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# File

The "File" menu is used to save and retrieve drawings from disk.

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Open...

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# New

## CREATING A NEW DRAWING:

If you are currently editing a drawing and would like to start a new drawing then select "New" from the "File" menu. The contents of the drawing area is cleared and you are placed in a blank drawing.

If you select the "New" item from the "File" menu and the drawing you are currently working on has not been saved then a message box will appear and ask if you want to save the current drawing. If you select "No" any changes you have made to the current drawing will be lost. Selecting "Cancel" ends the "New" command and returns you to the current drawing. If you select "Yes" then the drawing will be saved to the file name you specified previously. If no previous name was specified then you will be prompted for a name to save the drawing to. After saving the file you are placed in a new drawing.

# Open...

## OPENING AN EXISTING DRAWING:

If you want to continue editing a drawing you created previously then you do so by selecting the "Open" command from the "File" menu. This brings up the file selection dialog. Select the proper drive and directory from the drive and directory lists and then select one of the files from the file name list and click on the "OK" button. The drawing in the given file will then be displayed in the drawing area. You must select an existing file with this option. You can now edit the elements in the displayed drawing or add more elements if desired.

If you select the "Open" item from the "File" menu and the drawing you are currently working on has not been saved then a message box will appear and ask if you want to save the current drawing. If you select "No" any changes you have made to the current drawing will be lost. Selecting "Cancel" ends the "Open" command and returns you to the current drawing. If you select "Yes" then the drawing will be saved to the file name you specified previously. If no previous name was specified then you will be prompted for a name to save the drawing to. After saving the file the file open dialog will be displayed.

# Save      Ctrl+S

## SAVING THE DRAWING:

Once a filename has been specified for a drawing you can save it to that same file by selecting "Save" or by pressing CTRL+S. There are no further prompts when using the "Save" command. The "Save" option is grayed out and unselectable until a filename has been specified for the drawing with the "Save As" option.

When a drawing is saved all the undo levels are removed. This means that previous operations cannot be undone after a save has been performed. This is done to free up the memory used by the undo feature.

# Save As...

## SAVING THE DRAWING TO A SPECIFIED NAME:

The "Save As" option brings up a file selection dialog box. To specify a filename select a drive from the drive list and a directory from the directories list. Then type in the name of the file in the file name box. You do not have to specify an extension for the file name. If you do not specify one the extension ".dwg" will be appended to the name you enter. It is recommended that you use a ".dwg" extension on all your drawing files so they will appear in the list of file names in the file selection dialog. If you enter an existing file name the program will warn you and ask if you want to replace it. Selecting "Yes" will completely replace the contents of the file with the current drawing. The previous drawing in the file will be lost. The file name dialog will not allow you to enter an invalid path or file name. When the desired drive, path and file name have been entered select the "OK" button and the current drawing will be saved to the given file.

When a drawing is saved all the undo levels are removed. This means that previous operations cannot be undone after a save has been performed. This is done to free up the memory used by the undo feature.

# Plot...

## PLOTTING THE DRAWING:

The drawing may be plotted to the current print device using the "Plot" command on the "File" menu. The print device is set using the Windows Control Panel and it can be a printer or a plotter. When this option is selected a plot scale dialog is displayed. The drawing may be plotted to scale or the current drawing area can be "fit" to the available plot area on the output device.

To fit the drawing area to the plot page click on the "Fit plot to page" check box so that the box is checked and then select the "OK" button. The current drawing area will then be sent to the current print device and displayed as large as possible on the page. The scale of the drawing will be adjusted to allow the drawing area to be displayed as large as possible. The plot scale value set in the dialog is ignored.

To plot the drawing to scale you enter the desired scale in the dialog and select the "OK" button. The drawing will then be plotted at the scale specified. The "Fit Plot to page" check box must be unchecked for this plot method.

For both of these plot methods the origin of the plot is set to the lower-left corner of the drawing area. This means you must zoom and pan the drawing using the "View" menu to get the desired plot origin point at the lower left of the drawing area.

