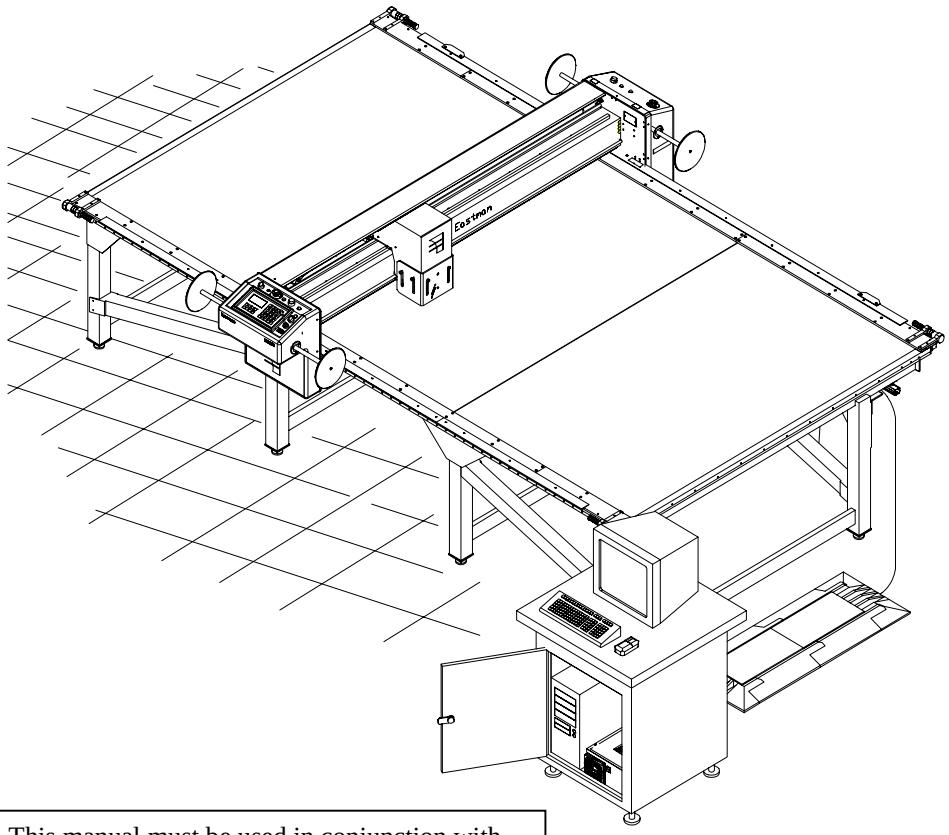
THE EASTMAN©

Easicut v2.1

User's Manual



This manual must be used in conjunction with the M9000 Machine Instruction and Service manual, Form #E-509-Instructions.

Eastman

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INTRODUCTION

Easicut 2.1 from Eastman Technology Systems, Ltd. is a Windows 98® based application program used to run a variety of Eastman cutting machines. The Easicut 2.1 application includes functions that allow the user to configure and/or tune machine operating parameters, load the machine with cut files, and monitor machine status and cut job progress.

This manual provides information on the operation and use of the Easicut 2.1 application program. It does not provide instructions on the operation of the cutting machine or any of its associated equipment. Please refer to the applicable Eastman manual(s) for operating, maintenance and safety information for your equipment.

Using the Easicut 2.1 software the cutting process consists of the following steps:

a. Select and open a drawing (marker) file for cutting. Easicut 2.1 recognizes drawing files in a number of formats.

b. Load the drawing (marker) file into the machine using Easicut's Cut command. This establishes the cutting pattern for the machine.

c. Execute the loaded pattern using commands entered at the machine's User Interface Terminal.

The section titled GETTING STARTED presents basic instructions on how to run the Easicut 2.1 software. This section also presents an overview of the various user displays. The primary user display interfaces of Easicut 2.1 are described in the sections titled DRAWING AREA, LAYERS DIALOG BOX, TOOLS DIALOG BOX and STATUS DIALOG BOX. All of the available menu options are presented in the MENUS section and all of the buttons and other controls found on the toolbar are presented in the TOOLBAR section. A GLOSSARY of terms unique to Easicut and the Eastman cutting machines is included at the end of this document.

GETTING STARTED

This section describes how to start execution of the Easicut 2.1 software. Instructions for enabling the Easicut 2.1 application using a hardware or a software license key are also provided.

This section also provides a general overview of various user interface components and displays as well as a description of the available security options.

Running the Program

It is very important that the machine and electronics box be switched on for at least 5 seconds before starting the Easicut 2.1 software. This lead time is necessary for the machine's power supply to stabilize. If the software is started before the machine and/or electronics box are switched on, damage to electrical components may occur.

The Easicut 2.1 software requires a hardware or a software license key in order to be fully functional. The hardware or software key are included with the purchase of an Eastman cutting machine system. The Easicut 2.1 Demonstration software will inform the user how to obtain a software key code to activate the program. Without a hardware or software key, you will not be able to load files into a cutting machine nor will you be able to save modified or converted drawing files. All other functions of Easicut 2.1 are available without the key.

Installation of the hardware key is easy. Simply plug the key into the LPT1 parallel port of your computer. Screws are provided to securely attach the key to the parallel port connector. If a printer is attached to the parallel port, unplug the printer cable, plug the hardware key into the parallel port, and then plug the printer cable into the hardware key. The hardware key will not affect the operation of your printer.

If a hardware key is not available, a software key code is required to activate the program. If your copy of Easicut 2.1 is not registered yet, the program issues a Software Key Code dialog box which includes instructions for obtaining a valid software key from the Eastman Machine Company. When calling for the software key code be prepared to provide the Code A and Code B values displayed in the Software Key Code dialog box. Enter the Span and Key Code values provided to you and click OK. This will register the Easicut 2.1 application on your computer.

The Eastman Easicut 2.1 program may be executed by clicking on the Start button found in the lower left corner of the Windows desktop and selecting the Programs option. If the Easicut 2.1 software was successfully installed, the Easicut 2000 folder is listed in the

Programs menu. Select the Easicut 2000 folder and then click on the Easicut icon to start the program.

The Easicut 2.1 program may also be started using a Windows shortcut. To create a shortcut to the Easicut 2000 folder, right click the Start button and select the Open or Explore option from the popup menu. Then open the Programs folder by double clicking on it. Right click on the Easicut 2000 folder icon and select Copy, right click on the Windows desktop and select the Paste Shortcut option in the popup menu. A shortcut to the Easicut 2000 folder will appear on your desktop. This shortcut provides direct access to the Easicut 2000 folder that contains the Easicut program icon.

Alternatively, a shortcut to the Easicut 2.1 program itself may be placed on your desktop following a similar procedure. However, rather than copying the Easicut 2000 folder to the desktop, open the folder, right click on the Easicut program icon and select Copy. Then paste the program shortcut to your desktop. This shortcut provides direct access to the Easicut 2.1 program.

