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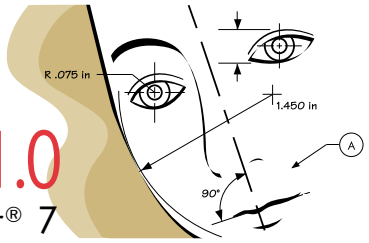
hot door™

CADtools 1.0

for Adobe® Illustrator® 7



User guide for Macintosh® or Windows®

Welcome to Hot Door CADtools, plug-in tools which provide precision drawing and dimensioning power *within* the flexible vector illustration environment of Adobe Illustrator 7.0. This manual contains detailed information about CADtools palettes, tools, and preferences added to Illustrator 7.0. This user guide applies to both Macintosh® or Windows® 95 and NT 4.0 versions of Hot Door CADtools. This user guide also assumes you have working knowledge of the operating conventions of the Macintosh or PC running Windows and Adobe Illustrator 7.0.

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Installing & registering CADtools 2

Macintosh Installation
To install CADtools on your **Macintosh**, follow these steps:

1. If you are currently running Adobe Illustrator 7.0, quit the application.

2. On your drive, locate the **Tools** folder inside the **Plug-ins** folder inside your **Adobe Illustrator® 7.0** folder. Insert the CADtools floppy diskette into the floppy drive. Copy the file named **CADtools** from the floppy diskette to the **Tools** folder on your drive.

3. When you launch the Adobe Illustrator 7.0 application again, you should see some of the tools belonging to CADtools appear in the toolbox. *CADtools icons are distinguished by their red point markings.*

Windows Installation
To install CADtools for **Windows**, follow these steps:

1. If you are currently running Adobe Illustrator 7.0, quit the application.

2. On your drive, locate the **Tools** folder inside the **Plug-ins** folder inside your **Adobe Illustrator® 7.0** folder. Insert the CADtools floppy diskette into the floppy drive. Copy the file named **CADtools.aip** from the floppy diskette to the **Tools** folder on your drive.

3. When you launch the Adobe Illustrator 7.0 application again, you should see some of the tools belonging to CADtools appear in the toolbox. *CADtools icons are distinguished by their red point markings.*

Installing & registering CADtools (cont.)

To be eligible for free technical support, information on upgrades, and other special offers, please register your copy of CADtools. To register, complete and mail this form, or the registration card attached to your CADtools reference card to:

Hot Door
P.O. Box 3841
Long Beach, CA 90803
USA

or FAX: 562-438-8686

CADtools registration card

Serial Number: _____ Date purchased: _____
(located on the sticker on the CADtools program disk)

Name: _____

E-mail: _____

Company: _____

Street Address: _____

City: _____ State/Province: _____

Zip/Postal Code: _____ Country: _____ Phone: _____

Where did you purchase CADtools:

_____

What is your organization's primary business?

_____

What is your primary job function?

_____

Where to find help with CADtools 4

This user guide
This user guide is in pdf format which can be viewed and printed with Acrobat Reader 3.0 which is located on your Adobe Illustrator 7.0 cd.

The quick reference card
The quick reference card included in your CADtools software product box lists the function and location of each tool belonging to CADtools. The card also describes the CADtips palette, CADtracker palette, and CADtools preferences. A tool reference is also located in Appendix A of this manual.

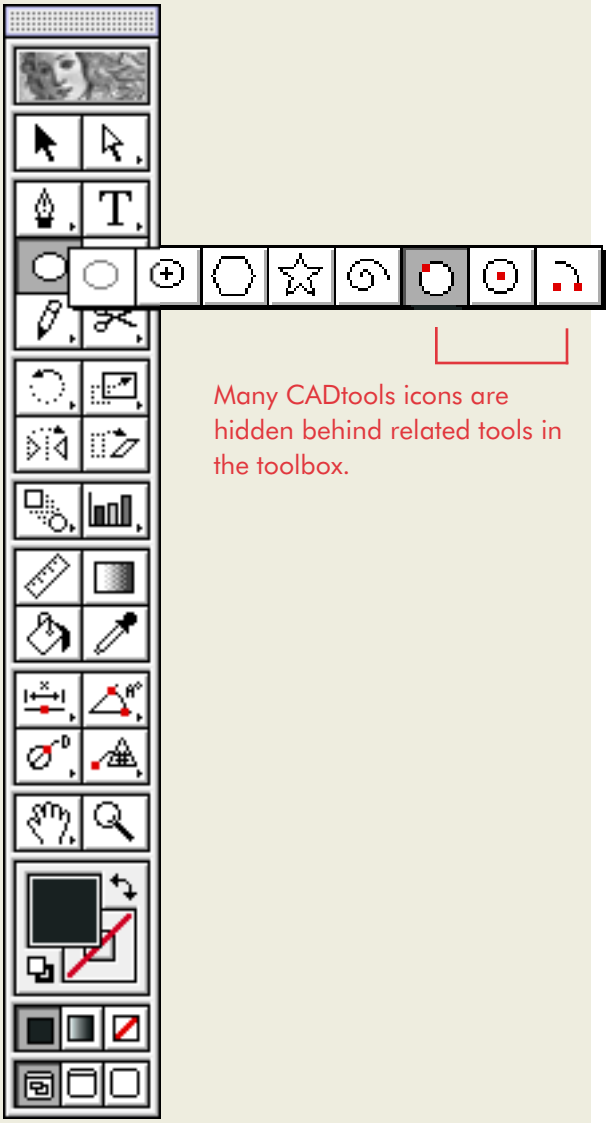
On-screen help
From the Adobe Illustrator 7.0 menu bar, choose **Windows** > **CADtools** > **Show CADtips**. CADtips will display step-by-step instructions for using any tool belonging to CADtools. To begin viewing CADtips, select one of the tools belonging to CADtools. *CADtools icons are distinguished by their red point markings*.

On-line FAQ
Frequently asked questions about CADtools are answered on the CADtools web site at **http://www.hotdoor.com/CADtools/**

E-mail technical support for registered users
If you complete and return the registration form included in your CADtools software product box, you are entitled to free e-mail technical support. If you are registered as a CADtools user on Macintosh, please send e-mail questions to **CADtoolsmac@hotdoor.com**. If you are registered as a CADtools user on Windows, please send e-mail questions to **CADtoolswin@hotdoor.com**

Phone technical support for registered users
If you complete and return the registration form included in your CADtools software product box, you may receive CADtools technical support by calling **562-438-4443** or faxing **562-438-8686.**

Overview of the CADtools interface 5



Many CADtools icons are hidden behind related tools in the toolbox.

Hot Tip!

The CADtools icons all contain red points which indicate the number and placement of mouse-clicks required to properly use the tool.

Finding all the tools

After you have properly installed CADtools and launched Adobe Illustrator 7.0, you will notice new CADtools drafting and dimensioning tools in the toolbox of Adobe Illustrator 7.0.

In addition to the four new tools you see in the toolbox, there are many hidden tools. Select the small arrows on the right of the tool icons and drag to highlight other tools. You will find CADtools drafting and editing tools by selecting and dragging from the pen, ellipse, rectangle, pencil, and scissors tools. CADtools dimensioning tools can be accessed by selecting and dragging on any of the four visible dimensioning tools near the bottom of the toolbox.

