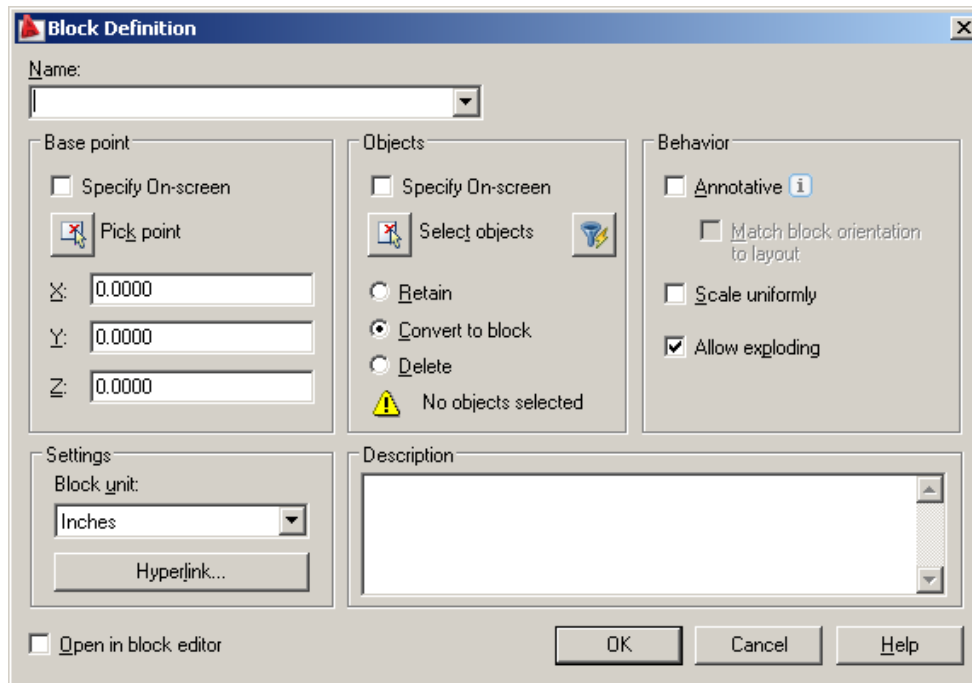


# AutoCAD® Block Help Sheet

By Mark S. Schwendau ©2012

An AutoCAD Block is like a symbol found on a drafting template. Unlike these template symbols, Blocks have major advantages as follows:

- Once geometry is turned into a Block, these objects can be used again in the drawing it was created in (BLOCK) or used in other drawings as well if WBLOCKed. Think of “WBLOCKS” as “Save As” that will create a DWG file.
- A symbols library can be created by nesting Blocks in a WBlock (DWG) that can be inserted as a drawing (DWG) into a second drawing (DWG) without having it come to screen (you simply press ESC after insertion point prompt).
- Creation of Blocks to established standards guarantees a consistency throughout the entire drawing data base of an engineering department.
- Use of Blocks helps condense drawing file size.
- Blocks can be edited globally such that when one Block is edited, all instances of that Block within that drawing will reflect the change.
- Blocks can be Dynamic similar to parametric modeling whereby data can be entered at Block insertion to change variable values related to the Block. An example are bolts where the diameter doesn’t change but lengths/heads do.
- Blocks can contain attribute data or alphanumeric text data that may be extracted from the drawing into other programs such as spreadsheets.
- Blocks can be 2-D or 3-D.



The Block command dialog box to define a Block from existing geometry.

The parts of the Block Definition dialog box are as follows:

Name – how the Block is to be identified for future reference.

Base Point – a handle point to be used during future Block insertions.

Objects – options for controlling the original object selections after Blocking:

Retain – keeps objects selected in their original form after Block creation.

Convert to Block – takes the selected objects, turns them into a Block.

Delete – takes the selected objects and Blocks them and deletes originals.