When Easicut 2.1 is started it loads a default drawing file named DESIGN.CMD into the cutting machine. This allows verification of the interface between Easicut 2.1 and the machine immediately after the program is started.

At this point cutting operations may begin. One or more drawing files are opened and loaded into the machine using menu commands. These drawing files are then executed using commands entered at the machine's User Interface Terminal.

Machine Interface

It is very important that the machine and electronics box be switched on for at least 5 seconds before starting the Easicut 2.1 software. This lead time is necessary for the machine's power supply to stabilize. If the software is started before the machine and/or electronics box are switched on, damage to electrical components may occur.

Easicut 2.1 communicates with the cutting machine through a separate motion control program named PLOTTERW. Machine control is accomplished by sending messages to PLOTTERW. The result of control messages sent by Easicut 2.1 may be viewed on the machine's User Interface Terminal.

Similarly, Easicut 2.1 is informed of the current machine status through messages received from PLOTTERW. The Plotter Status tab of the Status dialog box displays the status messages received from the cutting machine via the PLOTTERW program. For example, when Easicut 2.1 is first started the default design.cmd drawing file is loaded into the machine. The Plotter Status tab of the Status dialog box displays a series of messages which were generated by the loading of design.cmd. Among these messages are

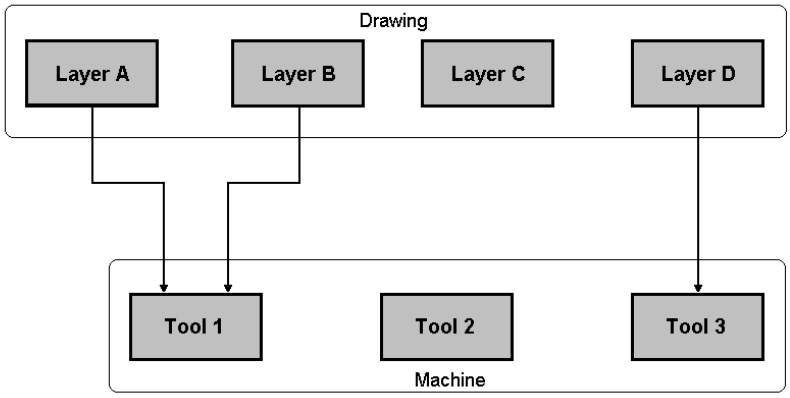
"file <= design" and "design LOADED". Any faults or fatal errors in the machine or the motion control software are also displayed here.

Tools and Layers

The primary method for controlling cutter performance in Easicut 2.1 is through the use of tools and layers. This paragraph describes what they are and how they are used to control the cutting process.

A tool in Easicut 2.1 refers to a physical cutting implement attached to the tool head of the plotter carriage or gantry of the machine. Only those tools actually available on the machine should be specified in Easicut 2.1. Each time a tool is added, removed or replaced with a different tool, the appropriate adjustments must be made in Easicut 2.1 to ensure proper cutting operations.

Easicut 2.1 uses layers to associate parts of a drawing file with a particular tool. When a drawing file is generated by a CAD application, each drawing entity is usually placed on a named layer. If a drawing entity is not associated with a layer, Easicut 2.1 will place such entities on a default layer when the drawing file is opened. In order for a drawing entity to be processed (cut) by the cutting machine, its layer must be assigned or mapped to a tool. That tool is then used to cut that part of the drawing. If a drawing layer is not mapped to a tool, all drawing entities on that layer are not processed (not cut).



Mapping Layers To Tools

As shown in the figure above, a layer may be assigned or mapped to one and only one tool. However, each tool may have one or more layers mapped to it. In the depicted example, drawing entities on Layer A and Layer B are both cut using Tool 1, Layer C entities are not cut, and Layer D entities are cut using Tool 3.

Within Easicut 2.1 each tool has a number of operating settings which must be entered when the tool is added to the program. These settings determine how the tool is used and how it performs during cutting. A subset of these tool operating settings are overridden when a layer is mapped to the tool. Therefore, by placing different parts of a drawing on different layers, the same tool can be made to perform differently when cutting different parts of the same drawing.

Jobs

Easicut 2.1 can be used to group drawing files into jobs. Each job consists of one or more drawing file along with certain processing and configuration parameters shared by the drawing files in that job. These processing and configuration parameters are defined using the Job command found in the Options Menu.

When Easicut 2.1 is first started the default Easicut job is accessed. Other jobs may be created and accessed using the commands found in the Job Menu. To create a new job simply do the following:

a. Create a new job using the New Job menu command.

b. Specify the appropriate job processing and configuration parameters using the Job command of Options Menu.

c. Open each of the drawing files to be included in the new job.

d. Save the new job with the Save Job menu command.

Thereafter, any time Easicut 2.1 is started, use the Open Job menu command to access the new job and all of its files. The parameters specified in this new job are used whenever one of the job's drawing files is cut.

Security Options

Easicut 2.1 provides a number of different security features which limit access to critical program functions.

A hardware key or a software key is required to run the fully functional Easicut 2.1 application. Without a key, files cannot be loaded into the cutting machine nor can drawing files be modified or converted. All other functions of Easicut 2.1 are available without a key.

Access to all critical, hardware dependent settings is restricted to Eastman personnel. A special username and password are required to access these settings. This restriction is imposed by Easicut 2.1 whether security is enabled or disabled.

Security is enabled and disabled with User Menu commands. If security is disabled, all program functions are available subject to any hardware/software key restrictions. If security is enabled, a user must log into Easicut 2.1 with a username and password. When security is enabled, a Supervisor user is automatically created. The Supervisor user maintains the list of authorized users and has access to the Machine, Job, Calibration and Stations commands in the Options Menu. All users have access to all other program functions.

Program Modes

Easicut 2.1 can be placed in one of three program modes: layout, simulate and cutting. The mode of the currently active drawing file window determines the current program mode and also determines the functions which may be performed on that drawing.

In the layout mode, the current drawing file is available for examination and editing. When a drawing file is opened, it is always opened in the layout mode. A layout mode drawing file may be transformed into a simulate mode drawing file by selecting the Simulate Mode command in the File Menu. A layout mode drawing file may be transferred to the cutting mode window by selecting the Cut command in the File Menu. Any number of drawing files may be opened in the layout mode. The mode of the currently active drawing file window determines the current program mode.

The simulate mode is used to perform cutting simulations on a drawing file. The contents of the drawing file may not be modified in the simulate mode. A drawing file must first be opened in the layout mode before it can be changed to the simulate mode. A simulate mode drawing file may be transformed back into a layout mode drawing file by selecting the Layout Mode command in the File Menu. A simulate mode drawing file may not be placed in the cutting mode window. Any number of drawing files may be in the simulate mode. The mode of the currently active drawing file window determines the current program mode.