When the "OK" button is pressed in the plot scale dialog another dialog box is displayed while the plot is being created. This dialog has one button, "Cancel". Pressing this button will cause the plot operation to be canceled. If this button is not selected then the plot is created and sent to the Print Manager. For more information on the Print Manager see your Windows manual.

If you have configured Windows to use "English" units then your plot scale specifies the number of drawing units per inch. If you have configured Windows to use "Metric" units then the plot scale specifies the number of drawing units per centimeter. The "International" option on the Windows Control Panel is used to set this parameter. Select the desired units from the "Measurement" field. See your Windows manual for more information.

This program does not care what units you use in the drawing. They can be anything. The plot scale is used to relate the drawing units to known sizes.

# Exit

## EXITING THE PROGRAM:

To exit the program simply select "Exit" from the "File" menu.

If you select the "Exit" item from the "File" menu and the drawing you are currently working on has not been saved then a message box will appear and ask if you want to save the current drawing. If you select "No" any changes you have made to the current drawing will be lost. Selecting "Cancel" ends the "Exit" command and returns you to the current drawing. If you select "Yes" then the drawing will be saved to the file name you specified previously. If no previous name was specified then you will be prompted for a name to save the drawing to. After saving the file the program will exit.

# Edit

The "Edit" menu is used to modify existing drawing elements.

Undo    Ctrl+Z

Select    Ctrl+E

Cut    Ctrl+X

Copy    Ctrl+C

Paste    Ctrl+V

Delete

Rotate...

Scale...

Change...    Ctrl+H

List...

Clear Selection

# Undo      Ctrl+Z

UNDOING CHANGES TO THE DRAWING:

The "Undo" option on the "Edit" pull down menu can be used to undo edit operations. If there are no edit operations that can be undone then the "Undo" option is grayed and unselectable.

All of the commands on the "Edit" menu can be undone with the exception of "Select", "Copy", "List" and "Clear Selection". You also cannot undo an "Undo" command. The commands on the "Draw" menu can also all be undone.

# Select      Ctrl+E

## SELECTING DRAWING ELEMENTS:

All of the options on the "Edit" menu (with the exception of "Undo", "Select" and "Paste") require that one or more drawing elements be selected first. They are grayed out and unselectable if no drawing elements are selected. To select elements pick the "Select" option off of the "Edit" menu. The prompt area will then display:

Select first corner of selection area

MOUSE: position cursor, press left button. Right button for...

KEYBOARD: position with arrow keys, press Enter. F2 for...

When selecting drawing elements you input opposite corners of a rectangular area and all elements that fall within this area or cross it will be selected. You may pick any corner of the area first. After selecting the first corner the first line of the prompt area becomes:

Select second point

Now you must enter the diagonally opposite corner of the selection area rectangle. As you move the cursor a box is displayed with one corner at your first selection point and the opposite corner at your current cursor position. This represents the area that would be used for the selection if the current cursor position was used for the second point.

When the second point is selected the program displays the elements that are inside or cross the selection area in the selection color. These are the selected elements. The selection color is initially set to light gray but it can be changed using the "Selection Set Color" item on the "Options" menu.

# Cut      Ctrl+X

## MOVING DRAWING ELEMENTS:

Elements within the drawing can be moved from one position to another by using a combination of the "Cut" and "Paste" options on the "Edit" menu. To move a drawing element first select the element(s) you want to move. See the section on selecting drawing elements for information on how to do this.

Once the desired elements have been selected pick the "Cut" command off of the "Edit" menu. The prompt area will display:

Select cut reference point

MOUSE: position cursor, press left button. Right button for...

KEYBOARD: position with arrow keys, press Enter. F2 for...

The point you pick will correspond to the alignment point you select when you perform the paste operation. Once the reference point has been entered the selected elements will be erased from the display and deleted from the drawing.