Behavior: Annotative - objects scaled to preset Layout viewport scales.

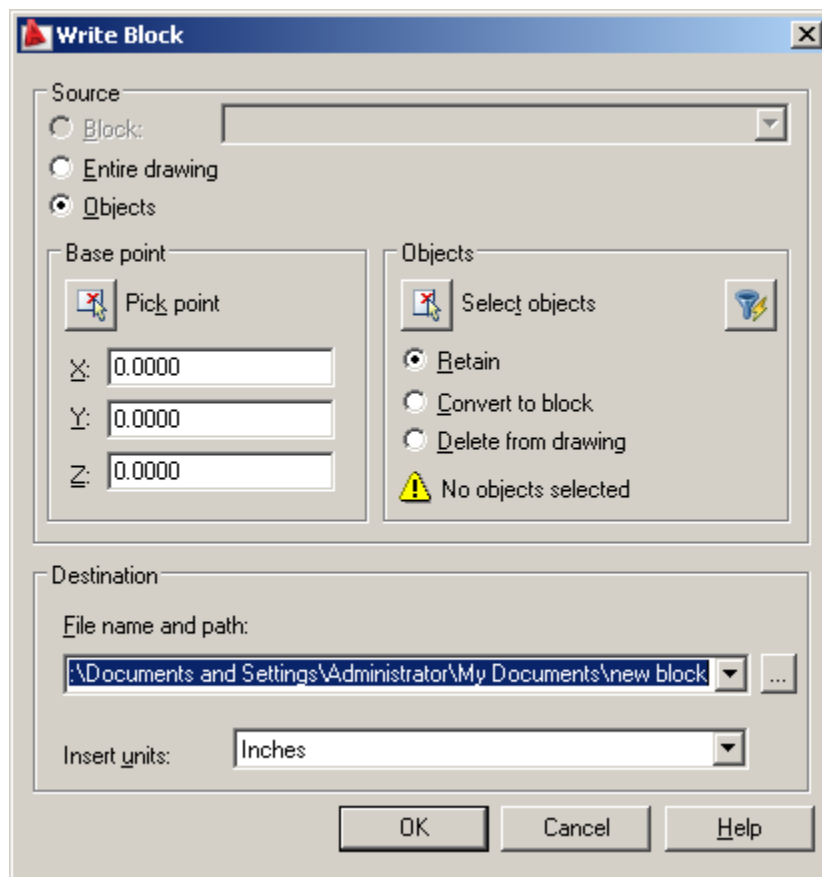
Scale Uniformly – allows uniform Block scaling at insertion.

Allow Exploding – determines if Blocks may be exploded after insertion.

Settings: Block Units – offers 22 different insertion units starting with inches.

Hyperlink – allows the created Block to be associated with a web address.

Description : allows text to be entered to better recall use of Block in the future.



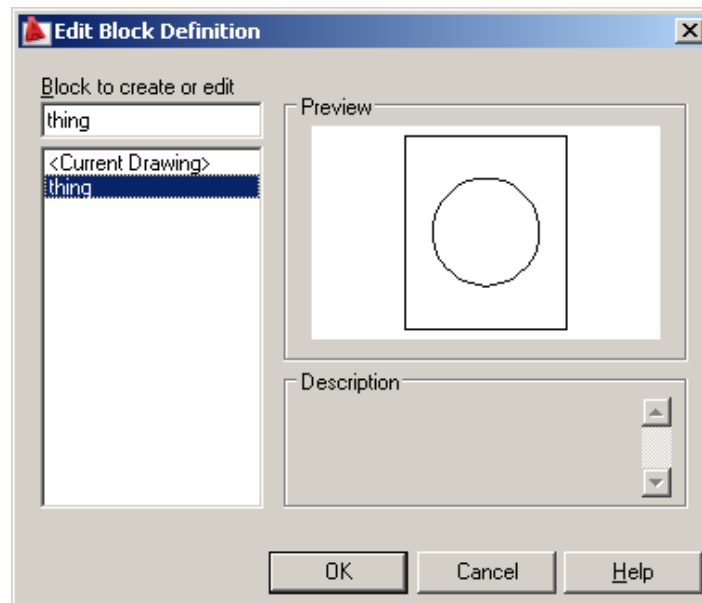
The WBlock, Write Block, dialog box is used to create a Block as a new drawing.