The current drawing file is in the cutting mode if it is the file currently loaded in the cutting machine. Since only one file may be loaded in the machine at any one time, there can only be one drawing file in the cutting mode. The cutting mode displays the current position of the cutting tool head within the drawing file. The cutting mode window is identified by the drawing's yellow border area and by the three asterisks appended to the drawing file name in the main window's title bar and in the Window Menu's windows list. A drawing file is opened in the cutting mode window when it is loaded into the cutting machine. The cutting mode window is completely separate from any layout mode or simulate mode drawing windows. It may be closed without affecting any other opened drawing file and without affecting the cutting process on the machine.

Easicut Main Window

When the Easicut 2.1 program is started the Easicut main window is output to the screen.

The Easicut main window serves as the user interface to the Easicut software and machine monitor and control functions. It consists of a number of different parts which provide user input and output options.

The window title bar includes the program name (Easicut 2.1) and the name of the job file and the drawing file currently opened formatted as follows.

Easicut 2.1 - [jobfile : drawing]

Only the filename of the current job file is listed in the title bar; the JOB extension is not included. The default job file name is Easicut.JOB. The filename and extension of the current drawing file are also included in the title bar. When the program is started, the default drawing file DESIGN.CMD is displayed in the main window and is included in the window title bar. In the cutting mode, the drawing file name is followed by three asterisks. This helps to identify the cutting mode window in the Window Menu's windows list.

The main menu bar appears directly below the window title bar. The menu bar provides access to all of the Easicut 2.1 pull down menus. These menu options are all listed and described in the MENUS section. The toolbar appears below the main menu bar. The toolbar buttons are used to quickly access common or frequently used functions of the Easicut 2.1 program. All toolbar buttons and controls are listed and described in the TOOLBAR section.

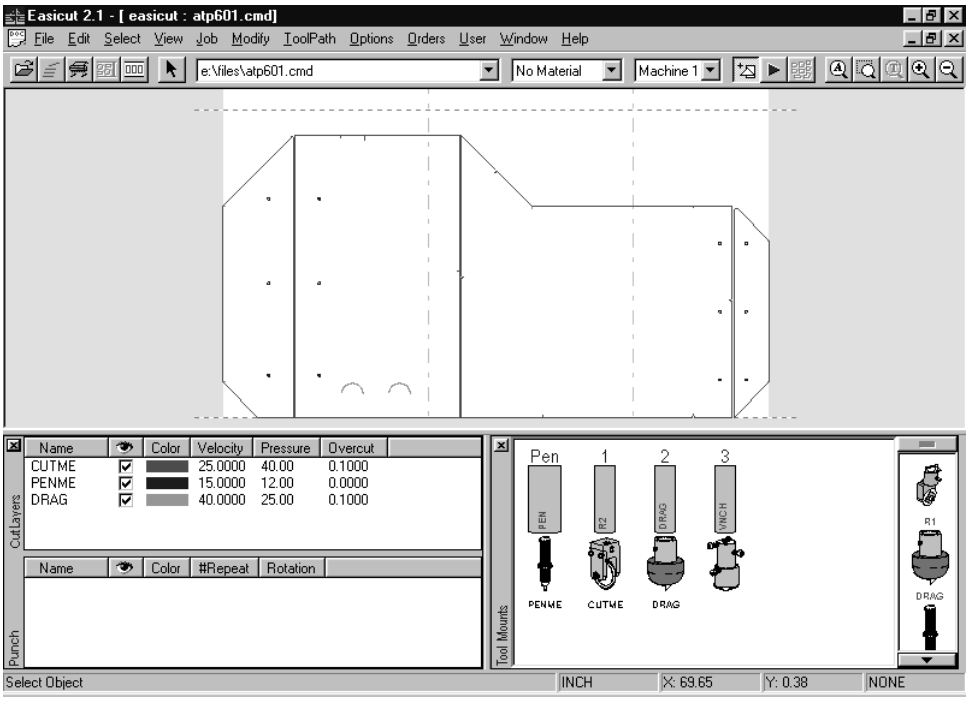
The largest portion of the Easicut main window is dedicated to the drawing area. This is where the currently open drawing file is displayed and manipulated. Easicut 2.1 allows multiple drawing files to be opened simultaneously. Each drawing is opened in its own drawing window. These drawing windows are accessed and manipulated using the commands found in the Windows Menu.

The Easicut main window also includes a dialogs area that is used to display up to three different dialog boxes. These are the Layers, Tools and Status dialog boxes. These dialog boxes may be individually displayed or erased by the user. The dialogs area may be positioned at the bottom edge or at the left edge of the Easicut main window.

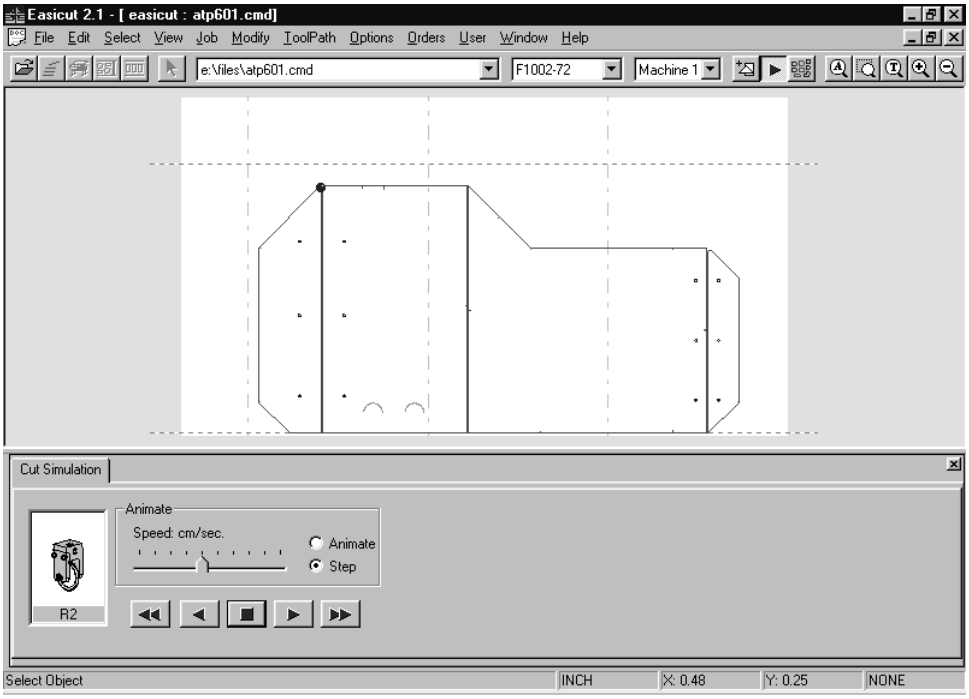
Finally, a status bar appears at the bottom of the Easicut main window. The status bar displays the currently active command, the default units used in the drawing and all

dialog boxes, the current coordinates of the cursor in the drawing area, and the security level of the current user, if any.

