimension. Continue clicking on points along the horizontal distance until the last point is clicked, then drag to position the dimension line. Use the shift key while dragging to place the dimension line at a set distance from the object. The offset increment value is set in the Snap distance field in the Dimension lines section of the CADdimensions panel. Hold down the control key to create dimensions perpendicular to the axonometric object.

Note: *For accurate measurements, make sure the artwork is arranged properly on one plane - to check this, flatten the artwork, adjust as needed and group before reprojecting it. If the artwork is properly constructed, axonometric dimension values should not change when the artwork and dimensions are flattened.*

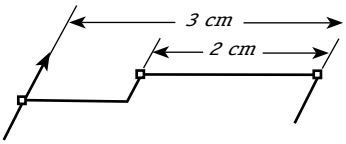
Axonometric dimensioning: Tools (cont.)

Horizontal Axonometric Datum Dimension

click on multiple points and drag

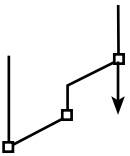


The Horizontal Axonometric Datum Dimension tool will dimension the horizontal distances between a point of origin and other points in axonometric view in *stacked style*. Select the Horizontal Axonometric Datum Dimension tool and position the cursor at the origin on one end of the horizontal distance to dimension. If this is an anchor point, the cursor will change to ( ) . Then click the mouse button once and release the mouse button. Position the cursor at the next point along the horizontal distance to dimension. Continue clicking on points along the horizontal distance until the last point is clicked, then drag to position the dimension line. Use the shift key while dragging to place the dimension line at a set distance from the object. The offset increment value is set in the Snap distance field in the Dimension lines section of the CADdimensions panel.



Horizontal Axonometric Chain Datum Dimension

click on multiple points and drag



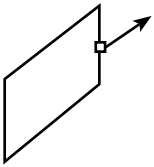
drag with the control key to create perpendicular dimensions

The Horizontal Axonometric Chain Datum Dimension tool will dimension the horizontal distances between a point of origin and other points in axonometric view in *chain style*. Select the Horizontal Axonometric Chain Datum Dimension tool and position the cursor at the origin on one end of the horizontal distance to dimension. If this is an anchor point, the cursor will change to ( ) . Then click the mouse button once and release the mouse button. Position the cursor at the next point along the horizontal distance to dimension. Continue clicking on points along the horizontal distance until the last point is clicked, then drag to position the dimension line. The offset increment value is set in the Snap distance field in the Dimension lines section of the CADdimensions panel.

To change the datum dimension terminator to a JIS terminator, check JIS terminator in the CADdimensions panel.

Axonometric dimensioning: Tools (cont.)

click once on a line segment and drag

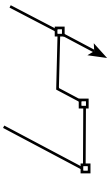


Vertical Axonometric Dimension (by Line)

The Vertical Axonometric Dimension (by Line) tool will dimension vertical line segments in axonometric view. A line segment is a path between two anchor points in Illustrator.

Select the Vertical Axonometric Dimension (by Line) tool and position the cursor over the line to dimension. When the (⊣) cursor appears, click the vertical line and drag to position the dimension line. Hold down the shift key while dragging to offset the dimension line in increments. The offset increment value is set in the Snap distance field in the Dimension lines section of the CADdimensions panel.

click on multiple points and drag



Vertical Axonometric Dimension (by Points)

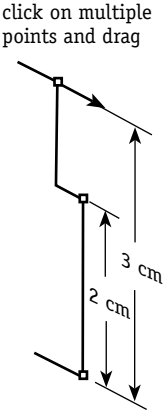
The Vertical Axonometric Dimension (by Points) tool will dimension the vertical distance between multiple points in axonometric view. Define the location of these points anywhere on the document.

Select the Vertical Axonometric Dimension (by Points) tool and position the cursor at one end of the vertical distance to dimension. If this is an anchor point, the cursor will change to (⊣) . Then click the mouse button once and release the mouse button. Position the cursor at the next point along the vertical distance to dimension. Continue clicking on points along the vertical distance until the last point is clicked, and then drag to position the dimension line. Use the shift key while dragging to place the dimension line at a set distance from the object. The offset increment value is set in the Snap distance field in the Dimension lines section of the CADdimensions panel.

Axonometric dimensioning: Tools (cont.)

Vertical Axonometric Datum Dimension

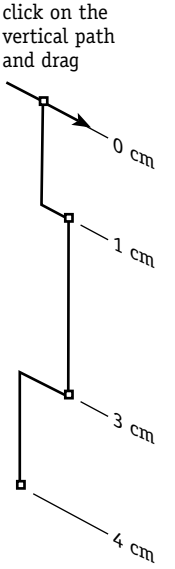
The Vertical Axonometric Datum Dimension tool will dimension the vertical distances between a point of origin and other points in axonometric view.



Select the Vertical Axonometric Datum Dimension tool and position the cursor at the origin on one end of the vertical distance to dimension. If this is an anchor point, the cursor will change to ( ) . Then click the mouse button once and release the mouse button. Position the cursor at the next point along the vertical distance to dimension. Continue clicking on points along the vertical distance until the last point is clicked and then drag to position the dimension line. Use the shift key while dragging to place the dimension line at a set distance from the object. The offset increment value is set in the Snap distance field in the Dimension lines section of the CADdimensions panel.

Vertical Axonometric Chain Datum Dimension

The Horizontal Axonometric Chain Datum Dimension tool will dimension the horizontal distances between a point of origin and other points in axonometric view in *chain style.* Select the Vertical Axonometric Chain Datum Dimension tool and position the cursor at the origin on one end of the horizontal distance to dimension. If this is an anchor point, the cursor will change to ( ) . Then click the mouse button once and release the mouse button. Position the cursor at the next point along the vertical distance to dimension. Continue clicking on points along the vertical distance until the last point is clicked, then drag to position the dimension line. The offset increment value is set in the Snap distance field in the Dimension lines section of the CADdimensions panel.

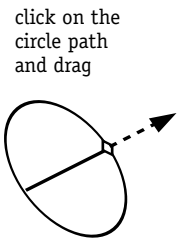


To change the datum dimension terminator to a JIS terminator, check JIS terminator in the CADdimensions panel.

Axonometric dimensioning: Tools (cont.)

Axonometric Diameter Dimension

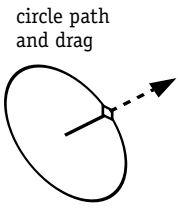
Select the Axonometric Diameter Dimension tool and position the cursor over the path of an axonometric circle. When the ( ) cursor appears, click and drag to position the diameter dimension. Hold down the shift key while dragging to constrain the tool to axonometric multiples of 45°. Hold down the control key while dragging to toggle the placement of the diameter dimension text.



Axonometric Radius Dimension

Select the Axonometric Radius Dimension tool and position the cursor over the path of an axonometric circle. When the ( ) cursor appears, click and drag to position the radius dimension. Hold down the shift key while dragging to constrain the tool to axonometric multiples of 45°. Hold down the control key while dragging to toggle the placement of the radius dimension text.

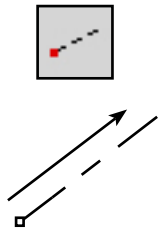
Note: To quickly toggle between radius dimension and diameter dimension, use the alt/option key.



Axonometric dimensioning: Tools (cont.)

Axonometric Center Line

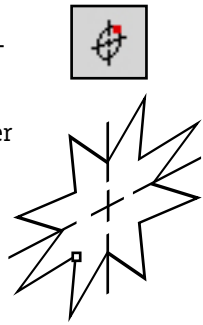
The Axonometric Center Line tool creates a center line that constrains to the current axonometric angles. Select the Axonometric Center Line tool and position the cursor at the beginning of the desired line. Click and drag to position the line, then release the mouse button to create the line. Hold down the shift key while dragging to constrain the tool to the current axonometric view angles (set in the CADaxonometric panel).



click and drag

Axonometric Object Center

Select the Axonometric Object Center tool and position the cursor over the path of a circle or object. When the ( ) cursor appears, click once and release the mouse button to create the object center in axonometric view.

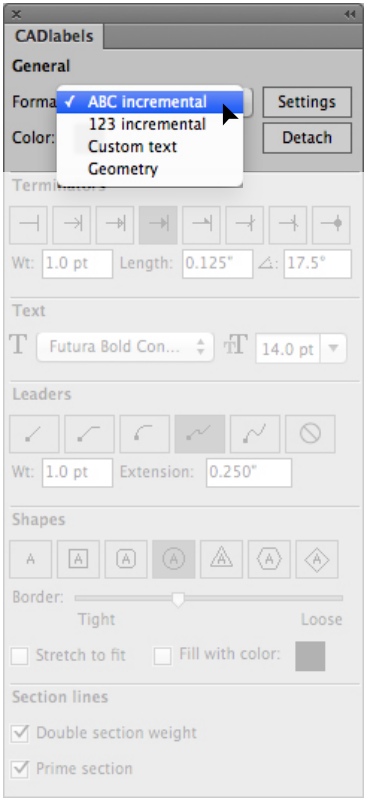


click on an object path

Labeling: CADlabels panel

The CADlabels panel sets the behavior and appearance of the Label, Multiple Leader Label, Datum Feature, Datum Target and Section Line tools. Choose **Window > CADtools > Show CADlabels**. ***Double-clicking any label tool will also open the CADlabels panel.***

Icons show the label line and border style, with leader length and border options. Shape borders can also stretch to fit custom text. Remember to check **Attach dimensions/labels** under **Window > CADtools > Preferences...** to create CADtools labels that can later be modified in appearance.