# Copy      Ctrl+C

## COPYING DRAWING ELEMENTS:

Elements within the drawing can be copied to another position by using a combination of the "Copy" and "Paste" options on the "Edit" menu. To copy a drawing element first select the element(s) you want to move. See the section on selecting drawing elements for information on how to do this.

Once the desired elements have been selected pick the "Copy" command off of the "Edit" menu. The prompt are will display:

Select copy reference point

MOUSE: position cursor, press left button. Right button for...

KEYBOARD: position with arrow keys, press Enter. F2 for...

The point you pick will correspond to the alignment point you select when you perform the paste operation. Unlike the "Cut" command the "Copy" command does not erase the selected elements. They remain in the drawing where they were.

# Paste      Ctrl+V

PASTING IN DRAWING ELEMENTS:

Select "Paste" from the "Edit" menu. The prompt line will display:

Select paste alignment point

MOUSE: position cursor, press left button. Right button for...

KEYBOARD: position with arrow keys, press Enter. F2 for...

As I mentioned before the paste alignment point corresponds to the copy reference point. When an alignment point is selected the elements copied previously are drawn at the new position and added to the drawing.

The elements may be pasted as many times as desired at any location in the drawing area. To end the paste command select another command from the menu or click the right mouse button and select "End" from the dialog.

The copy operation copies the selected elements to the Windows Clipboard. The paste operation retrieves them from the Clipboard and inserts them into the drawing. The "Paste" option is grayed out and unselectable if no data has been cut or copied to the clipboard. This program uses a private data format when it stores data in the clipboard so that it can store all the information about the drawing elements (i.e. actual coordinates, line type, width, color, text properties, etc.).

# Delete

## DELETING DRAWING ELEMENTS:

To delete drawing elements you first select the elements to delete (see the section on selecting elements). Then you select "Delete" from the "Edit" menu. The selected elements are deleted from the drawing and erased from the drawing area.

# Rotate...

## ROTATING DRAWING ELEMENTS:

To rotate drawing element you first select the elements to rotate (see the section on selecting elements). Then you select "Rotate" from the "Edit" menu. The prompt area then displays:

Select rotation center point

MOUSE: position cursor, press left button. Right button for...

KEYBOARD: position with arrow keys, press Enter. F2 for...

Pick a position that you want to rotate the selected elements around. Next a dialog is displayed that allows you to enter the desired rotation angle. Enter the angle in degrees counter-clockwise and click on the "OK" button. The selected elements will then be rotated about the given center point by the given angle.

The program continues to prompt you for a rotation center point. You can pick another point and rotate the elements again or end the command by clicking the right mouse button and selecting "End" from the dialog.

# Scale...

## SCALING DRAWING ELEMENTS:

This command is used to increase or decrease the size of drawing elements.

To scale drawing elements you first select the elements to scale (see the section on selecting elements). Then you select "Scale" from the "Edit" menu. The prompt area then displays:

Select scale reference point

MOUSE: position cursor, press left button. Right button for...

KEYBOARD: position with arrow keys, press Enter. F2 for...

Pick a position that you want to scale the selected elements from. Next a dialog is displayed that allows you to enter the desired scale factor. A factor greater than one increases the size of the selected elements and a factor greater than 0 but less than 1 reduces the size of the elements. For example a scale factor of 2 doubles the size of the elements. A scale factor of 0.5 halves the size of the elements. When the desired scale factor has been input click on the "OK" button. The selected elements will then be scaled about the given reference point by the input scale factor.

The program continues to prompt you for a scale reference point. You can pick another point and scale the elements again or end the command by clicking the right mouse button and selecting "End" from the dialog.

# Change... Ctrl+H

## CHANGING DRAWING ELEMENT PROPERTIES:

To change the properties of drawing elements you first select the elements to change. Then you select "Change" from the "Edit" menu or press Ctrl+H. This will bring up a dialog that allows you to select what property you want to change. You can only change one property at a time. To select a property click on its radio button and then click on the "OK" button.