Easicut 2.1 operates in one of three modes: layout, simulate and cutting. Certain parts of the Easicut main window change based on the current program mode and these are described below.



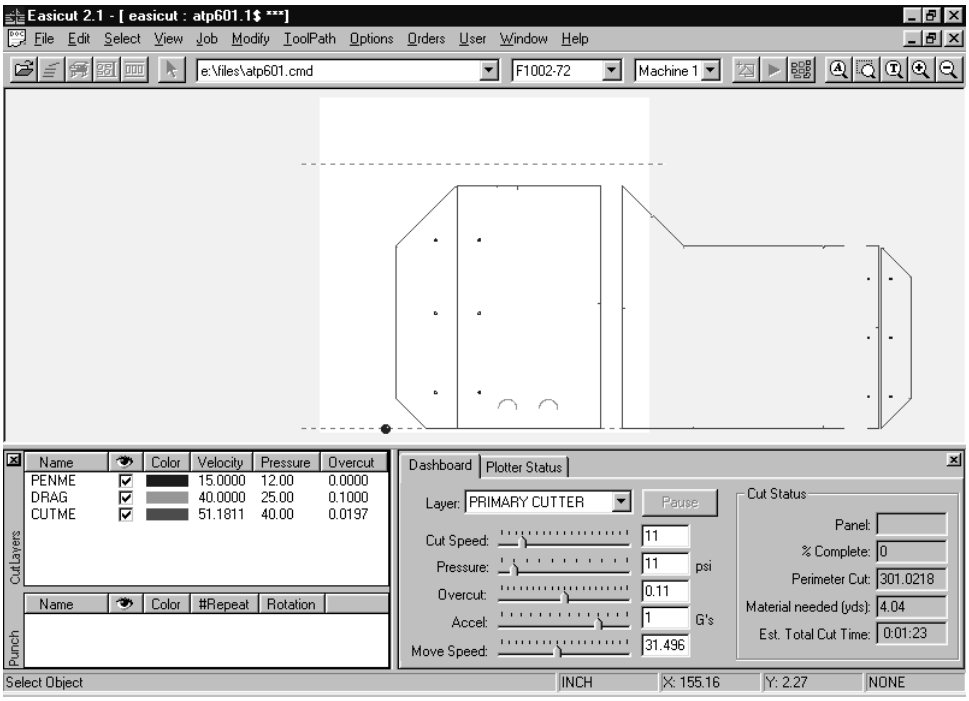
A typical Easicut main window for the layout mode is shown above. The Layers and the Tools dialog boxes are displayed below the drawing area. In the layout mode the white background in the drawing area only extends to the left and right edges of the drawing. The height of the white background corresponds to the width of the cutting machine as defined in the program's machine settings. These settings are accessed using the Machine command of the Options Menu. The above figure also shows the material width markers (two horizontal, dotted lines) and a pair of vertical divider lines (gray dash-dot lines). Both of these markings may be turned on or off using the Job command of the Options Menu.



A typical Easicut main window for the simulate mode is shown above. Only the Status dialog box is displayed below the drawing area. In the simulate mode the white background in the drawing area represents the table area of the cutting machine as specified in the program's machine settings. These settings are accessed using the Machine command of the Options Menu.

The small red circle located on the upper edge of the drawing is the tool position indicator. It indicates the simulated position of the tool head within the white "table" area.

A typical Easicut main window for the cutting mode is shown below. The Layers and Status dialog boxes are displayed below the drawing area. In the cutting mode the white background in the drawing area represents the table area of the cutting machine. Also note that the border around the white area is yellow in color. This helps to quickly identify this as the cutting mode window. While multiple drawing windows may be opened in the layout and simulate mode, there can be only one cutting mode window open at any time. This restriction parallels the fact that only one drawing file may be loaded into the machine at any one time.



The small red circle at the lower left of the drawing is the tool position indicator. It indicates the current position of the tool head of the machine's plotter carriage or gantry within the white "table" area.

Orders

Easicut 2.1 may be configured to operate in conjunction with an order entry application named EasiOrder. EasiOrder maintains a database of customers, fabric styles, and customer orders. When customer orders (or portions of orders) are ready for production, EasiOrder creates cut jobs which are then released to Easicut for production.

The Orders Menu found in Easicut 2.1 is used to access and open the EasiOrder cut jobs. Easicut uses the information found in a cut job record to create a drawing file which is opened into a layout mode window. The File Menu's Cut command is used to load the

drawing and, therefore, the cut job into the cutting machine. Easicut tracks the panels or pieces cut for the job and the actual length of material used to cut the job and this information is passed back to the EasiOrder application.

The EasiOrder program can be installed on the same computer as the Easicut program or can be installed on a computer which is accessible to the Easicut system via a network connection.

Refer to the Orders Menu commands for a detailed description of the orders processing functions available in Easicut. Contact the Eastman Machine Company for more information about the EasiOrder application.

DRAWING AREA

This section describes the user interface functions available within the drawing area of the Easicut main window. The drawing area is used to display all or part of the contents of an opened drawing file. Through the use of mouse clicks, drag and drop actions, and popup menus the drawing area provides a variety of user control options. The options available depend on the current program mode.

Two features of the drawing area are common to all program modes. One of these features is the display of the current cursor position. While the mouse cursor is within the drawing area, the drawing coordinates of the cursor are displayed on the status bar. The units used for reporting cursor coordinates are specified on the status bar to the left of the coordinates. When the mouse cursor is moved outside the drawing area, the coordinates of the point at which the mouse left the drawing area are displayed until the mouse is again moved into the drawing area.

The other common feature of the drawing area is the ability to resize it by moving the splitter bar which separates the drawing area from any displayed dialog boxes. When the mouse cursor is positioned over this splitter bar, the cursor shape changes to a pair of parallel lines with opposing arrows perpendicular to the lines. This new cursor indicates the directions in which the splitter bar may be moved. To move the splitter bar, click and hold the left mouse button while the cursor is on the splitter bar. Then move the mouse to the new splitter bar location. A gray shadow of the splitter bar follows the mouse cursor. When the left mouse button is released, the splitter bar is repositioned at the cursor location and the drawing area and any displayed dialog boxes are resized to fit.

Layout Mode

The mouse is used to select parts within a drawing in the layout mode. A selected part is redrawn in magenta to indicate that it is selected. A selected part may be further manipulated using the mouse or a variety of menu commands.