General section:

- **ABC Incremental** creates text labels that automatically increment alphabetically. Use the Settings button to select options.

- **123 Incremental** creates text labels that automatically increment numerically. Use the Settings button to select options.

- **Custom text** creates labels that can be edited with custom text or number values. Use the Settings button to select options.

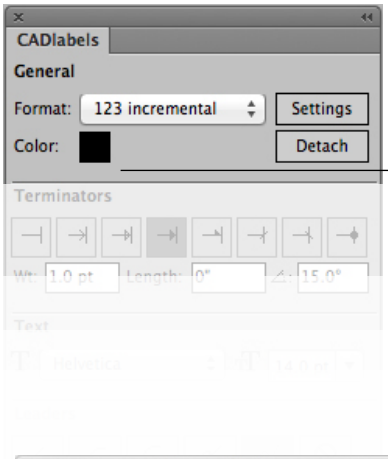
- **Geometry** displays object geometry in the label. Use the Settings button to select options.

- Change the label text and line color with the color picker.

Use the **Detach** button to unlink labels from their associated objects. If a label was not created over a point or path, this feature will not perform any action. Detached labels can be edited with Illustrator's tools.

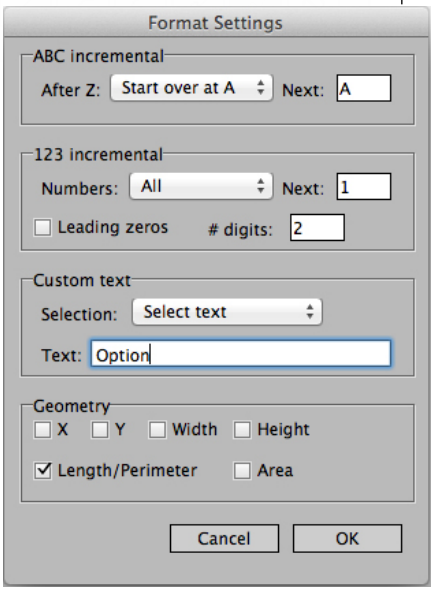
Labeling: CADlabels panel (cont.)

Use the **Settings** button in the CADlabels panel to control the behavior of each type of format. Use the Detach button to unlink selected labels from their associated paths and objects. Labels are attached to objects only if **Attach dimensions/labels** is selected under **Window > CADtools > Preferences...**



- Use the **Detach** button to unlink labels from their associated objects. If a label was not created over a point or path, this feature will not perform any action. Detached labels can be edited with Illutrator's tools.

- Change the label text, line, and terminator color by clicking the Fill box.



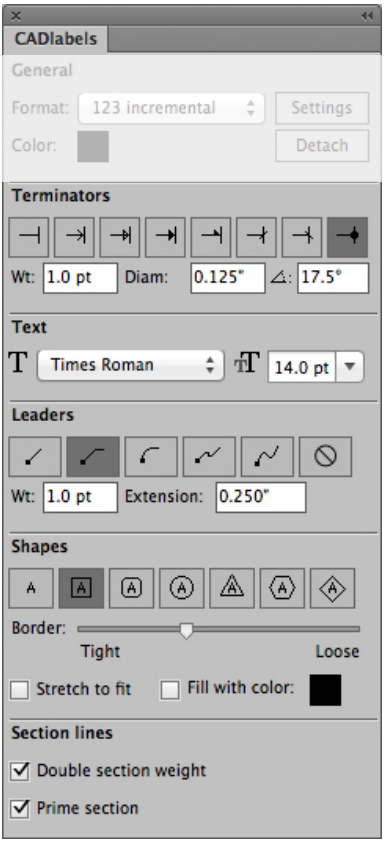
- For **ABC Incremental** label format, select how to increment and control the next letter.

- For **123 Incremental** label format, choose if numbers will increment as all, even or odd values. Control the next number, option for leading zeroes and digits.

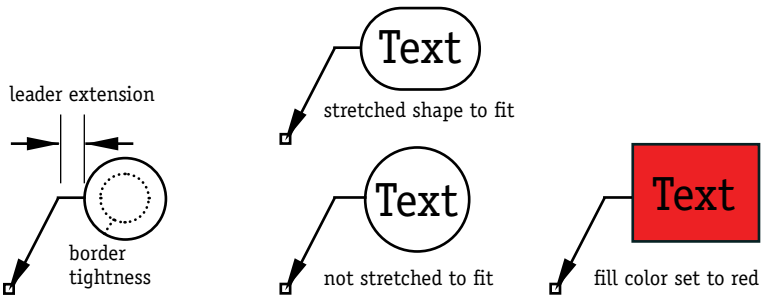
- For the **Custom text** label format, control if text will automatically select and display a custom text value.

- For **Geometry**, choose how object geometry will appear in the label. X and Y show location relative to the document ruler; width and height refer to the size of the object; length/perimeter shows distance along a path or around object; and area is total enclosed area.

Labeling: CADlabels panel (cont.)



- Under the **Terminators** section, select from several terminator types and adjust weight, length and angle of arrowhead with field values.
- In the **Text** section, customize the appearance and size of label text.
- Under **Leaders**, set the label leader shape and the length of its extension.
- In **Shapes**, set label border shape and the tightness of the border.
- Check Stretch to fit to automatically resize label borders to fit around custom text or numbers.
- To fill label shapes with color, check Fill with color and click on the Fill box to set the color. This option only affects the label shape.
- Under **Section lines**, choose to double the weight or add the prime symbol to Section lines (found in the Labeling tool group).



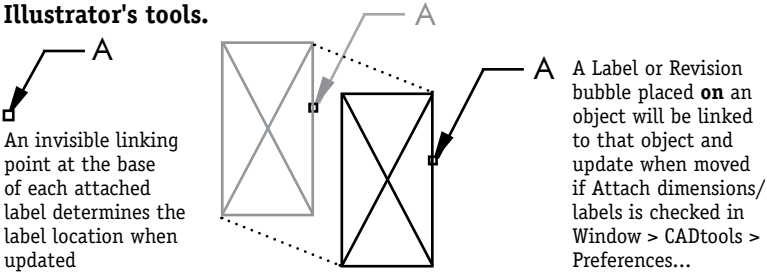
To create labels that will follow attached artwork, check **Attach dimensions/labels** under **Window > CADtools > Preferences...**

Labeling: Tools

Label tool - Click and drag to create a label using the format settings in the CADlabels panel – ABC incremental, 123 incremental, Geometry or Custom text. If Custom text is selected, labels will be drawn with custom, pre-selected text.
Multiple leader label - Click multiple points and then drag to create the label.
Datum feature - Click and drag to create the label.
Datum target - Click and drag to create the label.
Datum flag - Click and drag to create the label.
Revision bubble - Click an object line, or click and drag.
Section line - Click and drag to create the line. Use the CADlabels panel to make the section line double weight and appear with the prime symbol.

Keyboard shortcuts (available in CS6 or later):
Labels will change format between ABC incremental, 123 incremental, Custom text, and Geometry by pressing the "F" key while dragging to create the label. Labels will change terminator style by pressing the "T" key, shape by pressing the "S" key, leader style by pressing the "L" key, and font size by pressing the up and down arrows while dragging.

Note on attached labels:
If **Attach dimensions/labels** is checked under **Window > CADtools > Preferences...** labels will attach to a clicked path or object. To adjust the angle or extension of a label while maintaining attachment, use the CADtools Dimension Redo tool.
To detach a label, select the label and click the Detach button in the CADdimensions panel. Selected labels can also be detached by ungrouping them OR unchecking Attach dimensions/labels to objects under Window > CADtools > Preferences... Detached labels can be edited with Illustrator's tools.



An invisible linking point at the base of each attached label determines the label location when updated

A Label or Revision bubble placed **on** an object will be linked to that object and update when moved if Attach dimensions/labels is checked in Window > CADtools > Preferences...

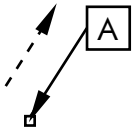
Labeling: Tools

Label tool

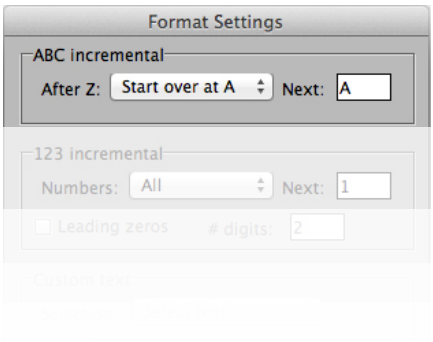
The CADlabels tool draws labels according to settings in the CADlabels panel. Four different formats create labels which can increment alphabetically or numerically, generate object geometry information or display custom text. To change the value of incremental labels, change the format to Custom text or edit the label text with Adobe Illustrator's Type tool. Text changes will be saved with the label.

Use the Dimension Redo tool to select and adjust the angle of the label without moving its attached point.