The program will then bring up a dialog that allows you to specify the new property. These dialogs are the same ones used in the corresponding selections on the "Options" menu. See the appropriate section under "Drawing Element Properties" in this manual for more information on using these dialogs.

When the new property is specified the selected elements are changed. You will have to clear the selection set (see that section) in order to see color changes since the current selection set is always drawn in the selection set color.

# List...

## LISTING DRAWING ELEMENTS:

With the "List" option on the "Edit" pull down menu you can display the properties for selected elements. First select the elements to list and then pick "List" from the "Edit" menu. A dialog with the properties for the first element in the selection set is displayed. Select "OK" to display the next element's properties or "Cancel" to quit.

# Clear Selection

CLEARING THE CURRENT SELECTION:

To clear the current selection and display the selected drawing elements in their actual color select "Clear Selection" from the "Edit" menu.

# Draw

The "Draw" menu is used to create new drawing elements.

Line    Ctrl+L

Arc    Ctrl+A

Circle    Ctrl+I

Point    Ctrl+P

Text    Ctrl+T

# Line      Ctrl+L

## CREATING LINES:

Lines are drawn by entering their start and end points.

To Draw a line all you have to do is select "Line" from the "Edit" pull down menu or you can press Ctrl+L. The prompt area will then display:

Select first end point of line

MOUSE: position cursor, press left button. Right button for...

KEYBOARD: position with arrow keys, press Enter. F2 for...

After entering the first end point the first line of the prompt area changes to:

Select second point

As you move the cursor a line is drawn from the first point to the current cursor position which represents the line that would be added to the drawing if the current cursor position is used for the second end point. When the second end point is specified a line with the designated start and end points is added to the drawing. It is displayed using the current line properties in affect.

The program continues to prompt you for a second point. If you wish to draw another line that starts at the end of the previous one then you simply select the second end point of that line.

To end line input you can select another operation from the main menu (except those on the "Options" menu) or you can click the right mouse button (or press F2) and select "End" from the dialog box that appears.

See the section on "Specifying Positions" for more information on entering the line end points. See the section on "Line Properties" for more information the different types of lines that can be drawn.

# Arc     Ctrl+A

## CREATING ARCS:

Arcs are drawn by specifying their start, center and end points. They are always drawn in a counter-clockwise direction.

To Draw an arc all you have to do is select "Arc" from the "Edit" pull down menu or you can press Ctrl+A. The prompt area will then display:

Select first end point of arc

MOUSE: position cursor, press left button. Right button for...

KEYBOARD: position with arrow keys, press Enter. F2 for...

After entering the first end point the first line of the prompt area changes to:

Select center point of arc

After entering the center point the first line of the prompt area changes to:

Select second end point of arc

As you move the cursor an arc is drawn from the first point to the current cursor position around the given center point in a counter-clockwise direction. This represents the arc that would be added to the drawing if the current cursor position is used for the second end point. When the second end point is specified an arc with the designated start and end points is added to the drawing. It is displayed using the current line properties in affect.

The program continues to prompt you for the first point of an arc. If you wish to draw another arc then you can enter it at this point.

To end arc input you can select another operation from the main menu (except those on the "Options" menu) or you can click the right mouse button (or press F2) and select "End" from the dialog box that appears.

See the section on "Specifying Positions" for more information on entering the arc points. See the section on "Line Properties" for more information on the different types of arcs that can be drawn.

# Circle      Ctrl+I

## CREATING CIRCLES:

Circles are drawn by specifying their center point and a point anywhere on the circle.

To Draw a circle all you have to do is select "Circle" from the "Edit" pull down menu or you can press Ctrl+I. The prompt area will then display:

Select center point of circle

MOUSE: position cursor, press left button. Right button for...

KEYBOARD: position with arrow keys, press Enter. F2 for...

After entering the center point the first line of the prompt area changes to:

Select point on circle

As you move the cursor a circle is drawn around the center point and through the current cursor position. This represents the circle that would be added to the drawing if the current cursor position was used. When the point on the circle is specified a circle with the designated center and circumference point is added to the drawing. It is displayed using the current line properties in affect.

