AutoCAD Tips and Tricks to Improve Efficiency

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About the speakers

Josh Watson

Senior Structural Designer

Matt DeBord

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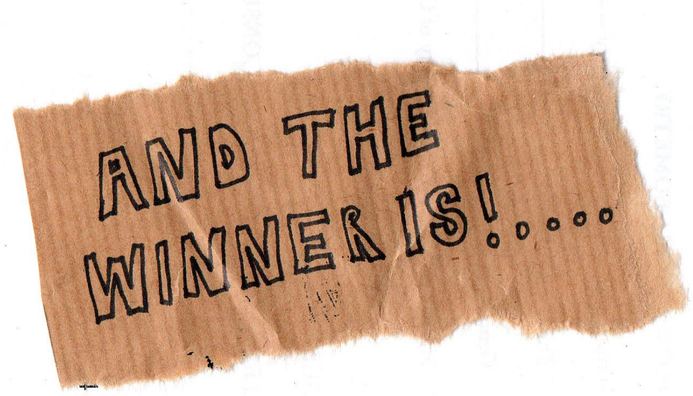
PRIZES!!!

Who is the most recent user to begin working with AutoCAD based products?

Who has the most experience working with AutoCAD based products?



Safety

- Slips, trips and falls are the second leading cause of injury and death.
- In the United States approximately 25,000 slips, trips and falls occur every day.
- 15% of all claims are from slips, trips and falls.

Class Description

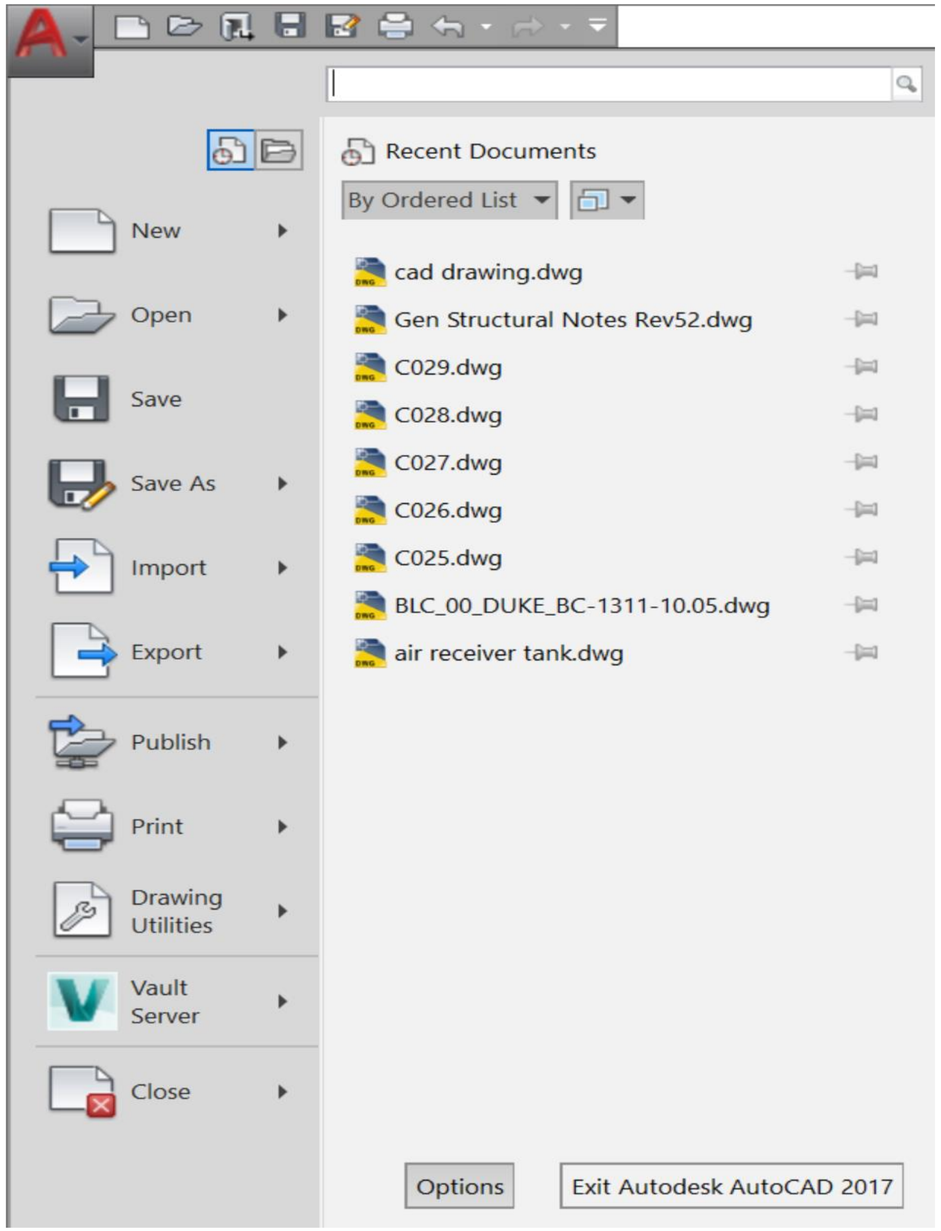
Do you find yourself behind on design projects? Are you wanting to familiarize yourself with AutoCAD better to become more efficient? In this class we will discuss how to manipulate settings / options to improve speed. We will also discuss how to setup drawings using x-refs and utilizing paper space and model space. We will also look at how layer commands and object display settings can reduce clutter in your drawings to make it easier to manipulate components in your drawing. This class will be a great class to help you become more familiar with some of the options in AutoCAD and make you take that next step in your career using the many tools AutoCAD has to offer.

Learning Objectives

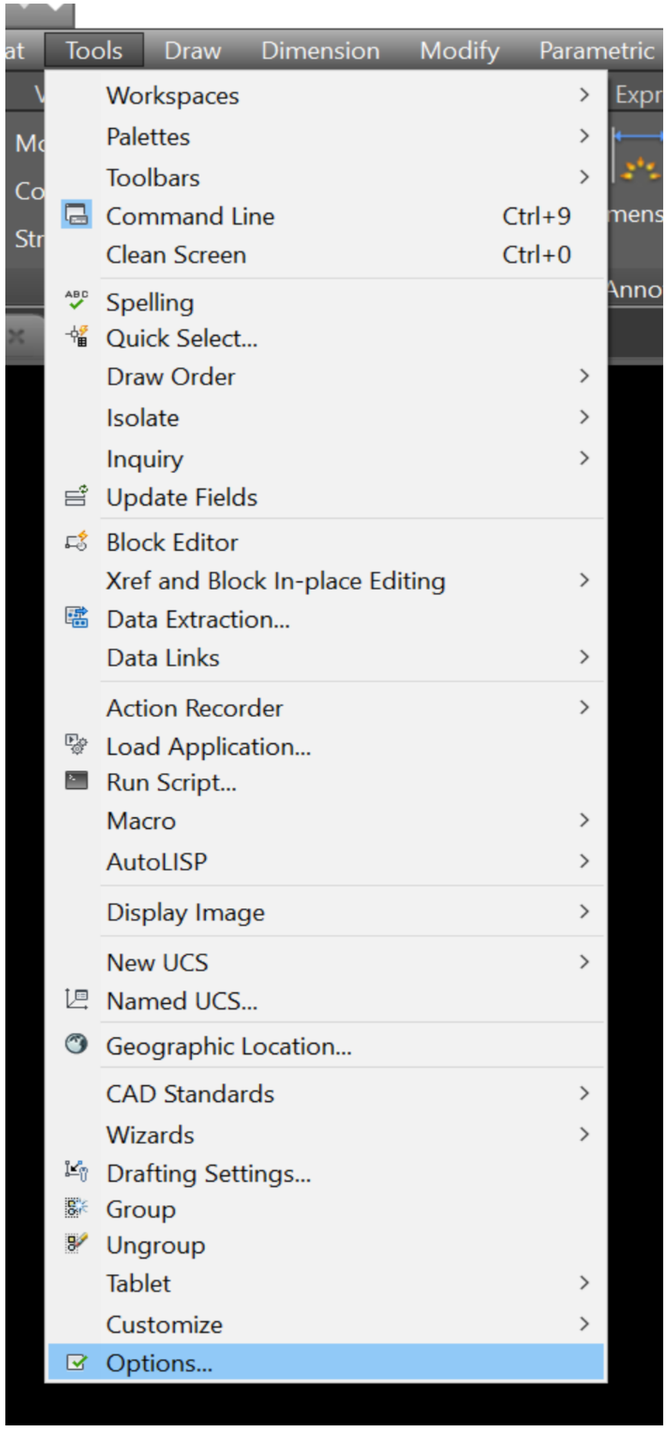
- Manipulate settings in the options menu and keyboard shortcuts
- Modify dimension style settings
- Utilize various layering commands to display objects differently
- Organize drawings using x-refs and model space / paper space

Options Menu

How to access the Options Menu

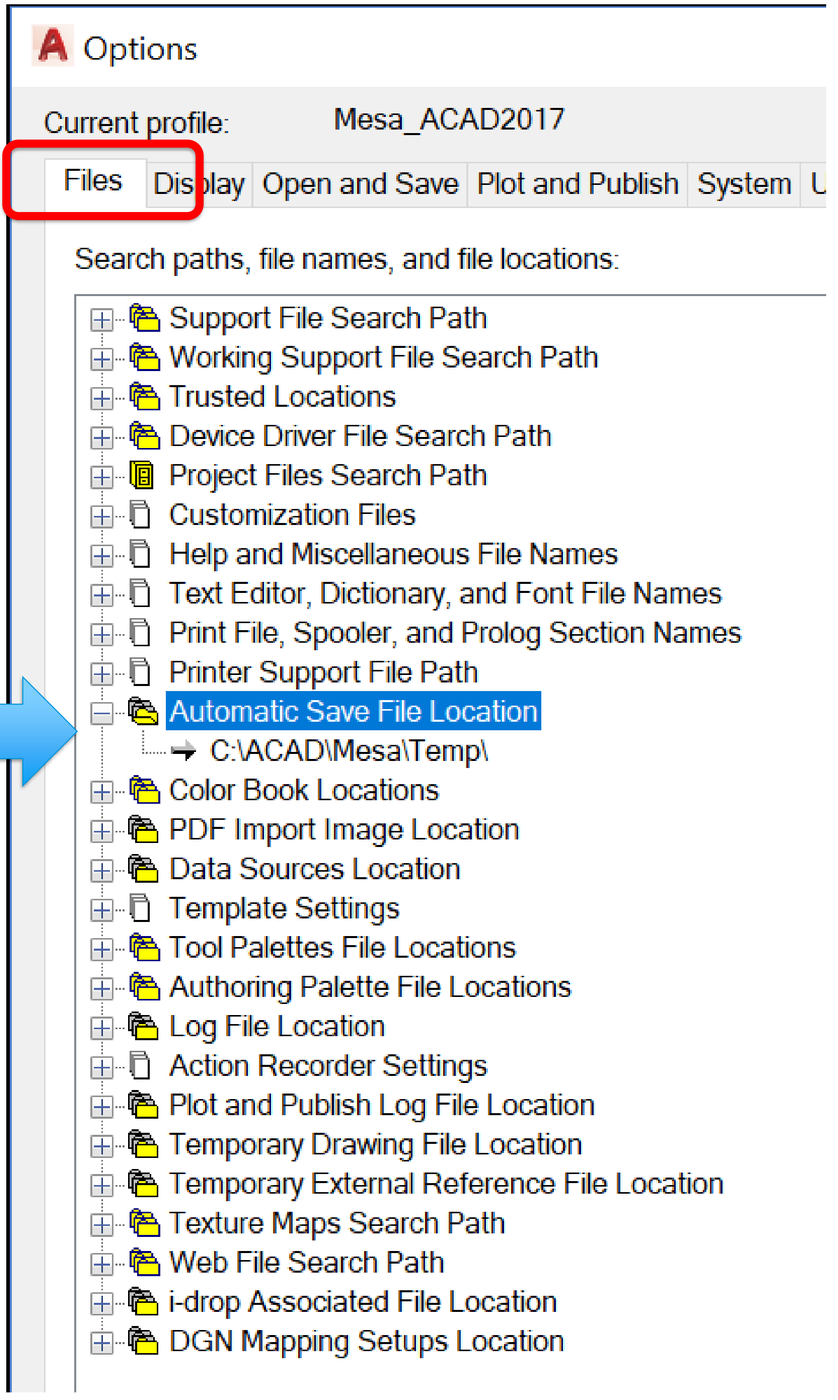


Type “OP” or “OPTIONS” in the command window

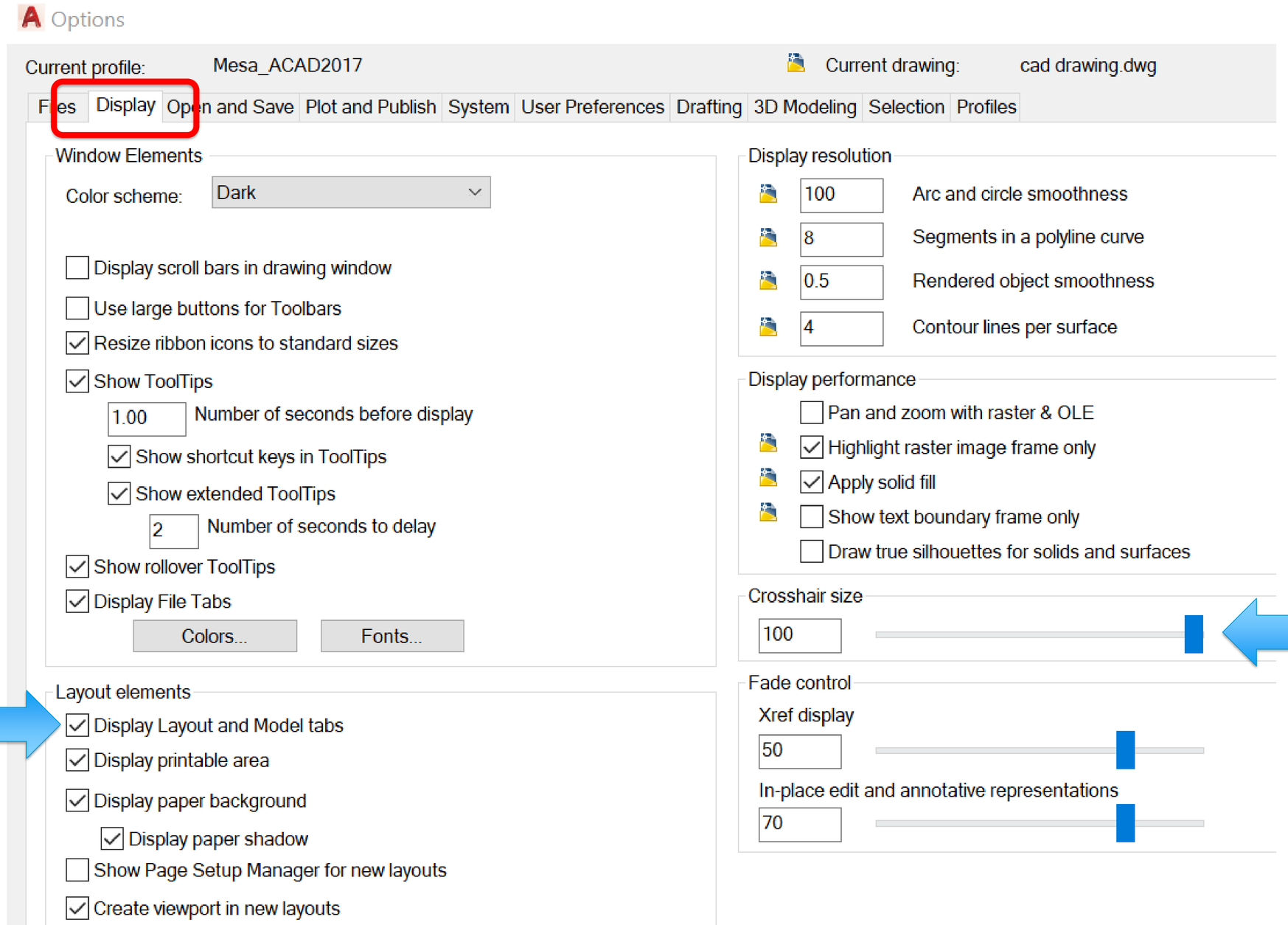


Options Menu – Files Tab

FATAL ERROR: When AutoCAD shuts down without warning, this is where you can find the autosave file.



