



BlockExtender



BlockExtender is a brand new technology that allows you to convert AutoCAD blocks into custom entities on the fly, programming not required.

Getting Started

To get BlockExtender up and running in AutoCAD a second step is required.

AutoCAD 2000 – 2002 installation (Full version):

Once the software is installed you must setup AutoCAD to load the BlkeBlockExtDbx.dbx and BlockExtender.arx. To do this, type in “APPLOAD” at the command line. Next, in the lower right corner of the dialog box, click on the "Contents" button. A new dialog will appear. Click on the "Add" button. Then go to the installation directory and select the BlkeBlockExtDbx.dbx file. This file contains the intelligent block tool. Then click the "Add" button again then select the BlockExtender.arx file. This file displays the dialog boxes. Then click the "Add" button again then select the BlockExtVba.arx file. This file manages the OPM (Object Properties Manager property list box and exported VBA API functionality All three files are required. Block Extender is now ready.

AutoCAD 2000 – 2002 installation (Free version):

Once the software is installed you must setup AutoCAD to load the BlkeBlockExtDbx.dbx and BlockExtenderFree.arx. To do this, type in “APPLOAD” at the command line. Next, in the lower right corner of the dialog box, click on the "Contents" button. A new dialog will appear. Click on the "Add" button. Then go to the installation directory and select the BlkeBlockExtDbx.dbx file. This file contains the intelligent block tool. Then click the "Add" button again then select the BlockExtenderFree.arx file. This file displays the dialog boxes. Then click the "Add" button again then select the BlockExtVba.arx file. This file manages the OPM (Object Properties Manager property list box and exported VBA API functionality All three files are required. Block Extender is now ready.

AutoCAD 2004 installation (Full version):

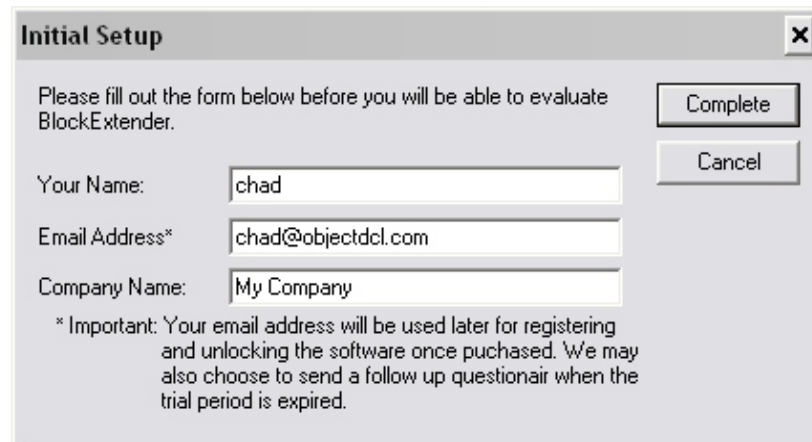
Once the software is installed you must setup AutoCAD to load the BlockExtDbx4.dbx and BlockExtender4.arx. To do this, type in “APPLOAD” at the command line. Next, in the lower right corner of the dialog box, click on the "Contents" button. A new dialog will appear. Click on the "Add" button. Then go to the installation directory and select the BlockExtDbx4.dbx file. This file contains the intelligent block tool. Then click the "Add" button again then select the BlockExtender4.arx file. This file displays the dialog boxes.

AutoCAD 2004 installation (Free version):

Once the software is installed you must setup AutoCAD to load the BlockExtDbx4.dbx and BlockExtenderFree4.arx. To do this, type in “APPLOAD” at the command line. Next, in the lower right corner of the dialog box, click on the "Contents" button. A new dialog will appear. Click on the "Add" button. Then go to the installation directory and select the BlockExtDbx4.dbx file. This file contains the intelligent block tool. Then click the "Add" button again then select the BlockExtenderFree4.arx file. This file displays the dialog boxes.

When BlockExtender Full Version is First Loaded

When BlockExtender full version is first loaded an initial setup dialog box will appear. This dialog box will not appear in the free version.



The 'Initial Setup' dialog box is a standard Windows-style window with a title bar containing the text 'Initial Setup' and a close button (X). The main area contains the following text and controls:

Please fill out the form below before you will be able to evaluate BlockExtender.

Complete

Cancel

Your Name:

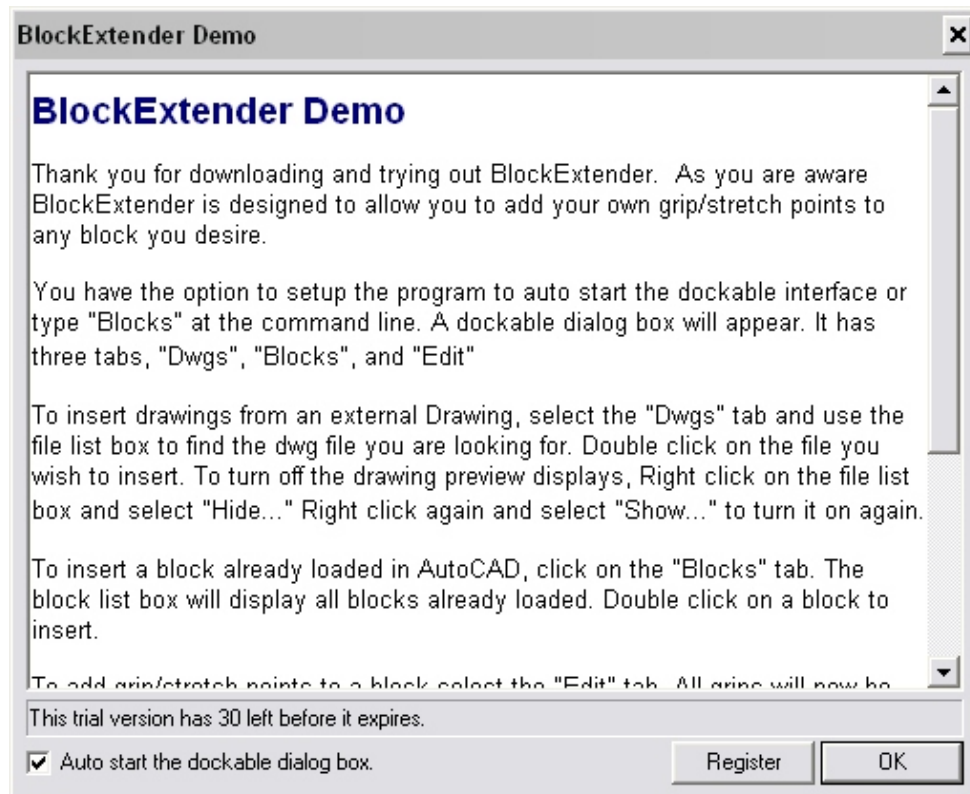
Email Address*:

Company Name:

* Important: Your email address will be used later for registering and unlocking the software once purchased. We may also choose to send a follow up questionnaire when the trial period is expired.