The program continues to prompt you for the center point of the next circle. If you wish to draw another circle then you can enter it at this point.

To end circle input you can select another operation from the main menu (except those on the "Options" menu) or you can click the right mouse button (or press F2) and select "End" from the dialog box that appears.

See the section on "Specifying Positions" for more information on entering the circle points. See the section on "Line Properties" for more information on the different types of circles that can be drawn.

# Point      Ctrl+P

## CREATING POINTS:

Points are drawn by specifying their position.

To Draw a point all you have to do is select "Point" from the "Edit" pull down menu or you can press Ctrl+P. The prompt area will then display:

Select point position

MOUSE: position cursor, press left button. Right button for...

KEYBOARD: position with arrow keys, press Enter. F2 for...

When a position is specified a point is drawn using the current point properties in affect.

The program continues to prompt you for a point position. If you wish to draw more points then you can do so at this time.

To end point input you can select another operation from the main menu (except those on the "Options" menu) or you can click the right mouse button (or press F2) and select "End" from the dialog box that appears.

See the section on "Specifying Positions" for more information on entering the point positions. See the section on "Point Properties" for more information on the different types of points that can be drawn.

# Text     Ctrl+T

## CREATING TEXT:

Text is drawn by specifying the text alignment point and the desired text string.

To Draw text all you have to do is select "Text" from the "Edit" pull down menu or you can press Ctrl+T. The prompt area will then display:

Select text alignment point

MOUSE: position cursor, press left button. Right button for...

KEYBOARD: position with arrow keys, press Enter. F2 for...

When a position is specified the text string input dialog is displayed.

Enter the desired text and select the "OK" button. The text is then displayed using the current text properties in affect.

The program continues to prompt you for a text alignment position. If you want to enter more text strings then you can do so at this point.

To end text input you can select another operation from the main menu (except those on the "Options" menu) or you can click the right mouse button (or press F2) and select "End" from the dialog box that appears.

See the section on "Specifying Positions" for more information on entering the text alignment points. See the section on "Text Properties" for more information on the different types of text that can be drawn.

# View

The "View" menu is used to examine different parts of the drawing.

Zoom Window    Ctrl+W

Zoom Extents

Zoom Previous    Ctrl+P

Zoom Factor...

Pan

Redraw

# Zoom Window      Ctrl+W

ZOOMING IN ON AN AREA OF THE DRAWING:

To see an area of the drawing in more detail you use the "Zoom Window" option on the "View" menu. With this option you input a rectangular area within the display area and then that area is enlarged to cover the entire display area.

When you select "Zoom Window" from the "View" menu or press Ctrl+W the prompt area changes to:

Select first corner of window

MOUSE: position cursor, press left button. Right button for...

KEYBOARD: position with arrow keys, press Enter. F2 for...

You may select any corner of the area you want to enlarge. Once you have selected the first corner the prompt changes to:

Select second point

As you move the cursor a box is drawn from the first point you entered to the current cursor position. This box represents the area that will be enlarged if the current cursor position is selected. When the second point is selected the input area is enlarged as much as possible while still displaying the entire area you selected. If the area you input is of a different shape than the shape of the current drawing area then you may get some elements in the drawing area that were not in the area you selected and the enlargement may not be as much as you expected. Keep in mind that this command displays the entire area you select at a minimum. It will display more in one direction if necessary to display the entire area in the other direction.

# Zoom Extents

DISPLAYING ALL THE ELEMENTS IN THE DRAWING:

To display all the elements in the drawing within the drawing area use the "Zoom Extents" command on the "View" menu. This command will display all the drawing elements as large as possible within the drawing area.

# Zoom Previous      Ctrl+P

## RESTORING A PREVIOUS VIEW:

To display the previous view select "Zoom Previous" from the "View" menu or press Ctrl+P. If there is no previous view to restore then the "Zoom Previous" option is grayed and unselectable. Up to 10 previous views are saved and can be restored.