Options Menu – Display Tab



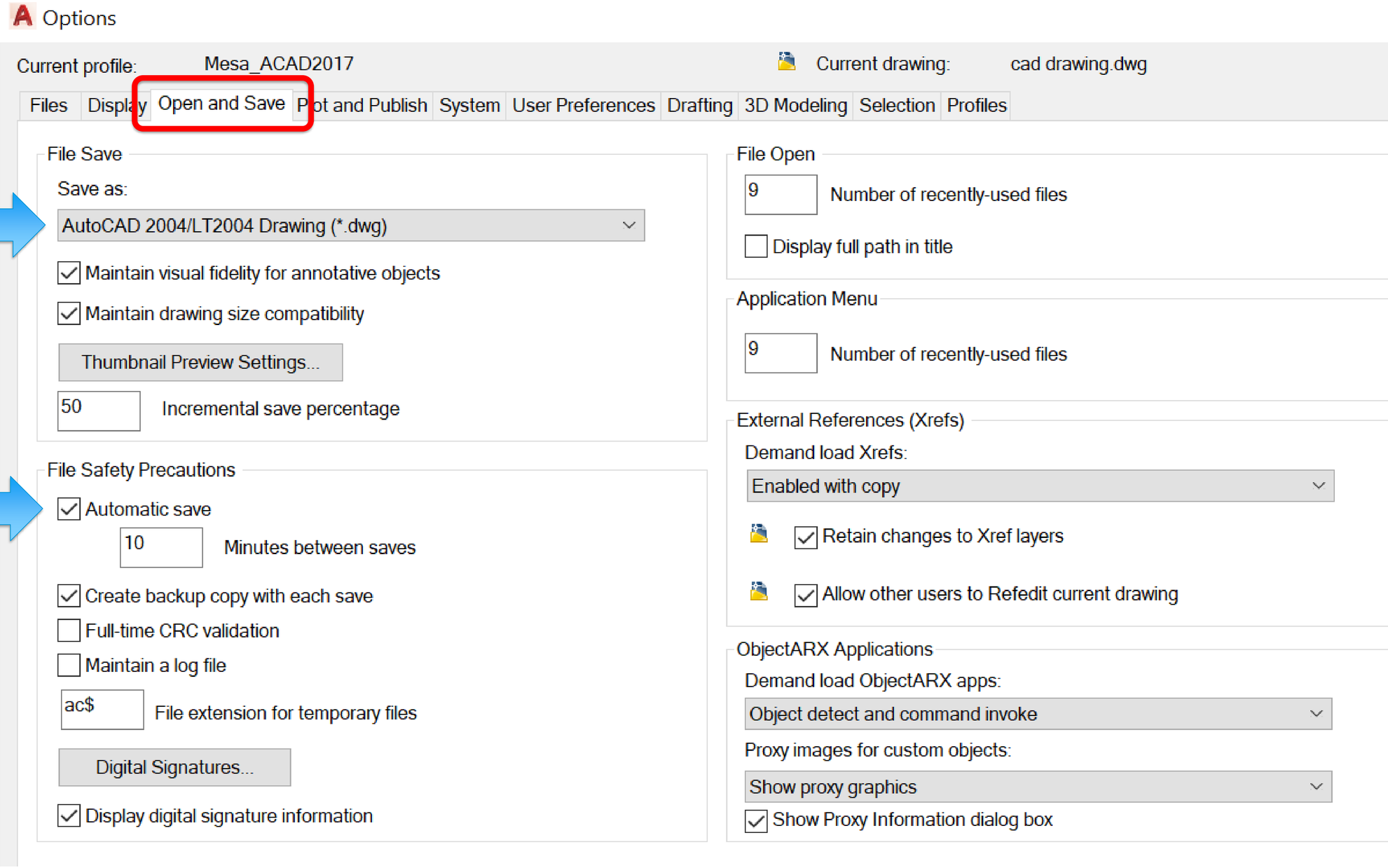
This will toggle on/off the model and layout tabs

How to change the crosshair size in your drawing

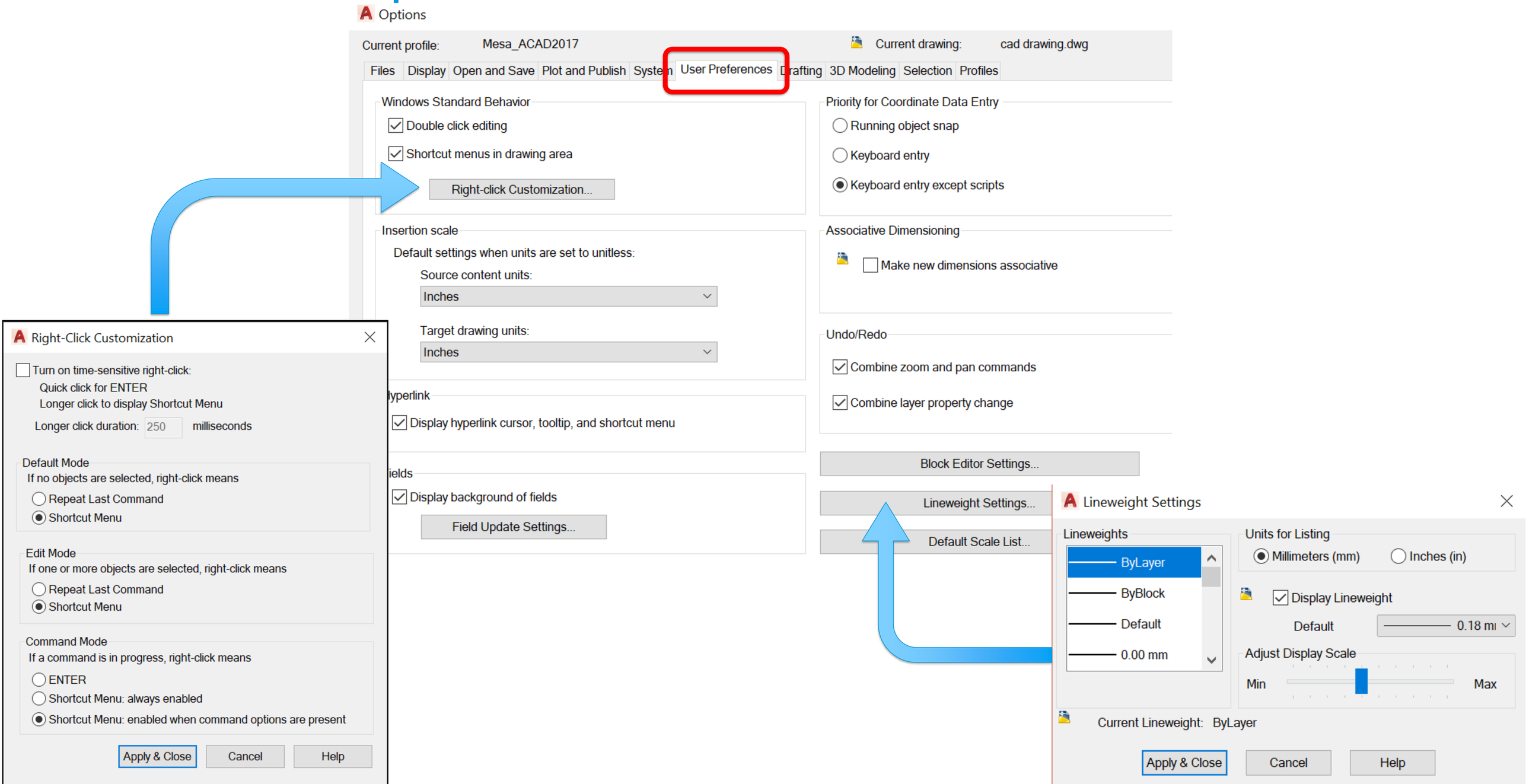
Options Menu – Open and Save Tab

What version of AutoCAD the file will be saved in

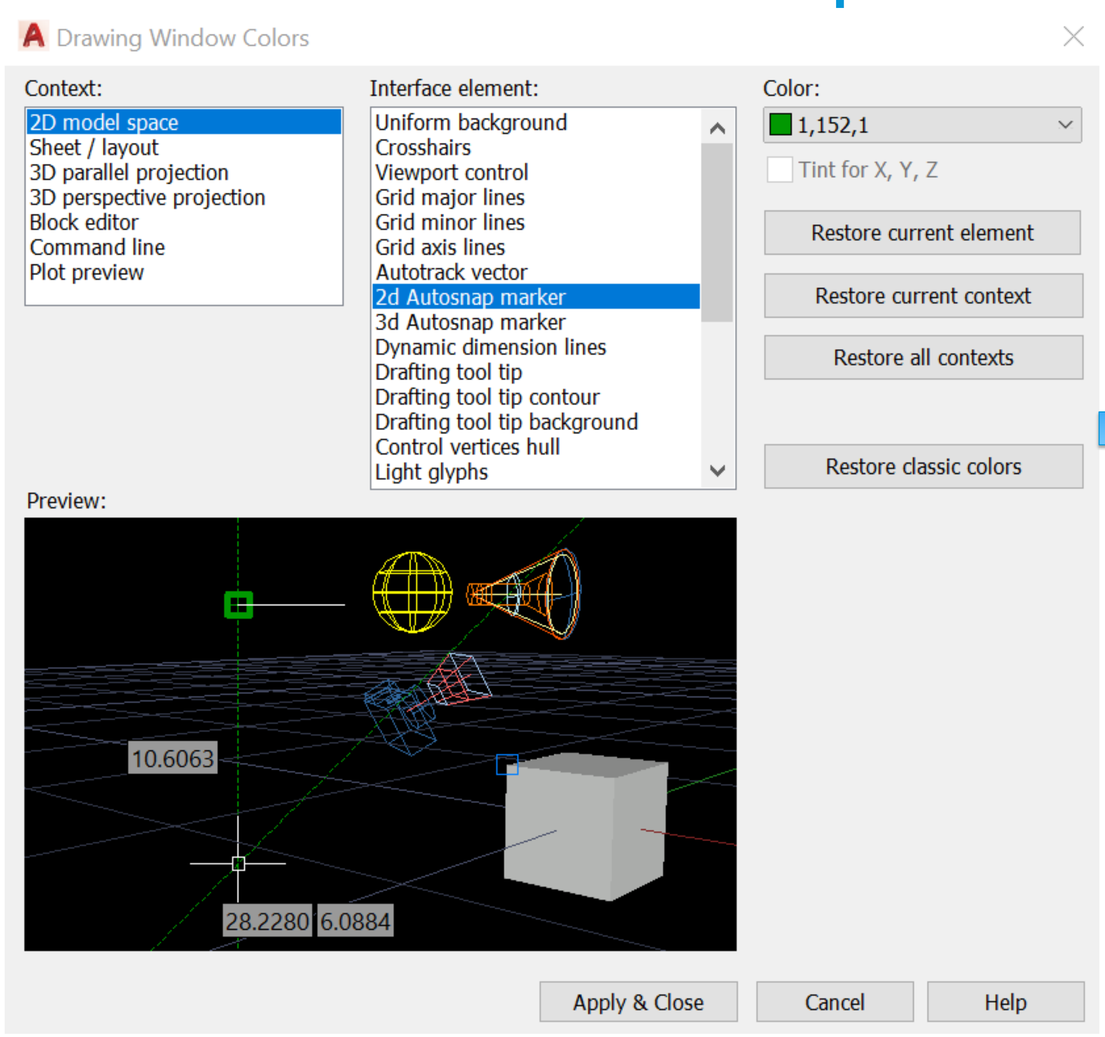
How often AutoCAD will run an automatic save file

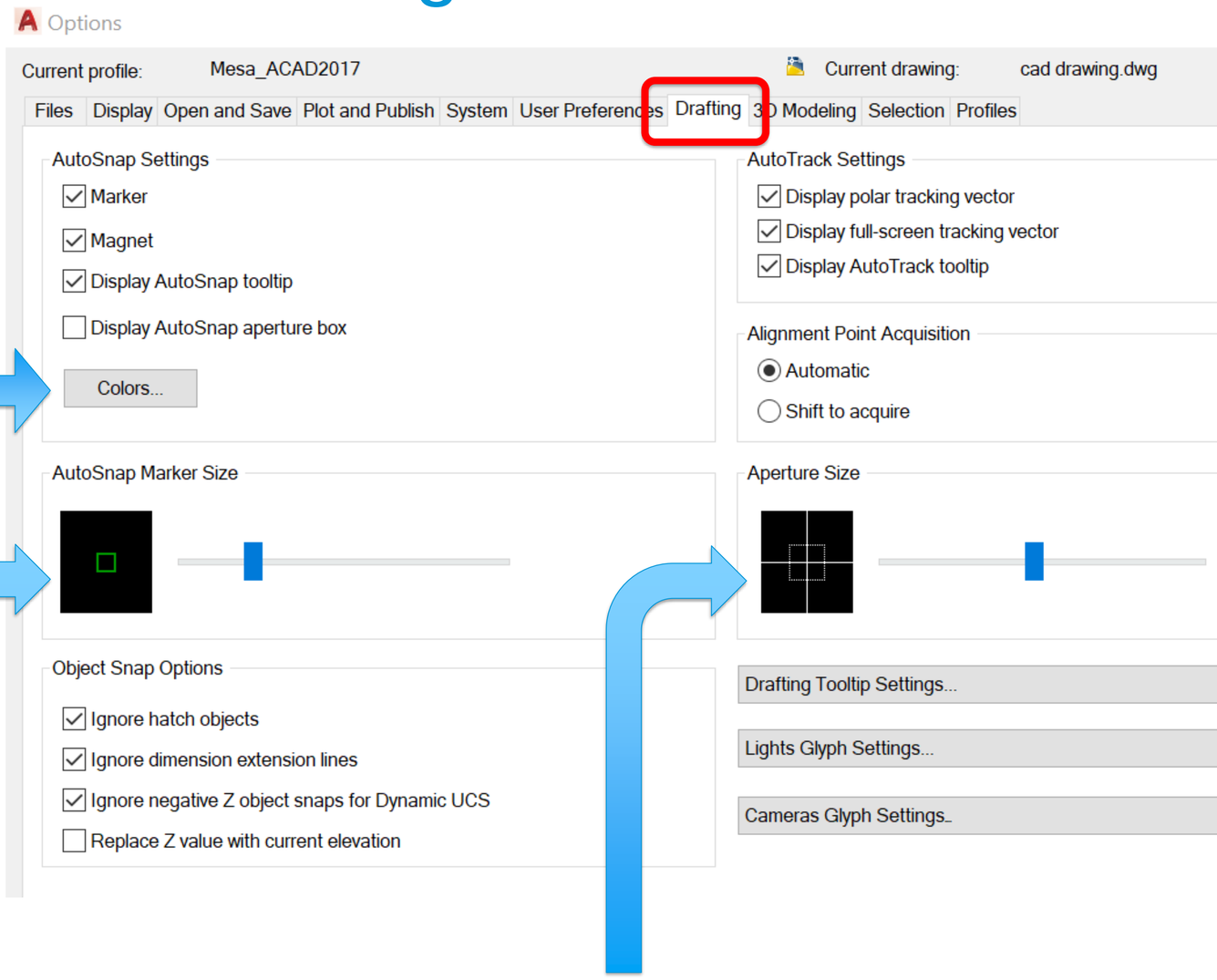


Options Menu – User Preferences



Options Menu – Drafting



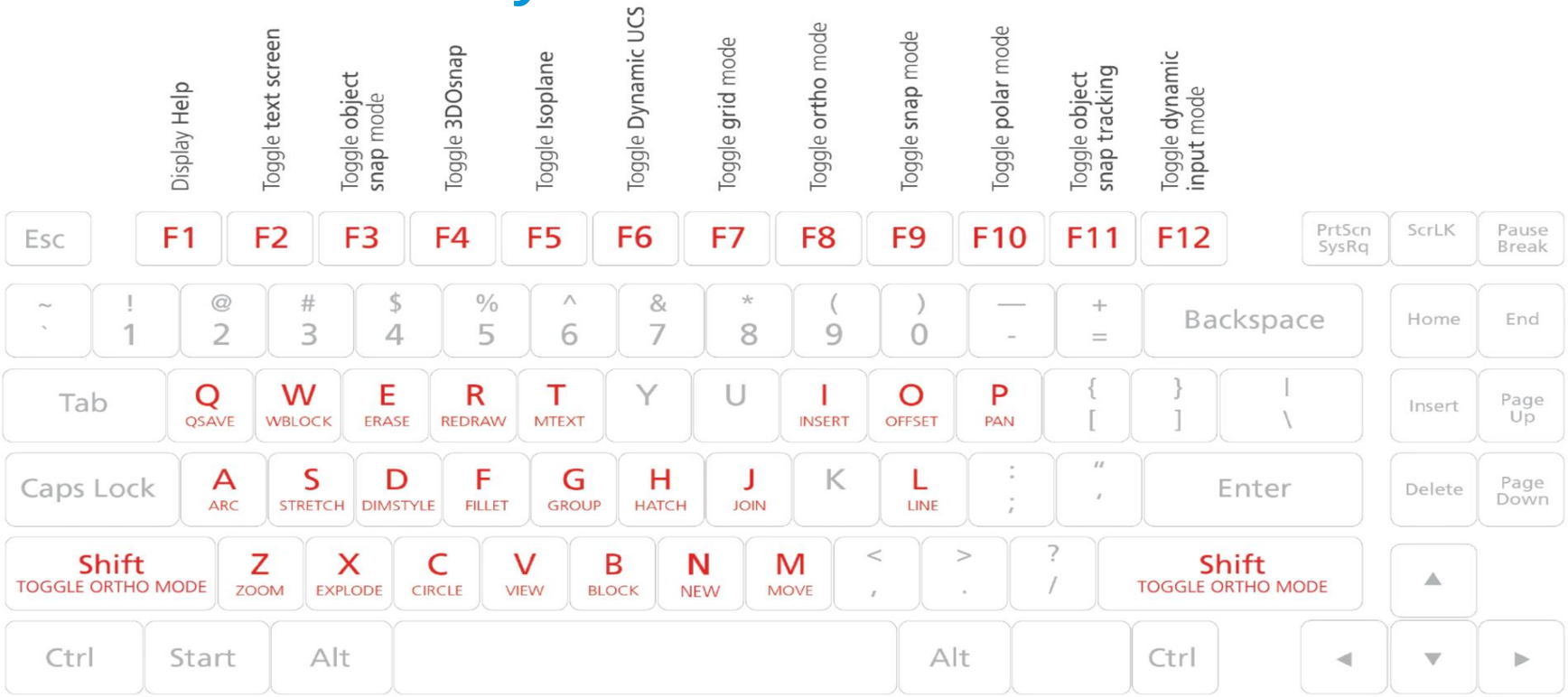


Location to change the AutoSnap Marker Size

Location to change the Aperture Size

Keyboard Shortcuts

Keyboard Shortcuts



Q **QSAVE** / Saves the current drawing.

A **ARC** / Creates an arc.

Z **ZOOM** / Increases or decreases the magnification of the view in the current viewport.

W **WBLOCK** / Writes objects or a block to a new drawing file.

S **STRETCH** / Stretches objects crossed by a selection window or polygon.

X **EXPLODE** / Breaks a compound object into its component objects.

E **ERASE** / Removes objects from a drawing.

D **DIMSTYLE** / Creates and modifies dimension styles.

C **CIRCLE** / Creates a circle.

R **REDRAW** / Refreshes the display in the current viewport.

F **FILLET** / Rounds and fillets the edges of objects.

V **VIEW** / Saves and restores named views, camera views, layout views, and preset views.

T **MTEXT** / Creates a multiline text object.

G **GROUP** / Creates and manages saved sets of objects called groups.

B **BLOCK** / Creates a block definition from selected objects.

N **NEW** / Create a new drawing

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

J **JOIN** / Joins similar objects to form a single, unbroken object.

M **MOVE** / Moves objects a specified distance in a specified direction.