Please fill in the correct information and click on Complete. This dialog is used to gather your information so that we may contact you in the future if we choose with a follow up questionnaire once the trial period expires. You will only ever see this dialog once.

Next the “BlockExtender Demo” splash screen will appear. This dialog box thanks you for downloading and discusses getting started. The check box in the lower right, if checked off will display the dockable dialog box that allows you to edit blocks, as well as insert them. If you do not wish to see this dialog box right away, uncheck it. To activate the dialog box at a later time, type “BLOCKS” at the command line to reactivate. Once the software is purchased this dialog box will no longer appear. Once purchased the dockable dialog box will also no longer appear unless called for by the command “BLOCKS”. This dialog box will not appear in the free version.



The 'BlockExtender Demo' splash screen is a standard Windows-style window with a title bar containing the text 'BlockExtender Demo' and a close button (X). The main area contains the following text and controls:

BlockExtender Demo

Thank you for downloading and trying out BlockExtender. As you are aware BlockExtender is designed to allow you to add your own grip/stretch points to any block you desire.

You have the option to setup the program to auto start the dockable interface or type "Blocks" at the command line. A dockable dialog box will appear. It has three tabs, "Dwgs", "Blocks", and "Edit"

To insert drawings from an external Drawing, select the "Dwgs" tab and use the file list box to find the dwg file you are looking for. Double click on the file you wish to insert. To turn off the drawing preview displays, Right click on the file list box and select "Hide..." Right click again and select "Show..." to turn it on again.

To insert a block already loaded in AutoCAD, click on the "Blocks" tab. The block list box will display all blocks already loaded. Double click on a block to insert.

To add grip/stretch points to a block select the "Edit" tab. All grips will now be...

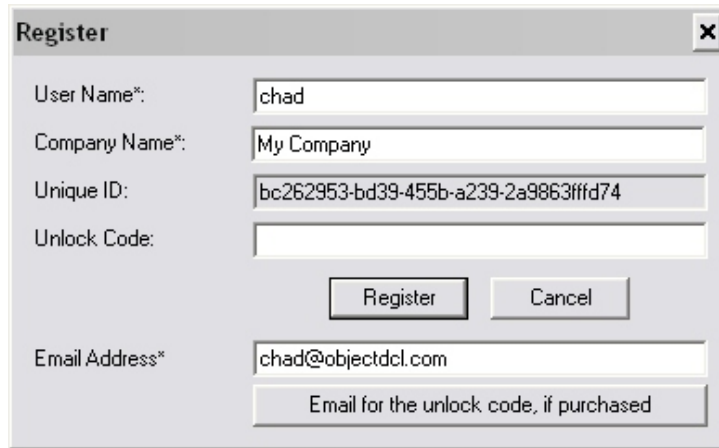
This trial version has 30 left before it expires.

☒ Auto start the dockable dialog box.

Register OK

Once The Full Version is Purchased

Once the software is purchased simply load the click on the “Register” button on the Demo splash screen. Or if a simple Yes/No message box appears explaining that the software has expired, click the “Yes” button. Now the registration dialog box below will be displayed.



The Register dialog box contains the following fields and controls:

Field Label	Value
User Name*	chad
Company Name*	My Company
Unique ID:	bc262953-bd39-455b-a239-2a9863fffd74
Unlock Code:	
Email Address*	chad@objectdcl.com

Buttons: Register, Cancel

Link: Email for the unlock code, if purchased

Please enter you name, company and your email address. These will probably be already filled in for you from the trial setup screen. Notice the third edit box from the top that is grayed out, called Unique Id. This is part of the unlocking system and identifies your computer from others. The top three pieces of information are used to create the unlock code. Once you have the unlock code click on the “Register” button and the software will then be locked to your computer.

As an aid to unlocking the software we have placed the “Email for unlock code, if purchased” button at the bottom. The information above will be emailed to 3rd Day Software so the unlock code can be created and sent back to you by email. Please ensure your correct email address is provided so you may receive the unlock code.

Transferring Unlock Codes to another Computer

To transfer the unlock code to another computer a command called “ITRANSFER” has been supplied. Once activated the dialog box below will be displayed. Now the data that is to be entered is the user name company name and the Unique ID from the computer to be transferred to. To get the unique id from the computer to be transferred too, simply go through the process of registering. From the register screen copy the unique id out and copy it into the “Unique ID” field in the dialog show below. Once completed click on the “Email for the unlock code”. An email will be sent to 3rd Day Software and they will email back the new unlock code. Once that button is clicked and the email sent successfully the software will be unregistered from the computer’s system and no longer useable.



The Transfer dialog box contains the following fields and controls:

Field Label	Value
User Name*	Chad
Company Name*	3rd Day
Unique ID from other computer*:	bc262953-bd39-455b-a239-2a9863fffd74
Unique ID from this computer:	af1dfb99-dadd-4860-a50f-a7226c976e80
Email Address*	chad@objectdcl.com

Buttons: Email for the unlock code, Cancel

Free Version and Full Version

The free version of BlockExtender comes complete with a full drawing and block manager/viewer found in the full version. Two tabs are provided "Dwg" and "Blocks". The "Dwg" provides the ability to list directories and shows the preview images of each drawing found (As Shown to the right). The "Blocks" tab shows a list of all the blocks loaded in the current drawing. Each tab have a preview button that you can use to activate a full preview of the drawing or block, complete with that ability to pan, zoom and orbit around in the drawing or block. To find out more, read the next three topics.

The Free version is to be sent along with any intelligent block drawing files that you might send to any external company or user that will be viewing or working with your intelligent block drawings.