Format: ABC Incremental - If ABC Incremental is selected in the CADlabels Format menu, the Label tool will create character labels that automatically increment according to the text settings in the CADlabels panel. To create an incremental label, first use the CADlabels panel to set the appearance of the label line, label shape, and border tightness. Then select the Label tool and position the cursor at the base of the desired label. Click and drag to position the incremental label. Hold down the shift key while dragging to constrain the tool to multiples of 45°. Hold down the control key while dragging to toggle the placement of the label text.



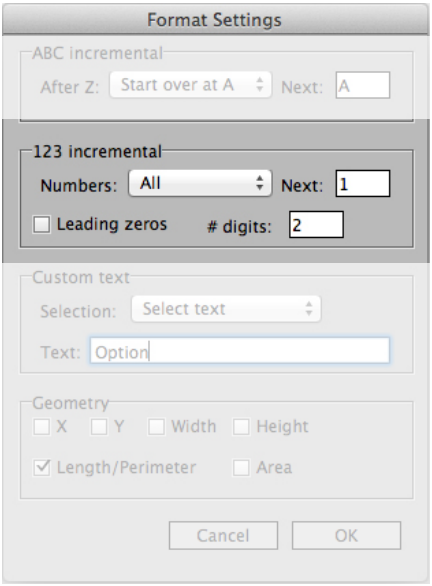
click and drag and the letter or number will increment according to Settings in the CADlabels panel



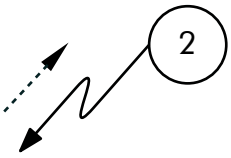
- Use the After Z menu to change how alphabet labels will change in value after Z.
- Set the value of the next alphabet label in the Next field.

Labeling: Tools (cont.)

Format: 123 Incremental - If 123 Incremental is selected in the CADlabels Format menu, the Label tool will create numeric labels that automatically increment according to the text settings in the CADlabels panel. To create an incremental label, first use the CADlabels panel to set the appearance of the label line, label shape, and border tightness. Then select the Label tool and position the cursor at the base of the desired label. Click and drag to position the incremental label. Hold down the shift key while dragging to constrain the tool to multiples of 45°. Hold down the control key while dragging to toggle the placement of the label text.



- Use the Numbers menu to determine if incremental number labels will show all, even or odd values.
- Set the value of the next number label in the Next field.



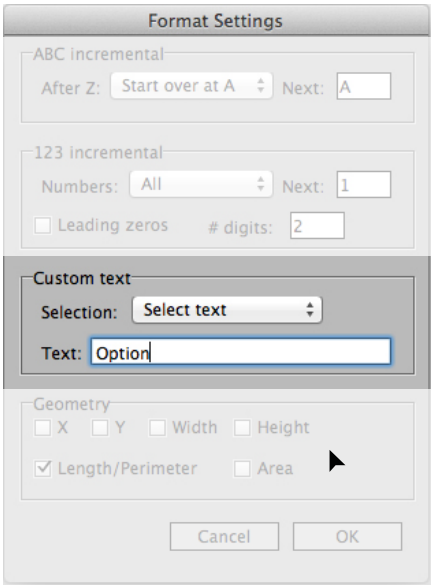
click and drag and the number will increment according to Settings in the CADlabels panel

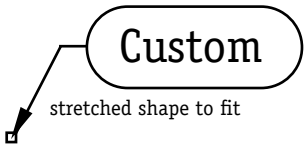
Labeling: Tools (cont.)

Format: Custom text - If Custom text is selected in the CADlabels Format menu, the Label tool will create a text label with a definable default value. To create a custom text label, first use the CADlabels panel to set the appearance of the label line, label shape and border tightness. Select Stretch shapes to fit to automatically resize label borders around custom text. Choosing Select text will allow quick editing, and the current tool will switch to the Type tool. To create multiple labels with the same custom text value, enter a text value in the Text field.

Then select the Label tool and position the cursor where the label terminator will end. Click and drag to position the custom text label. Hold down the shift key while dragging to constrain the tool to multiples of 45°. Hold down the control key while dragging to toggle the placement of the label text.

Use the Dimension Redo tool to select and adjust the angle of the label without moving its attached point.

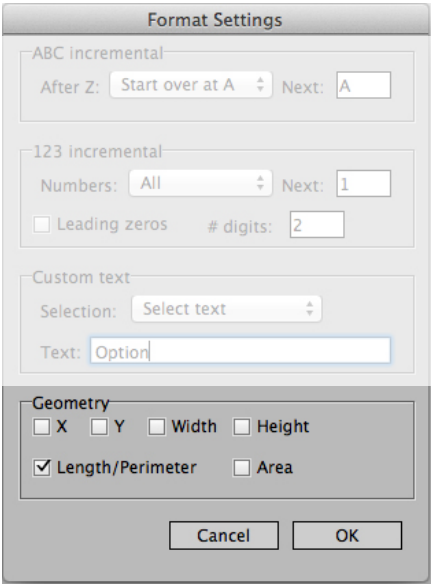




- Use the Select menu to determine if the default text will be selected or not selected after the label is created.
- Enter text in the Text field to create labels with the same custom text value.

Labeling: Tools (cont.)

Format: Geometry - If Geometry is selected in the CADlabels Format menu, the geometric attributes of an underlying path or object are displayed. To create a geometry label, first use the CADlabels panel to set the appearance of the label line, label shape, and border tightness. X and Y show location relative to the document ruler; width and height refer to the size of the object; length/perimeter shows distance along a path or around an object; and area is total enclosed area. Then select the Label tool and position the cursor directly over the filled object or path line. When the (⊹) cursor appears, click and drag to position the geometry label. Hold down the shift key while dragging to constrain the tool to multiples of 45°. Hold down the control key while dragging to toggle the placement of the label text.



Using CADtracker Geometry values and units as defined in the Panels section of the CADunits panel. To set Panel units, uncheck Follow primary dimension units in CADunits.

X: Horizontal distance of top left corner of object from ruler origin

Y: Vertical distance of top left corner of object from ruler origin

Width: Horizontal width of artwork

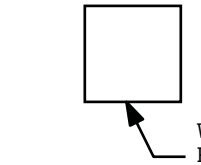
Height: Vertical height of artwork

Length: Total distance along path(s)

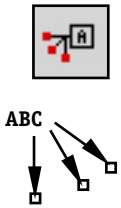
Perimeter: Total distance around closed path(s)

Area: Total area inside closed path(s) or inside compound path(s).

Area calculations will not be accurate for compound paths which overlap or compound paths which are projected in axonometric view.



Labeling: Tools (cont.)

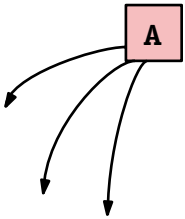


Multiple Leader Label

To create a multiple leader label, first use the Format menu in the CADlabels panel to set the incremental or custom text format. Use the Settings inside the CADlabels panel to set the unique letter or number of the next label.

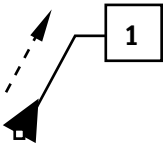
Then select the Multiple Leader Label tool and position the cursor at the base of the desired label. Click multiple points and then drag to position the label. Hold down the shift key while dragging to constrain the tool to multiples of 45°. Hold down the control key while dragging to toggle the placement of the label text.

Use the Dimension Redo tool to select and adjust the angle of the label without moving its attached point.



Datum Feature

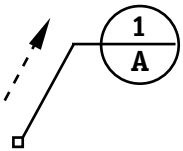
To create a datum feature, first use the Settings button in the CADlabels panel to set the letter of the next datum feature. Then select the Datum Feature tool and position the cursor at the base of the datum feature. Click and drag to position the datum feature. Hold down the shift key while dragging to constrain the tool to multiples of 45°. Hold down the control key while dragging to toggle the placement of the label text.



Use the CADtools Dimension Redo tool to select and adjust the label.

Datum Target

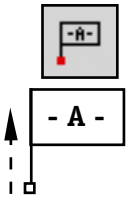
To create a datum target, select the Datum Target tool and position the cursor at the base of the datum target. Click and drag to position the datum target. Hold down the shift key while dragging to constrain the tool to multiples of 45°. Hold down the control key while dragging to toggle the placement of the label text. The datum target will always be created with “1” and “A” text. To adjust the angle of the label while maintaining the link to its artwork, use the CADtools Dimension Redo tool to select and adjust the label. To change the text, use the Illustrator text tool to select and edit the type.



Labeling: Tools (cont.)

Datum Flag

To create a datum flag, first use the CADlabels panel to set the Format and Settings for the letter or number of the next datum flag. Then select the Datum Flag tool and click and drag to position the datum feature. Hold down the shift key while dragging to constrain the tool to multiples of 45°. Hold down the control key while dragging to toggle the placement of the label text.

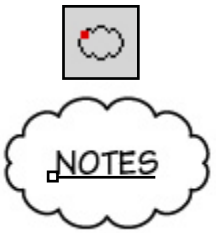


click and drag and the letter or number will increment according to the CADlabels panel

Revision Bubble

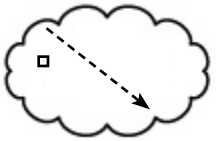
The Revision Bubble tool automatically encircles artwork or drag to make revision bubbles.