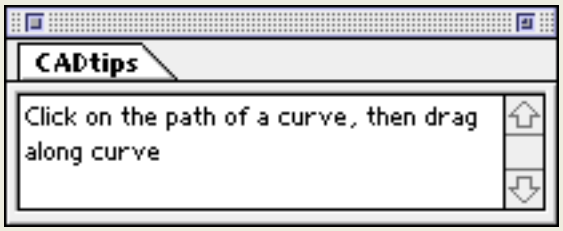
Color icons and tool behavior

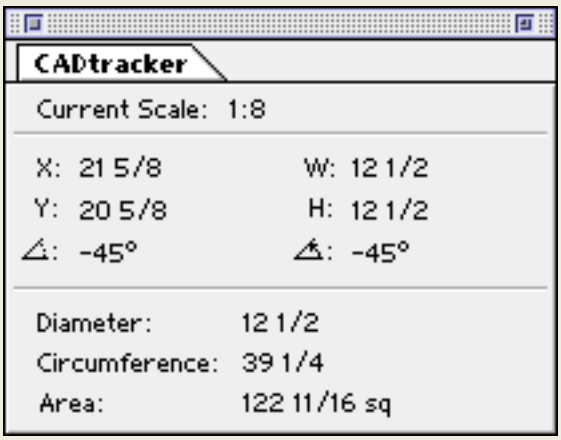
CADtools icons are distinguished by their red point markings. The red points indicate the position of mouse-click(s) in relationship to the artwork created. Tool icons which have only one red point require only one mouse-click-and-drag – except for the circle center tool, which requires only one mouse-click on a circle. Tool icons which have two red points require two mouse-clicks positioned on artwork as shown in the icon. For most of these tools, you must drag the mouse after the second click. The fillet, chamfer, trim, and wall healer tools do not require dragging after the second click.

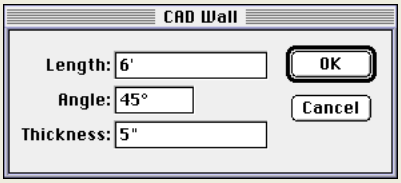
Locating CADtools preferences

CADtools preferences can be opened by choosing **File** > **CADtools Preferences...** CADtools Preferences allow you to adjust your general drafting specifications, appearance of dimension lines, terminators, and text, and settings for your drafting and editing tools.

Hot Tip!
CADtips and CADtracker can dock to any palette in Illustrator to help you organize your desktop. To dock a palette, drag the palette tab of one palette to the bottom of another palette.







Overview of the CADtools interface (cont.) 6

Displaying CADtools palettes

CADtools adds two new palettes to Illustrator 7.0: CADtips and CADtracker. These palettes can be opened by choosing **Windows** > **CADtools** > **Show CADtips** or > **Show CADtracker**.

CADtips displays step-by-step instructions while you are using any tool belonging to CADtools. To begin viewing tips in the CADtips palette, select one of the drafting and dimensioning tools in the toolbox.

While using CADtools drafting tools, the CADtracker palette displays object information in the current scale, units, and precision specified in CADtools Preferences. CADtracker displays width, height, circumference, perimeter, area, angle, line length and the current scale. CADtracker also displays scaled width and height of any selected object in Illustrator. CADtracker docks to any palette within Illustrator to help you organize your desktop.

Numeric input

You can create artwork to scale by numerically specifying dimensions for CADtools drafting tools. Select any of the CADtools ellipse, rectangle, line or wall tools and click once where you want to begin creating the shape. If you are using a centered tool, your 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 you last specified for that tool. The units of measure are determined by the settings in CADtools Preferences. Enter values and units in the text boxes, using one of the unit abbreviations listed below:

1) points: *pt*
2) picas: *p*
3) millimeters: *mm*
4) centimeters: *cm*
5) inches: *in* or *"*
6) feet: *ft* or *'*
7) feet and inches: *ft – in* or *' – "*
   (Example: *1 ft – 3 1/2 in* or *1' – 3.5"*)

Hot Tip!
To use the keyboarding enhancements, hold down the shift, alt/opt, and control keys after you click and begin dragging with CADtools drafting or dimensioning tools.

Overview of the CADtools interface (cont.)

Keyboarding for precision and shortcuts
CADtools utilizes the shift, alt/option, and control keys to give you more control and flexibility while drafting and dimensioning. *Note: these keys only function if you hold them down **after** you select and begin drafting or dimensioning with one of the tools.*

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

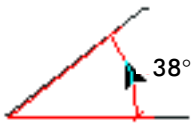
To quickly switch between certain tools in CADtools, use the **alt/option** key (**alt** for PC and **option** on Macintosh) while dragging to toggle between the following tools:
1) rectangle and centered rectangle
2) ellipse and centered ellipse
3) arc (by radius) and arc (by endpoints)
4) horizontal dimension by point and vertical dimension by point
5) horizontal dimension by line and vertical dimension by line
6) radius and diameter dimension

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) arc length dimension: complementary arc length
5) diameter dimension: adjacent placement of label
6) radius dimension: adjacent placement of label
7) Bézier curvature dimension: arc visibility
8) all label tools: adjacent placement of label

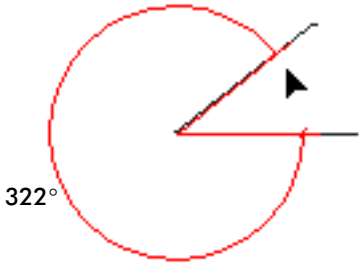
To remove witness lines while drawing angle dimensions, use the **alt/option** key while dragging with the angle dimension tool.

Using the control key for variations

Angle dimensioning without control key



Angle dimensioning with control key



Overview of the CADtools interface (cont.)

Cursor feedback

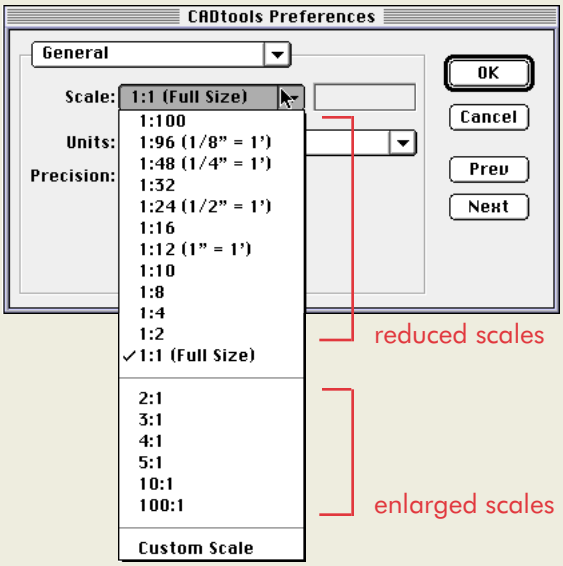
While you are drafting and dimensioning with CADtools, you will receive additional precision cursor feedback to help you select lines and anchor points in the correct order.

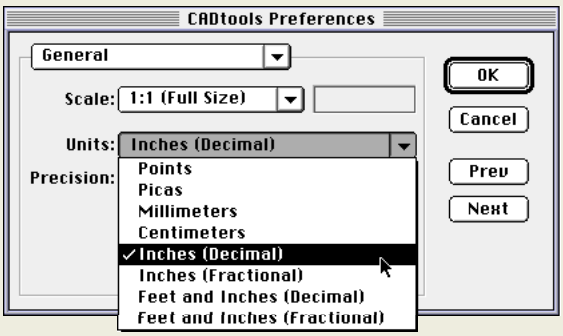
	Cursor description	Activity status
	precision cursor	CADtools drafting or dimensioning tool is selected
	precision cursor over path	CADtools drafting or dimensioning tool is selected and cursor is directly over a path
	precision cursor over anchor point	CADtools drafting or dimensioning tool is selected and cursor is directly over an anchor point
	precision cursor waiting for second click	CADtools drafting or dimensioning tool is selected, you have already clicked once, and you need to click or click-drag to create artwork
	cursor dragging to create artwork	CADtools drafting or dimensioning tool is selected, you have clicked once or twice, and you are dragging
	(optional) cursor over dimension line	**Allow dimensions off of dimensions** is unchecked in CADtools Preferences, a CADtools dimensioning tool is selected, and you are directly over a dimension line. You will not be able to create a dimension when this cursor appears.