Inserting Dwg Blocks

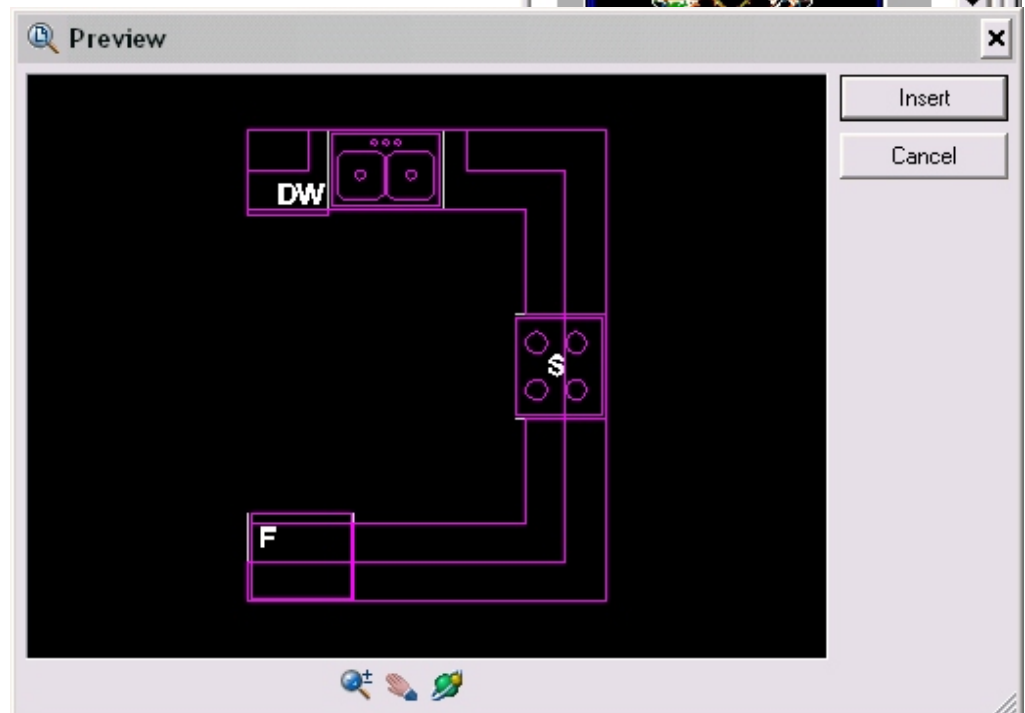
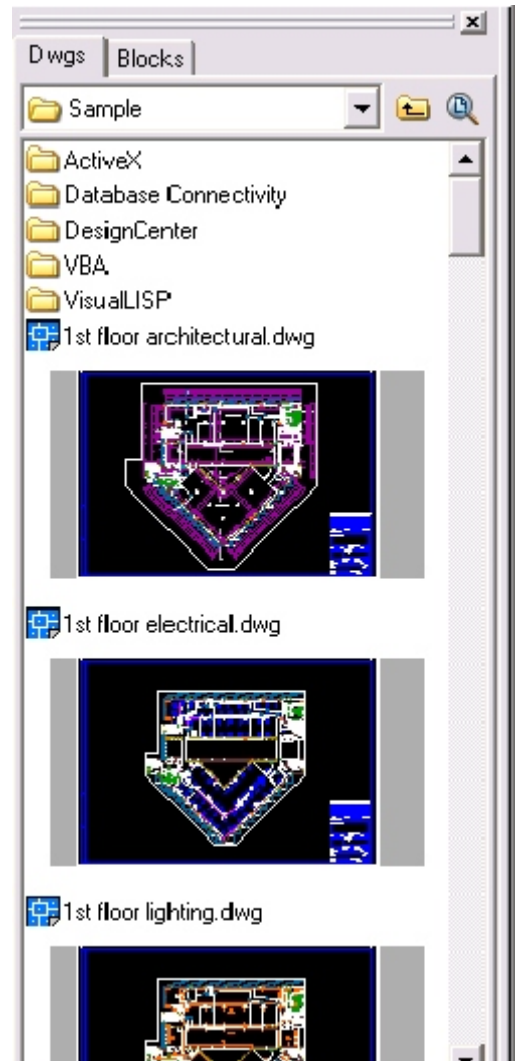
To insert drawings from an external Drawing, select the "Dwgs" tab and use the directory list box to find the drawing file you are looking for. Double click on the file you wish to insert.

As you will notice the file list box displays the drawings below each file name. This is a quick and easy way to display view and search drawings.

If you wish to turn off the drawing preview displays, Right click on the file list box and select "Hide...". Right click again and select "Show..." to turn it on again.

Previewing Drawings


Each drawing can be previewed in greater detail. Simply select the file you wish to preview and select the  icon button. Once the drawing is displayed you can use the three button below the image to zoom, pan and orbit the drawing to inspect the drawing in more detail.



Inserting Existing Blocks

To insert a block already loaded into an AutoCAD drawing, click on the "Blocks" tab. The block list box will display all blocks already loaded. Double click on a block to insert.

The block list will display the block preview icon for each block found. If the block does not have a block preview set, it will display AutoCAD's standard block icon image in its place.

Just as in the "Dwgs" tab, you can preview a block to inspect it for more detail. Simply click on the  button icon.



Editing Blocks (Full Version)

With BlockExtender, blocks become editable once grip/stretch points are added.

To add grip/stretch points to a block select the "Edit" tab. All available grip/stretch types will now be shown to you. Since this version is a Beta version, more grip/stretch point styles will be added later to provide more functionality.

Each grip/stretch point will define how to stretch a portion of the block when stretching using grips or the stretch command. Any drawing entity that can be stretched, will be able to be stretched. Entities like 3D solids however cannot be stretched, so BlockExtender will be unable to stretch 3D solids. If you wish to create a 3d block, use 3D faces, ADT or similar entities that can be stretched to create your 3D block.