- To automatically encircle objects with a revision bubble, select the revision bubble tool and position the cursor over artwork or text path. Click once to create the bubble.



click on an object to encircle it

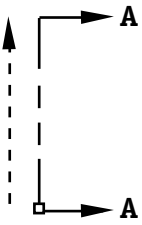
- To create a revision bubble, position the cursor at the corner of the bubble to appear. Click and drag from one edge of the bubble to the opposite edge. Hold down the shift key while dragging to create a circular revision bubble. Hold down the control or alt/option keys to adjust the bubble appearance.



click and drag

Section Line

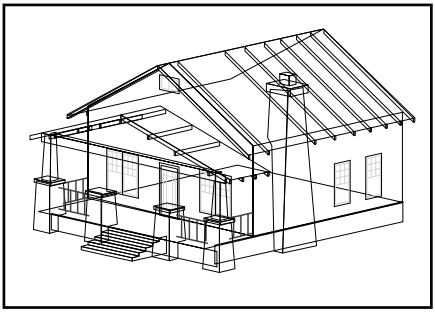
To create a section line, first use the CADlabels panel to set the Format and Settings for the letter or number of the next section line. To automatically double the stroke weight of the section line, check the Double section weight option in the CADlabels panel. To automatically add a prime symbol to the section line text, check the Prime section option in the CADlabels panel. Select the Section Line tool and click and drag to position the line, releasing the mouse button to create the line. Hold down the shift key while dragging to constrain the tool to multiples of 45°. To toggle the direction of the section line label, hold down the control key while dragging.



click and drag

Table and Title Block tools

Title Block tool - Click or click-drag desired area to enter values for creating a custom title block with drawing information.
Table tool - Click or click-drag desired area to enter values for a table with specified rows, columns, lines, title and text placeholders.



1	REVISION 1
2	REVISION 2
3	REVISION 3
4	REVISION 4
Title: Clone House	
Date: August 1, 2010	
Drawn by: Jed I. Master	
Page: 37	
Scale: 1/4" = 1'	

sample title block

Table Title	
Placeholder	*Placeholder*
Placeholder	*Placeholder*
Placeholder	*Placeholder*
Placeholder	*Placeholder*
Placeholder	*Placeholder*

sample table

Table and Title Block tools (cont.)

Title Block

The Title Block tool automatically creates title blocks for identifying drawings and revision details.

To create a title block, select the Title Block tool and click once or click-drag the area to place the title block. Enter values to set the specific size, or set the margin for filling the artboard. Title block position sets the text area at the top, right, bottom, or left side of the border. Font defines the typeface used in the title block.

Enter text values for Drawing Information. Change the subjects on the left or add new ones. The text will automatically be saved as default values for the next title block.

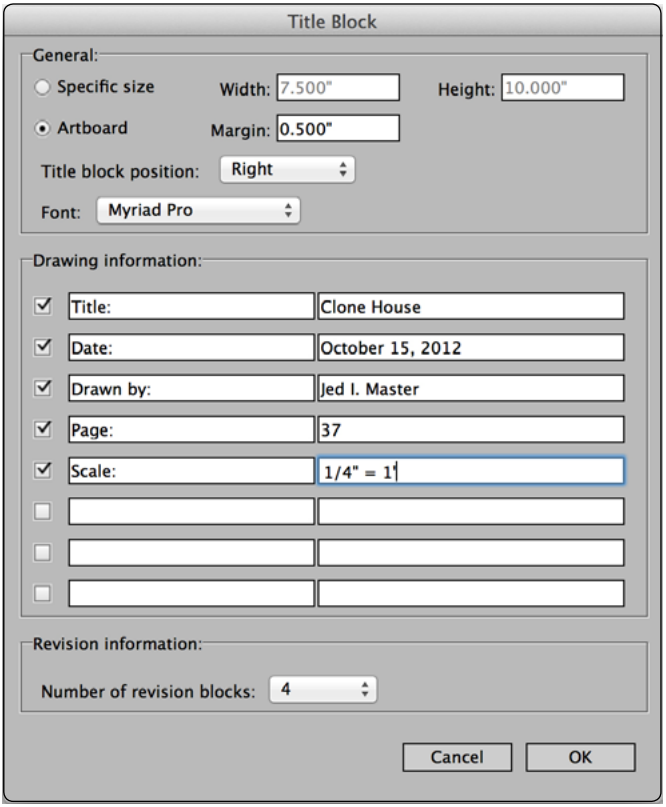


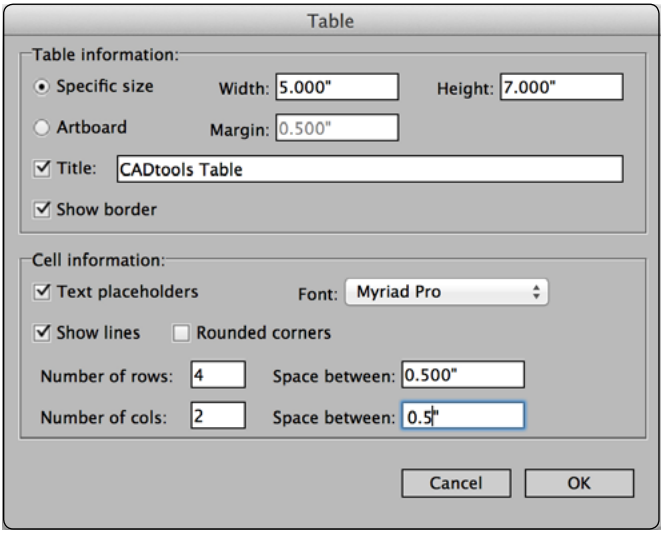
Table and Title Block tools (cont.)

Table

The Table tool automatically creates tables, printable labels and charts.

To create a table, select the Table tool and click once on the document or click-drag the area to place the table. Enter values to set the specific size, or set the margin for filling the artboard. Select options to create a table title and surrounding table border.

Enter text values for Cell Information. Choose to show cell lines or rounded corners. Enter values for the number of rows and columns, as well as the space between cells. The values will be automatically saved by default for the next table.

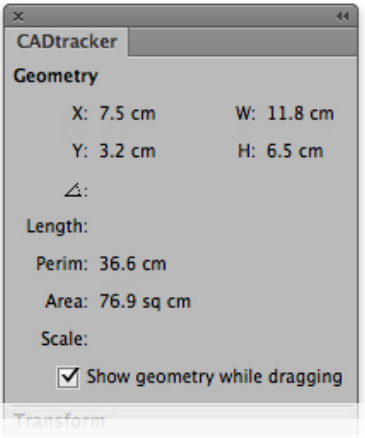


Precision control with CADtracker

CADtracker helps monitor and edit object information with five sections. The units and precision of the values can be changed in the Panels section of the CADunits panel.

Geometry

The **Geometry** section displays width, height, circumference, perimeter, area, angle and line length of objects - including points and placed images.



Using CADtracker Geometry
while drawing...

X: Horizontal distance of cursor from the ruler origin

Y: Vertical distance of cursor from the ruler origin

W: Horizontal width of the artwork

H: Vertical height of the artwork

∠: Angle between the first click point and the current mouse location

Length: Distance between the first click point and current mouse location

Radius: Radius of circle or arc

Diameter: Diameter of circle

Perimeter: Distance around a path

Circumference: Distance around a circular path

Arc Length: Distance around the circular arc between two defined endpoints

Area: Area of rectangles, ellipses and arc (show area in acres using CADtracker popout menu)

Using CADtracker Geometry
with artwork selected...

X: Horizontal distance of top left corner of object from the ruler origin

Y: Vertical distance of top left corner of object from the ruler origin

W: Horizontal width of artwork

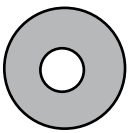
H: Vertical height of artwork

Length: Total distance along path(s)

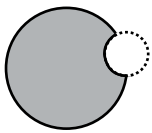
Perimeter: Total distance around closed path(s)

Area: Total area inside closed path(s) or inside compound path(s). Area calculations will not be accurate for compound paths that overlap or compound paths that are projected in axonometric view:

accurate area



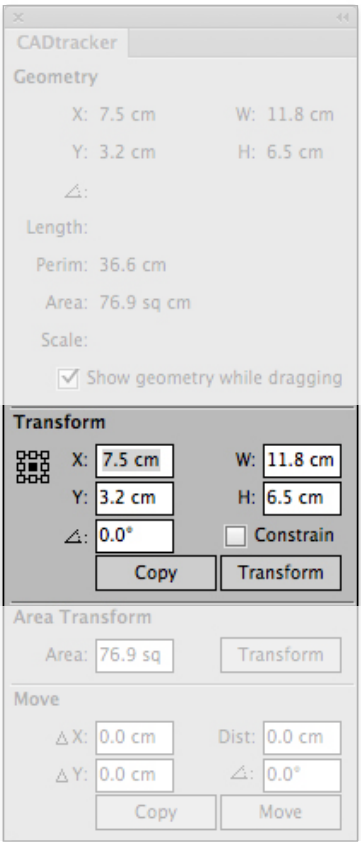
inaccurate area

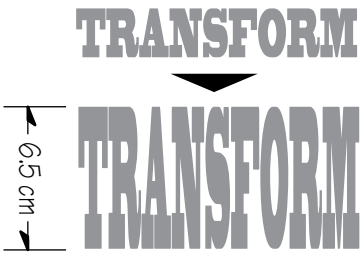


Precision control with CADtracker (cont.)