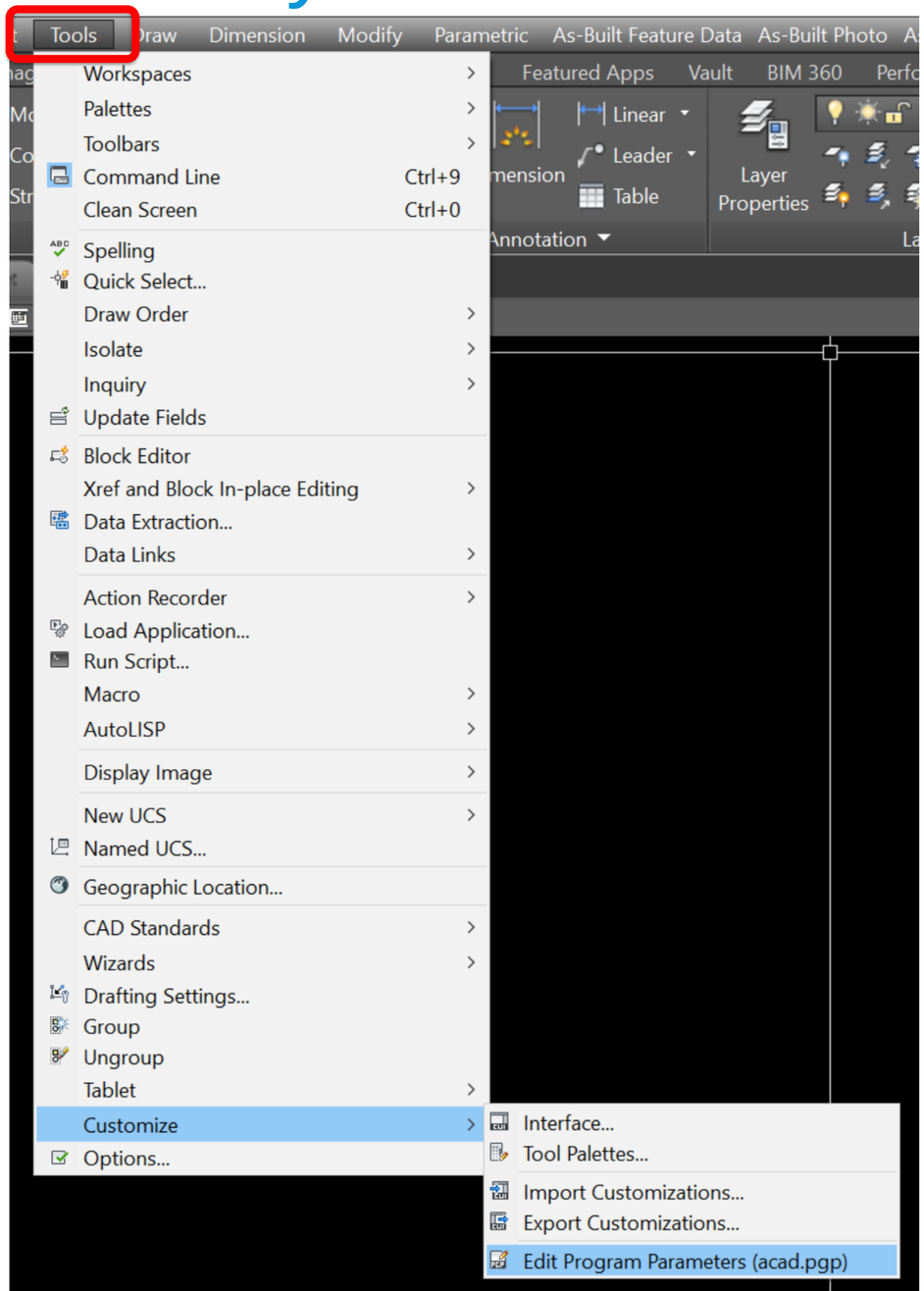
I **INSERT** / Inserts a block or drawing into the current drawing.

O **OFFSET** / Creates concentric circles, parallel lines, and parallel curves.

L **LINE** / Creates straight line segments.

P **PAN** / Adds a parameter with grips to a dynamic block definition.