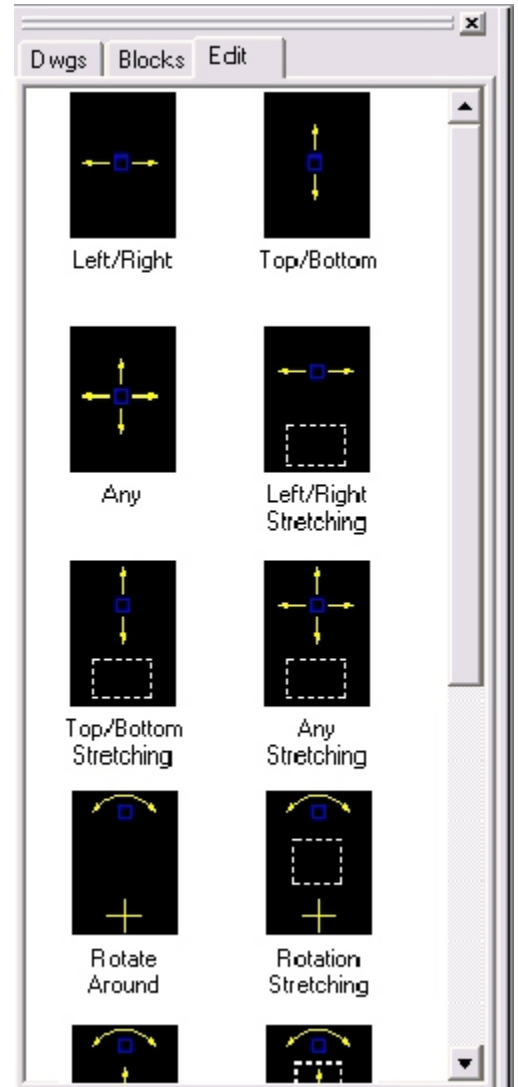
Stretching occurs by finding the stretch points of the drawing objects and modifying those stretch points. So if you put a grip/stretch point on the end of a line, only that end of the line will move. Simply put the grip/stretch points work on the drawing entities just as the stretch command does itself.

There are three main groups of grip/stretch points:

Simple grip/stretch points will move only the points directly under the grip/stretch point.

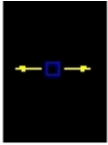
Simple grip/stretch points with stretching windows allow you to select the points of drawing entities by using a crossing window or crossing polygon. It will also move the points directly under the grip/stretch point.

Complex grip/stretch points are predesigned groups that behave in a defined pattern and work using two or more crossing windows/polygons.



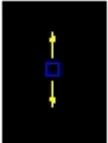
Grip/Stretch Points (Full Version)

There are many different grip/stretch point types. Since this version of BlockExtender is a Beta, more will be provided in later versions.



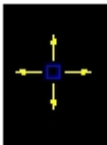
Left/Right

This grip/stretch point will move any point(s) under the grip to the left or right only. Note: If the block is rotated, the direction of movement rotates with the block.



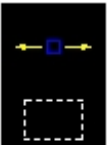
Top/Bottom

This grip/stretch point will move any point(s) under the grip to the up or down only. Note: If the block is rotated, the direction of movement rotates with the block.



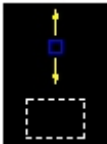
Any

This grip/stretch point will move any point(s) under the grip to in any direction. Note: If the block is rotated, the direction of movement rotates with the block.



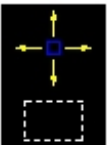
Left/Right
Stretching

This grip/stretch point will move to the left or right only. It allows you to select any drawing entity(s) for stretching using a crossing window or crossing polygon. The grip/stretch point will also move any point(s) under the grip as well. Note: If the block is rotated, the direction of movement rotates with the block.



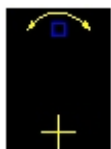
Top/Bottom
Stretching

This grip/stretch point will move to the up or down only. It allows you to select any drawing entity(s) for stretching using a crossing window or crossing polygon. The grip/stretch point will also move any point(s) under the grip as well. Note: If the block is rotated, the direction of movement rotates with the block.



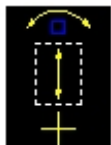
Any
Stretching

This grip/stretch point will move in any direction. It allows you to select any drawing entity(s) for stretching using a crossing window or crossing polygon. The grip/stretch point will also move any point(s) under the grip as well. Note: If the block is rotated, the direction of movement rotates with the block.



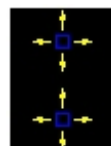
Rotate
Around

This grip/stretch point will rotate any point(s) under the grip around a center point.



Rotation, Radius
Stretching

This grip/stretch point will rotate any points around a center point. It allows you to select any drawing entity(s) for stretching/rotating using a crossing window or crossing polygon. The grip/stretch point will also rotate any point(s) under the grip as well.



Line Multi
Direction

This complex grip/stretch point combination is provided to duplicate the actions of a line or other linear object. The first point selected is the start point, the second point is the end point. The insert grip point is automatically displayed at the midpoint. Two crossing windows/polygons are used to select the start point entities and the end point entities, this will allow for correct rotation when one end is moved/stretched.

When selecting the points, pick the points in order like this. Left/Bottom to Right/Top, then in the same order pick the stretching windows, as show here.



Once the start and end points are selected, and the crossing windows/ polygons are also selected, you will be prompted to enter some dimensional guideline information.

This dialog will be displayed and you can enter an incremental value to force the length of the 2 points to snap to regular defined increments. You can also define minimum and maximum lengths.

2 Point Grips

Dimensional Information

☐ Multiple Incremental Values

Incrementation Value:

Minimum Length:

Maximum Length:

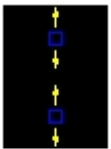
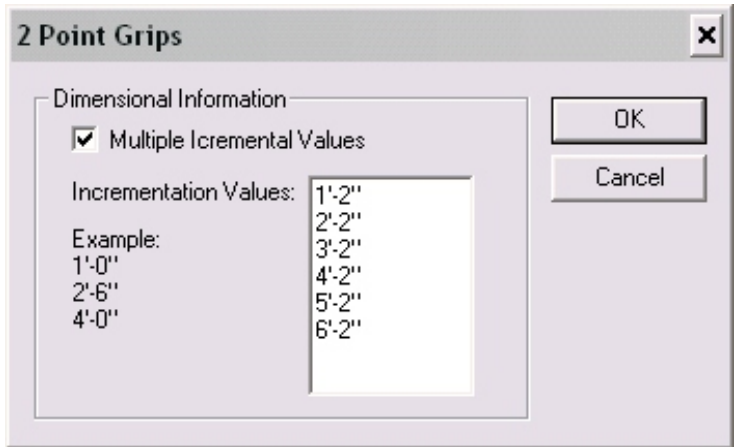
Note: A setting of 0 will indicate that the value should be ignored.

OK

Cancel

You can also click on the check box and you may enter any number of different and specific incremental dimension values that the length will only snap to.