## Layer Zero “0” and Blocks

Layer Zero is the only Layer that is preset in AutoCAD at startup and cannot be purged from the drawing, ever. It cannot be renamed, either. Layer Zero is a special Layer for when a Block (AutoCAD term for symbol) is created on Layer Zero, it will assume the identity to whatever Layer it is inserted on in later use in other drawings. In other words; If a Block is made on Layer Zero, and is inserted on a Layer called say “Plumbing”, it will be an inserted Block on Layer “Plumbing” and will give up its identity with Layer Zero. On the other hand, if a Block were made on a Layer called “Plumbing” and then later inserted into a another drawing not having a Layer called “Plumbing”, a new “Plumbing” Layer would be created at Block insertion.

## Dynamic Blocks

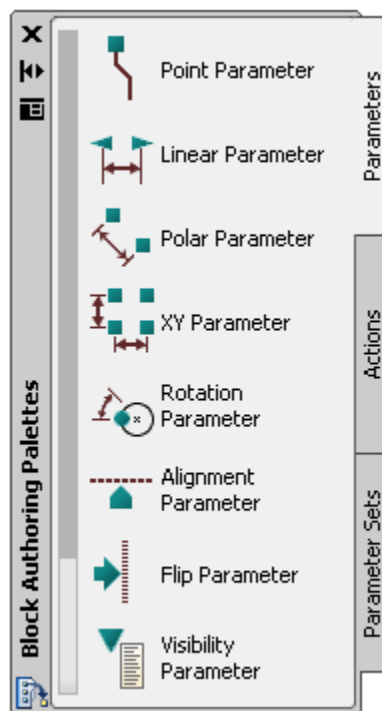
Once a Block has been created, it can be converted into a Dynamic Block using the BEDIT command. A Dynamic Block is a Block that has designated features and constraints set by the creator the user must specify later at Block insertion into a drawing. Possible examples for using Dynamic Blocks in architectural and mechanical design are a door or window that can be sized to a standard wall opening without increasing its thickness, or a bolt or screw that can be lengthened or have its head type changed without increasing its diameter.



After the BEDIT command is executed, and a Block is selected to be made dynamic, the Block Editor window appears with the floating Block Authoring Pallet.



	Edit or create Block Definition
	Save Block Definition
	Save Block As
	Authoring Palettes On/Off
	Parameter
	Action
	Define attribute
	Update parameter and action text size
	Learn about Dynamic Blocks

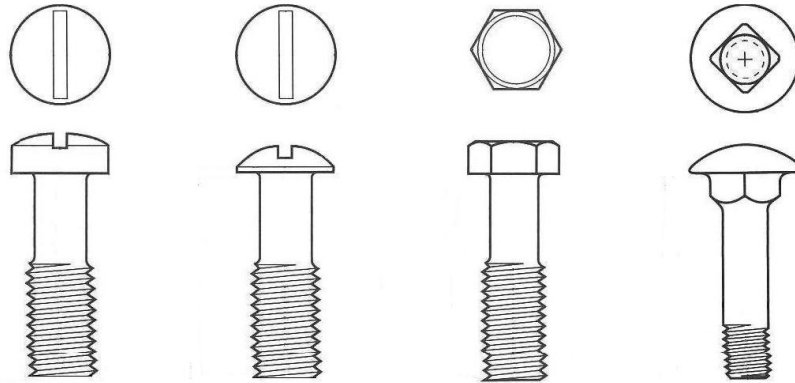






Floating Block Authoring Pallet is in the drawing editor screen unless it is turned off.