Transform

CADtracker's **Transform** section allows an object to be numerically resized in scale.





Select an object or set of objects and enter values in the Transform panel (enter digits with up to five decimal places in text boxes).

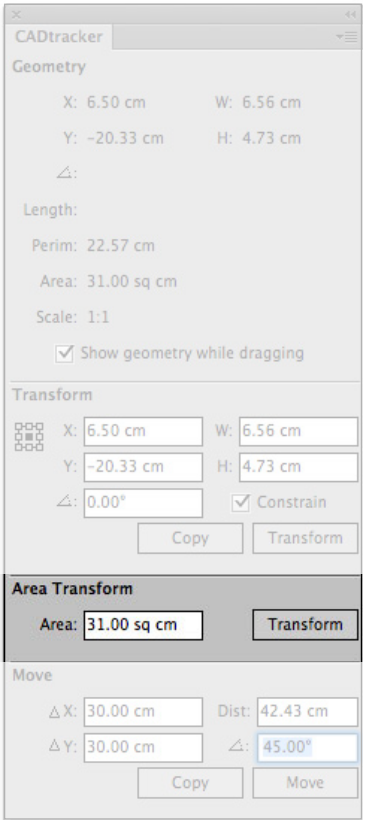
- To change an object's horizontal location, enter a value in the X text box.
- To change an object's vertical location, enter a value in the Y text box.
- To change the width of a selection's bounding box, enter a value in the W text box.
- To change the height of a selection's bounding box, enter a value in the H text box.
- To rotate a selection, enter a new angle between 0 and 360 degrees in the Angle text box, or choose a value from the popup menu.
- To Constrain proportions of the transformed object, check Constrain. The control key can also be used to contrain while clicking Transform.
- To select the reference point for the selection, click a handle on the square representing the object's bounding box.

Click the Transform button to transform the selected objects. Click the Copy button to make a transformed copy of the artwork.

Precision control with CADtracker (cont.)

Area Transform

The **Area Transform** panel helps numerically resize an object to a specified area value and retain proportions.

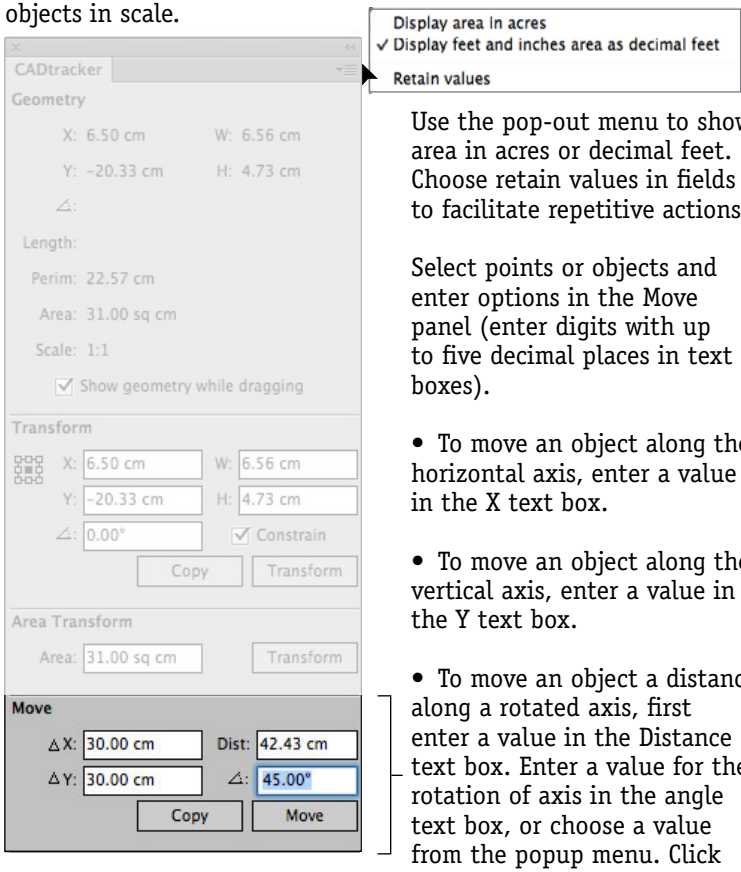


Select the object(s) and enter the desired area in the Area text box. Click the Transform button to resize artwork. Type must be outlined prior to transformation.

Precision control with CADtracker (cont.)

Move

CADtracker's **Move** section numerically moves selected points or objects in scale.



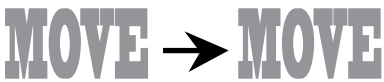
Use the pop-out menu to show area in acres or decimal feet. Choose retain values in fields to facilitate repetitive actions.

Select points or objects and enter options in the Move panel (enter digits with up to five decimal places in text boxes).

- To move an object along the horizontal axis, enter a value in the X text box.

- To move an object along the vertical axis, enter a value in the Y text box.

- To move an object a distance along a rotated axis, first enter a value in the Distance text box. Enter a value for the rotation of axis in the angle text box, or choose a value from the popup menu. Click the Move button to move the selected points or objects.



Click the Move button again to continue moving the objects as needed. Click the Copy button to make a copy of the artwork and move it.

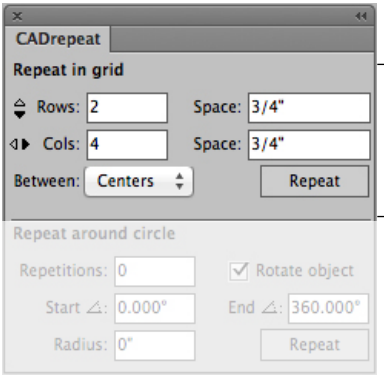
Important!

The coordinate system inside Adobe Illustrator uses increasing Y values "moving down" the document. By default, use a positive Y value to move an object "down" and a negative Y value to move an object "up." To change this behavior, use CADtools Preferences to select "Y axis increases going up".

Precision control with CADrepeat panel

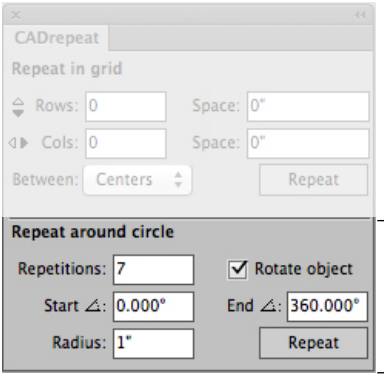
Using scaled values, the **CADrepeat** panel duplicates selected objects in rows and columns or around a circle.

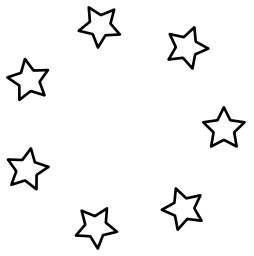
Repeat in grid



- First select an object.
- To duplicate objects on vertical and horizontal paths, enter the number of Rows and Columns in text box. Use the directional arrows to repeat up or down and left or right.
- Enter the space between objects in the Space text boxes.
- Use the Between menu to set the spacing between edges or centers of the selected objects.
- Click the Repeat button to repeat the selected objects. Duplicates will be created according to the scale set in the CADscale panel.

Repeat around circle





- First select an object.
- Enter the number of repetitions (3 or more).
- Check to rotate object around center.
- Enter start and end angles.
- Enter radius.
- Click the Repeat button to repeat the selected objects. Duplicates will be created according to the scale set in the CADscale panel.

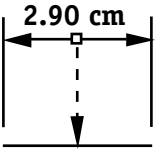
2D CAD editing tools

Dimension Redo - Click and drag a dimension to change the distance from the object it measures.
Fillet - Click on a line segment near a corner, then click anywhere on the adjacent segment and enter the fillet radius in the dialog box. Use the alt/option key while clicking to create additional fillets with the same radius.
Chamfer - Click on a line segment near a corner, then click on the adjacent segment and enter the chamfer offsets from the corner in the dialog box. Use the alt/option key while clicking to create additional chamfers with the same offsets.
Corner Profile - Click on a line segment near a corner, then click on the adjacent segment and enter the shape, offsets, and notch value in the dialog box. Use the alt/option key while clicking to create additional profile with the same offsets.
Trim - Click the excess portion of one of two intersecting lines to remove it, or click on a line to remove the distance to its closest endpoint. Click and drag across a set of lines to trim multiple lines simultaneously.
Extend - Click on a line, then click on any line or object which can be intersected by an extension of the line to extend it.
Path Divider - Click on a path, then choose from options in the Path Divider dialog box to divide and/or mark the path into measured segments with points or crosshairs.
Measure Scale - Click the first point from which to measure and drag to define the scaled distance. In the custom scale dialog box that appears, enter a scaled distance that represents the actual distance dragged. The document scale will change based on this new equation, and the new scale will be added to the CADscale Scale popup menu.
Measure Distance - Click any point and drag to another point. The distance between the two points will appear on the screen in the units defined in the CADunits panel under Primary dimension settings.
Proportion - Click on any object, then click on a second object. Select resize to width or height or constrain proportions. The first object will resize to match the proportions of the second. If multiple objects are selected but ungrouped, click on one of the objects to define it as the *key object*; the rest of the selected artwork will follow to match the proportions of the second clicked object.