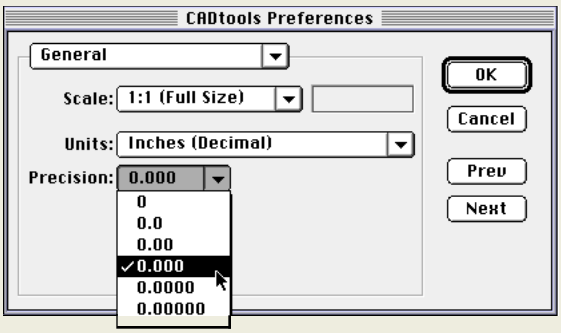
Hot Tip!
To open CADtools Preferences without using the menu, double-click any tool belonging to CADtools.

Setting CADtools preferences 9

Locating CADtools preferences
CADtools preferences can be opened by double-clicking any tool belonging to CADtools or choosing **File** > **CADtools Preferences...** Select one of the five preference panels by using the pop-down menu at the top of the CADtools Preferences dialog box. You can also navigate through the preference panels by clicking **Next** or **Prev**. At any time you may click **OK** and your CADtools Preferences will close and be saved.







1) General

- **Scale** affects how your drafted artwork is measured in the CADtracker palette, CADtools numeric input dialog box, and Drafting Tools Preference panel in CADtools Preferences. While drafting in scale, use the CADtracker or numeric input to accurately draw artwork at a reduced or enlarged size to fit on your page. *Note: CADtools scale will not affect measurements displayed in the Illustrator Info palette.*

To set scale, select the pop-down menu and choose an enlarged or reduced preset scale or Custom Scale. If you select Custom Scale, enter any scale in the field located to the right of the Scale menu. Enter the scale in the format shown – numbers separated by a colon.

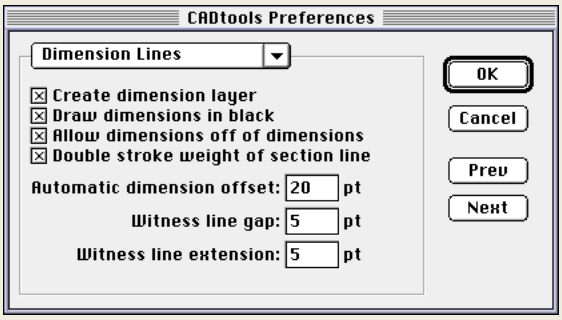
Note: CADtools scale does not automatically enlarge or reduce your artwork – it affects how your drafted artwork is measured in the CADtracker palette, numeric input dialog box, and Drafting Tools preference settings. To enlarge or reduce your artwork, use the scale tool within Adobe Illustrator 7.0.

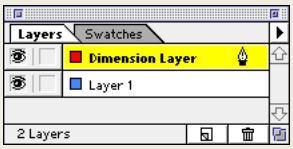
- **Units** are set by selecting the Units pop-down menu and choosing from several standard units. Any of these units may be used when specifying dimensions with the CADtools numeric input dialog box or Drafting Tools preferences.

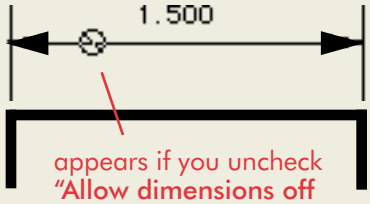
- **Precision** is set by selecting the Precision pop-down menu. Choose from one to five decimal precision places or from 1/2 to 1/256 when using fractional units.

Hot Tip!

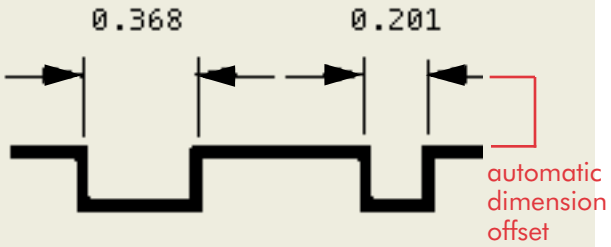
You can avoid mistaking dimension lines for artwork by unchecking "Allow dimensions off of dimensions". When this option is unchecked, you will see (⃠) when you move the cursor over dimension lines, and you will not be able to dimension those lines.

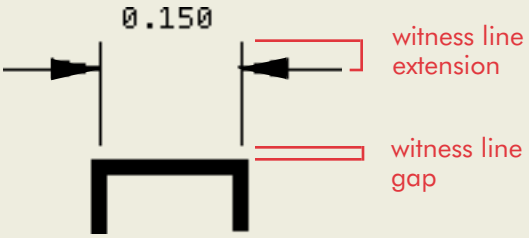






appears if you uncheck "Allow dimensions off of dimensions" in CADtools Preferences





Setting CADtools preferences

2) Dimension Lines

The Dimension Lines Preference panel allows you to set the appearance of your dimension lines.

- **Create and use dimension layer** will draw your dimension lines in a separate layer named "Dimension Layer". This layer can be hidden, locked, displayed, and printed like other layers created within Illustrator 7.0. *Note: If you rename the "Dimension Layer", another layer named "Dimension Layer" will be created.*

- **Draw dimensions in black** will ignore the current paint style settings and allow you to always create black dimension lines and text. Stroke weight for your dimension lines will remain defined by the settings in the stroke palette.

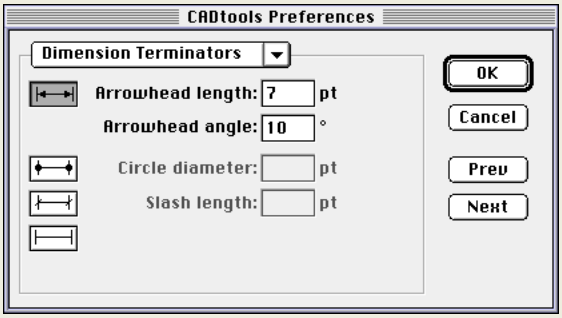
- **Allow dimensions off of dimensions** will allow you to dimension lines originally created with the dimensioning tools in CADtools. When this option is unchecked, you will see (⃠) when you move the cursor over dimension lines, and you will not be able to dimension those lines. You may want to uncheck this option when working with many dimension lines on a page.

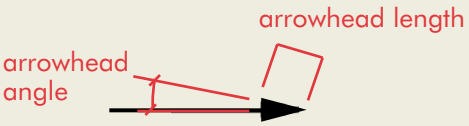
- **Double stroke weight of section line** will automatically draw your section lines at double the stroke weight set in the stroke palette.

- **Automatic dimension offset** value is the offset increment to which your dimension will snap from the object line while you are dragging *with the shift key down*. This feature will allow you to maintain consistency in dimension line placement.

- **Witness line gap** value is the distance between the object line and the witness line.

- **Witness line extension** value is the distance that the witness line extends beyond the dimension line.





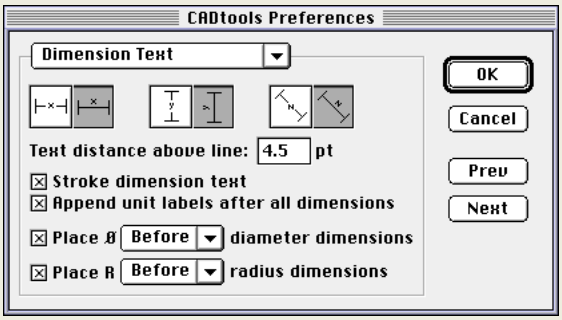
3) Dimension Terminators

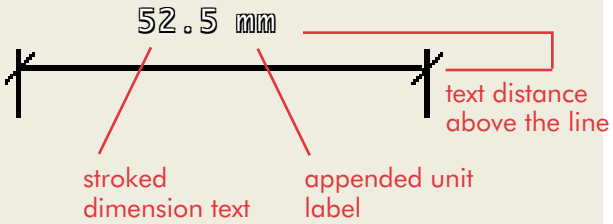
The Dimension Terminators Preference panel allows you to adjust the appearance of your dimensioning terminators. Select one of the four buttons on the left and then enter values to fine-tune your selection.

- **Arrowhead length and angle** values will fine-tune the arrowhead appearance if the arrowhead terminator option is selected.

- **Circle diameter** value will adjust the size of the circle terminator if it is selected.

- **Slash length** value will set the length of the slash terminator if it is selected.