Select a single part within the drawing by positioning the mouse cursor on the part and left clicking. Each time a drawing part is selected by left clicking on it, all other selected parts in the drawing are deselected. Select more than one drawing part by holding down the Shift key while left clicking on each of the parts. To deselect one of a number of selected parts, holding down the Ctrl key while left clicking on the part. To deselect all parts, simply click on a point within the drawing area that is away from all parts of the drawing.

The mouse can also be used to move a selected drawing part. When the mouse cursor is positioned over a selected part, the cursor shape changes to four opposing arrows. This

new cursor indicates that the part may be moved in any direction. To move the selected part, click and hold the left mouse button while the cursor is on the selected part. Then move the mouse to the new part location. A copy of the part follows the mouse cursor. When the left mouse button is released, the part is erased from its original position and redrawn at the new position. If more than one part is selected when a part is moved, all of the selected parts are moved in the same direction by the same amount. This means that a move does not change the relative position of the selected parts.

Make a copy of one or more selected drawing parts by moving the parts while holding down the Ctrl key.

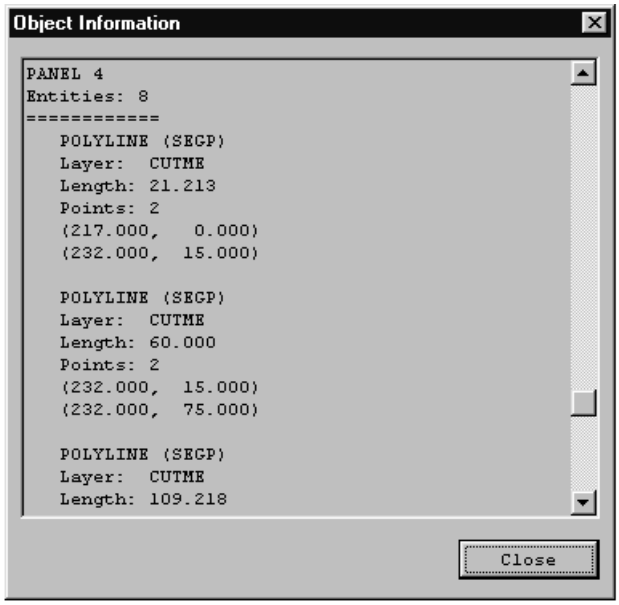
One or more parts may be erased from the drawing by selecting the part(s) and then pressing the Delete key.

In the layout mode the drawing area provides a popup menu which allows quick access to functions commonly used to manipulate a drawing. This menu is invoked by clicking the right mouse button while the mouse cursor is within the drawing area. The options within the popup menu depend on whether or not a drawing parts is selected.

No Selected Parts	Part(s) Selected
Cut	Move
Select All	Rotate
Select Window	Scale
Invert Selection	Mirror
Deselect All	Copy
New Layer	Erase
Object Information	Change Layer
	Explode
	To Panel
	Object Information

Except for the Object Information option, all of these menu options are available through the Easicut 2.1 main menu bar. A description of these options is available in the MENUS section.

The Object Information menu command opens a dialog box which lists a description of the drawing entities. This description includes the type of entity, its drawing layer, the coordinates of the entity's points, and the cutting length of the entity. If no parts are selected when the Object Information option is selected, information for all parts in the drawing are listed. If one or more parts are selected, only entities in the selected parts are listed.



Simulate Mode

The simulate mode is used to display the path that would be taken by the cutting tools if the displayed drawing were loaded into the cutting machine and processed. It allows the user to preview the actions taken by the cutter.

If the pattern in a drawing file is longer than the available length of the cutting table, the drawing is divided into table bites. Each such bite is processed as an individual pattern. The simulation process also divides the drawing into table bites. Normally, the simulation begins at the start of the first table bite and continues to the end of the last table bite. However, the mouse may be used to select the table bite at which to start the simulation. Click on a part within the table bite to select that bite for simulation. If the selected table bite is not the first bite, the drawing is repositioned on the "table" (white rectangular area within the drawing).

Cutting Mode

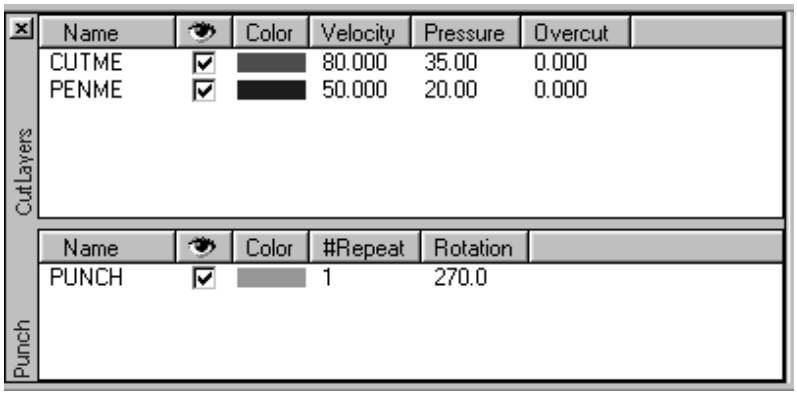
In the cutting mode, the drawing area does not provide any user interface functions through mouse or keyboard inputs. The drawing area simply displays the drawing or pattern currently loaded in the machine.

LAYERS DIALOG BOX

This section describes the contents and user interface functions available within the Layers dialog box. The Layers dialog box lists the layers found in the currently displayed drawing file. Layer and associated tool settings for the listed layers are also displayed.

The Layers dialog box is displayed within the dialogs area located below or to the left of the drawing area. The position of the dialogs area is selected using the Dock Left and Dock Bottom options of the View Menu.

If the dialogs area is at the bottom of the Easicut main window, the Layers dialog box is the leftmost dialog box. If the dialogs area is at the left edge of the Easicut main window, the Layers dialog box is the topmost dialog box. The Layers dialog box is displayed or erased from the dialogs area by checking or unchecking the Show Layers option of the View Menu. The Layers dialog box may also be erased or closed by clicking on the "X" found in the upper left corner of the dialog box.



The Layers dialog box contains two separate lists of layers. The Cut Layers list includes all drawing layers that are mapped to any cutting or marking tools. The Punch list includes all drawing layers that are only mapped to punch or notching tools.

The amount of the Layers dialog box devoted to each list may be adjusted by moving the splitter bar which separates the two lists. When the mouse cursor is positioned over this splitter bar, the cursor shape changes to a pair of parallel lines with opposing arrows perpendicular to the lines. This new cursor indicates the directions the splitter bar may be moved. To move the splitter bar, click and hold the left mouse button while the cursor is on the splitter bar. Then move the mouse to the new splitter bar location. A gray shadow of the splitter bar follows the mouse cursor. When the left mouse button is released, the

splitter bar is repositioned at the cursor location and the two layer lists are resized to fit. Likewise, the splitter bar that separates the Layers dialog box from the next dialog box in the dialogs area may be repositioned to adjust the size of the Layers dialog box.