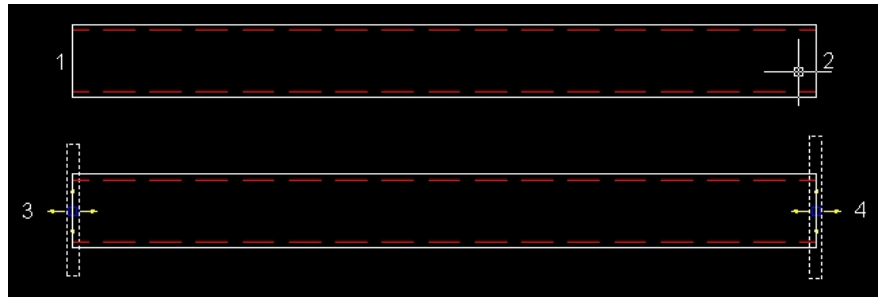
Please note: The units displayed by the edit boxes are based on the units set by the DDUNITS command.



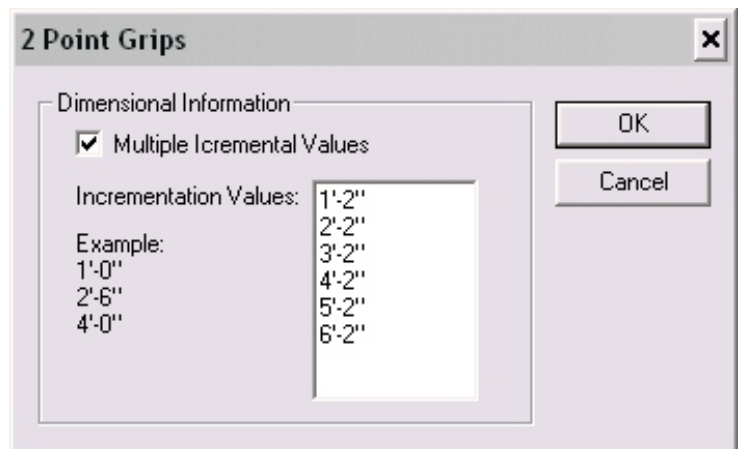
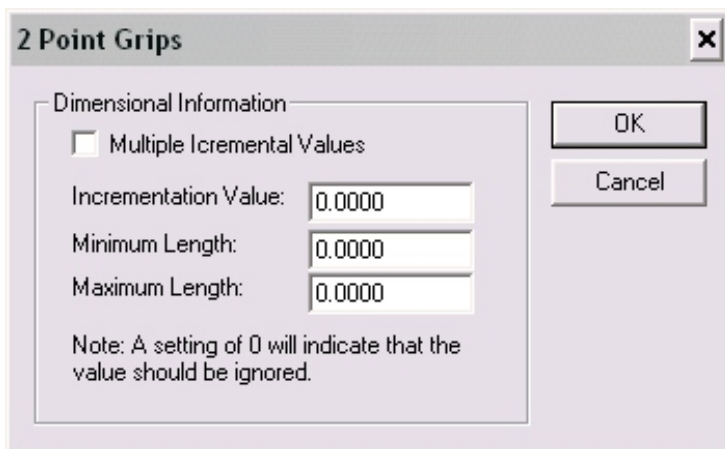
Line Single Direction

This complex grip/stretch point combination is provided to allow linear objects to be created that can only be stretched along a parallel path to the two grip/stretch points. This object can also be used in combination with other grip/stretch types to create complex behavior. The first point selected is the start point, the second point is the end point. The insert grip point is automatically displayed at the midpoint.

Two crossing windows/polygons are used to select the start point entities and the end point entities.

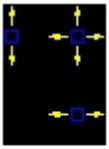


When selecting the points, pick the points in order like this. Left/Bottom to Right/Top, then in the same order pick the stretching windows, as show above.



Once the start and end points are selected, and the crossing windows/ polygons are also selected, you will be prompted to enter some dimensional guideline information.

The dialog above will be displayed and you can enter an incremental value to force the length of the 2 points to snap to regular defined increments. You can also define minimum and maximum lengths. Or click on the check box and you may enter any number of specific incremental dimension values that the length will only snap to.



Rectangle Formation

Please note: The units displayed by the edit boxes are based on the units set by the DDUNITS command.

Use the **gedit** command to edit / change the grips dimensional information after it's been created.

This complex grip/stretch point combination is provided to allow rectangular objects to be created. This object can also be used in combination with other grip/stretch types to create complex behavior. Three grip/stretch points are displayed from the rectangular selection set. Two crossing windows/polygons are used to select the vertical stretching point entities and the horizontal stretching entities, this will allow for correct stretching when one or both sides are moved/stretched.

The below dialog will be displayed and you can enter an incremental value to force the height and widths of the rectangle to snap to regular defined increments. You can also define minimum and maximum height and widths.

Click on the "Multiple Incremental Values" check box and you may enter any number of specific incremental dimension values for the height and widths to snap only to.

Please note: The units displayed by the edit boxes are based on the units set by the DDUNITS command.

Use the **gedit** command to edit / change the grips dimensional information after it's been created.

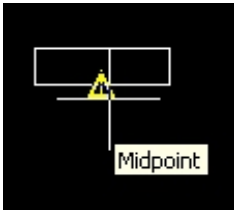
Arraying Objects Example (Full Version)

Arraying objects in a block can be used to create customizable blocks like stairs or screws with threading. This step by step procedure will demonstrate how to create a stairs customizable block.

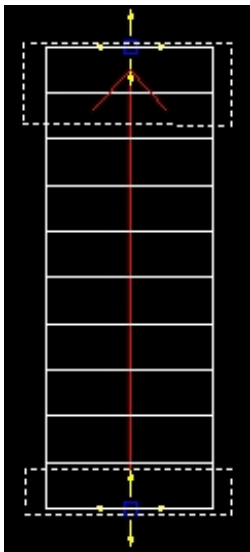
1. Draw the first stair.



2. Use the BLOCK command and create a block called “Stair” and select the objects you have just drawn. Set the insert point to the middle of the bottom line.