4) Dimension Text

The Dimension Text Preference panel allows you to control the placement and appearance of dimension text. Select one button from each of the three pairs to set the placement of horizontal, vertical, and incline dimension text.

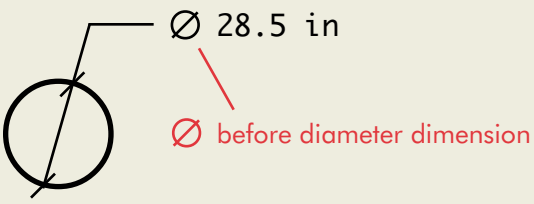
- **Text distance above the line** value defines the gap between the dimension text and line.

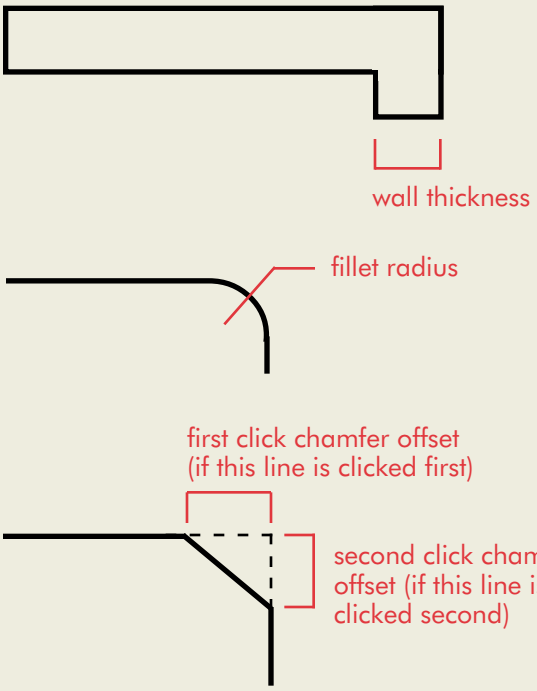
- **Stroke dimension text** option will stroke dimension text with your current stroke style settings. *Note: when this option is unchecked, CADtools ignores the stroke setting when creating dimension text.*

- **Append unit labels after all dimensions** option will place the unit after the dimension text.

- **Place ∅ <Before> or <After> diameter dimension** option will allow you to adjust the placement of ∅ in the diameter dimension text.

- **Place** "R" **<Before> or <After> radius dimension** option will allow you to adjust the placement of "R" in the radius dimension text.





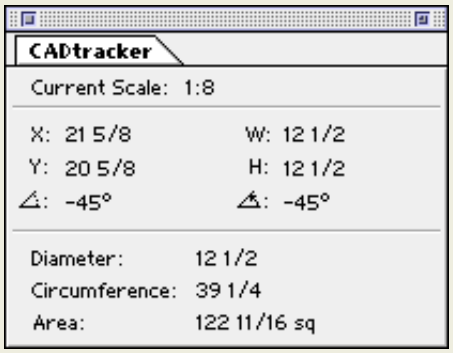
5) Drafting Tools
The Drafting Tools Preference panel allows you to set drafting and editing measurements. Enter values for actual size, since the values automatically scale according to the current scale displayed in the CADtracker palette. Also enter a unit of measurement which is supported by CADtools, including *pt*, *p*, *mm, cm*, *in* or *"*, *ft* or *'*, *ft – in* or *' – "*.
(Example: *1 ft – 3 1/2 in* or *1' – 3.5"*)

- **Wall thickness** value sets the width of your walls.

- **Fillet radius** value sets the radius of any fillet you create by clicking on two lines with the fillet tool.

- **First click chamfer offset** value is the distance between the intersection of two lines and the point on the first line that you click with the chamfer tool. The point becomes an endpoint of the chamfer.

- **Second click chamfer offset** value is the distance between the intersection of two lines and the point on the second line that you click with the chamfer tool. The point becomes an endpoint of the chamfer.



Using CADtools for drafting

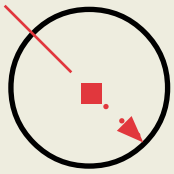
The CADtools drafting tools allow you to precisely create artwork by using numerical input or measurements displayed in the CADtracker palette.

first click then drag

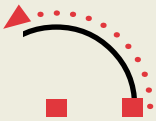
Ellipse
Select the CADtools ellipse tool and position the cursor where you want a corner of the ellipse to appear. Click and drag from one edge of the ellipse to the opposite edge. Hold down the shift key while dragging to create a circle.

Note: To quickly toggle between ellipse and centered ellipse, use the alt/option key. To numerically create an ellipse to scale, click once with the CADtools ellipse or centered ellipse tool.

first click then drag

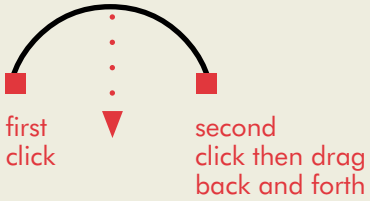


Centered ellipse
Select the CADtools ellipse tool and position the cursor where you want a corner of the ellipse to appear. Click and drag from the center of the ellipse to the edge. Hold down the shift key while dragging to create a circle.



Arc (by radius)
Select the arc tool and position the cursor where you want the center of the arc. Click the mouse button once and release the mouse button. Position the cursor where you want the arc to begin, which will be the length of the arc radius. Click and drag *counterclockwise* to create the arc. Hold down the control key while you are dragging to create the opposite angle.

Note: To quickly toggle between arc (by radius) and arc (by endpoints), use the alt/option key.



Arc (by endpoints)
Select the arc tool and position the cursor where you want the arc to begin. 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 you want the arc to end. Click and drag back and forth to create the arc. Hold down the control key while you are dragging to create the opposite arc.

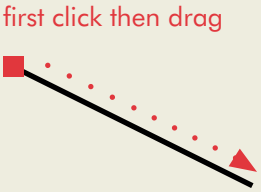
Rectangle

Select the CADtools rectangle tool and position the cursor where you want a corner of the rectangle to appear. 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 rectangle and centered rectangle, use the alt/option key. To numerically create a rectangle to scale, click once with the CADtools rectangle or centered rectangle tool.

Centered rectangle

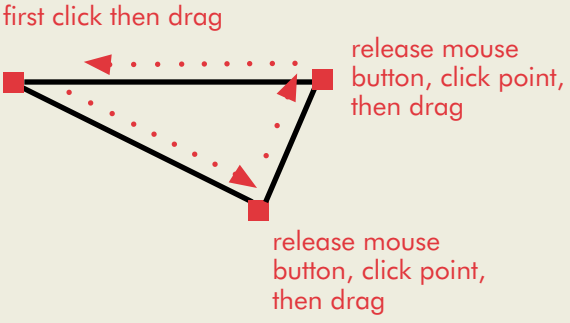
Select the CADtools rectangle tool and position the cursor where you want a corner of the rectangle to appear. Click and drag from the center of the rectangle to the edge. Hold down the shift key while dragging to create a square.



Line

The CADtools line tool allows you to *see the line while you are dragging to create it.* Using the CADtracker palette, you can also monitor the angle of the line while you are creating it.

Select the line tool and position the cursor where you want the beginning of the line to appear. 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 multiples of 45°.



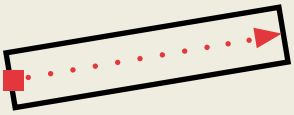
To create polygons with the line tool, create a line, then position your mouse over an endpoint of the line. When the ( ) cursor appears, begin dragging to create a new line joined at that endpoint. Release the mouse button when you have positioned the line and continue the process as needed. If you want 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.

Note: To numerically create a line to scale, click once with the CADtools line tool.

Using CADtools for drafting (cont.)