Keyboard Shortcuts – Edit Program Parameters




```
3A,          *3DARRAY
3DMIRROR,    *MIRROR3D
3DNavigate,*3DWALK
3DO,         *3DORBIT
3DP,         *3DPRINT
3DPLOT,      *3DPRINT
3DW,         *3DWALK
3F,          *3DFACE
3M,          *3DMOVE
3P,          *3DPOLY
3R,          *3DROTATE
3S,          *3DSCALE
A,           *ARC
AC,          *BACTION
ADC,         *ADCENTER
AECTOACAD,  *-ExportToAutoCAD
AA,          *AREA
AL,          *ALIGN
3AL,         *3DALIGN
AP,          *APPLOAD
APLAY,       *ALLPLAY
AR,          *ARRAY
-AR,         *-ARRAY
ARR,         *ACTRECORD
ARM,         *ACTUSERMESSAGE
-ARM,        *-ACTUSERMESSAGE
ARU,         *ACTUSERINPUT
ARS,         *ACTSTOP
-ARS,         *-ACTSTOP
ATI,         *ATTIPEDIT
ATT,         *ATTDEF
-ATT,        *-ATTDEF
ATE,         *ATTEDIT
-ATE,        *-ATTEDIT
ATTE,        *-ATTEDIT
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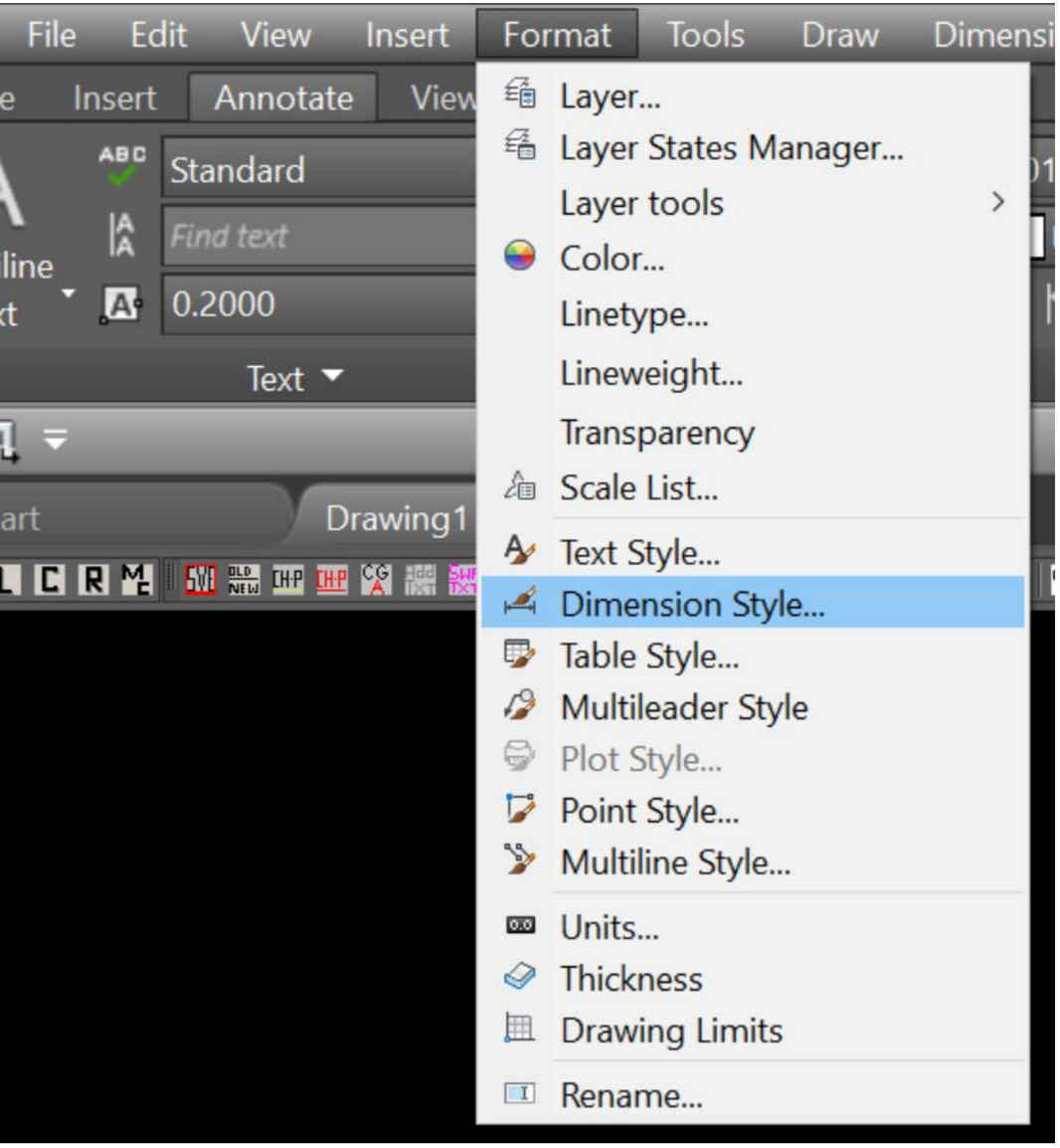
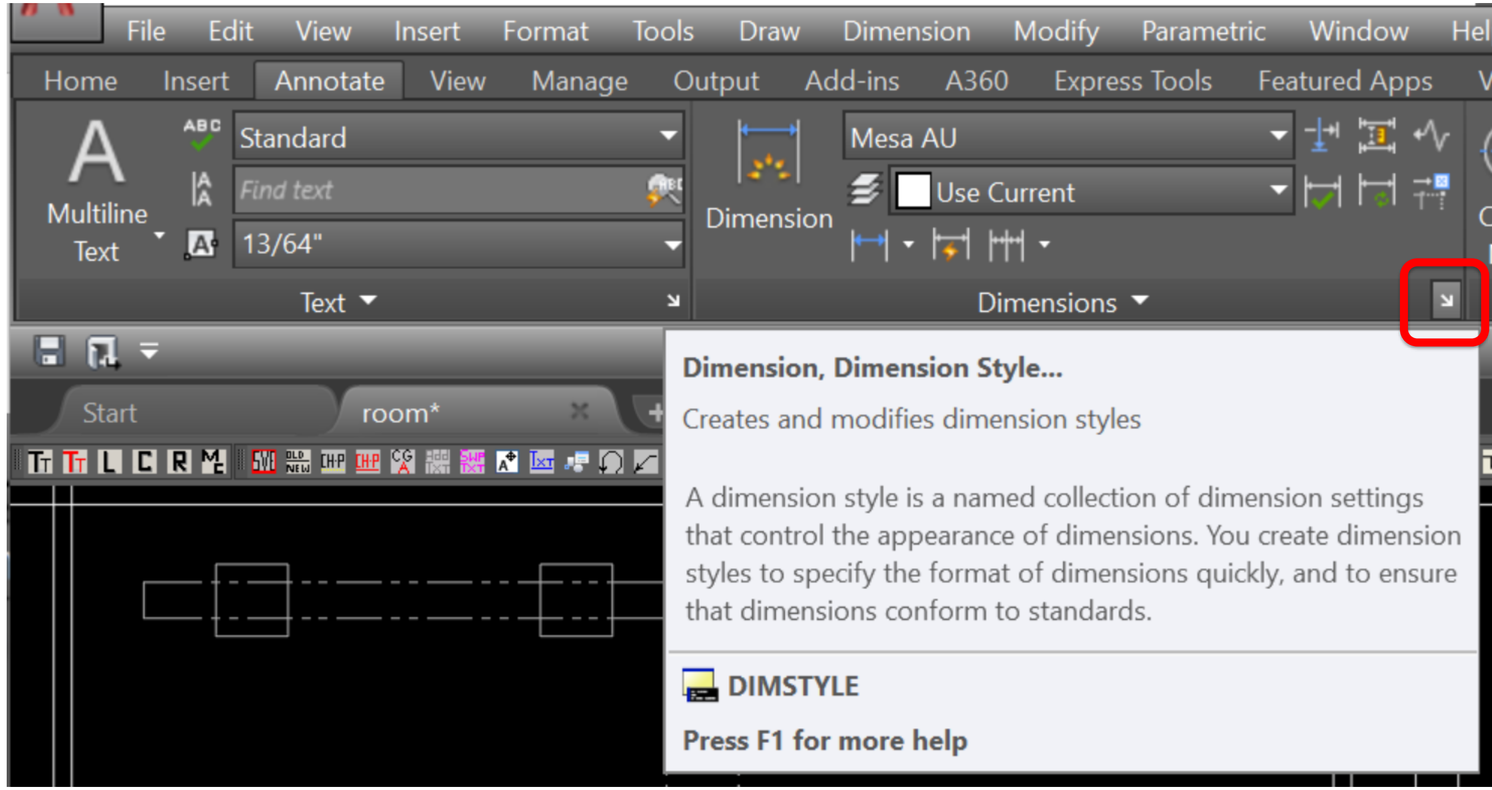
Dimension Styles

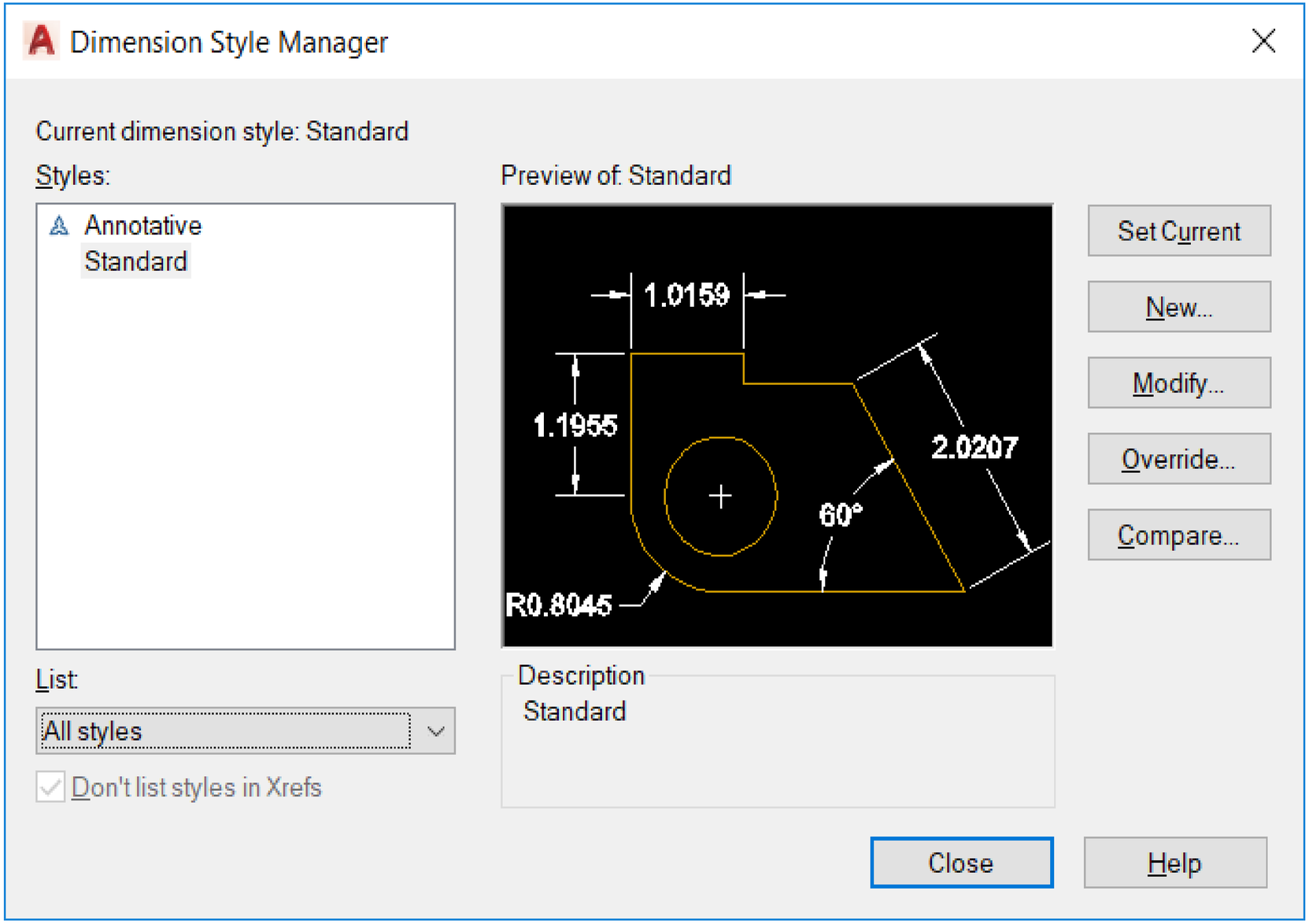
How to Access the Dimension Style Manager





Type “dimsty” in the command window

Dimension Style Manager



Dimension Style Manager

Sets currently selected dimension style used for new dimensions

New Dimension Style Dialog Box

Modify Dimension Style Dialog Box (Similar to New)

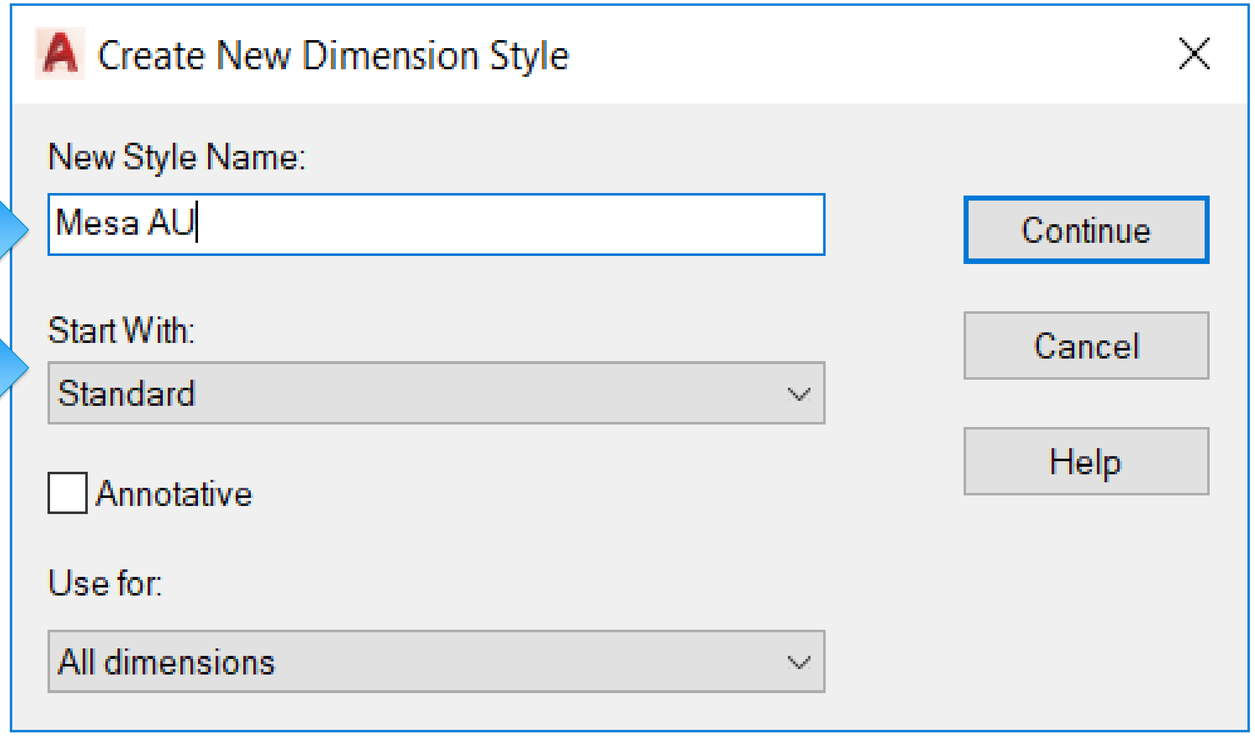
Override Dimension Style Dialog Box (Similar to New)

Compares two different dimension styles

New Dimension Style Dialog

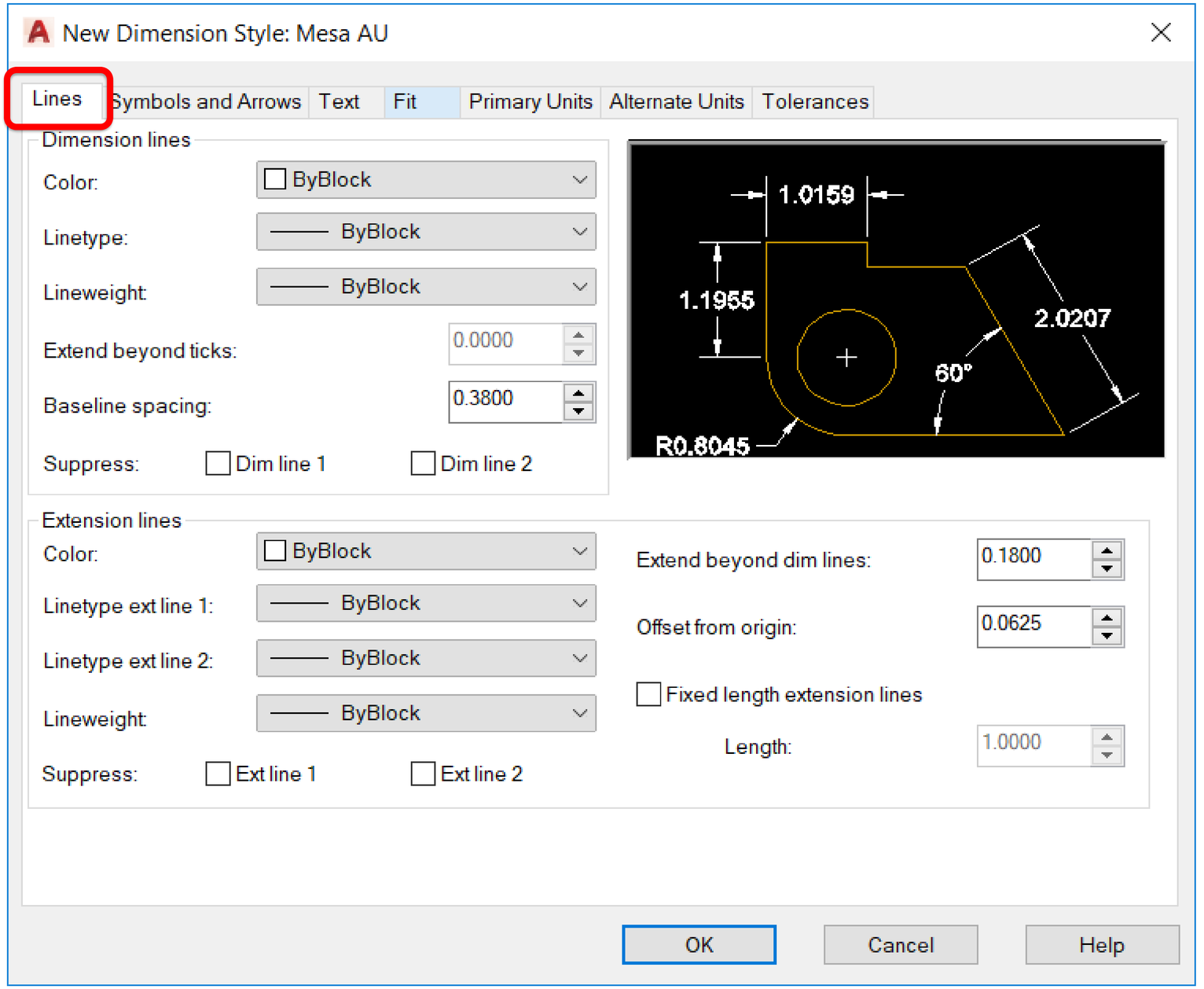
Name of Style to be Defined

Baseline for New Style



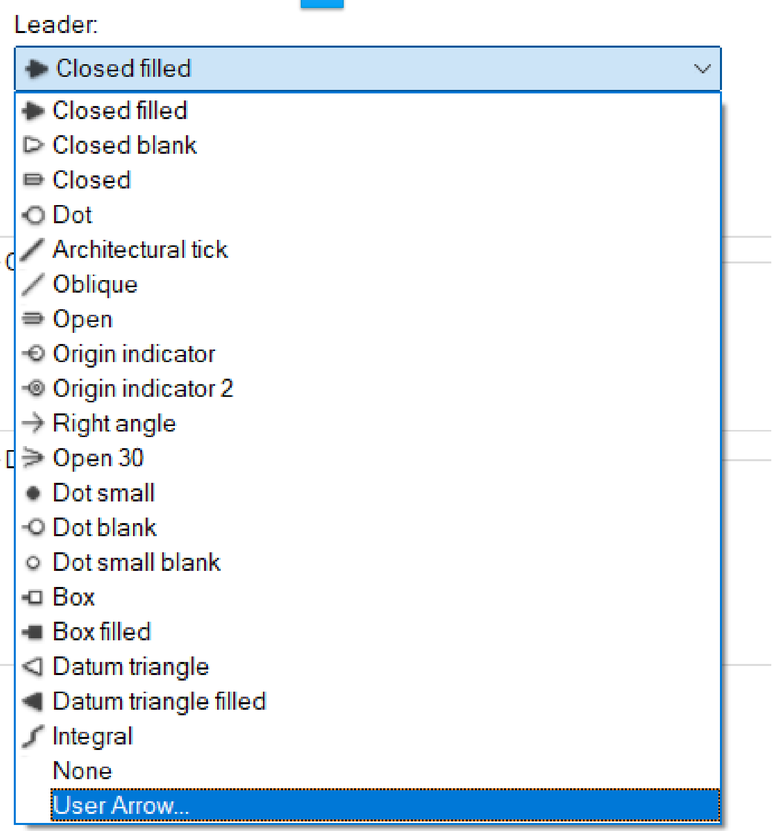
New Dimension Style Dialog - Lines

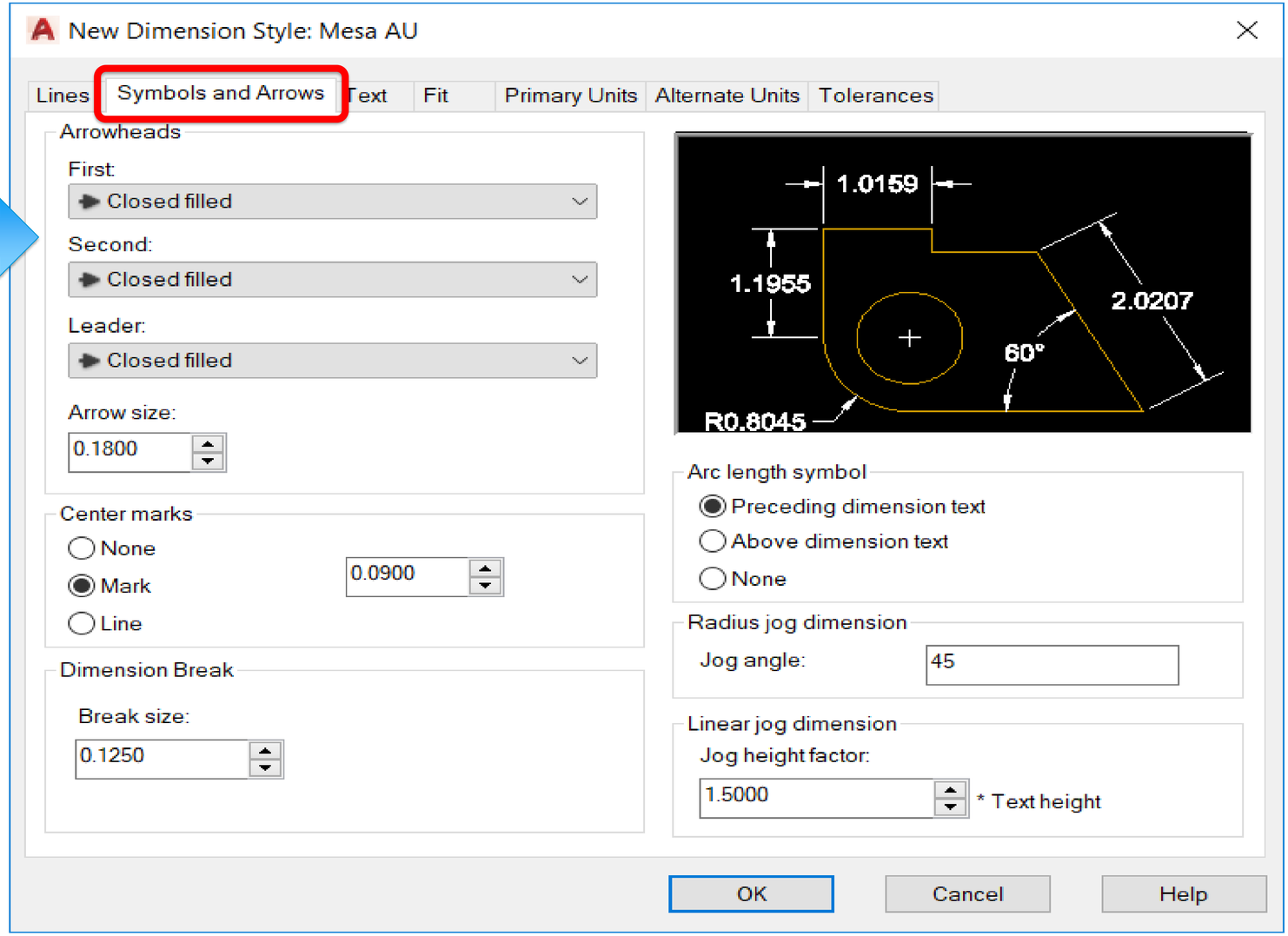
Adjust dimension line and extension line properties



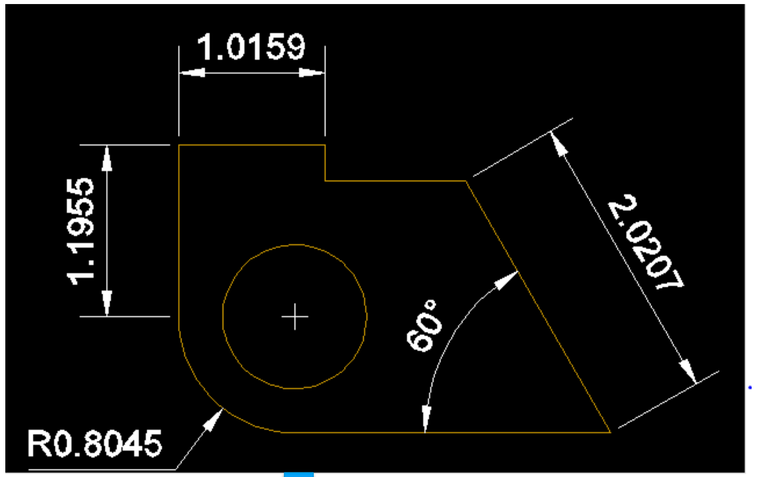
New Dimension Style Dialog – Symbols and Arrows

Arrowhead properties
Type and Size