# Zoom Factor...

## ZOOMING IN AND OUT:

The drawing may be zoomed in (enlarged) and out (shrunk) using the "Zoom Factor" option on the "View" menu. When you select this option a dialog box appears that prompts you for a zoom factor. Specifying a number greater than 1 causes the drawing to be zoomed out. Specifying a number greater than 0 but less than 1 causes the drawing to be zoomed in. For example specifying a value of 2 causes the drawing area extents to be twice their current size and the drawing elements appear to be half their original size. Specifying a value of 0.5 causes the drawing area extents to be half their current size and drawing elements appear to be twice their original size.

The current center point of the display area remains in the center after the zoom.

# Pan

## PANNING THE DRAWING:

The drawing elements may be moved right, left, up and down in the drawing area while still maintaining the current zoom factor by using the "Pan" option on the "View" menu. Selecting this option changes the prompt area to:

Select first point to define the displacement

MOUSE: position cursor, press left button. Right button for...

KEYBOARD: position with arrow keys, press Enter. F2 for...

Pick a position within the drawing area that you want to move somewhere else. The first line of the prompt area changes to:

Select second point

Pick the position within the drawing that you would like the first point to be moved to. The drawing area will be redrawn with the drawing elements shifted by the specified amount.

# Redraw

REDRAW:

During the course of drawing and editing you may get extra tic marks and such within the drawing area that are not actually part of the drawing. To erase the drawing area and redraw only the elements actually in the drawing select "Redraw" from the "View" menu.

# Options

The "Options" menu allows you to set drawing element properties.

Line Color...

Line Type...

Line Width...

True Type Fonts Only

Text Font...

Text Angle...

Text Orientation...

Text Justification...

Point Color...

Point Type...

Point Size...

Selection Set Color...

Plot Scale...

Cursor Increment...

Element Snap...

Enter Coordinates... F2

# Line Color...

## SPECIFYING LINE COLORS:

To specify a line color select "Line Color" from the "Options" menu. To make a selection from the color input dialog simply click on the desired color (or highlight it using the arrow keys and press the spacebar). Then select the "OK" button. If a nonsolid color is selected the closest solid color is used instead. You must also be careful not to select colors that map to the solid color white since they will not be visible on the white background.

# Line Type...

## SPECIFYING LINE TYPES:

To specify a line type select "Line Type" from the "Options" menu. To select a line type click on the desired type (or use the arrow keys). The selected line type is displayed to the right. Click on the "OK" button (or press Enter) to use the displayed line type.

# Line Width...

## SPECIFYING LINE WIDTHS:

To specify a line width select "Line Width" from the "Options" menu. Enter the desired line width. This value is specified in drawing units and its displayed width will vary depending on the current drawing area extents. Specifying a width of 0 will cause the line to be drawn as thin as possible (1 pixel wide) no matter what the drawing area extents.

One important limitation is that only solid lines can have a width of more than one pixel. If a line type other than solid is selected then the current line width setting is ignored and the line is drawn with the specified type but at a 0 width.

# True Type Fonts Only

## TRUETYPE FONTS:

The font name is the main property affecting the appearance of a text string. It determines how the different characters in the string are drawn. Windows comes with several built in fonts. With version 3.1 of Windows TrueType fonts were introduced. It is recommended that you use these fonts exclusively. The program defaults to allowing the selection of TrueType fonts only. The TrueType fonts work much better with this program than some of the other Windows fonts. You can use the other fonts available to Windows if you choose by clicking on the "TrueType Fonts Only" item on the "Options" pull down. This will remove the check mark next to that item and when you select "Text Font" from the "Options" menu it will display all the fonts available to Windows in the "Font Name" list. The "TrueType Fonts Only" selection only affects the fonts list in the "Text Font" option. It does not change any existing text strings in the drawing. When the check mark is present to the left of "TrueType Fonts Only" then only TrueType fonts are listed by the "Text Font" option. When there is no check mark present then all fonts are listed. The drawing may or may not already contain fonts other than TrueType fonts. This toggle does not change existing text strings.