Easicut 2.1 saves the visibility and size of the Layers dialog box for each program mode. That visibility and size are restored each time Easicut 2.1 is started and each time the program mode changes.

Popup Menus

If the right mouse button is clicked while the mouse cursor is within the Layers dialog box, a popup menu is displayed with the following options:

Show Layers
Show Tools
Show Status
Dock Left
Dock Bottom
Reset Splitters

All of these options are found in the main menu bar's View Menu except for the Reset Splitters option. A description of the View Menu options is available in the MENUS section. The Reset Splitters option restores the splitter bars between dialog boxes and the splitter bar between the two layer lists to their default positions.

Cut Layers List

The Cut Layers list of the Layers dialog box includes all drawing layers that are mapped to any cutting or marking tools. The list consist of 6 columns that include the "Name", visible status ("eye" header), and "Color" of the layer and the "Velocity", "Pressure" and "Overcut" settings used by the mapped tool. The width of the columns may be adjusted by using the mouse to move the column divider lines found in the list header.

All list data except the layer name may be edited directly in the list. A Cut Layers list entry must be selected before any of its settings may be edited. Select a list entry by left clicking anywhere on the row contained the layer to edit. Editing layer settings in the Cut Layers list of the Layers dialog box is equivalent to editing the layer settings in the Job Options dialog box.

NOTE: If the Easicut security option is enabled, access to both the Job Options dialog box and editing of data within the Cut Layers list is restricted to the Supervisor user.

The visible status is toggled by clicking the checkbox. All drawing entities on the selected layer are visible in the drawing area when the checkbox is checked.

The layer color is edited by clicking on the colored rectangle. A dropdown list of 16 different colored rectangles is displayed. Use the mouse to scroll the list and click on the layer's new color. All drawing entities on the selected layer are drawn using the new color.

The velocity, pressure and overcut settings are edited by clicking on the value. A black rectangle is drawn around the value to indicate it is available for editing. Enter the new value and press the Enter key. If an invalid number is entered, an error message dialog box is displayed. The velocity and overcut values are displayed and must be entered in the currently selected units of measure (displayed on the status bar at the bottom of the Easicut main window).

The "Velocity" specifies the maximum velocity of the tool to which the layer is mapped. Valid values are in the range from 0.1 to 180 cm/sec (0.04 to 70 in/sec).

The "Pressure" setting indicates the pressure in PSI that is applied to the tool to which the layer is mapped. Valid values are in the range from 1 to 100 PSI.

The "Overcut" specifies any added length that should be applied to the beginning and end of each cut using the tool to which the layer is mapped. Valid values are in the range from -10.0 to 10 cm (-3.9 to 3.9 in).

Punch List

The Punch list of the Layers dialog box includes all drawing layers that are only mapped to punch or notching tools. The list consist of 5 columns that include the "Name", visible status("eye" header), and "Color" of the layer and the "#Repeat" and "Rotation" settings used by the mapped tool. The width of the columns may be adjusted by using the mouse to move the column divider lines found in the list header.

All list data except the layer name may be edited directly in the list. A Punch list entry must be selected before any of its settings may be edited. Select a list entry by left clicking anywhere on the row contained the layer to edit. Editing layer settings in the Punch list of the Layers dialog box is equivalent to editing the layer settings in the Job Options dialog box.

NOTE: If the Easicut security option is enabled, access to both the Job Options dialog box and editing of data within the Punch list is restricted to the Supervisor user.

The visible status is toggled by clicking the checkbox. All drawing entities on the selected layer are visible in the drawing area when the checkbox is checked.

The layer color is edited by clicking on the colored rectangle. A dropdown list of 16 different colored rectangles is displayed. Use the mouse to scroll the list and click on the layer's new color. All drawing entities on the selected layer are drawn using the new color.

The number of punch repeats and the rotation angle setting are edited by clicking on the value. A black rectangle is drawn around the value to indicate it is available for editing. Enter the new value and press the Enter key. If an invalid number is entered, an error message dialog box is displayed.

The "#Repeat" setting specifies the number of times that a punch tool is plunged into the material. A punch tool is always plunged at least once.

The "Rotation" setting specifies the angle, in degrees, that a punch tool is rotated while it is down on the material.

Layer Mapping

A layer in the Layers dialog box may be mapped to a tool in the Tools dialog box by dragging the layer name to the desired tool.

NOTE: If the Easicut security option is enabled, access to drag and drop layer mapping function described below is restricted to the Supervisor user.

To map a layer to a tool, click and hold the left mouse button while the cursor is anywhere on the row containing the layer to map. Then move the mouse cursor to the tool's image in the Tools layer box. As soon as the mouse begins to move, the cursor shape changes to indicate that a layer is being dragged.

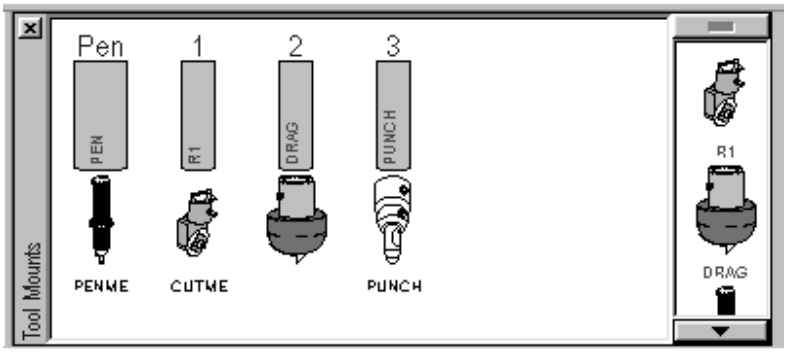
When the left mouse button is released while the cursor is on a tool, the layer name appears below that tool's image. If the layer was previously mapped to a different tool, the layer name is erased from that tool's layer list. (A layer may be mapped to one and only one tool.) If the mouse cursor is not located on a tool when the left mouse button is released, the layer mapping process is aborted without changing the layer's mapping.

TOOLS DIALOG BOX

This section describes the contents and user interface functions available within the Tools dialog box. The Tools dialog box presents a graphical representation of the current tool head and tools configuration for the cutting machine.

The Tools dialog box is displayed within the dialogs area located below or to the left of the drawing area. The position of the dialogs area is selected using the Dock Left and Dock Bottom options of the View Menu.