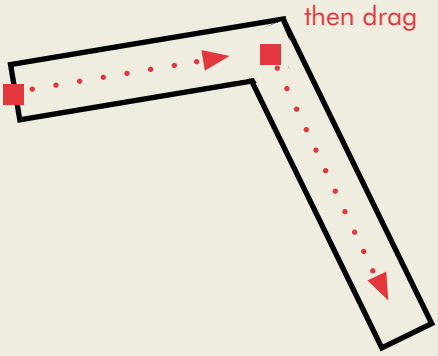
Hot Tip!
To open CADtools Preferences without using the menu, double-click any tool belonging to CADtools.

first click then drag



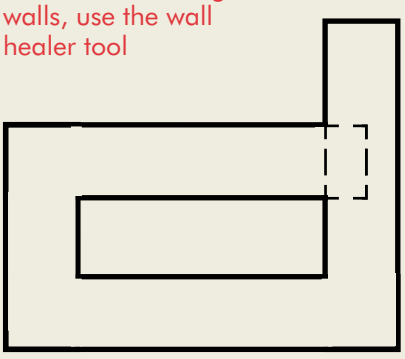
first click then drag

release mouse button, click point, then drag



Hot Tip!
Use the wall tool to easily create borders or frames on your documents.

To heal intersecting walls, use the wall healer tool



Wall
The CADtools wall tool works much like the line tool, creating rectangles (representing walls) with a thickness defined in the Drafting Tools Preference panel in CADtools Preferences.

Select the wall tool and position the cursor where you want the end of the wall to appear. Click and drag to position the wall. Release the mouse button to create the wall. Hold down the shift key while dragging to constrain the tool to multiples of 45°.

To create an additional wall joined to the end of an existing wall, click on the end of a wall and begin dragging. Release the mouse button when you have positioned the wall and continue the process as needed. If you are creating a wall path and want to close the path, drag the final wall segment until the cursor is over the beginning of the wall path. When the ( ) or ( ) cursor appears, release the mouse button and the wall path will close itself.

Note: If you want to heal multiple or intersecting walls, use the wall healer tool to select and heal the walls. To numerically create a wall to scale, click once with the CADtools wall tool.

Using CADtools for drafting (cont.) 16

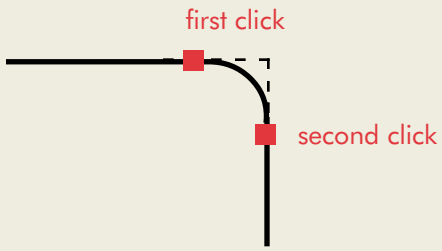
Using CADtracker while you are drawing...

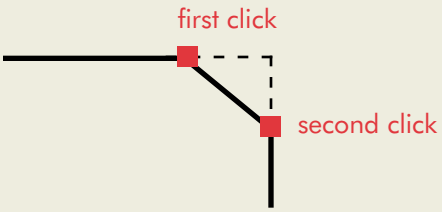
X	Horizontal distance of cursor from 0 point on the ruler
Y	Vertical distance of cursor from 0 point on the ruler
W	Horizontal width of the artwork created
H	Vertical height of the artwork created
∠:	Angle between the first click point and the current mouse location
Length *for lines and walls*	Distance between the first click point and the current mouse location
Diameter *for circles*	Diameter of the circle you are drawing
Radius *for circles and arcs*	Radius of the circle or arc you are drawing
Perimeter *for rectangles and ellipses*	Distance around a non-circular path
Circumference *for circles*	Distance around a circular path
Arc Length	Distance around the circular arc between two endpoints you have defined
Area	Area of rectangles, centered rectangles, ellipses, centered ellipses, and arcs

Using CADtracker with artwork selected...

X	Horizontal distance of object from 0 point
Y	Vertical distance of object from 0 point
W	Horizontal width of the artwork created
H	Vertical height of the artwork created
Length for any open path	Total distance along the path
Perimeter for any closed path	Total distance around the closed path

Hot Tip!
To open CADtools Preferences without using the menu, double-click any tool belonging to CADtools.



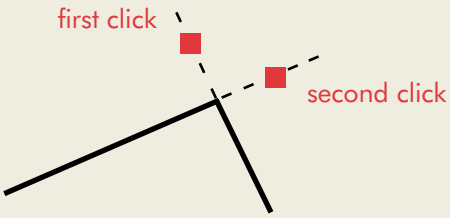


Fillet
The fillet tool allows you to create a fillet between two *intersecting lines or a corner*. The fillet radius is set in the Drafting Tools Preference panel in CADtools Preferences.

Select the fillet tool and position the cursor over one of two intersecting lines which you plan 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 create the fillet.

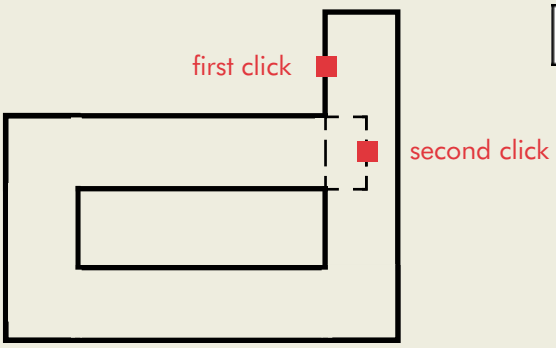
Chamfer
The chamfer tool allows you to create a chamfer between two *intersecting lines or a corner*. The chamfer length is determined by the distance between the chamfer endpoints and the corner or intersection. These distances – chamfer offsets – can be set in the Drafting Tools Preference panel in CADtools Preferences.

Select the chamfer tool and position the cursor over one of two intersecting lines which you intend 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 create the chamfer.

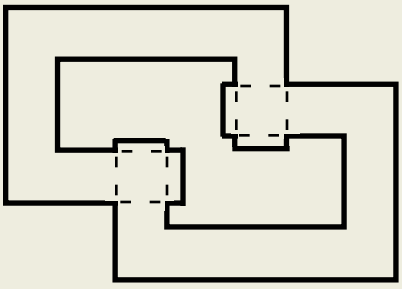


Trim

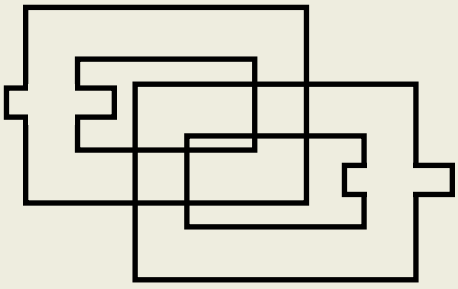
The trim tool will automatically delete the excess portion of two intersecting lines. Select the trim tool and position the cursor over the excess portion of one of the intersecting lines. When the ( ) cursor appears, click once on the line, then position the cursor over the excess portion of the second line. Click once on the second line to eliminate both excess portions and create a corner intersection.



Simple wall paths can heal with wall healer tool



Wall paths which are made of multiple compound paths cannot heal with the wall healer tool



Wall healer

The wall healer tool will unite two walls or wall paths which intersect. Select the wall healer tool and position the cursor over one of the intersecting walls. When the ( ) cursor appears, click once on the wall, then position the cursor over the second intersecting wall. When the ( ) cursor appears, click once on the second wall and both walls or wall paths will unite.

Note: You cannot heal walls which are already composed of multiple or compound paths. To heal wall paths which are compound paths, select both wall paths and select Object > Pathfinder > Unite.