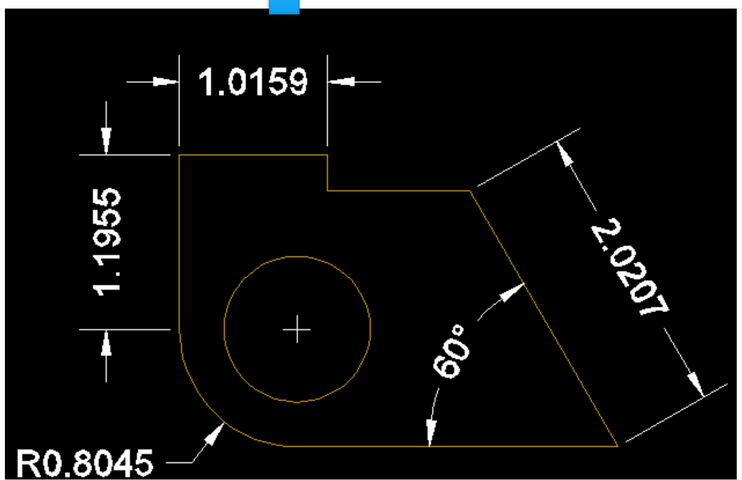


New Dimension Style Dialog – Text



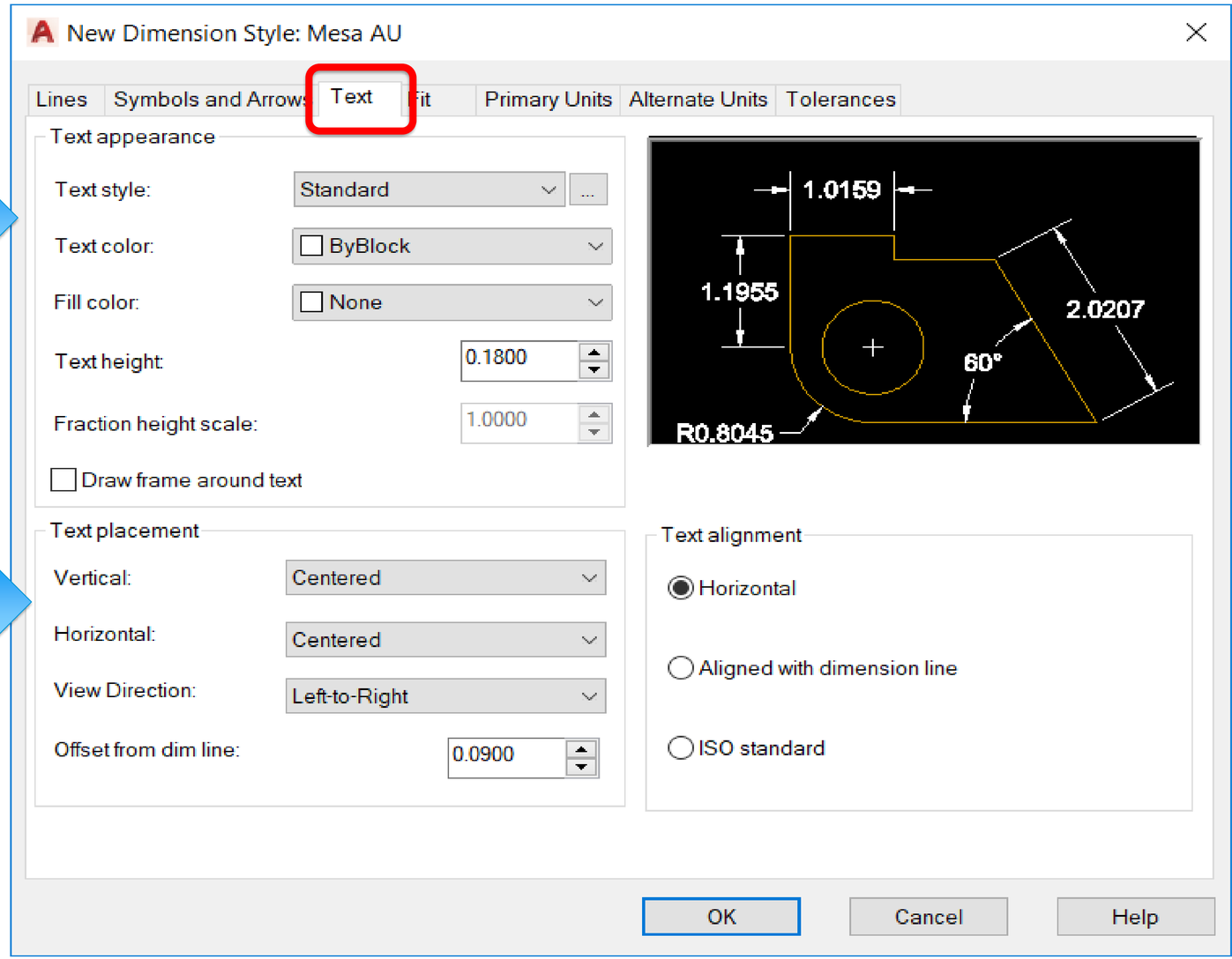
Vertical - Above

Vertical - Centered



Text Properties (Style)

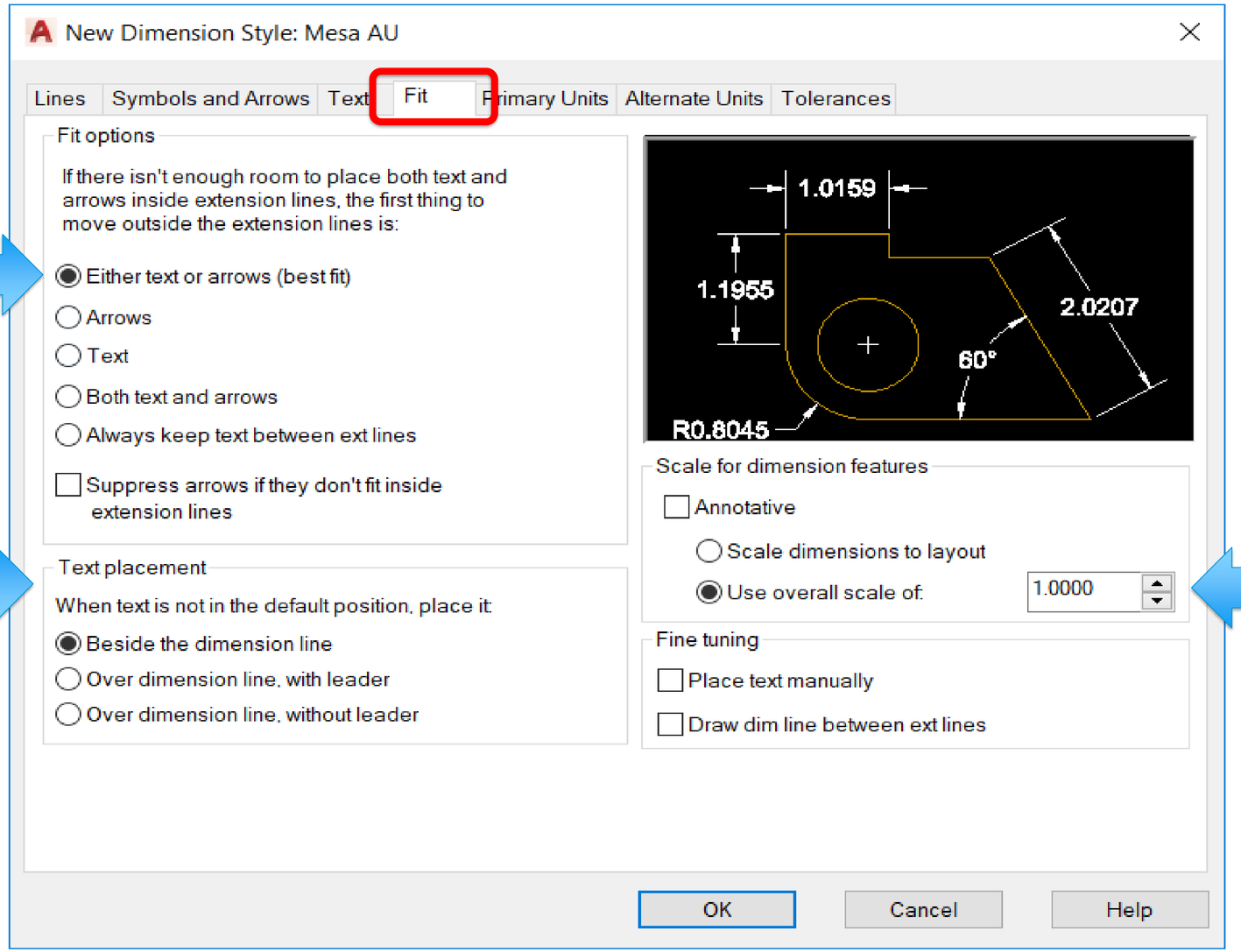
Text Placement



New Dimension Style Dialog - Fit

Selection of component which will be relocated if fitment doesn’t allow

Text placement when fitment doesn’t allow default location

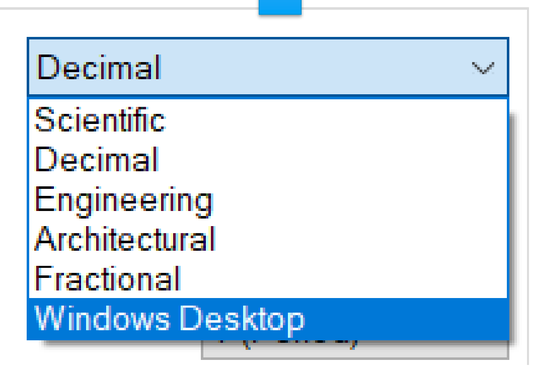


All size related variables are multiplied by this overall scale factor (DIMSCALE)

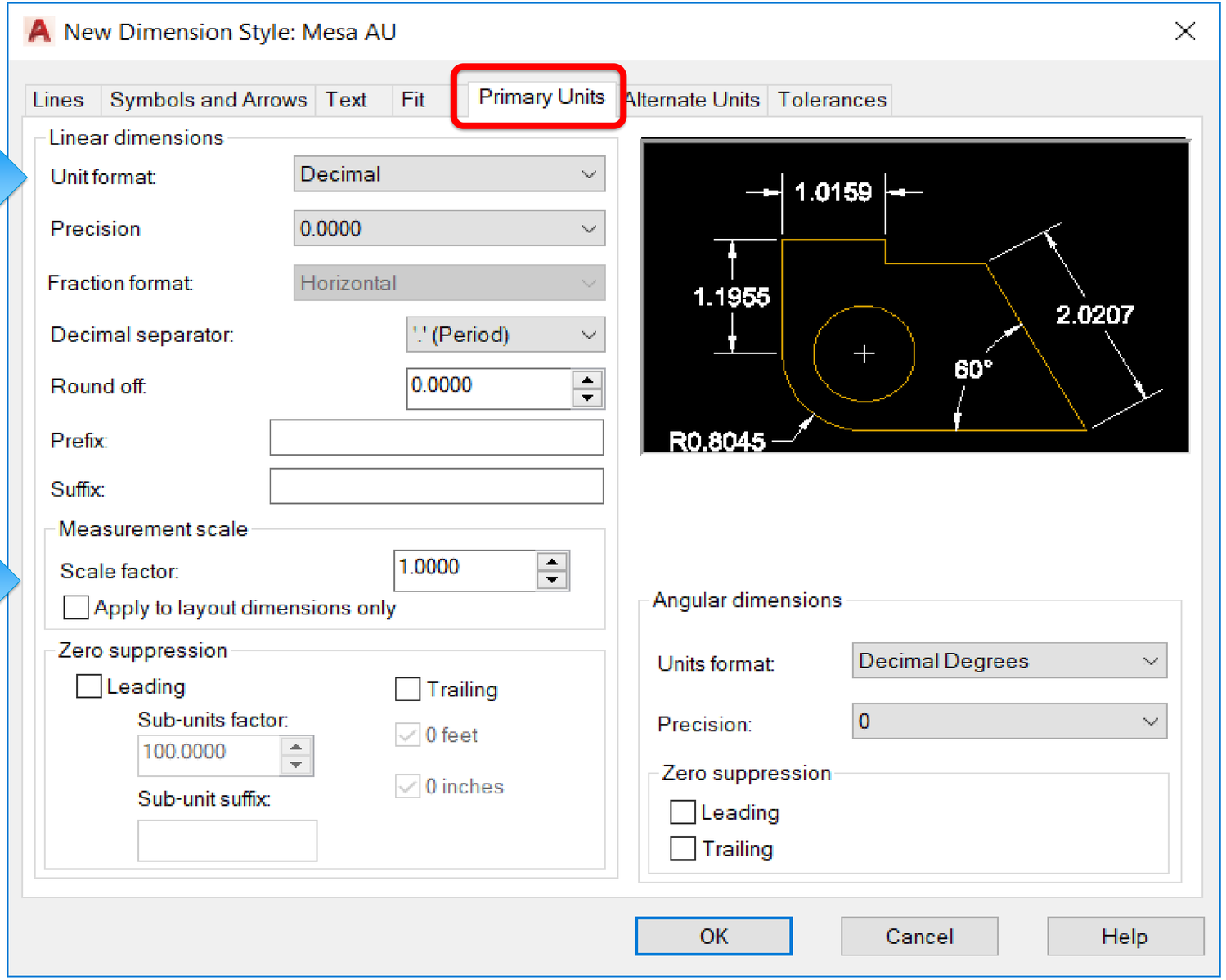
TIP: DIMSCALE is typically the first step for dimension styles and should be set as family wide variable

New Dimension Style Dialog – Primary Units

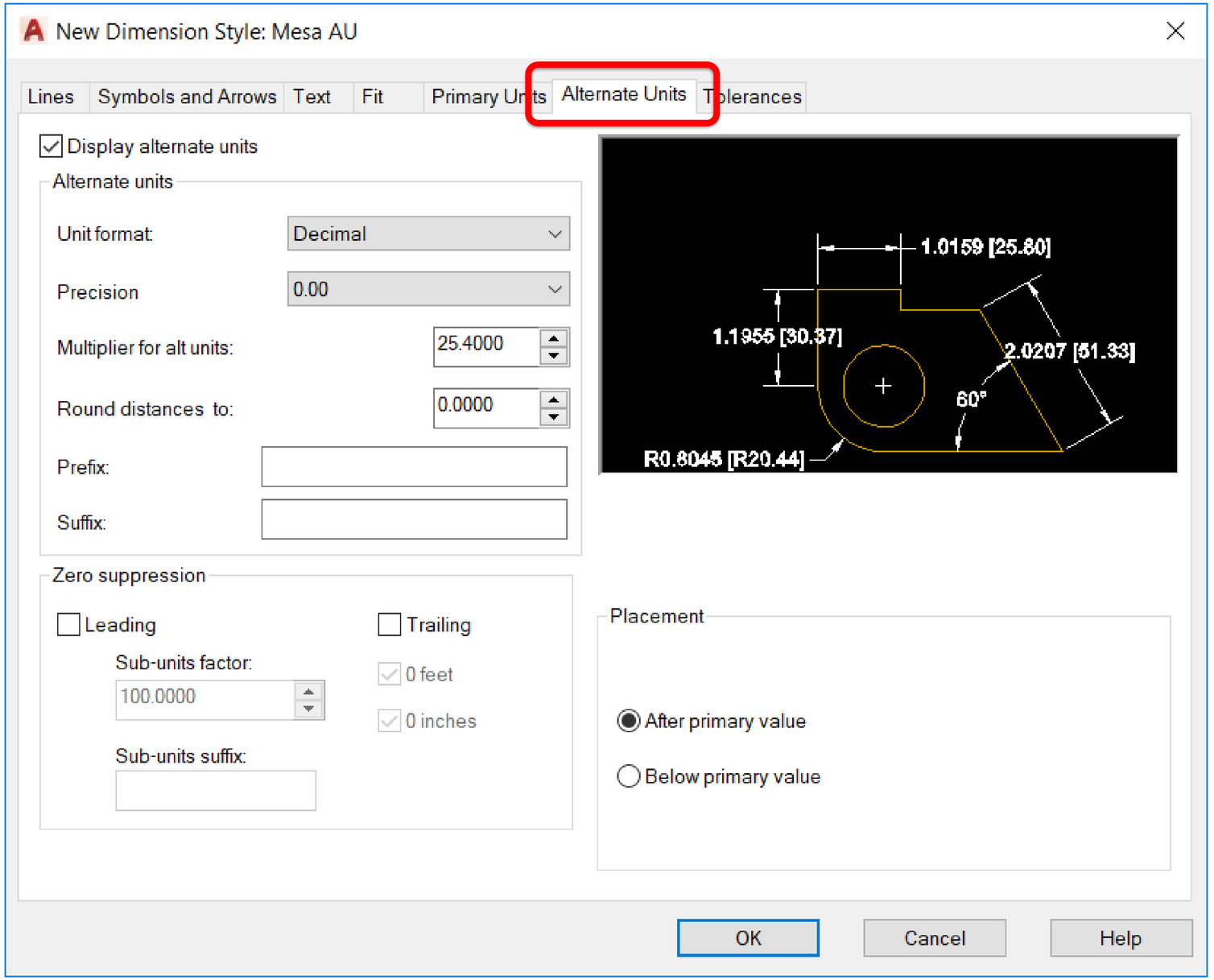
Selection of linear dimension Primary Units



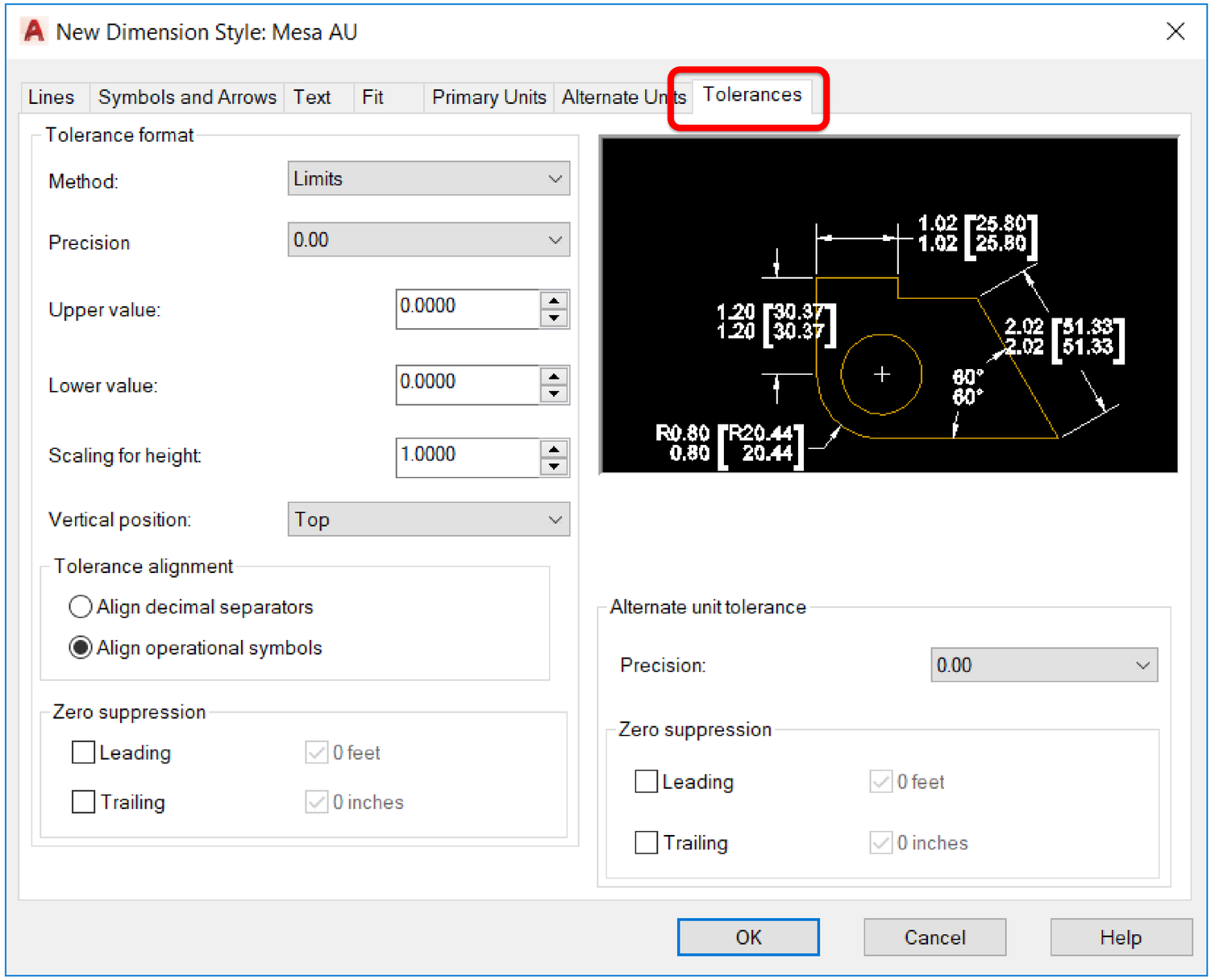
Linear dimension scale factor.



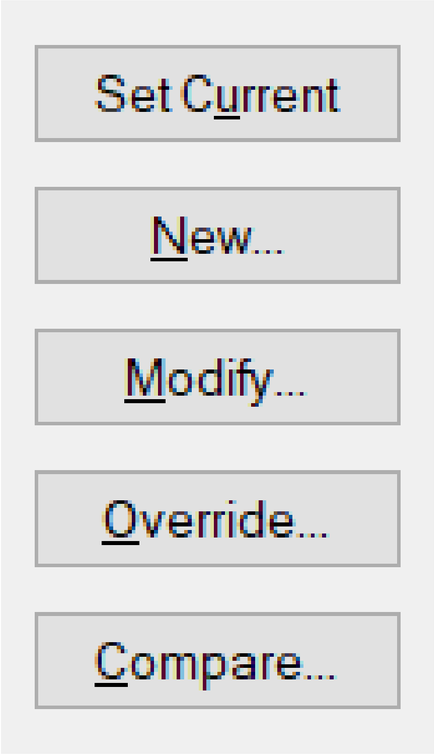
New Dimension Style Dialog – Alternate Units



New Dimension Style Dialog – Tolerances



Dimension Style Manager – Modify and Override



These dialogs are identical to “New” Dimension Style Dialog

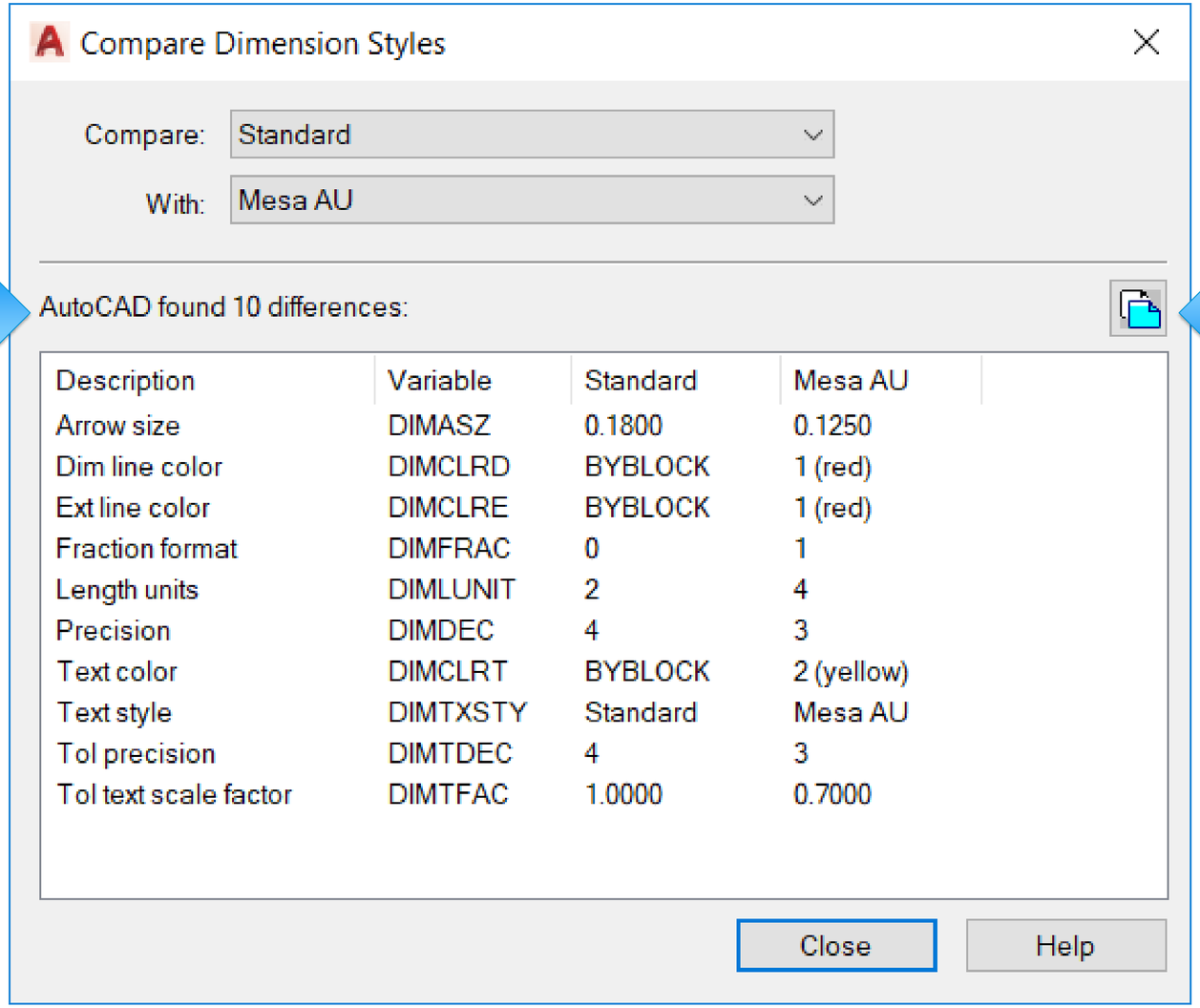
- Modify: Change of dimension variables which applies to new as well as updates existing dimensions

- Override: Change of dimension variables which only applies to new dimensions. Therefore, it does not update existing dimensions.

TIP: Style overrides can be saved to the dimension style by using the right click shortcut menu if desired to be permanent

Dimension Style Manager – Compare

Indicates number of difference between dimension styles as well as detailed listing of differences



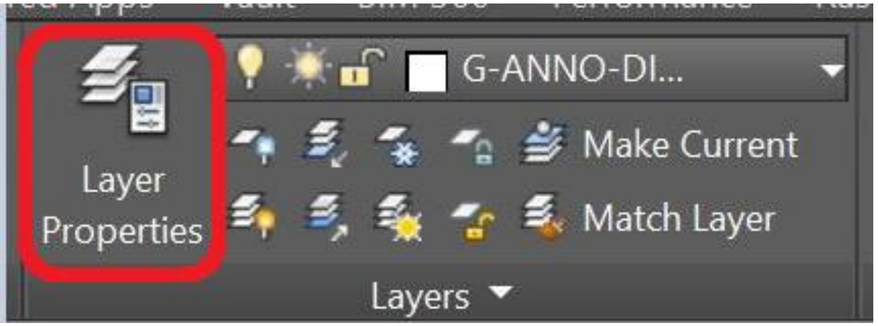
Description	Variable	Standard	Mesa AU
Arrow size	DIMASZ	0.1800	0.1250
Dim line color	DIMCLRD	BYBLOCK	1 (red)
Ext line color	DIMCLRE	BYBLOCK	1 (red)
Fraction format	DIMFRAC	0	1