If the dialogs area is at the bottom of the Easicut main window, the Tools dialog box appears to the right of the Layers dialog box. If the Layers dialog box is not displayed, the Tools dialog box is the leftmost dialog box. If the dialogs area is at the left edge of the Easicut main window, the Tools dialog box appears below the Layers dialog box. If the Layers dialog box is not displayed, the Tools dialog box is the topmost dialog box. The Tools dialog box is displayed or erased from the dialogs area by checking or unchecking the Show Tools option of the View Menu. The Tools dialog box may also be erased or closed by clicking on the "X" found in the upper left or upper right corner of the dialog box.



Each tool mount is represented by a gray rectangular shape. The mount's identification is listed above the mount. If a tool is attached to the mount, the tool's image is displayed below the mount and the name of the tool is printed in red within the tool mount rectangle. The layers of the current drawing which are mapped to tools are listed below the respective tool images. A scrollable list of available tool images is displayed at the right edge of the Tools dialog box.

Easicut 2.1 saves the visibility and size of the Tools dialog box for each program mode. That visibility and size are restored each time Easicut 2.1 is started and each time the program mode changes.

Popup Menus

If the right mouse button is clicked while the mouse cursor is positioned on a tool or tool mount, a popup menu is displayed with the following options:

Remove Tool
Properties

NOTE: If the Easicut security option is enabled, access to this popup menu is restricted to the Supervisor user.

If the Remove Tool option is selected, the tool image is erased from below the mount. The tool is detached from the mount and is no longer available in any cutting operations.

The Properties option accesses the Tools tab of the Machine Options dialog box for the selected tool. This displays all of the tool's settings. The Machine Options dialog box is accessible through the Options Menu of the main menu bar. A complete description of the Machine Options' Tools tab is presented in the MENUS section.

If the right mouse button is clicked while the mouse cursor is positioned on a tool within the scrollable tools list, a popup menu is displayed with the following options:

New Tool
Delete Tool
Properties

NOTE: If the Easicut security option is enabled, access to this popup menu is restricted to the Supervisor user.

All three of these options access the Tools tab of the Machine Options dialog box for the selected tool. This displays all of the tool's settings and includes buttons to add new tools or delete the current tool. The Machine Options dialog box is accessible through the Options Menu of the main menu bar. A complete description of the Machine Options' Tools tab is presented in the MENUS section.

If the right mouse button is clicked while the mouse cursor is within the Tools dialog box but not on a tool or tool mount, a popup menu is displayed with the following options:

Show Layers

Show Tools
Show Status
Dock Left
Dock Bottom
Reset Splitters

All of these options are found in the main menu bar's View Menu except for the Reset Splitters option. A description of the View Menu options is available in the MENUS section. The Reset Splitters option restores the splitter bars between dialog boxes and the splitter bar between the two layer lists in the Layers dialog box to their default positions.

Tool Attachment

Easicut 2.1 executes all cutting operations based on the tool attachments displayed in the Tools dialog box. Therefore, all tool attachments made within this dialog box **must** reflect the actual configuration of the machine's tool head.

NOTE: If the Easicut security option is enabled, access to all drag and drop tool attachment functions described below are restricted to the Supervisor user.

A tool may be attached to a tool mount by dragging that tool from the scrollable tools list to the desired tool mount. Use the arrow buttons located above and below the tool list to scroll the list until the tool is located. When the tool is located in the list, click and hold the left mouse button while the cursor is positioned on the tool's image. A red rectangle surrounds the tool image and serves as the drag icon for this operation. Move the mouse cursor to the tool mount.

When the left mouse button is released, the tool image appears below the tool mount and the tool name is written into the tool mount rectangle. The tool is now attached to the tool mount. If a tool was previously attached to the mount, that tool is detached from the mount.

A tool may be moved from one tool mount to another in a similar fashion. Use the mouse to drag the tool's image from its current tool mount to the new mount. If the tool had one or more layers mapped to it, those layers remain mapped to the tool.

A tool is detached from a tool mount be dragging the tool's image to an area of the Tools dialog box away from all tool mounts. All layers which were mapped to the detached tool are no longer mapped to a tool.

Layer Mapping

A layer in the Tools dialog box may be mapped to a different tool by dragging the layer name to the desired tool.

NOTE: If the Easicut security option is enabled, access to the drag and drop layer mapping functions described below are restricted to the Supervisor user.

Click and hold the left mouse button while the cursor is located on the layer name. Then move the mouse cursor to the new tool's image. As soon as the mouse begins to move, the cursor shape changes to indicate that a layer is being dragged.

When the left mouse button is released while the cursor is on a tool, the layer name appears below that tool's image. The layer name is erased from below the original tool. (A layer may be mapped to one and only one tool.) If the mouse cursor is not located on a tool when the left mouse button is released, the layer is unmapped from the original tool; its name is erased from below the tool image. No new layer map is established.

A layer in the Layers dialog box may be mapped to a tool in the Tools dialog box by dragging the layer name to the desired tool. To map a layer to a tool, position the mouse cursor anywhere on the layer list row containing the layer to map and click and hold the left mouse button. Then move the mouse cursor to the tool's image in the Tools layer box. As soon as the mouse begins to move, the cursor shape changes to indicate that a layer is being dragged.

When the left mouse button is released while the cursor is on a tool, the layer name appears below that tool's image. If the layer was previously mapped to a different tool, the layer name is erased from below that tool's image. (A layer may be mapped to one and only one tool.) If the mouse cursor is not located on a tool when the left mouse button is released, the layer mapping process is aborted without changing the layer's mapping.

STATUS DIALOG BOX

This section describes the contents and user interface functions available within the Status dialog box. The appearance and functionality of the Status dialog box depends on the program mode. In the layout and cutting modes the Status dialog box displays the current values of certain machine settings and also lists all status, warning and error messages generated by the machine motion control software (PLOTTERW program). In the simulate program mode, the Status dialog box provides a simulation control interface.

The Status dialog box is displayed within the dialogs area located below or to the left of the drawing area. The position of the dialogs area is selected using the Dock Left and Dock Bottom options of the View Menu.

If the dialogs area is at the bottom of the Easicut main window, the Status dialog box is the rightmost dialog box. If the dialogs area is at the left edge of the Easicut main window, the Status dialog box appears at the bottom of the dialogs area. The Status dialog box is displayed or erased from the dialogs area by checking or unchecking the Show Status option of the View Menu. The Status dialog box may also be erased or closed by clicking on the "X" found in the upper right corner of the dialog box.