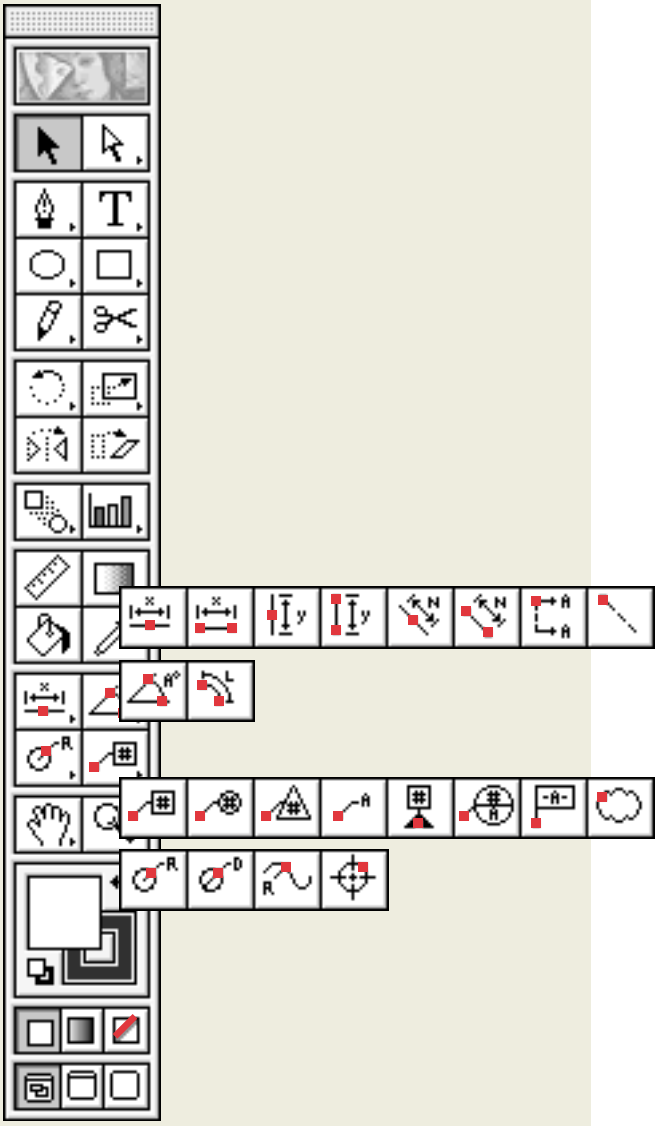
For complex layouts requiring many intersecting compound wall paths, avoid closing your wall paths. For best results, use the wall healer on intersecting wall segments and paths which are not closed.

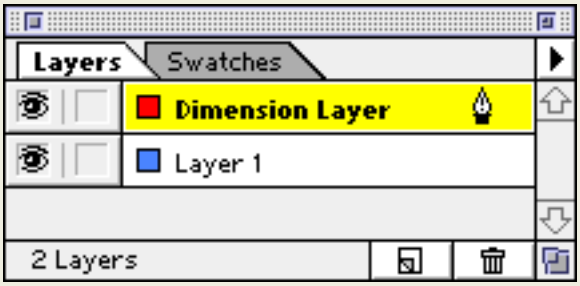
Hot Tip!

To "heal" compound paths, use Illustrator's "Unite" filter.

Hot Tip!

Since CADtools dimension lines are placed on their own Dimension Layer, hide or lock this layer to easily work with artwork on other layers.





Using CADtools for dimensioning 19

The dimensioning tools in CADtools allow you to express detailed information about shapes, objects, and spaces through the conventional use of lines, symbols, and text. The CADtools dimensioning tools work with *any vector artwork* within Adobe Illustrator 7.0. With Adobe Illustrator 7.0, you can also open files created by many other applications. Vector artwork in the document you open becomes Illustrator paths that you can dimension with CADtools.

Note: Dimension lines and symbols that are created with CADtools are vector artwork, and can be selected, moved, and modified within Illustrator. The numerical measurements are not linked to the artwork being measured or the dimension lines created. ***If the artwork is modified after you have dimensioned it, the original dimension lines and measurements may not be accurate.*** *To insure accuracy, delete any original dimensions which describe the modified artwork, then re-dimension the modified artwork.*

Once you have created a dimension or label with CADtools, it is grouped as artwork. To select, move, or modify the dimension artwork without ungrouping it, use Illustrator's direct-selection tool ( ). To edit text, use the text tool ( ).

The dimensions are placed on a **Dimension Layer** within Illustrator if you have checked this option in the Dimension Lines Preference panel in CADtools Preferences. You can lock or hide this layer to work with other artwork without affecting the dimensions.

You can also dimension off of other dimension lines if you have checked this option in the Dimension Lines Preference panel in the CADtools Preference. If this option is *checked*, you will be able to dimension from points or lines of circle centers, datum flags, and other dimensioning artwork. If this option is *unchecked* you will see the ( ) cursor over dimension lines and you will not be able to dimension them.

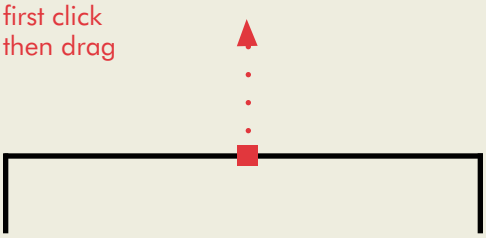
Using CADtools for dimensioning (cont.)

Hot Tip!
Create consistently placed linear dimension lines by holding down the shift key while dragging dimension lines. This will offset the dimension lines at an increment set in the Dimension Line Preference panel in CADtools Preferences.

Use the CADtools Preferences to adjust the appearance of your dimension lines, terminators, and text before you dimension your artwork. *Note: Your preferences will not adjust your dimensions after they have already been created.*

Hot Tip!
Avoid adjusting dimension line and text paint attributes by checking "Draw dimensions in black" in the Dimension Line Preferences panel in CADtools Preferences. "Draw dimensions in black" will ignore the current paint style settings and allow you to always create black dimension lines and text.

To set the dimension line and text color, use the paint style palette in Adobe Illustrator 7.0. The fill box controls the dimension text color and the stroke box controls the dimension line color. To set the stroke weight use the Stroke palette. *Note: If you plan to use black dimension lines and text, check "Draw dimensions in black" in the Dimension Line Preferences panel in CADtools Preferences.* "Draw dimensions in black" will ignore the current paint style settings and allow you to always create black dimension lines and text. Only stroke weight for your dimension lines will remain defined by the settings in the stroke palette.



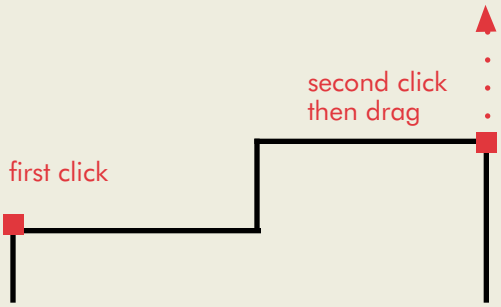
Horizontal dimension (by line)
The horizontal dimension (by line) tool will dimension horizontal line segments. A line segment is a straight path between two anchor points in Illustrator.

Select the horizontal dimension (by line) tool and position the cursor over the line you want 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 Dimension Line Preference panel in the CADtools Preferences.

Note: To quickly toggle between horizontal dimension (by line) and vertical dimension (by line), use the alt/option key.

Hot Tip!
The CADtips palette displays step-by-step instructions while you are using any tool belonging to CADtools.

Using CADtools for dimensioning (cont.)

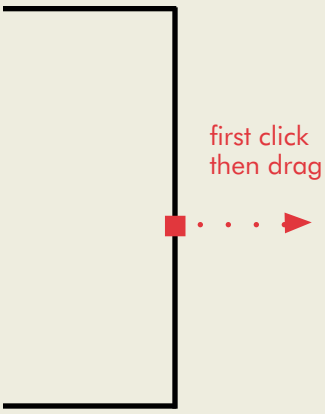


Horizontal dimension (by points)

The horizontal dimension (by points) tool will dimension the horizontal distance between any two points. You define the location of these two points anywhere on your document.

Select the horizontal dimension (by points) tool and position the cursor at one end of the horizontal distance you want 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 horizontal distance you want to dimension. If this is an anchor point, the cursor will change to ( ) . Then click 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 Dimension Line Preference panel in the CADtools Preferences.

Note: To quickly toggle between horizontal dimension (by points) and vertical dimension (by points), use the alt/option key.