2D CAD editing tools (cont.)

Dimension Redo

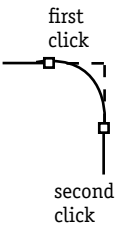
The Dimension Redo tool changes the distance between a dimension or label and the attached object while maintaining the link.



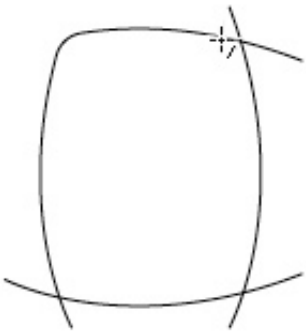
Select the Dimension Redo tool and position the cursor over the label or dimension line to resize. When the (⊣↕) cursor appears, click and drag to adjust the dimension. Use the shift key while dragging to place dimension lines at a consistent distance from the object. This offset distance is defined in the Snap distance field in the Dimension lines section of the CADdimensions panel. To detach a dimension from the object it measures, select it and click the Detach button.

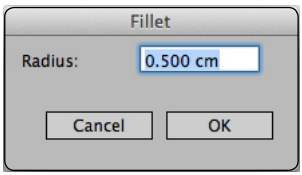
Fillet

The Fillet tool creates a fillet between two *intersecting lines or a corner*. The fillet radius is defined by the last value used in the numeric input dialog box. Fillets can be created with radii as small as 2 pts (.028 in at 1:1 scale).



Select the Fillet tool and position the cursor over one of two intersecting lines to fillet. When the (⊣↕) cursor appears, click once on the line, then position the cursor over the second intersecting line. When the (⊣↕) cursor appears, click once on the second line to open the numeric input dialog box. Enter the fillet radius value to create the radius.





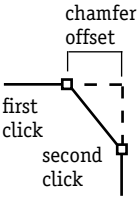
Note for creating multiple fillets: *To automatically create additional fillets with the same radii, use the alt/option key while clicking on the adjacent line.*

Note for dimensioning:
Be sure to fillet objects before adding dimensions.

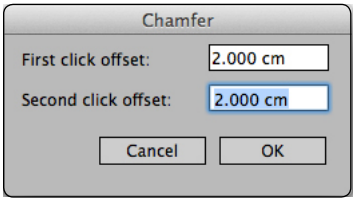
2D CAD editing tools (cont.)

Chamfer

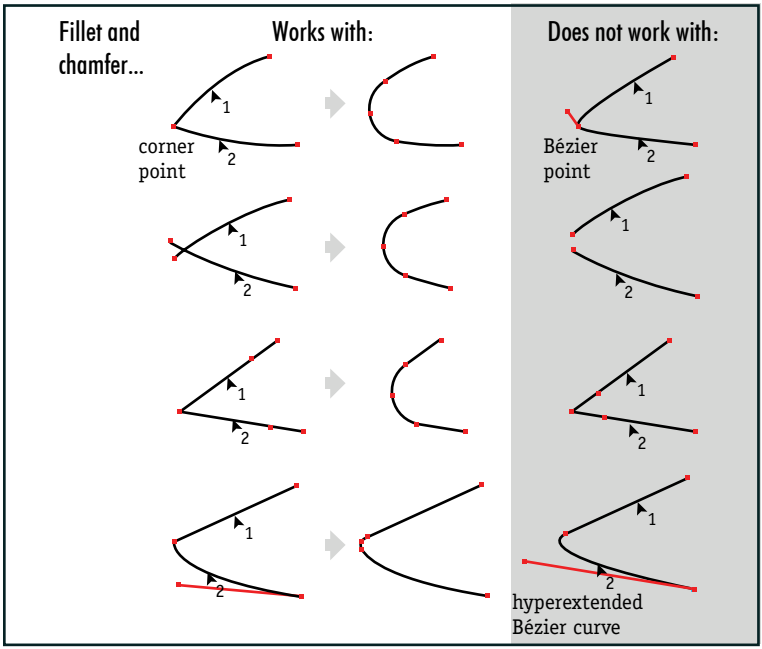
The Chamfer tool creates a chamfer between two *intersecting lines or a corner*. The chamfer length becomes the distance between the chamfer endpoints and the corner or intersection.



Select the Chamfer tool and position the cursor over one of two intersecting lines to chamfer. When the ( ) cursor appears, click once on the line, then position the cursor over the second intersecting line. When the ( ) cursor appears, click once on the second line to open the numeric input dialog box. Enter the chamfer offset values to create the chamfer.



Note for creating multiple chamfers: *To automatically create additional chamfers with the same values, use the alt/option key while clicking on the adjacent line.*

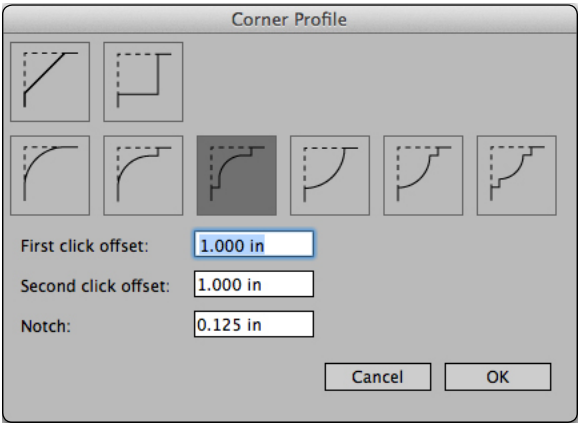


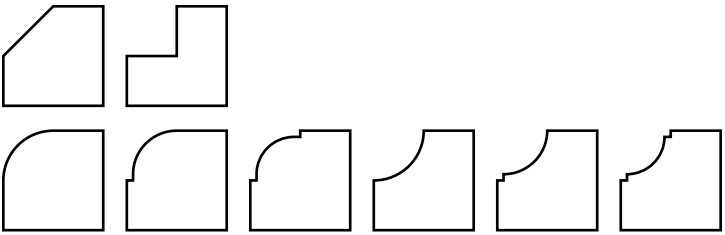
2D CAD editing tools (cont.)

Corner Profile

The Corner Profile tool will transform corners to shapes commonly used in the construction and furniture industry, including basic chamfers and fillets. Corner profiles can be created on 90° corners or 90° intersections.

Select the Corner Profile tool and position the cursor over one of two intersecting lines to chamfer. When the ( ) cursor appears, click once on the line, then position the cursor over the second intersecting line. When the ( ) cursor appears, click once on the second line to open the numeric input dialog box. Enter the corner profile values to create the chamfer.





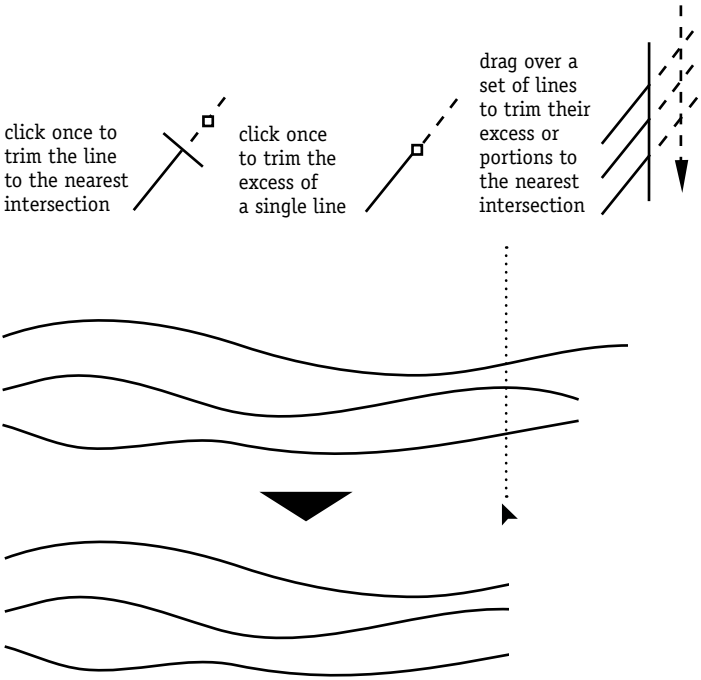
Note for creating multiple chamfers: *To automatically create additional chamfers with the same values, use the alt/option key while clicking on the adjacent line.*

2D CAD editing tools (cont.)

Trim
The Trim tool will automatically delete the excess portion of an intersecting path or the distance between the click point and the closest endpoint. For intersecting paths, select the Trim tool and position the cursor over the excess portion of the line. When the ( ) cursor appears, click once on the line to remove the distance to the intersection. For non-intersecting paths, select the Trim tool and click the trim location on the path.

To trim multiple lines at once, select the Trim tool and click-drag over the excess portions of lines to trim. They will trim to the nearest intersecting line or at the click-drag point if there is no intersection.

Note about trimming: *To create trim points along the path without deleting the artwork, double-click the Trim tool and set the tool preferences.*



2D CAD editing tools (cont.)