Length units	DIMLUNIT	2	4
Precision	DIMDEC	4	3
Text color	DIMCLRT	BYBLOCK	2 (yellow)
Text style	DIMTXSTY	Standard	Mesa AU
Tol precision	DIMTDEC	4	3
Tol text scale factor	DIMTFAC	1.0000	0.7000

Copy comparison results to clipboard

TIP: Select desired dimension style and compare with NONE to displace full listing of variables and settings for one dimension style

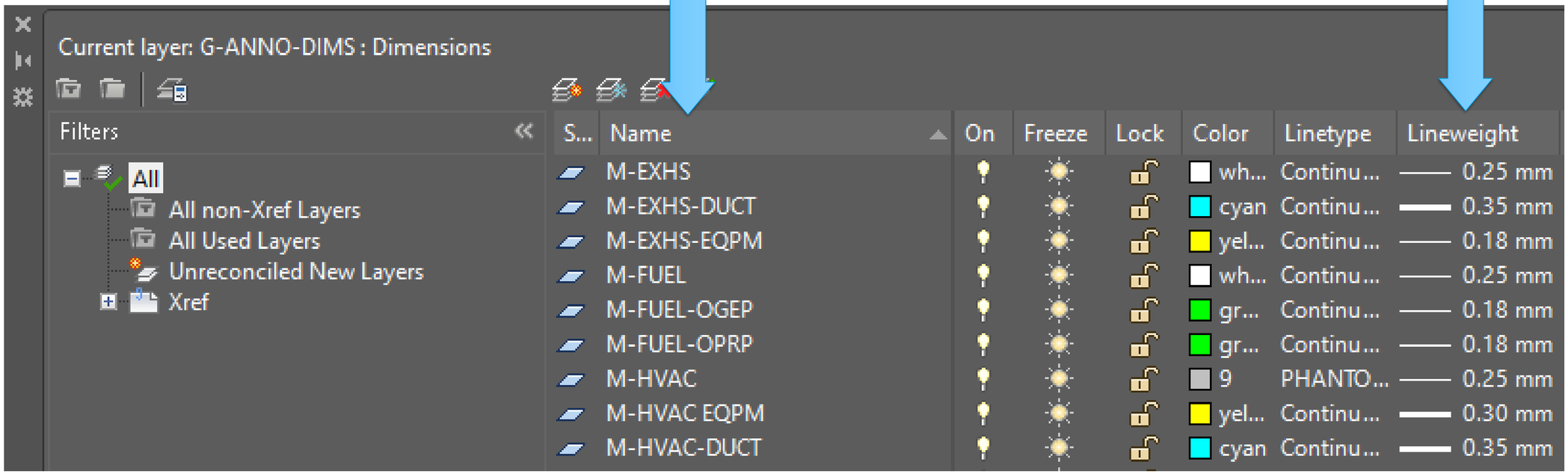
Layer Properties

How to access the layer properties manager



If you click on a heading, the column will sort ascending or descending.

If you do not want to display any of these settings, right click on the heading and uncheck the check box beside the heading



Layer Options

Isolate - Hides or locks all layers except for those of the selected objects

Off - Turns off the layer of the object that is selected

Freeze the layer of selected objects

Current layer

Turn on all layers in the drawing (except for the frozen layers)

Thaws all layers in the drawing

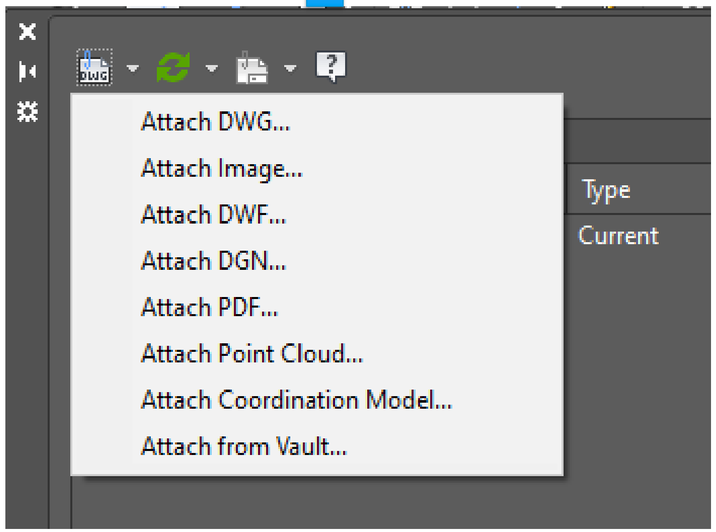
Unisolate - Restores all layers that were hidden or locked

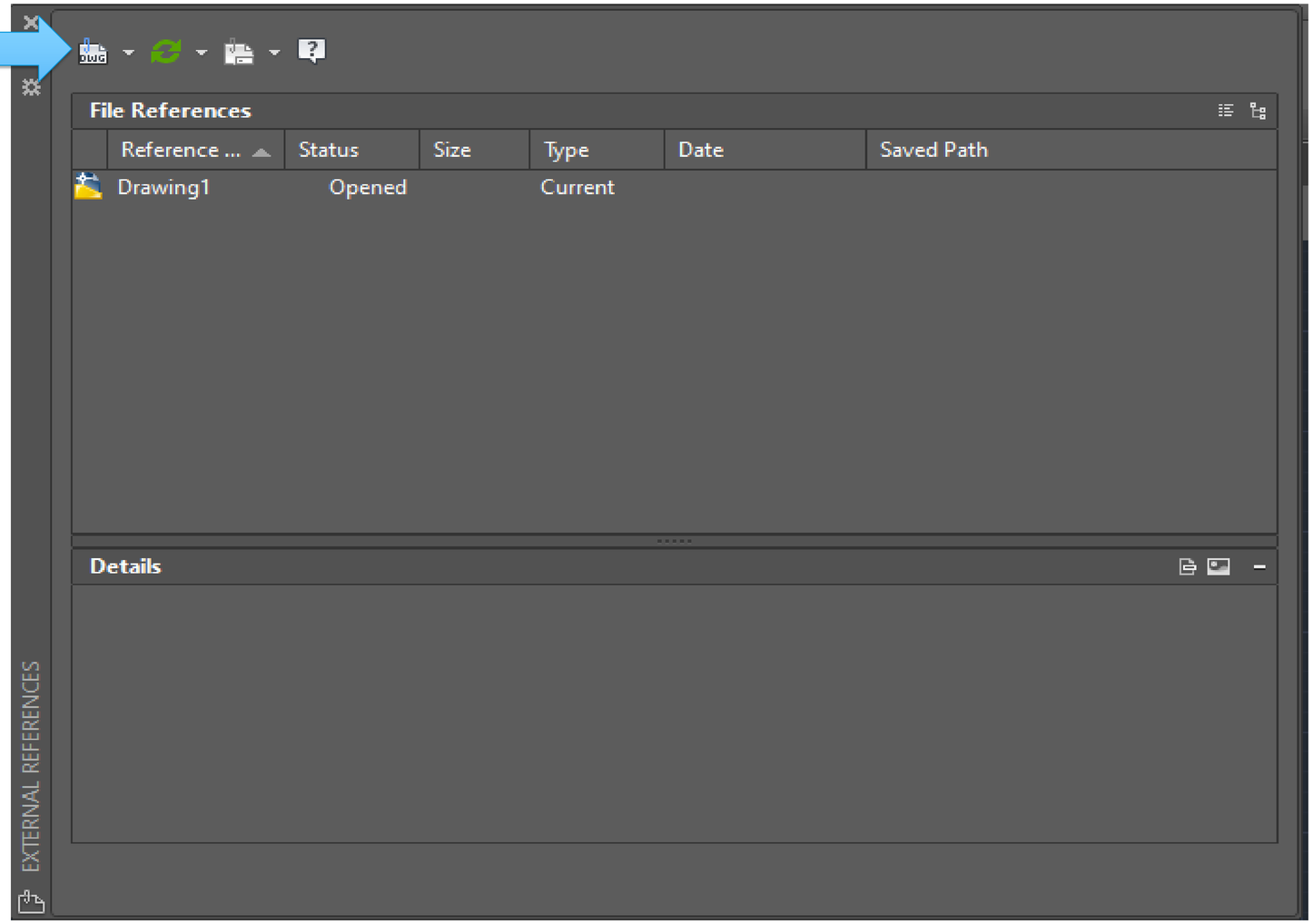
TIP: AutoCAD still sees objects that are on an “OFF” layer but does not see those objects if the layer is “Frozen”. Therefore, regens are faster if layers are frozen. Also, you can turn off the current layer, but you can not freeze the current layer.

Layer Properties Demonstration

External References

External References





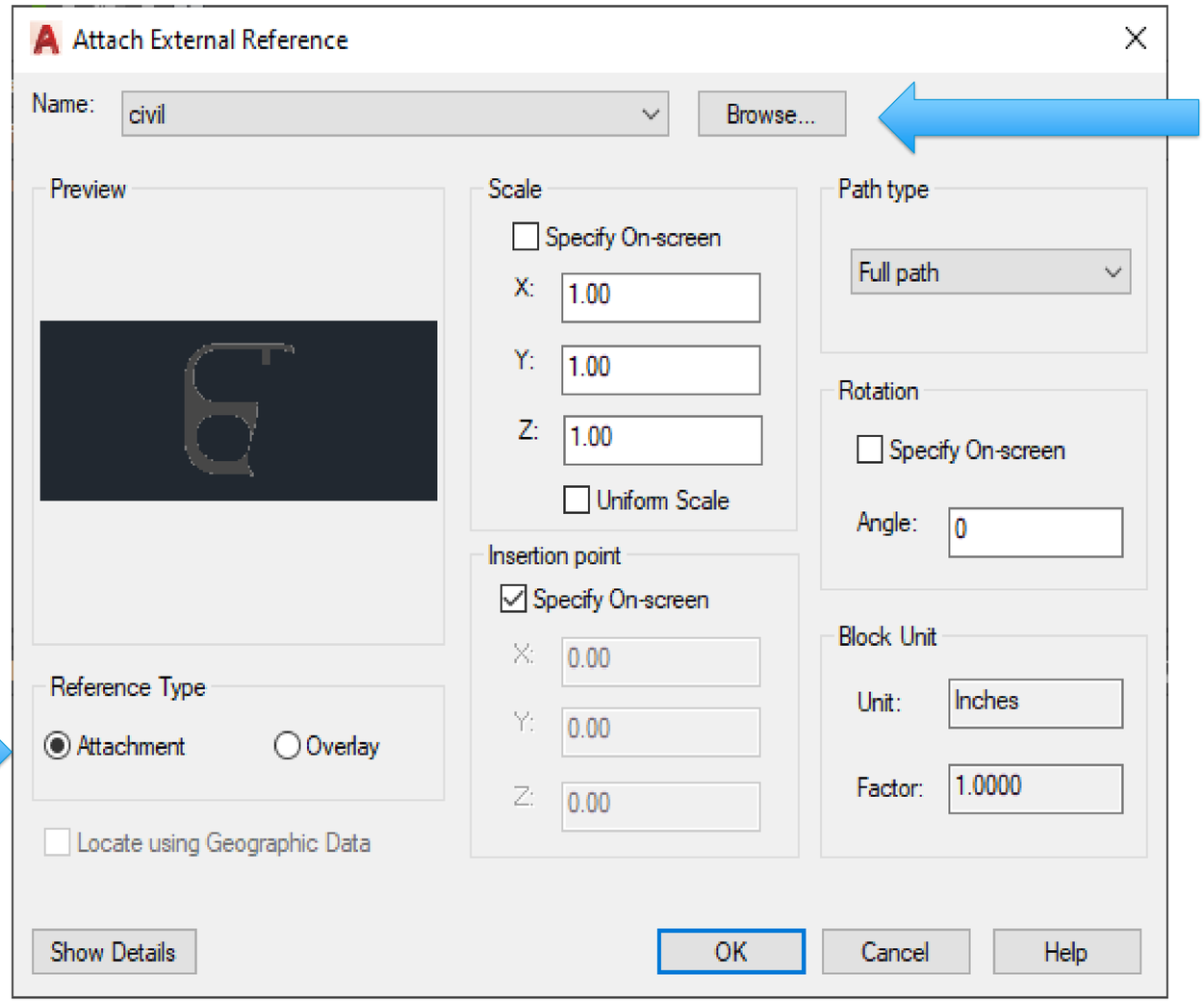
Note: The benefit of using a x-ref is when the referenced drawing changes, it will update the current drawing.

- Type “XREF”, “EXTERNALREFERENCES” or “XATTACH” in the command window
- Go to the “view” tab, then “palettes” panel, then “external references” palette
- Go to the “tools” menu, the click “palettes”, then click “reference manager”.

External References

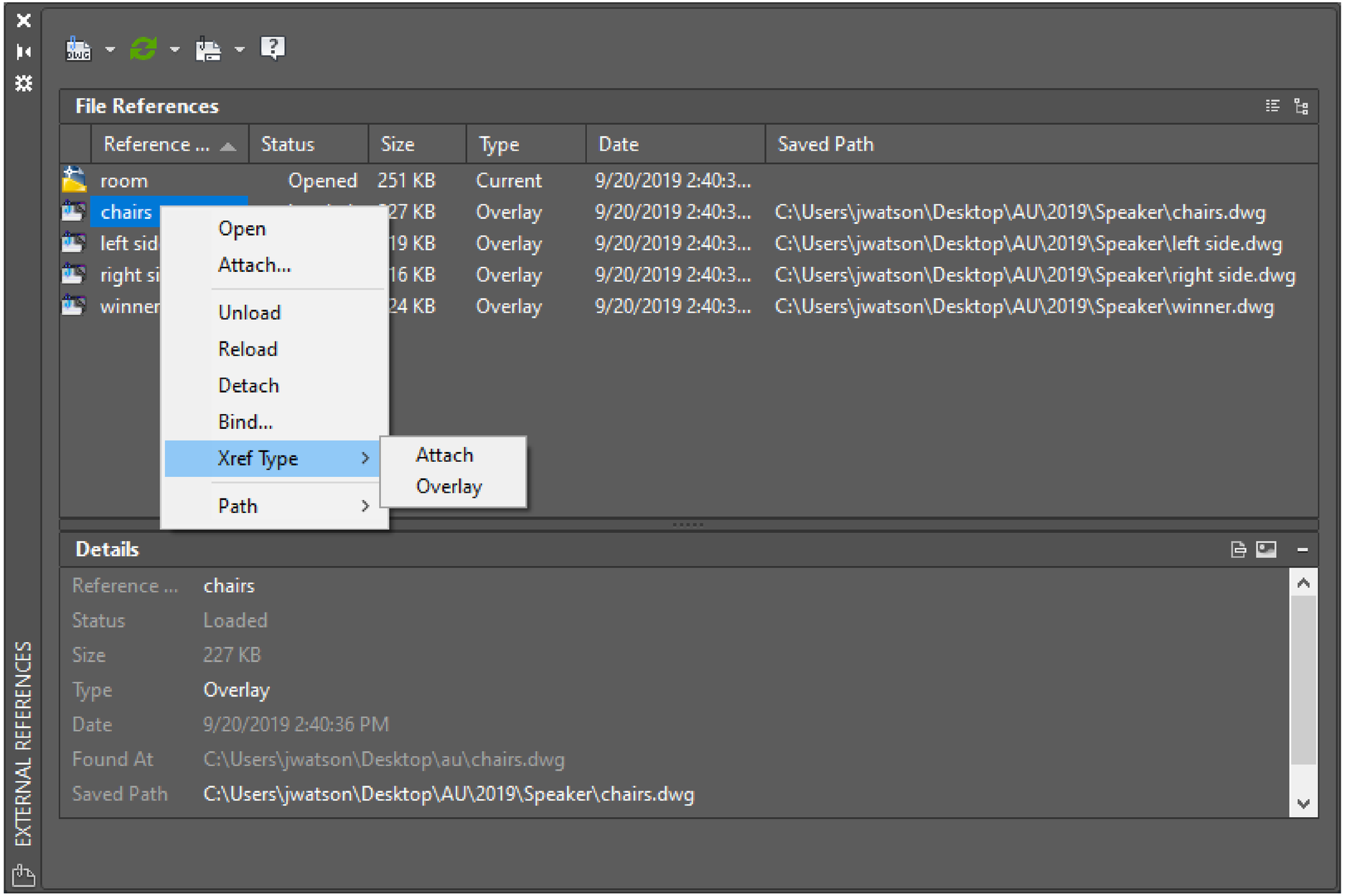