3. Now use the command MINSERT and insert the block “Stair”. Follow the instructions in the command line until you are requested “Enter number of rows (---) <1>:” at the command line. Enter your default value.
4. Now you will requested “Enter number of columns (|||) <1>:”, enter the value 1.
5. Now you will requested “Enter distance between rows or specify unit cell (---):” enter the vertical distance of the stairs, in my example I entered 10 inches.
6. Now using the *Line Multi Direction* grip style set the start and end points, one around the base of the stairs and one around the top of the stairs, as show below.



7. Save the file.
8. Create a new drawing and insert the block just created.

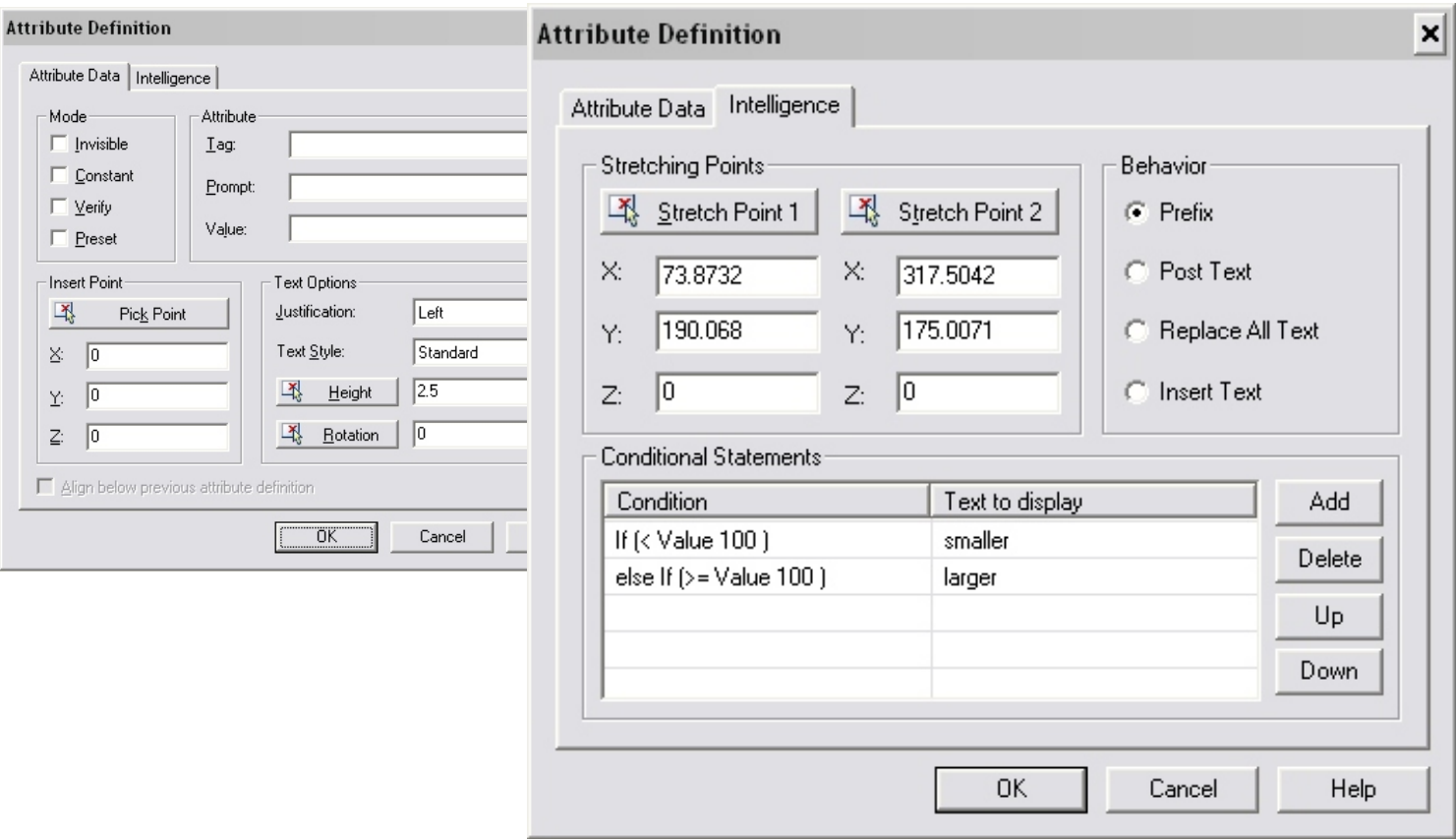
Intelligent Attributes (Full Version)

Intelligent Attributes are provided in BlockExtender to allow you to create attributes that display different text based on the distance between two points.

There are two commands to work with intelligent attributes and they are:

- iattdef** - the command to create a new intelligent attribute.
- iattedit** - the command to edit an existing intelligent attribute.

When activating either command a dialog box is displayed as shown below:



This dialog box is show for both commands. The first tab (shown on the left) is basically the same as AutoCAD attdef command’s dialog box. This tab functions the exact same as the attdef command. The second tab labeled “Intelligence” (shown on the right) is where you define the intelligence the attribute is to have.

Stretching Points:

Stretching points are used to define the two points that the attribute will used to determine a possible course of action.

Behavior:

The behavior option buttons allow you to define who the text defined by the user will be modified for each condition. This means that you can assign a different “Behavior” to each conditional argument found in the “Conditional Statements”. There are four options. Prefix will place the text found in the “Text to display” column before the user’s assigned text value. “Post Text” will place it after. “Replace All Text” will completely replace the user’s text. “Insert Text” is more interesting. This option allows you to define text to be inserted into the user’s

assigned text or allow the user's assigned text to be inserted into text from the "Text to display" column. To assign how to replace text, simply place a '\i' where you wish to insert text. To insert into the user's assign text value simply ensure the user places a '\i' in his text so the insertion can take place. More realistically insert the '\i' in the "Text to display" text. This last option will be the more commonly used.