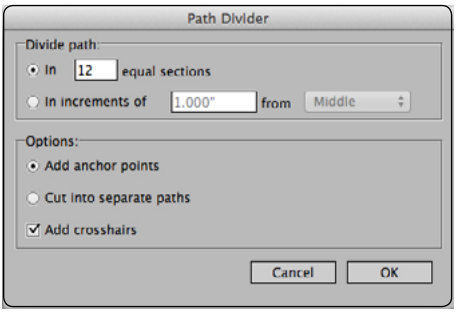
Extend

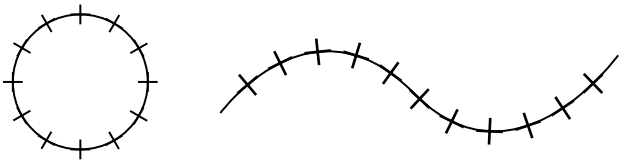
The Extend tool will automatically extend a path to meet another path. Select the Extend tool and position the cursor over the path to extend. When the ( ) cursor appears, click once on the path, then click the path to extend. *Note: The two paths must be able to intersect.*

click once on the line and then on the path to extend

Path Divider

The Path Divider tool divides a path in sections or in specified increments from beginning, middle or end. Divisions can be marked with anchor points and crosshairs and cut into paths. Select the Path Divider tool and click on the path to divide. Use the dialog box to set the options for division.





Measure Scale

The Measure Scale tool sets a custom scale based on a representative actual distance. Measure Scale works much like a legend on a map. Select the Measure Scale tool and click the first point from which to measure. Drag to define the scaled distance. In the custom scale dialog box that appears, enter a scaled distance that represents the actual distance dragged. The current scale will change based on this new equation, and the new custom scale will be added to the Scales list in the CADscale panel.

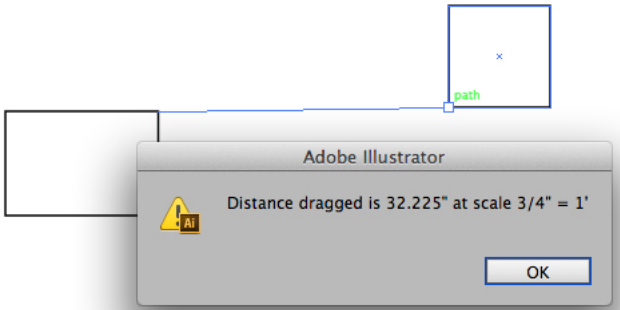
click and drag the distance from which to measure

2D CAD editing tools (cont.)

click and drag between any two points

Measure Distance

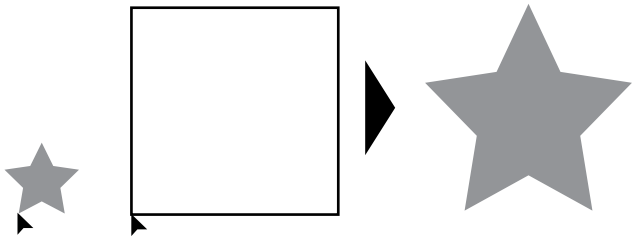
The Measure Distance tool will display the distance between any two points. Select the Measure Distance tool and click-drag from one point to another. To select a point on an object, make sure that the ( ) or ( ) cursor appears when clicking or releasing. The absolute scaled distance and scale (based on the first clicked object) will appear upon release.



click any two points of separate objects

Proportion

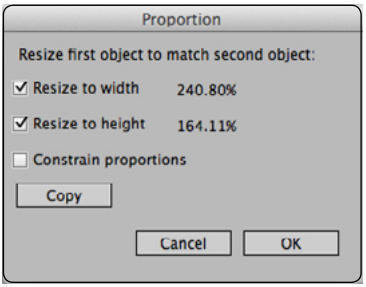
For simple control, use the Proportion tool to resize an object to another object's width, height or all aspects with optional constrained proportions. Select the Proportion tool and click a point on one of the *unselected* objects. Click any point on the second object. In the Proportion dialog box, select Resize to width or height. If both are selected, proportions will automatically constrain. Click OK and the first object will resize to match the proportions of the second.



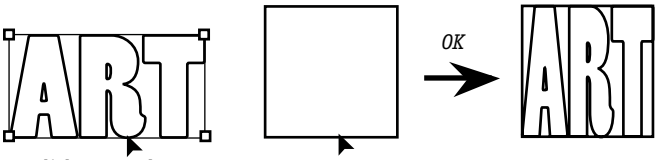
click a point on the object or grouped objects, then click on the object of desired proportion

2D CAD editing tools (cont.)

For key object control, use the Proportion tool to resize objects based on selected grouped or ungrouped objects. Ungrouped selected objects follow the clicked key object when resizing, and grouped selected objects resize together.

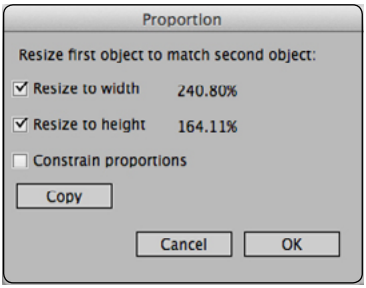


If the selected objects to resize are ***grouped***, then the objects will resize together to fit the proportions of the second object as shown.

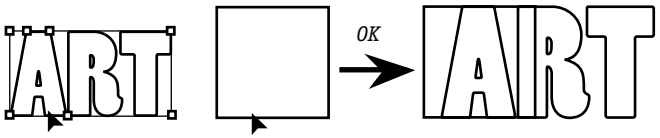


1. Click grouped set

2. Click object to match proportion



If the selected objects to resize are ***ungrouped***, then the proportion will resize the objects together, fitting only the clicked object into the second object as shown.



1. Click one ***key object*** in the selected, ungrouped set - the "A" as shown

2. Click object to match proportion

Quick Reference: Numeric input and units

Using numeric input

Create artwork to scale by numerically specifying dimensions for CADtools drawing tools. Select the tool and click once to begin creating the shape. While using a centered tool, the click location will define the center of the object; otherwise, the click location will define a corner of the object. A numeric input dialog box will appear, displaying the dimensions last specified for that tool.

Setting units throughout CADtools

Use the CADunits panel to set up units and precision for all dimension values and interface settings like numeric input, CADrulers and CADpanel options.

Use the following unit abbreviations:

1) Points: *pt*
2) Pixels: *px*
3) Picas: *p*
4) Millimeters: *mm*
5) Centimeters: *cm*
6) Meters: *m*
7) Kilometers: *km*
8) Mils: *mil*
9) Decimal inches with symbol: X.X"
10) Fractional inches with symbol: X X/X"
11) Decimal inches with units: X.X *in*
12) Fractional inches with units: X X/X *in*
13) Decimal feet and inches with symbol: X' X.X"
14) Fractional feet and inches with symbol: X' X/X"
15) Decimal feet and inches with units: X *ft* X.X *in*
16) Fractional feet and inches with units: X *ft* X/X *in*
17) Decimal feet with symbol: X.X'
18) Decimal feet with units: X.X *ft*
19) Miles: *mi*
20) Nautical miles: *nmi*

Note: If a unit is not specified in numeric input, the artwork will be drawn in the units specified in the CADunits panel.

Quick Reference: Keyboard shortcuts

Keyboard input for precision and shortcuts

CADtools utilizes the shift, alt/option, and control keys to provide more control and flexibility while drawing and dimensioning. *Note: these keys only function by holding them down **after** selecting and beginning drafting or dimensioning with one of the tools.*

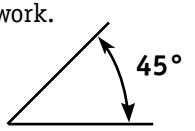
Use the **shift** key to constrain most CADtools 2D drafting and dimensioning tools to multiples of 45°.

To quickly switch between certain tools in CADtools, use the **alt/option** key (alt for Windows and option on Mac) while dragging to toggle between the following 2D and axonometric tools:

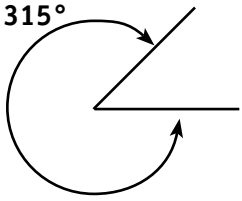
1) Rectangle and Centered Rectangle
2) Ellipse and Centered Ellipse
3) Arc (by radius) and Arc (by endpoints)
4) Universal Dimension
5) Horizontal Dimension by Point and Vertical Dimension by Point
6) Horizontal Dimension by Line and Vertical Dimension by Line
7) Horizontal and Vertical Datum Dimension
8) Radius and Diameter Dimension
9) Tangent Dimension: Shows normal/perpendicular line

Use the **control** key for variations in dimensioning artwork. The control key provides the following tool variations:

1) Arc: complementary arc
2) Section Line: adjacent placement of label
3) Angle Dimension: complementary angle
4) Bézier Length Dimension: for closed paths, complementary arc or residual length of path
5) Diameter Dimension: adjacent placement of label
6) Radius Dimension: adjacent placement of label
7) Bézier Curvature Dimension: arc visibility
8) Tangent Dimension: placement of normal line
9) All label tools: adjacent placement of label



angle dimensioning without the control key



angle dimensioning with the control key

To remove witness lines while drawing angle dimensions, use the **alt/option** key while dragging with the angle dimension tool.