# Text Font...

## SELECTING A TEXT FONT:

Text strings have the following properties:

1. Font name.
2. Font style.
3. Size.
4. Effects.
5. Color.
6. Angle.
7. Orientation.
8. Justification.

The first 5 text properties are all specified using the "Text Font" selection on the "Options" menu. To select the font name click on the desired font name from the list. You can scroll the list up and down by clicking on the scroll arrows if the list is longer than the number displayed. To select a font style click on the desired style. The font size, effects and color can be specified in the same way. A sample of the currently selected font is displayed in the lower right of the dialog. When you have input the desired text properties click on the "OK" button.

The parameters in this dialog are pretty self-explanatory with the possible exception of the "Size" parameter. These sizes are in points. A point is  $1/72$  of an inch. This specifies the size of the text when plotted. The size that it appears on the display will vary depending on the currently specified plot scale and the current drawing area extents. When you specify a text size it is converted to the units you are using in the drawing area using the currently specified plot scale and then drawn with that size in the drawing area. For example if you specified a 10 point font and your current plot scale is 1 inch equals 100 drawing units then the height in drawing units for the text would be 13.9 ( $10/72 \times 100$ ). If the y extent of the drawing area is 100 then the text will be 13.9% as tall as the y extent of the drawing area. If the drawing is zoomed so that the y extent is 50 then the text will be 27.8% of the drawing area height.

The text will always be plotted at a 10 point size (0.139") no matter what the plot scale or current drawing extents (unless the "Fit" plot option is used).

# Text Angle...

## SETTING THE TEXT ANGLE:

The text angle specifies the rotation of the baseline of the text string in degrees counter-clockwise from the x axis. The Windows raster fonts (i.e. Courier, Fixedsys, MS Sans Serif, MS Serif, Small Fonts, System and Terminal) will not rotate.

# Text Orientation...

## SETTING THE TEXT ORIENTATION:

The text orientation is not used by TrueType fonts so it is grayed out and unselectable on the menu if TrueType fonts only are specified. The only fonts currently supplied with Windows that support orientation angles are the vector fonts: Modern, Script and Roman. The orientation angle is the rotation of the individual characters of a text string in a counter-clockwise direction from the x-axis. The interaction between the baseline angle and the orientation angle for the vector fonts can be quite difficult to understand. See the manual for some examples.

There are a couple of drawbacks to using the vector fonts. One is that the "Zoom Extents" command only uses the alignment point of vector fonts in its calculations. This means that part or all of a text string that uses a vector font may lay outside the drawing area even after a "Zoom Extents" command. The second drawback is that you must include the alignment point in your selection area in order to select a string using a vector font.

# Text Justification...

## SETTING THE TEXT JUSTIFICATION:

When you create a text element you are asked to input the alignment point. This point can represent different positions within the string depending on the current text justification setting. The default setting when you first enter the drawing is the upper-left of the text string. To change this setting select "Text Justification" from the "Options" menu. The text justification dialog allows you to specify one of three horizontal justification points (Left, Center and Right) and one of three vertical justification points (Top, Baseline and Bottom). To select one click on its radio button and then click on "OK".

# Point Color...

## SETTING THE POINT COLOR:

To specify a point color select "Point Color" from the "Options" menu. To make a selection from the color input dialog simply click on the desired color (or highlight it using the arrow keys and press the spacebar). Then select the "OK" button. If a nonsolid color is selected the closest solid color is used instead. You must also be careful not to select colors that map to the solid color white since they will not be visible on the white background.

# Point Type...

## SETTING THE POINT TYPE:

To specify a point type select "Point Type" from the "Options" menu. To select a point type click on the desired type (or use the arrow keys). The selected type is displayed to the right. Click on the "OK" button (or press Enter) to use the displayed type.