Conditional Statements:

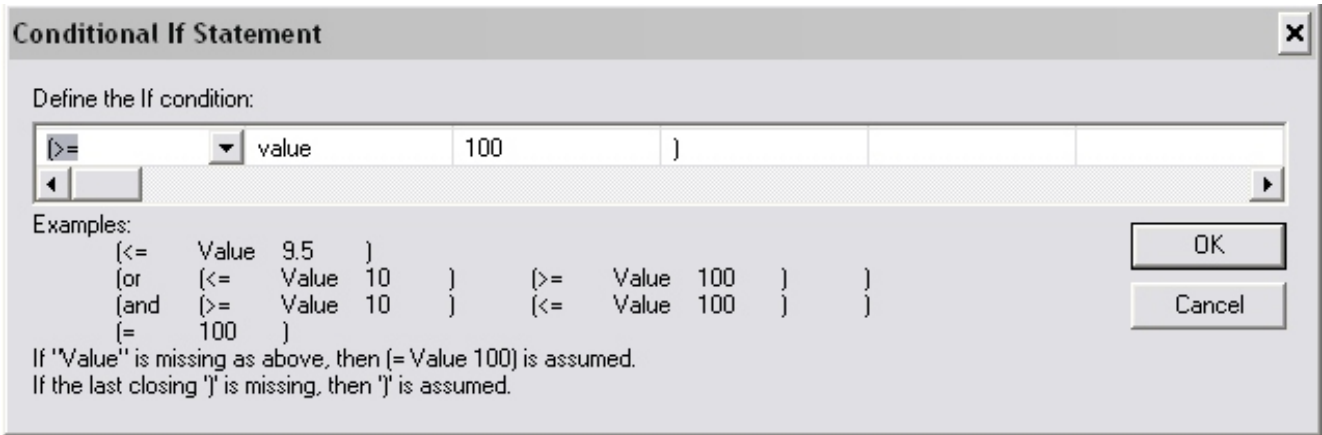
The conditional statements list box is used to create and assign your conditions. The left column indicates the formula to be used. The right column indicates the text to be inserted or for replacement if that condition is met or exists. The order of statements is important, the first statement is checked, if it is found to be true then the text is inserted or replaced. No other statements are then checked. The process checks each statement from top to bottom until only one conditional statement is found to be true.

Conditional Statements Buttons:

The conditional statements are used to add and remove equations/rows. The up and down buttons are user to reorder the conditional statements.

Editing/Adding Conditional Equation:

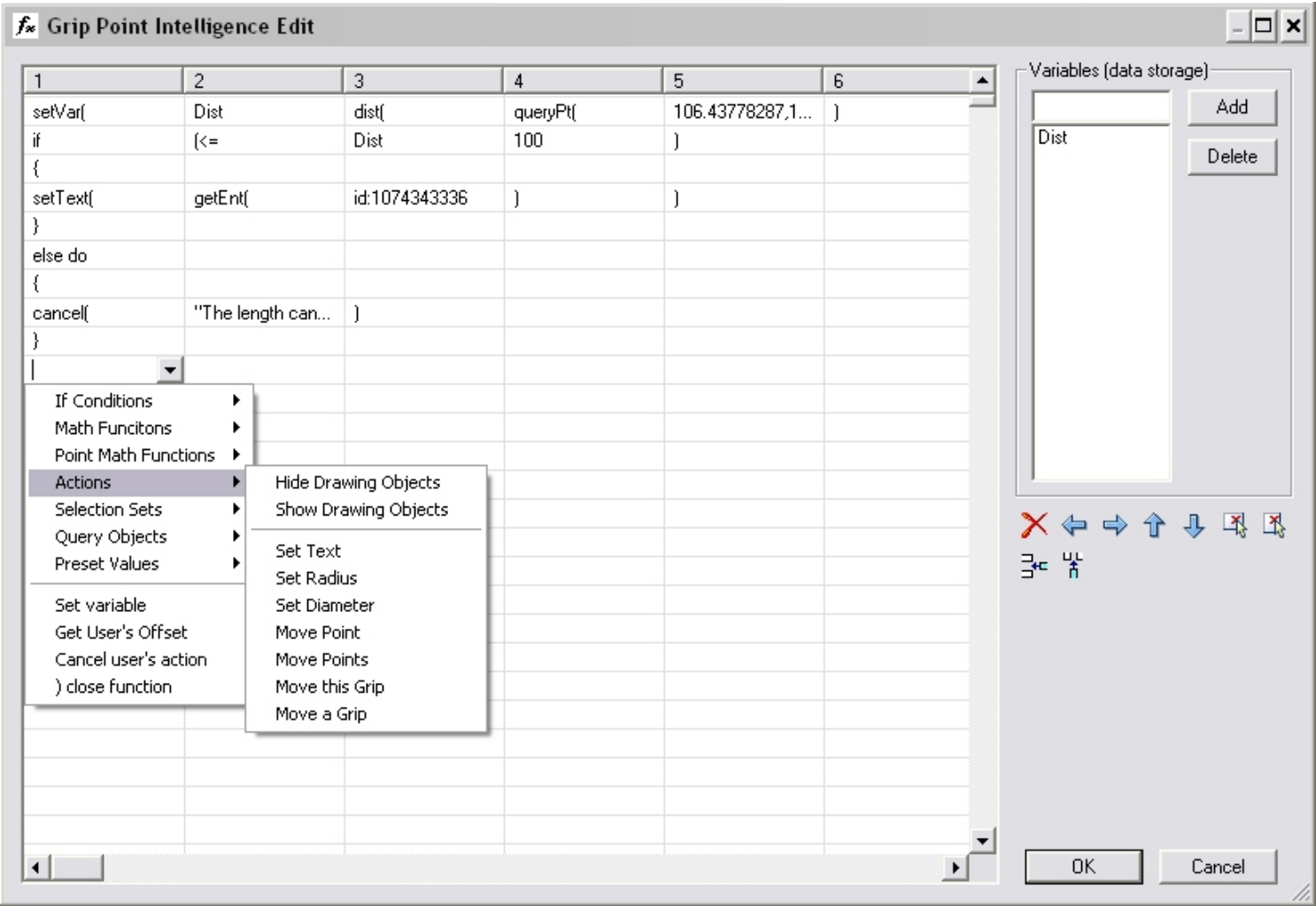
To edit or add a conditional equation simply click on the left column of the Conditional Statements grid / list box and a new dialog box will appear showing you a new grid to create or edit your equation.



Each cell is used to identify a different conditional function or value. As each cell gains focus a drop down arrow will appear showing you the functions available to you. The word "value" is used to extract the distance between the two stretching points to be tested against any other numeric value you may assign. The example above is defined as 'if the distance between the two stretch points is equal to or greater than 100'.

Intelligent Grip Points (Full Version)

Intelligent grips can be creating using the command **iedit**. **iedit** first prompts you to select a grip point to modify. Then it will display a spread sheet like dialog box where you design and define formulas used by the grip point during a stretch made by the user using any command.