Hold the **alt/option** key down when projecting artwork with the cube icon to automatically expand it.

Use the **control** key to constrain the CAD Line tool to the angle started while dragging.

Quick Reference: Cursor feedback

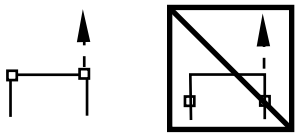
Cursor feedback

While drawing and dimensioning with CADtools, receive additional precision cursor feedback to help select lines and anchor points in the correct order.

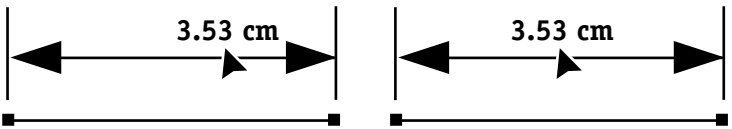
Cursor description	Activity status
Precision cursor	CADtools drawing, editing, dimensioning or labeling tool is selected
Precision cursor over path	Tool is selected and cursor is directly over a path
Precision cursor over anchor point	Tool is selected and cursor is directly over an anchor point
Precision cursor waiting for second click	Tool is selected, first click has been made, waiting for click or click-drag to create artwork
Cursor dragging to create artwork	Tool is selected, first or second click has been made, and cursor is dragging
Cursor over dimension line	Cursor is directly over a dimension line and a dimension cannot be created

Dimensioning objects

When dimensioning by points, be sure to use the precision cursor over the anchor points to properly dimension the object. Inaccurate measurements will result if the dimensions are pulled from the lines rather than the anchor points.



When Free sliding text is checked in the CADdimensions panel, dimension text can slide while dragging. To lock it into center position, use the control key while dragging.



with **Free sliding** text checked

with **Free sliding text** checked holding the control key

Advanced topics

Automatic updates on Windows

When CADtools automatically detects a new update, a dialog indicates that a new CADtools update is available. After downloading the update, another dialog will advise quitting Adobe Illustrator and relaunching.
If the Windows user account control is set below administrator privileges, then the update installation may fail and Illustrator may crash.
To prevent these complications and ensure completion of the update, follow these instructions:
1) Quit Adobe Illustrator
2) Right-click on the Illustrator application
2) Choose "Run as administrator"

Scroll bar display in CADtools panels on Mac

On Mac systems, scroll bars may not appear inside CADtools panels – CADaxonometric, CADscale, and CADshortcuts – unless scroll bars are set to **Always** show under the Apple menu > System Preferences > General panel.

Importing or exporting artwork

Adobe Illustrator CS5, CS6 and CC include DXF and DWG import and export in R13, R14, 2000, and 2004/2005/2006 formats. Illustrator CC supports 2007/2008/2009 and 2010/2011/2012. Once a file is imported as vector artwork inside Adobe Illustrator, CADtools can be used to dimension or edit the artwork. In some cases, an imported file may contain artwork comprised of small line segments. Dimensioning tools by line, as well as radius, diameter, arc length, and Bézier curvature dimensioning tools will not work for such segmented artwork. To connect these DXF line segments, use the Concatenate filter available at **(http://rj-graffix.com/)** For more information on opening or placing files within Illustrator, please refer to the Adobe community forums and the Adobe web site at **www.adobe.com**.

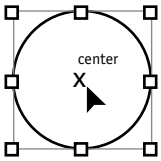
Saving artwork

Save artwork in Illustrator CS or higher format or the dimension information may not display properly.

Advanced topics (cont.)

Using CADtools full screen cursors and Smart Guides

Adobe Illustrator includes Smart Guides that help create, align, edit and transform objects. Smart Guides works with CADtools for optimal precision and control when manipulating artwork. The CADguides panel offers Full screen cursors for precision when creating lines or objects with CADtools.



Using CADgrids

CADgrids increments are logical divisions of the units defined in the CADunits panel.

Drawing in the dimension layer

Dimensions will automatically draw into a separate layer named “Dimension Layer” if 'Create and use dimension layer' is checked in the CADtools Preferences under **Window > CADtools > Preferences...** This Dimension layer can be hidden, locked, displayed, and printed like other layers created within Illustrator. ***All objects drawn in the dimension layer will be 1:1 scale.*** *Avoid using the Dimension Layer for creating other artwork and make sure the appropriate layer is selected while drawing.*

Bézier curvature dimensioning for circles and arcs

Circles and circular arcs created within Illustrator are constructed with Bézier curves. Therefore, the radius at any point of a circle or circular arc may reveal a variance of up to 5% of the original specified radius.

Duplicating objects with dimensions in CS5

Any dimensions linked to objects that have been duplicated with the alt/option-drag keys may not update correctly in CS5. To duplicate objects with dimensions, ***copy and paste the objects with their dimensions using menu or command keys.*** To avoid unpredictable results, detach dimensions prior to copying and pasting them into new documents.

Advanced topics (cont.)

Drawing axonometric/isometric objects

For best results, create a simple axonometric cube before creating artwork and adjust the view angles. For separate axonometric shapes that share the same plane, first create them as flat artwork. Then project them to the front, side, or top plane with the cube in the CADaxonometric panel.

Area values for intersecting or compound paths

The area of a path that intersects itself cannot be calculated correctly by the CADtracker panel. Area can be calculated for single or multiple shapes as long as they are closed and do not include overlapping compound paths.

Using patterns in axonometric view

Patterns are not automatically transformed with CADtools objects, but a transformation of pattern artwork can be forced by expanding and projecting it with flat artwork using the CADaxonometric panel.

Smoothing sharp axonometric artwork

The geometry of axonometric objects may naturally show many sharp angles in the artwork. If artwork is stroked, select it and choose Round Join in the Illustrator Stroke panel for a cleaner appearance.

Symbol, patterns, and additional tools

- Hot Door CADpatterns: 134 patterns for technical drawing
- Hot Door Dwell Symbols: Samples of architecture
- Code Zebra TechSymbols in seven libraries: Architecture, Building Services, Landscaping, Electrical, Mechanical, Fasteners and General
- DGI SignSymbols: Road sign graphics
- GDS Drop3D: 3D model manipulation and import tool

Check the Hot Door Web site for updates on these and other design resources as they become available.

Index

3-point circle 24

A

Activation 9
Add Wall 29-31
Advanced Topics 100-102
Angle dimension 42, 49
Arc (by points) 24
Arc (by radius) 24
Area 60, 66, 68, 72, 84
Area Transform 86
Attach dimensions/label 13
Axonometric line 62
Axonometric cube 63
Axonometric cylinder 63
Axonometric diameter dimension 69
Automatic dimensioning 53
Axonometric ellipse 62
Axonometric grid 63
Axonometric object center 70
Axonometric radius dimension 69
Axonometric rectangle 60

B

Bezier curvature dimension 51
Bezier length dimension 49

C

CADguides panel 18
CADaxonometric panel 12, 56-58
CADlabels panel 71-73
CADpresets 53-54
CADdimensions panel 36-40
CADrepeat 88
CADscale 14-17
CADshortcuts 53-55
CADtracker panel 66-70, 84-87
CADunits panel 19-21
CADwalls panel 28-34
Centered ellipse 24
Centered polygon 24
Centered rectangle 23
Center Line 52
Chain datum dimension 41, 44, 46, 48
Chamfer 91
Circle 23, 24
Constrained Line 26
Control Bar 21
Corner Profile 89, 92
Converting older files 10
Creative Cloud 7
Cursor feedback 99
Custom label 71, 72, 77
Custom scale 15

D

Datum feature 79
Datum flag 80
Datum target 79
Demo Version 9
Diameter dimension 50
Dimensioning tool group 41
Dimension Redo 90
Door insertion 28, 33
DXF/DWG 100

E

Ellipse 22, 23
Extend 94

F

Fillet 90
Fillet radius dimension 50
Flatten 58
Fractions 19
Full screen cursor 18, 101

G

Geometry in CADtracker 84
Geometry label 78

H

Horizontal dimension tools 43-44
Horizontal axonometric datum dimension 64-66

I

Importing 10, 100
Inclined dimensioning 47-48
Incremental labeling 75-76
Installation 8-9

K

Keyboard shortcuts 98
Key object (proportion) 78

L

Labeling tools 74-80
Language for CADtools 13
Language for CADunits 21
Layer scales 14-16
License agreement 4
Line 25-26

M

Measure distance 95
Measure scale 94
Move 87
Move wall 32

O

Object Center 52
Offset 27

P

Path Divider 94
Patterns 102
Perpendicular line 22, 27
Polygon 24
Preferences 13
Presets 53-54
Projection 56-57
Proportion 95-96

R

Radius dimension 41, 50
Rectangle 23
Revision bubble 80
Rounded rectangle tool 23, 61
Rise, run 26
Rulers 18

S

Scale 14-17
Section line 52
Select 55
Shortcuts 35, 55, 74
Sliding text 38, 99
Span circle 40

T

Table tool 83
Table of contents 3
Tangent line 27
Title block 81-82
Transform 85
Trim 75

U

Unit abbreviation 20, 97
Universal dimension 41

V

Vertical dimension tools 45-46
Vertical axonometric dimension
64-68

W

Wall 28-32
Window insertion 34