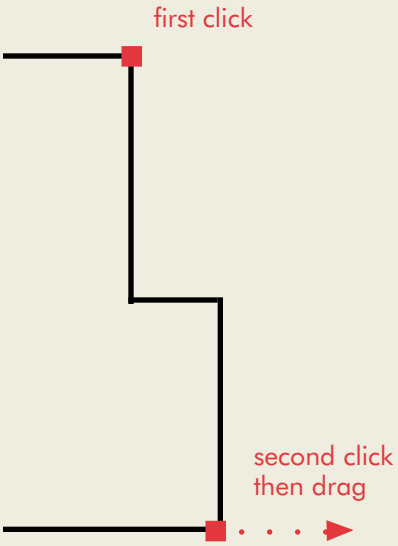


Vertical dimension (by line)

The vertical dimension (by line) tool will dimension vertical line segments. A line segment is a straight path between two anchor points in Illustrator. The vertical dimensioning (by line) tool works like the horizontal dimensioning (by line) tool.

Select the vertical dimension (by line) tool and position the cursor over the line you want 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 Dimension Line Preference panel in the CADtools Preferences.

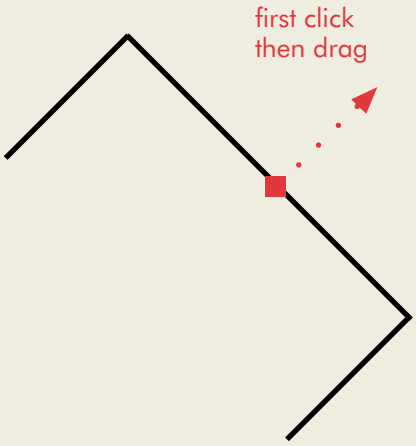
Note: To quickly toggle between vertical dimension (by line) and horizontal dimension (by line), use the alt/option key.



Vertical dimension (by points)
The vertical dimension (by points) tool will dimension the vertical distance between any two points. You define the location of these two points anywhere on your document.

Select the vertical dimension (by points) tool and position the cursor at one end of the vertical distance you want 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 vertical distance you want to dimension. If this is an anchor point, the cursor will change to ( ). Then click 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 Dimension Line Preference panel in the CADtools Preferences.

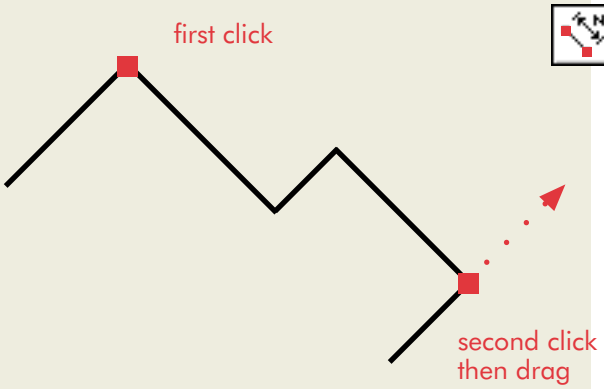
Note: To quickly toggle between vertical dimension (by points) and horizontal dimension (by points), use the alt/option key.



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

Select the inclined dimension (by line) tool and position the cursor over the inclined line you want 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 inclined dimension line in increments. The offset increment value is set in the Dimension Line Preference panel in the CADtools Preferences.

Using CADtools for dimensioning (cont.)



Inclined dimension (by points)

The inclined dimension (by points) tool will dimension the absolute distance between any two points. You define the location of the two points, which do *not* have to be 1) on the same line or path or 2) anchor points on artwork.

Select the inclined dimension (by points) tool and position the cursor at one end of the inclined distance you want 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 you want to dimension. If this is an anchor point, the cursor will change to ( ). Then click and drag to position the dimension line. Hold down the shift key while dragging to offset the inclined dimension line in increments. The offset increment value is set in the Dimension Line Preference panel in CADtools Preferences.

Hot Tip!

Create consistently placed linear dimension lines by holding down the shift key while dragging dimension lines. This will offset the dimension lines at an increment set in the Dimension Line Preference in CADtools Preferences.

Section line

The section line tool will allow you to create a section line on your document. Select the section line tool and position the cursor where you want the beginning of the line to appear. 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 multiples of 45°. Hold down the control key while dragging to toggle the placement of the section line label. To automatically double the stroke weight of section lines, check the option in the Dimension Line Preference panel in CADtools Preferences.

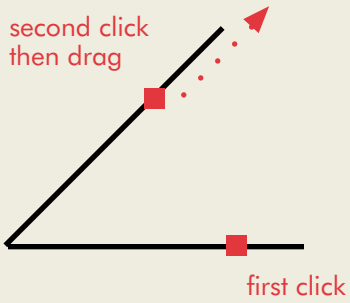
Center line

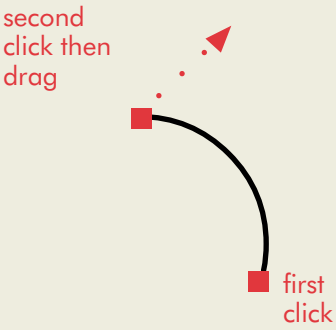
The center line tool will allow you to create a center line on your document. Select the center line tool and position the cursor where you want the beginning of the line to appear. Click and drag to position the line, then release the mouse button to create the line. Hold down the shift key while dragging to constrain the tool to multiples of 45°.

Hot Tip!

To quickly find the center of a line or shape, use the circle center tool. Then select the center line tool, click on the endpoint of the object's center symbol, and drag to accurately place your center line. Make sure you have checked "Allow dimensions off of dimensions" in CADtools Preferences.

Using CADtools for dimensioning (cont.)





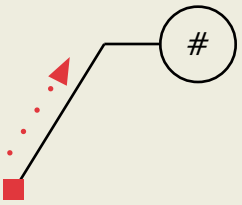
Angle dimension
The angle dimension tool will dimension the angle between any two nonparallel lines. Position the cursor over the first line. When the ( ) cursor appears, click anywhere on the line and release the mouse button. Then position the cursor over the second line. When the ( ) cursor appears, 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 you are dragging to remove witness lines.

Arc length dimension
The arc length dimension tool will dimension the length of a *circular* arc or circle defined by any two points on the circular arc or circle. Position the cursor over the arc or circle where the arc length dimension will begin. When the ( ) or ( ) cursor appears, click once on the arc or circle. Then position the cursor over the arc or circle where the arc length dimension will end. When the ( ) or ( ) cursor appears, click on the arc and drag to position the arc length dimension line. Hold down the control key while you are dragging to dimension the opposite arc length.

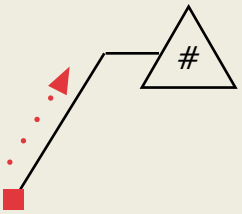
Note: The arc length dimension tool works only on circular arcs or circles.

Square label
To create a square label, select the square label tool and position the cursor where you want the terminator to end. Click and drag to position the square label. Hold down the shift key while dragging to constrain the tool to multiples of 45°. Hold down the control key while you are dragging to toggle the placement of the label text.

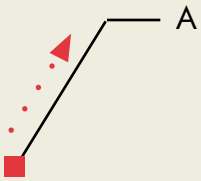
Note: To edit the text, select the text tool and highlight the label text. The label artwork can be selected, moved and modified as needed.



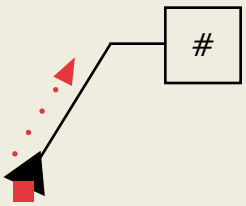
first click then drag



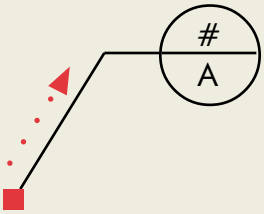
first click then drag



first click then drag



first click then drag



first click then drag

Circle label
To create a circle label, select the circle label tool and position the cursor where you want the terminator to end. Click and drag to position the circle label. Hold down the shift key while dragging to constrain the tool to multiples of 45°. Hold down the control key while you are dragging to toggle the placement of the label text.