Overlay is used when you just want to insert a drawing as reference.

When you use the attachment option then the drawing becomes part of the master drawing.

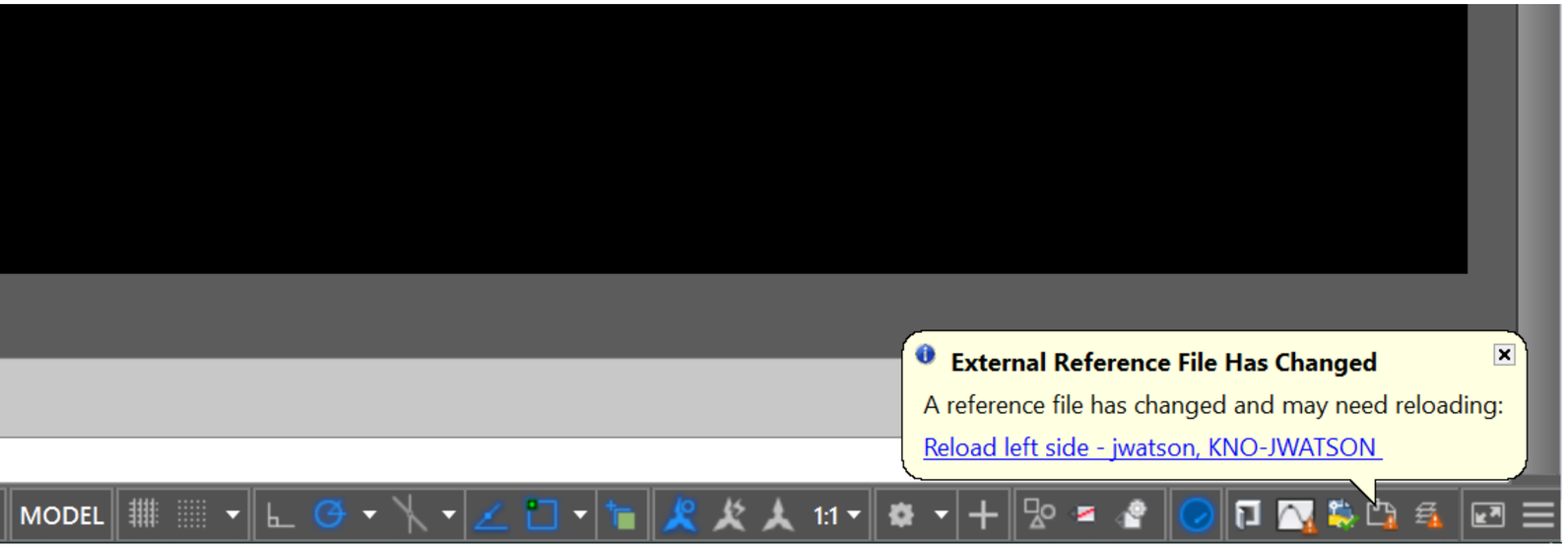


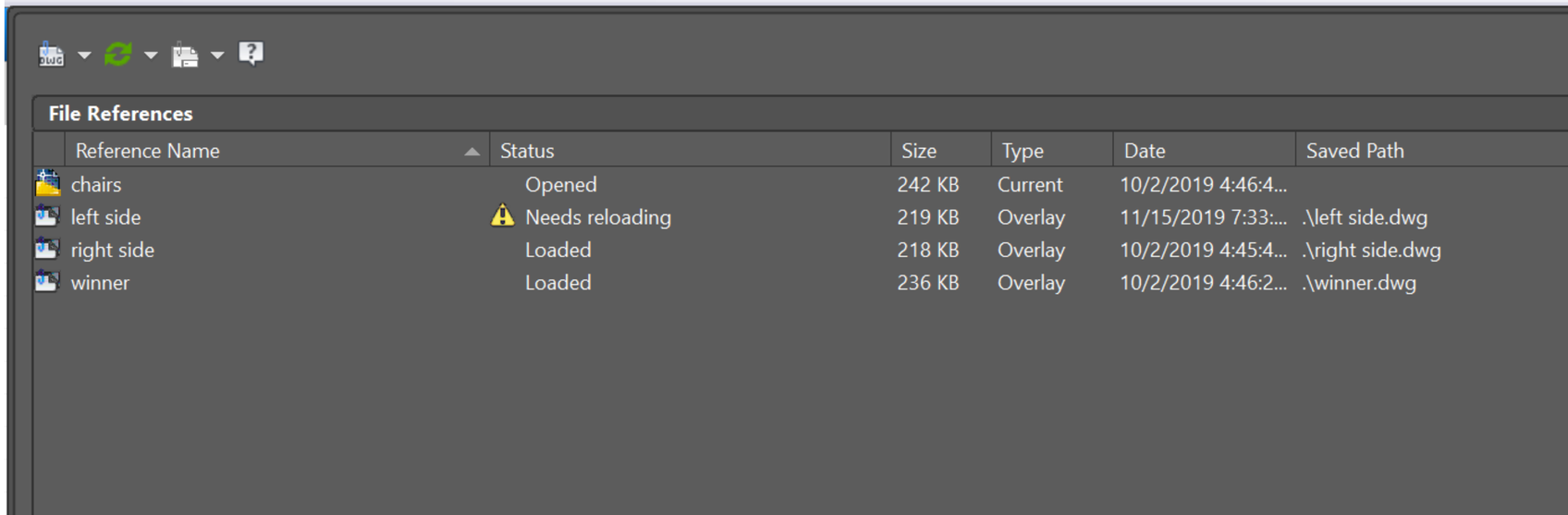
Modify the path of the selected files.

External References – How to Change the Type



External References – Out of Date



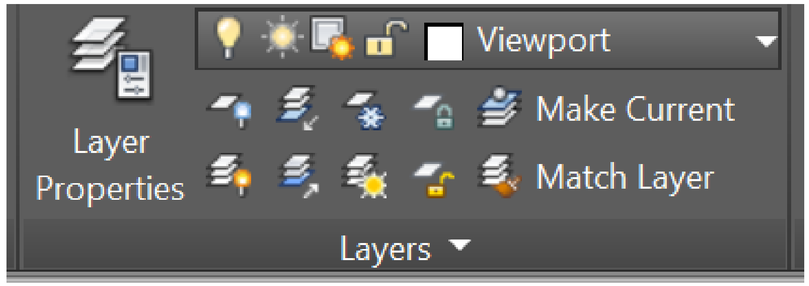


External Reference Demonstration

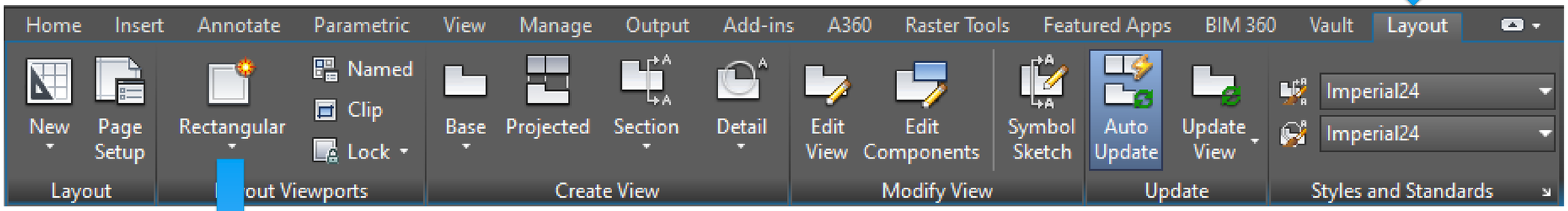
Model Space vs. Paper Space

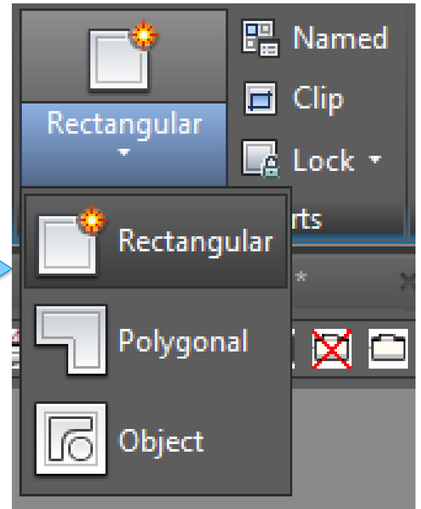
Model Space vs. Paper Space – Creating a Viewport

- Select appropriate layout tab
- Make the layer current you want to viewport to show up on
- Select type of viewport
- Select boundaries for viewport

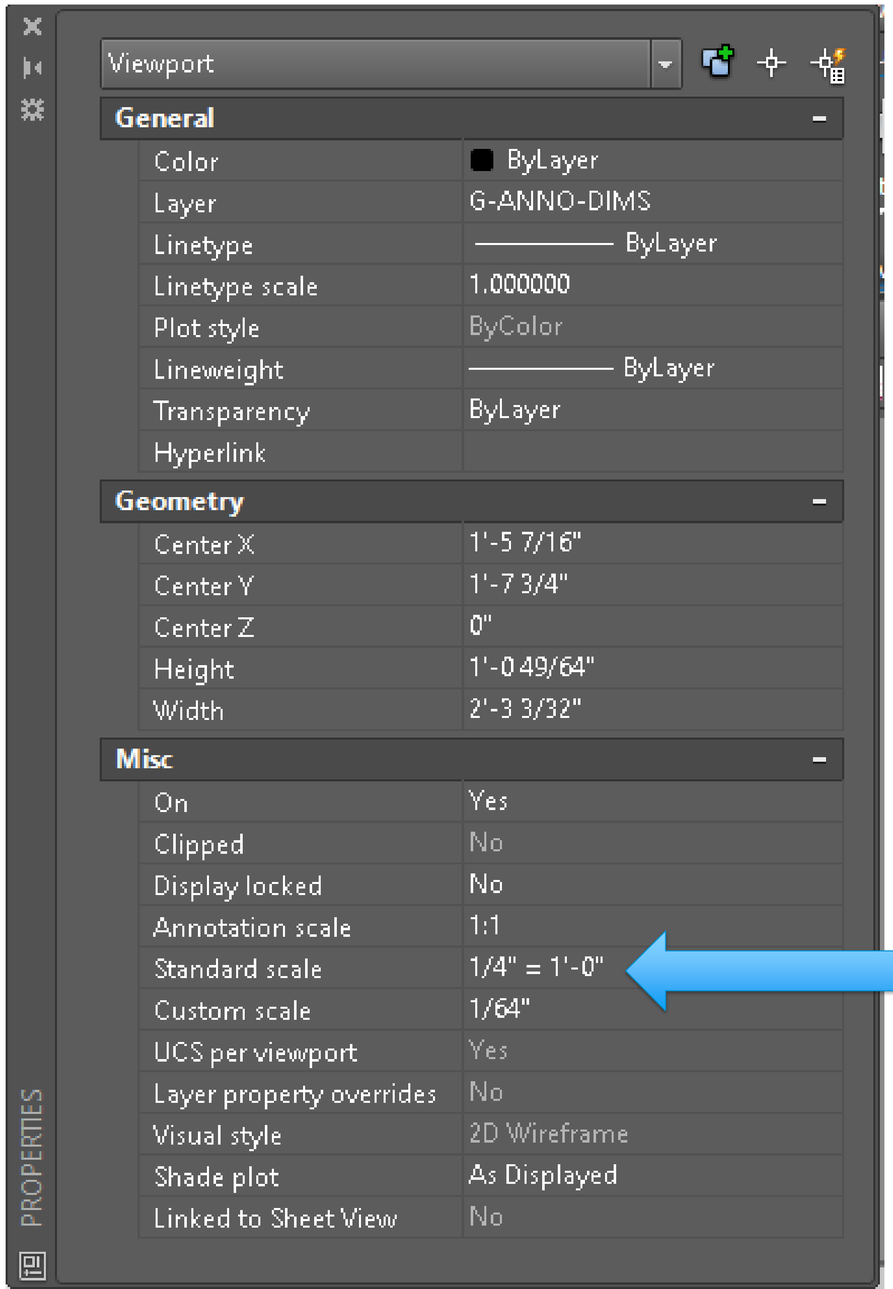


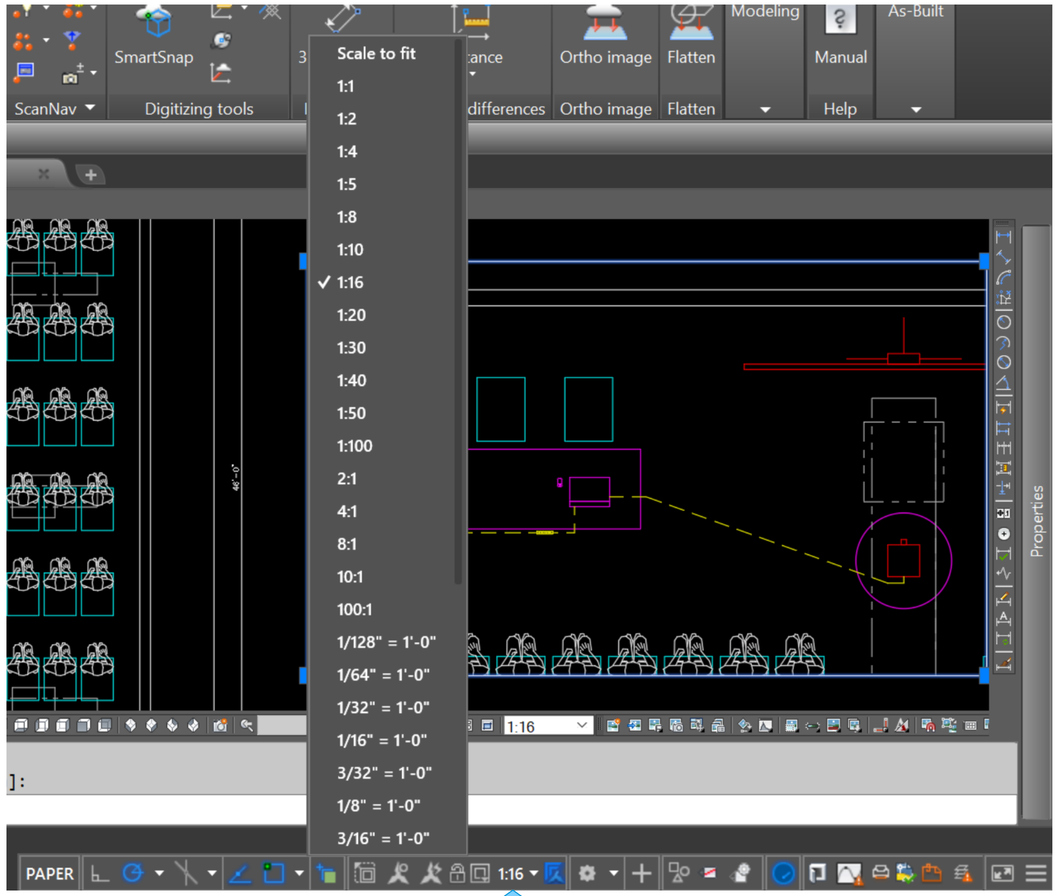
Layout tab appears only when you are in the layout tab





Model Space vs. Paper Space – Creating a Viewport

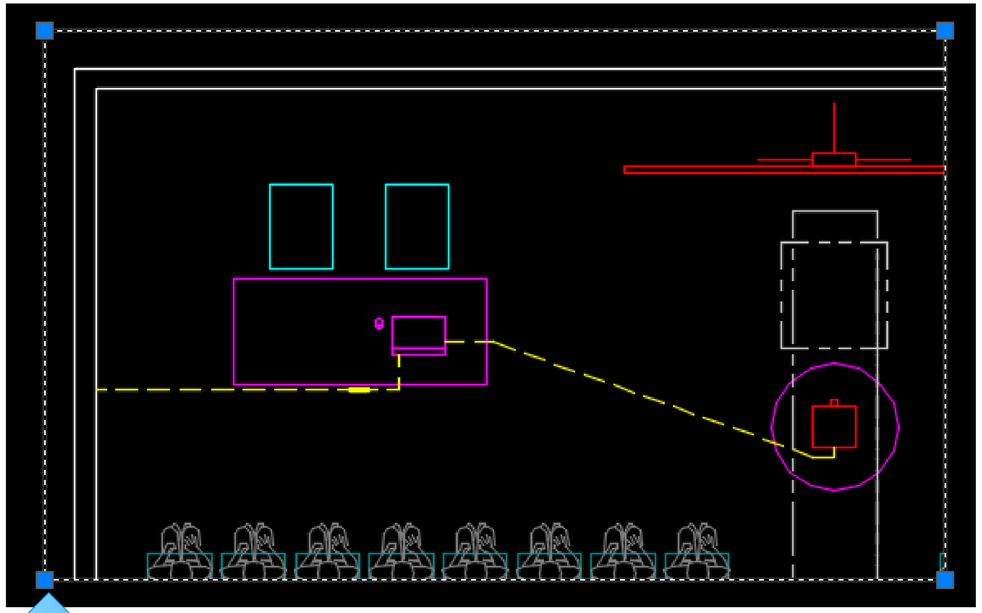




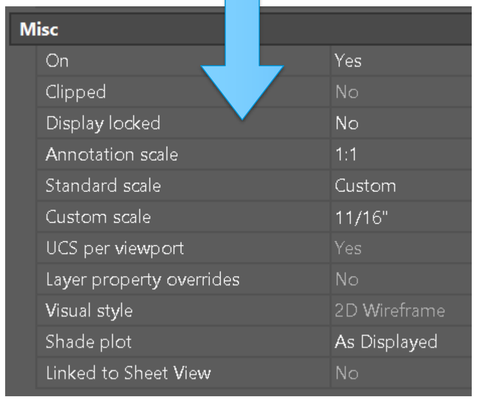
Select viewport scale

TIP: When the DIMASSOC system variable is set to “2”, dimensions will automatically apply the required scale factor in paperspace dimensions. Dimensions are associated with the geometric object in model space.

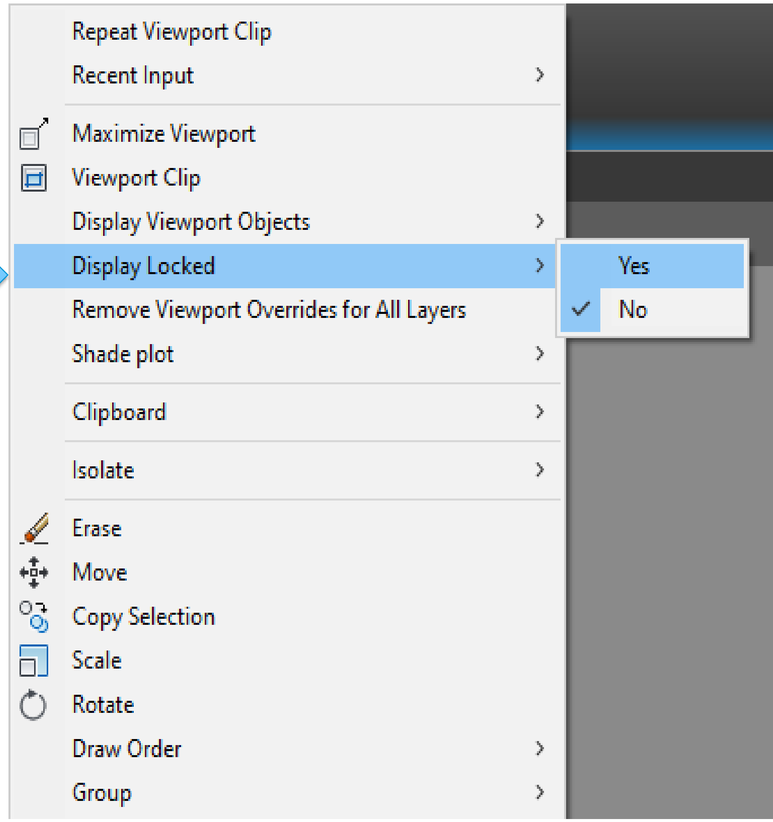
Model Space vs. Paper Space – Creating a Viewport

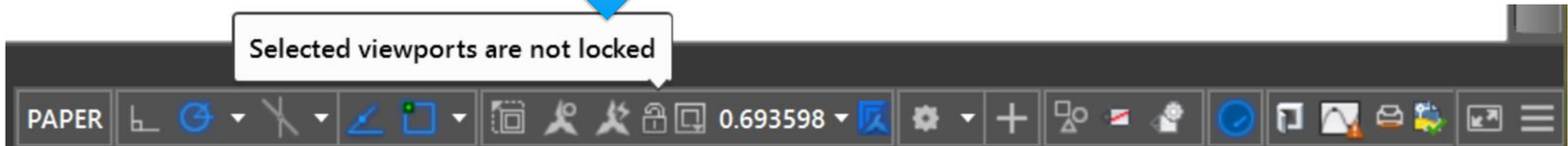


Modify size of viewport by the grips and move viewport with move command



Lock viewport once it is set in your drawing





REVISIONS				
REV	DESCRIPTION	DATE	DRAWN	APPR
0	ISSUED FOR CONSTRUCTION			

NEW VIEWPORT

UNLESS OTHERWISE SPECIFIED	SIGNATURES	DATE
DIMENSIONS ARE IN INCHES TOLERANCES ON: 2 PL DECIMALS ± .05 3 PL DECIMALS ± .025 ANGLES ± 0.5° FRACTIONS ± 1/32	DRAWN MESA	
	CHECKED MESA	
	APPROVED	
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AU PAPERSPACE EXAMPLE