# Point Size...

## SETTING THE POINT SIZE:

To specify a point size select "Point Size" from the "Options" menu. Enter the desired point size. This value is specified in drawing units and its displayed size will vary depending on the current drawing area extents.

# Selection Set Color...

## SETTING THE SELECTION SET COLOR:

The program displays selected elements in a certain color. To change that color pick the "Selection Set Color" item off of the "Options" menu. This will bring the color selection dialog. Select the new color from this menu and click on the "OK" button. The selection set will now be displayed in that color.

# Plot Scale...

## SETTING THE PLOT SCALE:

The "Plot Scale" selection on the "Options" menu allows you to set a plot scale. This selection brings up a plot scale dialog. This dialog is also displayed when "Plot" is selected from the "File" menu. There are 2 differences between them, however. The "Fit plot to page" is grayed out and unselectable in the "Options" version of the plot scale dialog. This version also does not try to plot the drawing when the "OK" button is selected. This option is placed here so that a plot scale can be set without plotting the drawing. Plot scale affects the size of the text in the drawing area. This option allows the plot scale to be changed if the text is too small or large.

# Cursor Increment...

## SETTING THE CURSOR INCREMENT:

The cursor moves a certain number of pixels on the display when an arrow key is pressed. The cursor increment or step size specifies how many pixels it moves. This value is initially set to 5. Larger values cause the cursor to move more quickly across the display but make it more difficult to position the cursor at desired coordinates. Smaller values have the opposite effect.

To change this value select "Cursor Increment" off of the "Options" menu. Enter the desired cursor increment (greater than 0) and click on the "OK" button. The cursor will then move by that number of pixels when an arrow key is pressed and the cursor is in the drawing area.

# Element Snap...

USING ELEMENT SNAPS:

There are three methods for specifying positions within this program:

1. Pick a position in the drawing area using the cursor.
2. Enter exact coordinates (manual entry).
3. Snap to an existing drawing element.

The third method, using element snaps, allows you to specify positions based on elements that are already in the drawing. For example if you want a line to start at the exact same position as the end of another line in your drawing you would use the "End" element snap. To use element snaps simply select the desired mode using the "Element Snap" item on the "Options" pull down menu.

You can select an element snap before or during a command. The element snap selected remains in affect until another is chosen. The current element snap mode is displayed in the status area. If an element snap other than "NONE" is in affect then the cursor will change from a cross to a box. When a position is selected the program will look to see if an element is within the box and if it is then the program will determine the proper coordinates using the current snap mode and the element that is within the box. The program tries to snap to the first element it finds within the box. If it cannot snap to this element then it uses the center of the box as the input point. When you are using element snaps you should make sure that only one element lies within the cursor box so that you are certain you are snapping to the proper element. Use the "Zoom Window" command to enlarge the area around the element you are snapping to if necessary to avoid getting other elements in your cursor box.

The element snaps that are available within this program are:

- None - no element snaps are used, the cursor is a cross.
- End - snap to the end of the selected element.
- Center - snap to the center of an arc or circle element.
- Point - snap to the position of a point element.

# Enter Coordinates... F2

## ENTERING EXACT COORDINATES:

There are three methods for specifying positions within this program:

1. Pick a position in the drawing area using the cursor.
2. Enter exact coordinates (manual entry).
3. Snap to an existing drawing element.

The second method, manual entry, allows you to specify exact positions. To use this method click the right mouse button or press F2 while the cursor is in the drawing area or select "Enter Coordinates" from the "Options" pull down menu. This will bring up a "Coordinate Input" dialog. You use this dialog to enter the exact (x,y) coordinates of a drawing position. This method can be used when you have the exact coordinates or dimensions of the object you are drawing.

# Help

The "Help" menu gives you access to program information.

Help... F1

About CAD Vantage...

# Help... F1

Brings up this help facility.

## **About CAD Vantage...**

This option gives you information on CAD Vantage.