### **Visibility States**

A visibility state turns the visibility of a Block component on and off. You define component visibility states, each of which is a variation of visibility or invisibility. You can make one or more components visible or invisible. The following bolts illustrates how one Dynamic Block can be used to in place of four different Blocks using Visibility States.





	BVMODE On/Off
	Select Objects to make visible
	Select Objects to hide
	Visibility States On/Off

The right Block Editor toolbar end is active after the Visibility Parameter is selected.

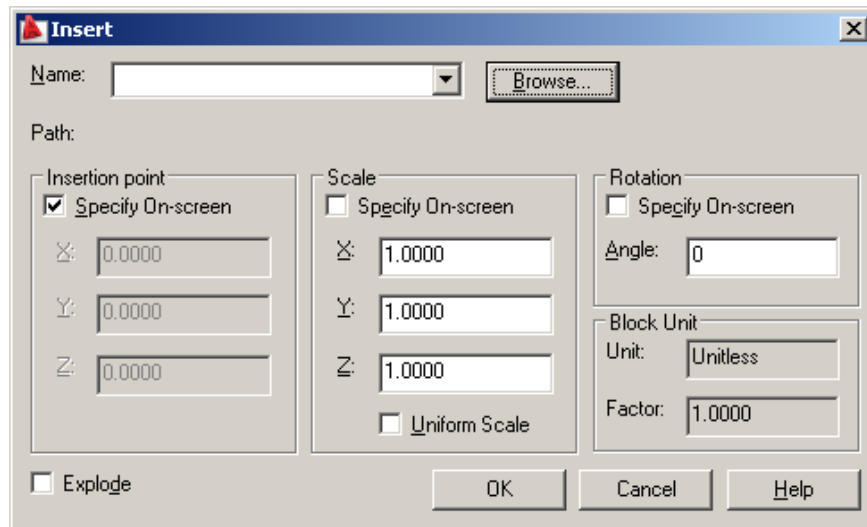
For more detailed information on the capabilities of Dynamic Blocks, see Autodesk's White Papers:

[autocad\\_2006\\_dynamic\\_Blocks\\_part\\_1\\_white\\_paper.pdf](#) (378 kb)

[autocad\\_2006\\_dynamic\\_Blocks\\_part\\_2\\_white\\_paper.pdf](#) (566 kb)

[autocad\\_2006\\_dynamic\\_Blocks\\_part\\_3\\_white\\_paper.pdf](#) (652 kb)

## Insert



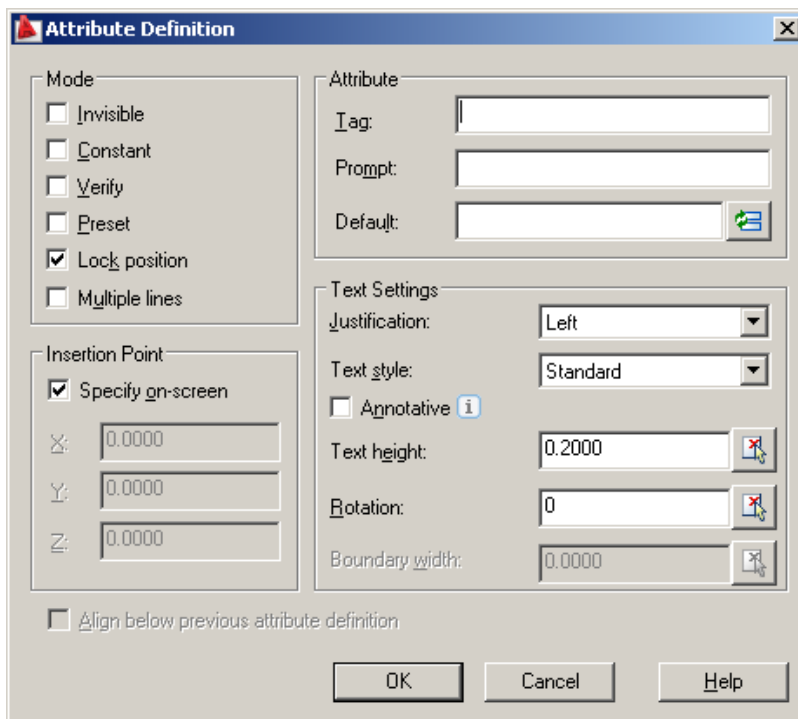
Execution of the Insert command opens the Insert dialog box. This box allows you to select a Block to insert, the insertion point for that Block, as well as the Scale and Rotation of the Block. Scaling and Exploding of the Block at Insertion are dependent on how the Block was made as per the illustration on the first page.