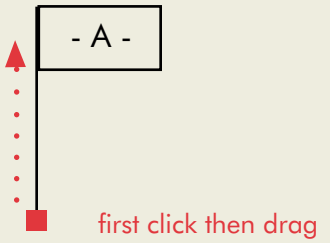
Triangle label
To create a triangle label, select the triangle label tool and position the cursor where you want the terminator to end. Click and drag to position the triangle label. Hold down the shift key while dragging to constrain the tool to multiples of 45°. Hold down the control key while you are dragging to toggle the placement of the label text.

Pointer label
To create a pointer label, select the pointer label tool and position the cursor where you want the terminator to end. Click and drag to position the pointer label. Hold down the shift key while dragging to constrain the tool to multiples of 45°. Hold down the control key while you are dragging to toggle the placement of the label text.

Datum feature
To create a datum feature, select the datum feature tool and position the cursor where you want the terminator to end. 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 you are dragging to toggle the placement of the label text.

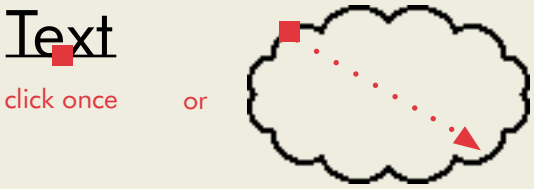
Datum target
To create a datum target, select the datum target tool and position the cursor where you want the terminator to end. Click and drag to position the datum target. Hold down the shift key while dragging to constrain the tool to multiples of 45°. Hold down the control key while you are dragging to toggle the placement of the label text.

Using CADtools for dimensioning (cont.)



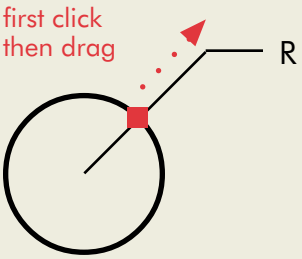
Datum flag

To create a datum flag, select the datum flag tool and position the cursor where you want the datum flag to begin. Click and drag to position the datum flag. Hold down the shift key while dragging to constrain the tool to multiples of 45°. Hold down the control key while you are dragging to toggle the placement of the flag.



Revision bubble

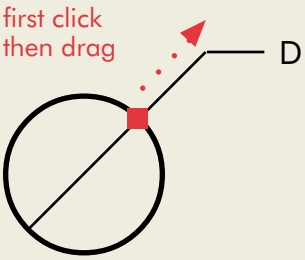
The revision bubble allows you to automatically encircle artwork or drag to make revision bubbles and tree symbols. To automatically encircle objects with a revision bubble, select the revision bubble tool and position the cursor over artwork or text path. Click once to create the bubble. To create your own revision bubble, position the cursor where you want a 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.



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 you are 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.

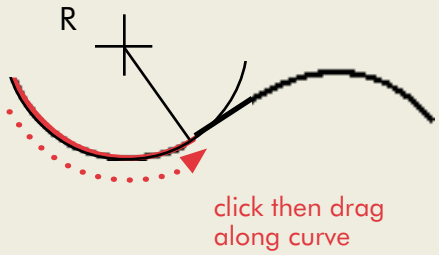


Diameter dimension

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 you are dragging to toggle the placement of the diameter dimension text.

Using CADtools for dimensioning (cont.)

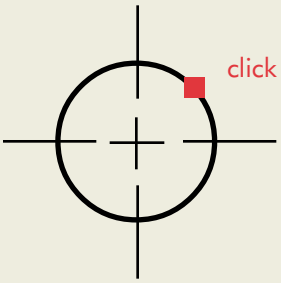
Hot Tip!
To dimension type, convert type to outlines with the Create Outlines command in Adobe Illustrator.



click then drag
along curve

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 over a Bézier curve. When the ( ) cursor appears, click and drag along the Bézier curve. While you are dragging along the curved path, you will see 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.

Note: 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.



click once

Circle center
Select the circle center tool and position the cursor over the path of a circle. When the ( ) cursor appears, click once and release the mouse button.

Note: the circle center tool will also allow you to find the center of the invisible bounding box enclosing any path.

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

Dimensioning imported artwork
CADtools dimensioning tools works with any vector artwork inside Adobe Illustrator 7.0. If your imported artwork appears as vector paths, it can be dimensioned with CADtools. In some cases, an imported file may contain circles which consist of a series of line segments. Radius, diameter, arc length, and Bézier curvature dimensioning tools will not work for ellipses or arcs which consist of line segments.

For questions regarding opening, placing, or exporting files using Illustrator, please refer to the Adobe Illustrator 7.0 User Guide, technical notes, and Adobe web site at http://www.adobe.com/

Paint style settings for dimension line and text
The paint style palette in Adobe Illustrator 7.0 displays the paint attributes of artwork currently selected – or most recently selected if nothing is currently selected. If you set the fill and stroke for dimensioning and then click on artwork with other attributes, your dimensioning paint attributes will be replaced by those of the artwork selected.
You can avoid this inconvenience by checking "Draw dimensions in black" in the Dimension Line Preferences panel in CADtools Preferences. "Draw dimensions in black" will ignore the current paint style settings and allow you to always create black dimension lines and text. Only stroke weight for your dimension lines will remain defined by the settings in the stroke palette.

For stroked dimension text, check "Stroke dimension text" in the Dimension Terminators Preferences panel in CADtools Preferences.

If dimension lines appear very thin or disappear when printed, their stroke weight may be 0 point. 0 point lines may be visible on the screen but not on the printed page.

Troubleshooting

Healing walls
The CADtools wall healer tool unites intersecting wall paths which are not made of multiple compound paths. If the wall paths are composed of multiple compound paths, you can heal them using the Unite filter in Illustrator. To unite, select both wall paths and choose Object > Pathfinder > Unite.

Drawing in the dimension layer
By checking "*Create and use dimension layer*", your dimensions will automatically draw into a separate layer named "Dimension Layer". This layer can be hidden, locked, displayed, and printed like other layers created within Illustrator 7.0. If the "Dimension Layer" is selected – by manually selecting it or selecting a dimension drawn into that layer – new artwork will be placed on the "Dimension Layer". As a general Illustrator tip, make sure that you are working in the appropriate layer by checking that it is selected while you are drawing.

Using grids and guides
CADtools drafting and dimensioning tools do not snap or respond to Illustrator grids and guides – which are not artwork. To use CADtools with grids or guides, create a grid or guide as Illustrator artwork.

Bézier curvature dimensioning for circles and circular 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. The Bézier curvature dimension tool will reveal these minute variations. To insure accurate dimensions of circles, use the radius or diameter dimension tools.

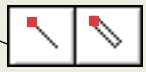
Drafting/editing tools

Drawing in scale with info displayed in CADtracker palette

ellipse, centered ellipse, arc

rectangle, centered rectangle

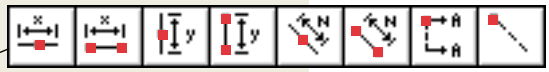
fillet, chamfer, trim, wall healer



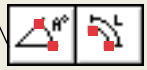
line, wall

Dimensioning tools

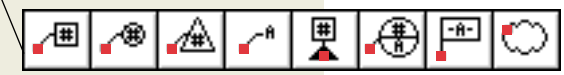
Customizable leaders, lines, terminators, and text placement in CADtools preferences



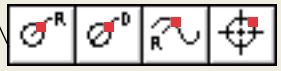
horizontal dimension (by line), horizontal dimension (by points), vertical dimension (by line), vertical dimension (by points), inclined dimension (by line), inclined dimension (by points), section line, center line



angle dimension, arc length dimension

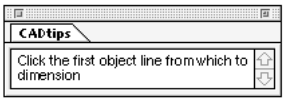


square label, circle label, triangle label, pointer label, datum feature, datum target, datum flag, revision bubble

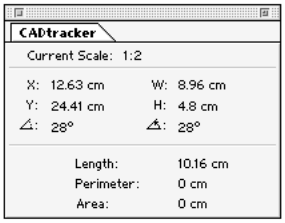


radius dimension, diameter dimension, Bézier curvature dimension, circle center

CADtips: Smart feedback



CADtracker: Scale/object info



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