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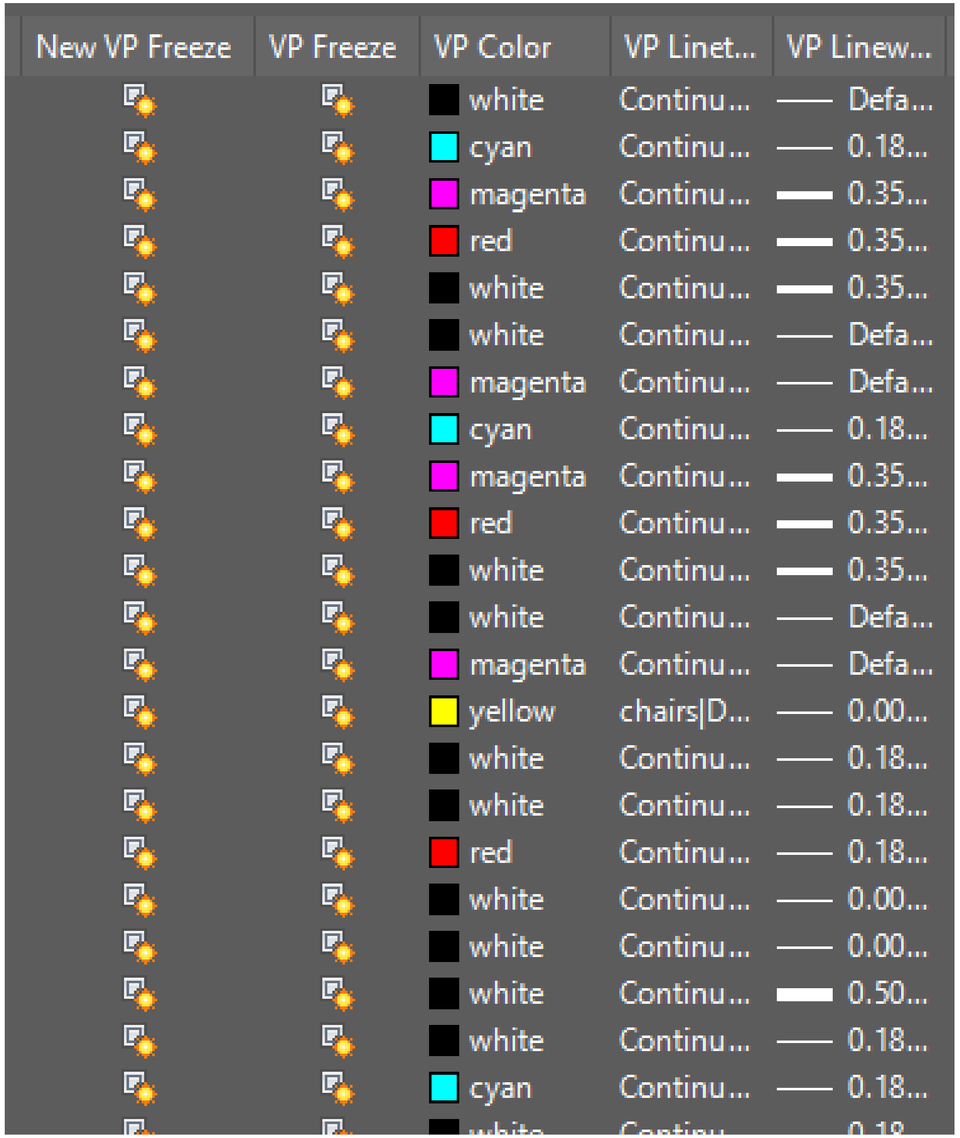
A	PRODID	AU PAPERSPACE	0
SCALE NONE	PROJECT NO. 000	SHEET 1 OF 1	

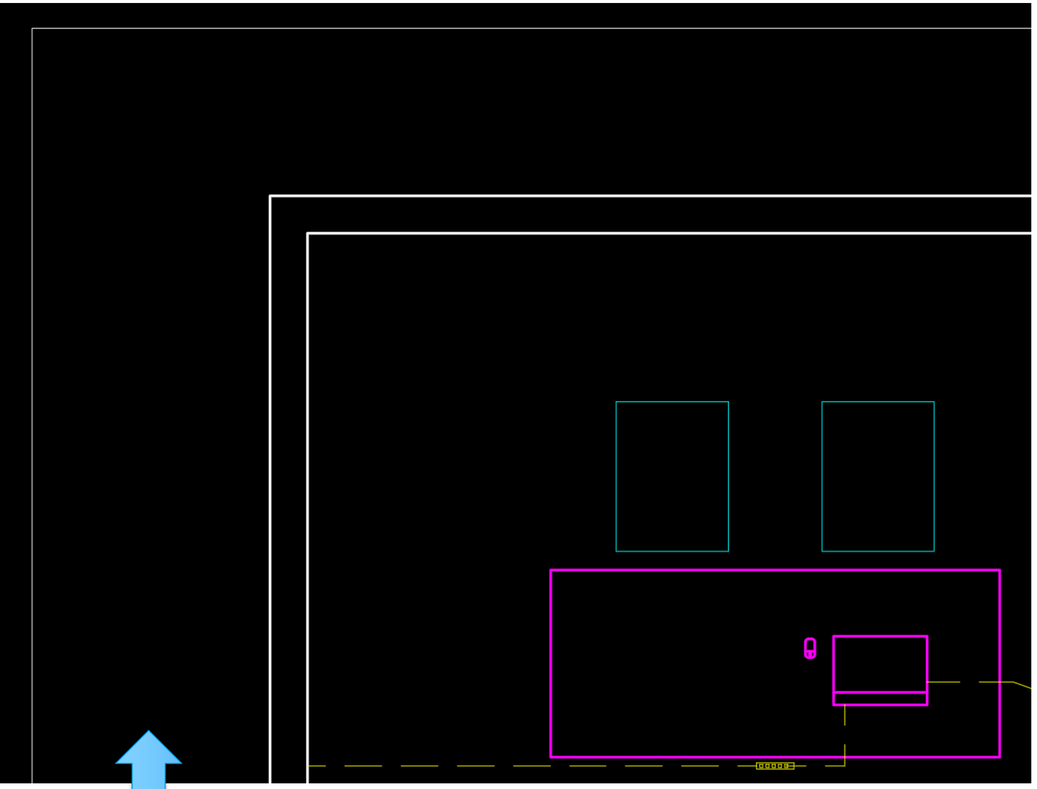
Model Space vs. Paper Space – Manipulating Layers in Viewports



New VP Freeze	VP Freeze	VP Color	VP Linet...	VP Linew...
		white	Continu...	Defa...
		cyan	Continu...	0.18...
		magenta	Continu...	0.35...
		red	Continu...	0.35...
		white	Continu...	0.35...
		white	Continu...	Defa...
		magenta	Continu...	Defa...
		cyan	Continu...	0.18...
		magenta	Continu...	0.35...
		red	Continu...	0.35...
		white	Continu...	0.35...
		white	Continu...	Defa...
		magenta	Continu...	Defa...
		yellow	chairs|D...	0.00...
		white	Continu...	0.18...
		white	Continu...	0.18...
		red	Continu...	0.18...
		white	Continu...	0.00...
		white	Continu...	0.00...
		white	Continu...	0.50...
		white	Continu...	0.18...
		cyan	Continu...	0.18...

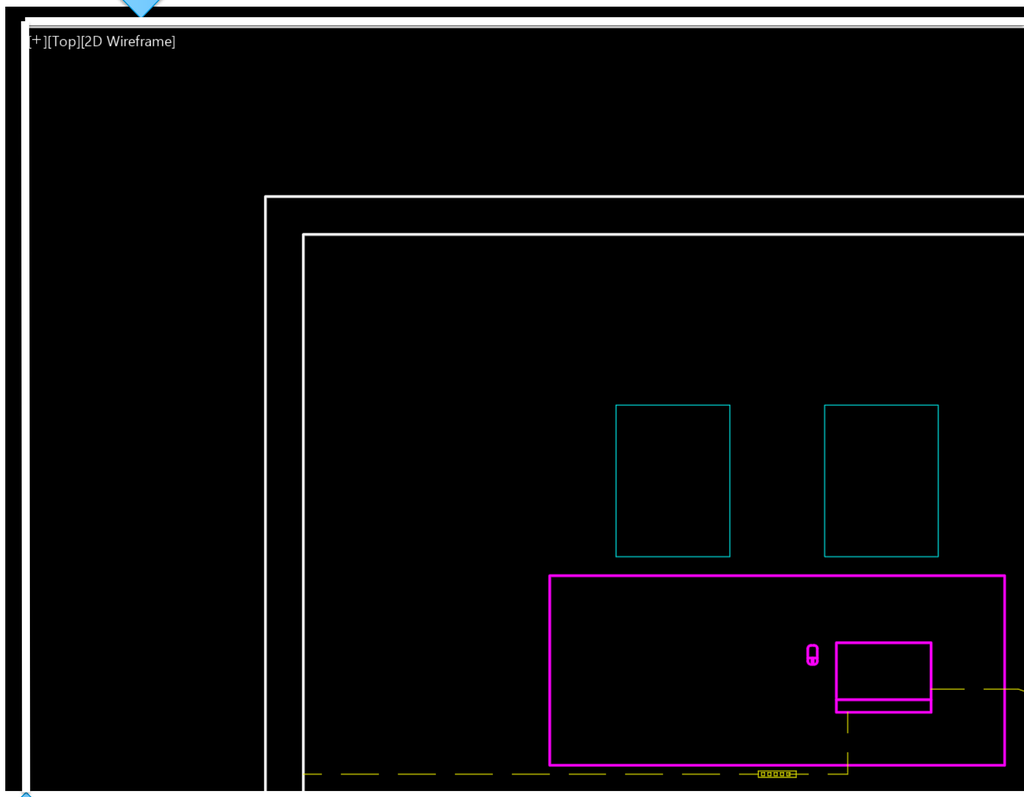
- New VP Freeze
- VP Freeze
- VP Color
- VP Linetype
- VP Lineweight

Model Space vs. Paper Space – Layout Tab



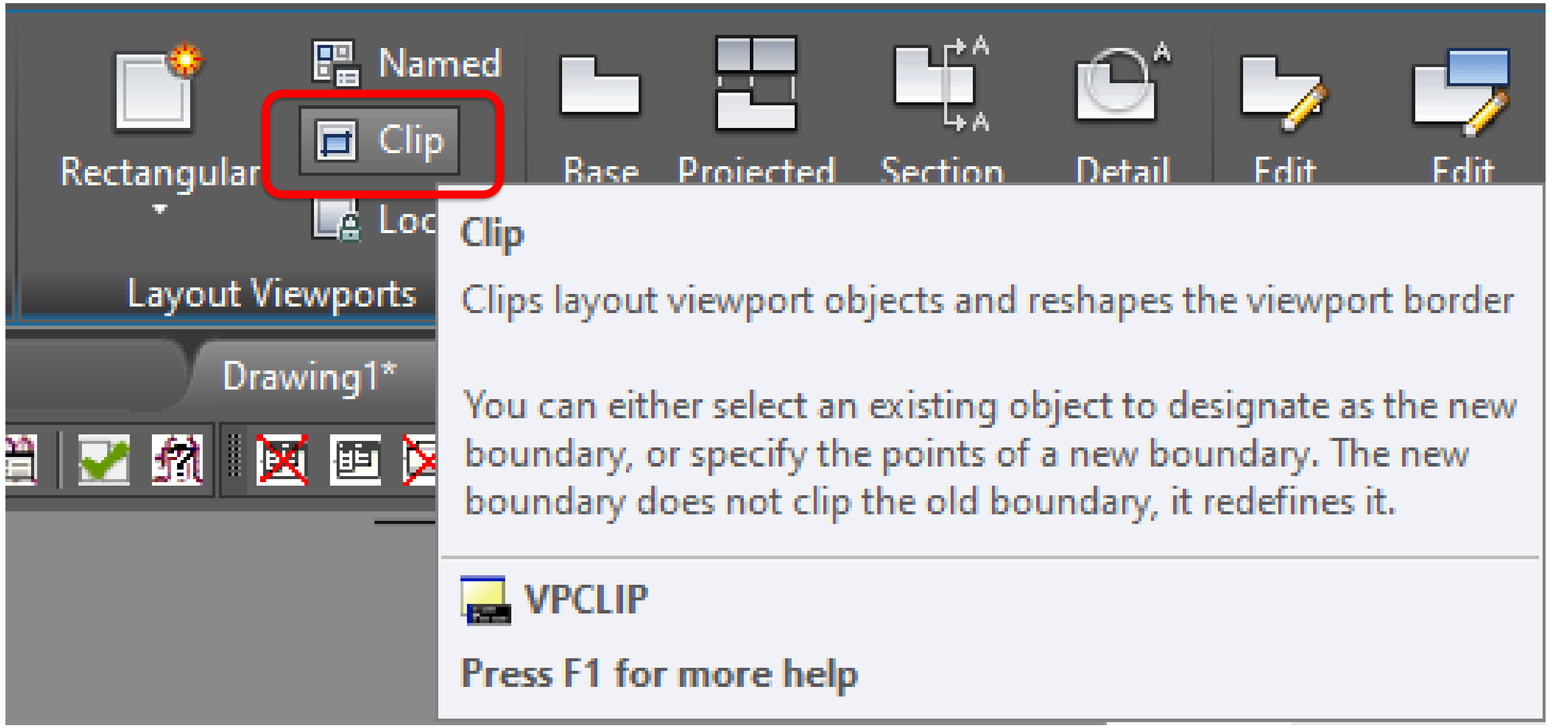
Double click inside viewport to enter model space

Double click outside viewport to enter paper space



Thick line represents you are in model space

Model Space vs. Paper Space – Viewport Clipping

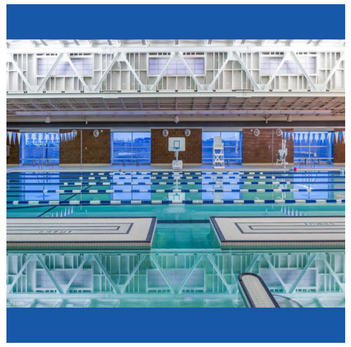


This can be helpful if you already have your drawings setup but need to add something to your drawing and you don't want to have to change the viewport scale.

Model Space vs. Paper Space Demonstration

Learning Objectives

- Manipulate settings in the options menu and keyboard shortcuts
- Modify dimension style settings
- Utilize various layering commands to display objects differently
- Organize drawings using x-refs and model space / paper space



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