## **Insertions BYBLOCK or BYLAYER**

- The *BYLAYER* – means Blocks inherit the properties from the layer the Block is inserted on.
- The *BYBLOCK* – means Blocks inherit the properties from the properties of the Block (the Block reference/insertion).

In general, Autodesk does not recommend doing insertions BYBLOCK.

## **Block Attributes**



Blocks may have Attributes included, alphanumeric information attached to the Block. A Block can even be created that consists of only Attribute information such as an Attribute Block to insert title Block text automatically at drawing completion.

Mode(s):

Invisible – determines whether Attribute will be visible or invisible in the drawing  
Constant – establishes if the value of an Attribute should always be the same  
Verify – prompts user to confirm entered Attribute data as correct before insertion  
Preset – option disables the Verify prompt  
Lock position – keeps Attributes in place but this is not to be used in Dynamic Blocks  
Multiple Lines – used when Attributes are going to be multiple lines of information

Attribute(s):

Tag – is the default value of the Attribute such as SCALE to enter drawing scale

Prompt – is a helpful hint to ask you to supply Attribute information such as, SCALE?

Default – a place to supply a value if the user inserting the Block fails to such as 1=1

### **Block Related Commands**

- ATTDEF – creates an Attribute definition
- ATTDIA – controls the Attribute dialog box visibility on/off
- ATTDISP – globally controls Attribute visibility
- ATTEDIT – changes Attribute information
- ATTEXT – extracts Attribute data
- ATTIN – imports Attributes
- ATTOUT – exports Attributes
- ATTREDEF – redefines a Block and updates associated Attributes
- BATTMAN – opens Block Attribute editor
- BATTORDER – displays Attribute order dialog box
- BCLOSE – closes the Block editor
- BCOUNT – counts Blocks used in a drawing
- BEDIT – opens the edit Block definition dialog box
- BLOCKREPLACE – replaces one Block in a drawing with another
- BTESTBLOCK – a popup window for testing of Blocks/Dynamic Blocks
- BURST – alternative command to EXPLODE for Attribute/Dynamic Blocks
- DDATE – edits Attribute values but not properties
- EATEDIT – Enhanced Attribute Editor dialog box
- EATTEXT – Enhanced Extraction Wizard Editor to inventory Blocks in XLS
- GATTE – global Attribute edit of multiple Blocks
- INSERT and -INSERT – popup window or command line options
- MINSERT – inserts a Block in a rectangular array
- PURGE – used to eliminate any inserted but unused Blocks from a drawing
- QSELECT – filters Blocks from other geometry when being selective
- REFEDIT – edits a Block reference in place
- RENAME – renames Blocks
- SELECTSIMILAR – used to select similar geometry such as Blocks
- SHP2BLK – changes a shape into a Block
- XLIST – lists, type/block name/layer name/color/linetype/ of a nested Block
- XPLODE - to better control properties rather than EXPLODE a Block

Some of these commands may require loading of the optional Express Tools.  
Express Tools are an optional add on option of AutoCAD not supported by Autodesk.