As in intelligent attributes each cell specifies a specific function or value. The second part of the dialog box organizes the Variables. Variables are defined as storage devices or units used to temporarily store some data for later use by the formula. A comparable way to explain it is using algebra as an example.

$$x = y * 10$$

In this example x and y are both variables that represent unknown values. x is a variable that has not been set yet and y is a variable that has been previously set. So if y = 9, then the result of the algebraic equation will be 90. This is the way intelligence is setup using the **iedit** command, simply create algebraic equations.

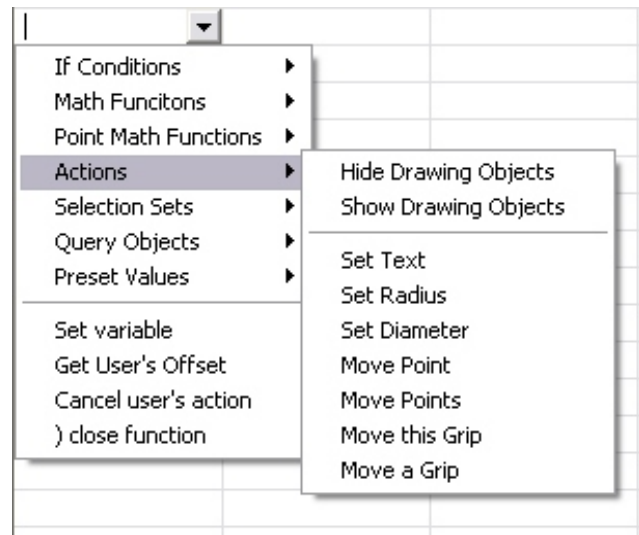
It is a little more complicated with many different types of functions available. A function is a specific instruction for the program so it will know what to do or calculate next. In addition to the usual math functions you would find on a calculator; There are *if* conditional functions to test a value(s) to see what course of action to take. There are functions that query objects in the block for data. There are functions that will modify objects in the block like hiding, showing, changing text, radius, position, etc.

Drawing objects in the block (also called entities) can be easily queried or modified using several different functions, but each entity call is wrapped up in a function call `getEnt(...)`. This function keeps track of the entity so when it comes time to query or modify that entity(s) it can be done. The entity identifier is simple, it starts with 'id:' and ends with a long number. If you wish to change a selected entity simply select the spread sheet cell and click on the "Pick an entity" button (it's the farthest right button below the variables).

Certain points in a block can also be easily modified or queried. Usually when you insert the appropriate function it will place one of the functions `getFence(...)` or `queryPt(...)` or `getAtPoint(...)`. `queryPt(...)` will retrieve the current location of a single point, this is useful especially because the original location of that point may have been moved by a grip point. `getFence(...)` Allows you to get a collection of one or more points defined by a selecting crossing window or polygon. `getAtPoint(...)` Is similar to `queryPt(...)` in that it retrieves a point but is used to get drawing entities and their stretch points and supply them to another function that modifies the location of that point. `queryPt(...)` Is used to get only the current location of a point.

Function Lookup (Full Version)

Looking up function is quite easy. Each time you edit a cell in the spread sheet a drop down arrow is displayed. Clicking on that drop down will display a drop down menu. From this menu you can select a topic to lookup or select one of the functions as the button. The cell you are editing will then be modified to display the function you have selected. Some of the functions interact directly with a point or drawing entity in the block, in these cases the dialog box will be hidden and you will prompted to select something on screen. Once completed the dialog box will reappear automatically.



Some of the functions are quite powerful like 'hide' and 'show'.

Functions Syntax

Functions must be written in specific way. Each function starts and ends with a parenthesis (). Most functions will be written as shown below:

```
queryPt(      166.00,218.00,0      )
```

Most functions require some kind of input data to allow them to pass back an answer, this is the reason why data must be placed inside the brackets. A few functions that do not require any input arguments are written as shown below all in one single spread sheet cell:

```
getThisPoint()
```

The math and conditional/test functions are written slightly differently as shown below:

```
(= variable 100)
(* variable 25.4)
```


Rotation, Scaling and Mirroring of Blocks.

Blocks as you know can be rotated, scaled and mirrored. How does this effect the calculation formulas of an intelligent block. They don't. The coordinates and offset data you will deal with are all in the block's drawing space and not in Model Space or Paper space. This is accomplished by correctly translating the data as it is process so you don't have to.

Intelligence Examples (Full Version)

To find examples of formulas put together and put to use in blocks, please see the Formula Examples.pdf file.

FAQ

- Q. Why do I see the grips in my blocks?
A. When the "Edit" tab is selected, the grips will always be shown. Select another tab and the grips will disappear.
- Q. I have sent my drawings with intelligent blocks in them to another company and they can see the blocks. What do I do so they can see them?
A. The Free version of BlockExtender is to be sent along with your drawing with any embedded intelligent blocks you might send to any external company or user that will be viewing or working with your drawings. The free version can be easily download from www.objectdcl.com/free.html.
- Q. When I create a block using the block command my little block preview icon shows the grips. Yet I do not wish to show these grips. How do I create the block in the drawing and now show the grips?
A. The solution is a two step process. When you are selecting the drawing objects that are to be included in the block switch the tabs in the dockable dialog box to "Edit" and select everything including the grip points. Before you press enter, switch the tabs in the dockable to the "Dwgs" or the "Blocks" tabs, then press enter and complete you block. Doing the steps in this order will allow you to hide the grips when the block is created but still allow you to select the grips to be included in the block.
- Q. I exploded a block and all the grips disappeared. Why?
A. The blocks do not keep their grips when exploded because usually one someone wishes to explode the block they wish to manipulate the drawing objects to create a new but similar drawing, etc. Because of this it was decided not to retain the grips in the drawing after the block is exploded because the user would normally have to erase the grips they no longer need nor would want in the drawing.
- Q. I have upgraded my ADT / Mechanical Desktop / AutoDesk Map program and now BlockExtender isn't loading.
A. The upgrade has created new data in the registry that did not exist at the time BlockExtender was installed. There are one possible solution, follow the instructions for manually loading the BlockExtender files found on the first page of this pdf help file.

3rd Day Software

P.O. Box #808

Grande Cache, Alberta, Canada

T0E 0Y0

www.objectdcl.com/BlockExtender.html

sales@objectdcl.com