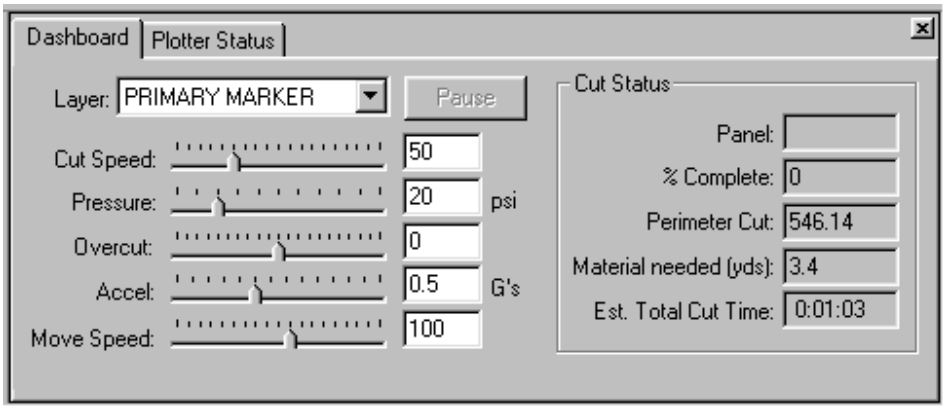
Easicut 2.1 saves the visibility and size of the Status dialog box for each program mode. That visibility and size are restored each time Easicut 2.1 is started and each time the program mode changes.

Layout and Cutting Mode

In the layout and cutting program modes, the Status dialog box provides a monitor and control interface to the cutting machine. The dialog box consists of Dashboard and Plotter Status pages accessed through tabs located at the top edge of the Status dialog box.

Dashboard Tab

On the Dashboard page of the Status dialog box the machine control interface is located on the left half of the page while the right half of the page displays status and statistical information about the currently loaded and executing file. The machine control interface consists of a Layer combobox and a set of five sliders and associated text box controls. The Layer combobox displays a drawing layer while the slider/text box control pairs display the current machine settings being used for the loaded drawing file. The Cut Speed, Pressure and Overcut settings only apply to the currently selected layer.



The Layer combobox list always includes the PRIMARY CUTTER and PRIMARY MARKER pseudo-layers. These layers correspond to the primary cutter tool and primary marker tool specified in the Job Options dialog box. The remaining layers in the combobox list include all of the layers found in the file currently displayed in the drawing area of the Easicut main window. In the cutting program mode, this file is the same as the file currently loaded in the machine for cutting.

The first three slider and text box controls (Cut Speed, Pressure and Overcut) apply to the layer selected in the Layer combobox. The Accel and Move Speed slider and text box controls apply to general machine settings which are not layer-specific. The Cut Speed, Overcut and Move Speed values are displayed in the currently selected units of measure (displayed on the status bar at the bottom of the Easicut main window).

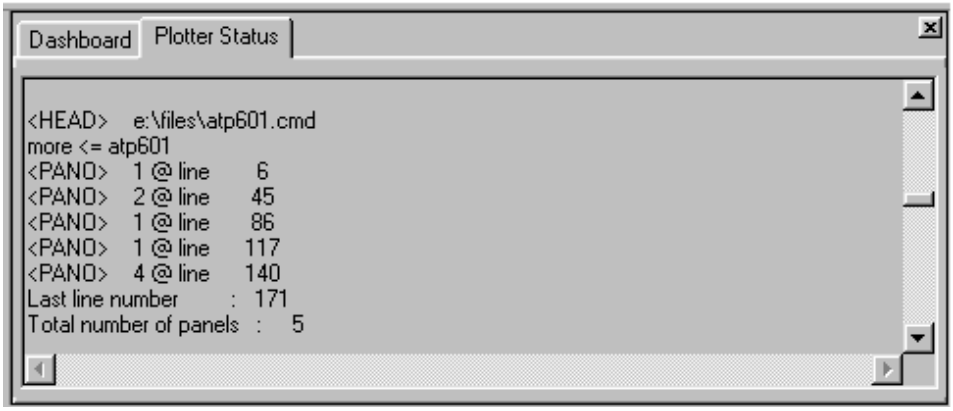
NOTE: If the Easicut security option is enabled, editing the settings on the Dashboard page of the Status dialog box is restricted to the Supervisor user.

In order to modify any of the five setting values, use the mouse to move the slider control to the desired position or enter the desired value in the associated text box and press the Enter key. The range of each slider control is limited to valid values for the machine setting. However, if an invalid number is entered into one of the text boxes, an error message dialog box is displayed. In the case of the Cut Speed, Pressure or Overcut setting, the new setting is only applied to the drawing layer currently selected in the Layer combobox. Any new settings will not take effect until the next time that layer's tool is accessed for a cutting operation. Any cutting operation in progress at the time of a setting change remains unaffected. Also, the new values are only used for the currently loaded file. When a new file is loaded into the machine using the File Menu's Cut command, the settings revert back to the values specified in the Machine, Job and/or Material Options dialog boxes.

The status and statistical information displayed in the right half of the Dashboard page of the Status dialog box consists of the current panel name (Panel), the amount of the loaded file already cut (% Complete), the total cut length for the loaded file (Perimeter Cut), the total length of material required by the loaded file (Material needed), and the estimated cutting time needed to complete the loaded file (Est Total Cut Time). The Panel and % Complete values are changed as cutting of the currently loaded file progresses. The remaining parameters are displayed when a file is loaded into the machine and remain unchanged until a new file is loaded. The Perimeter Cut value is displayed in the currently selected units of measure (displayed on the status bar at the bottom of the Easicut main window).

Plotter Status Tab

The Plotter Status page of the Status dialog box consists of a single large text box with scroll bars. This text box displays the status, warning and error messages received from the machine's motion control software (PLOTTERW program).



The Plotter Status page can be used to verify the proper operation of the motion control software, to identify any hardware problems detected by the motion control software, and to help diagnose any communications problems which may arise between Easicut 2.1 and the motion control software.

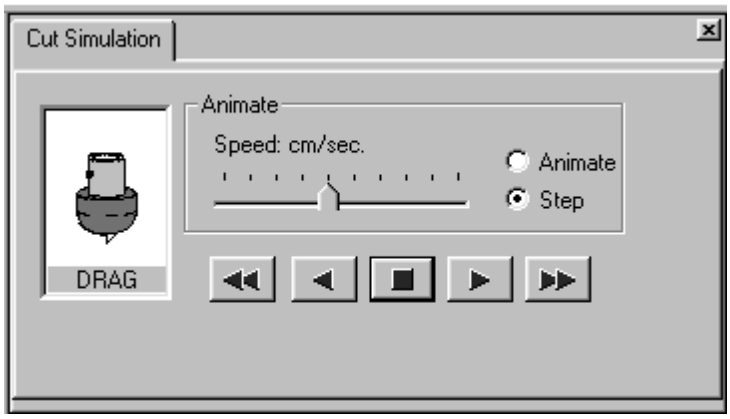
The text box of the Plotter Status page may also be used to change machine settings at the computer keyboard using the same two letter commands recognized by the machine's user interface terminal OPTION command. Type the two letter command and press the Enter key. Type a setting value and press the Enter key if the command prompts for a

value. Please refer to the Operations section of your machine's user's manual for a listing and description of the available two letter commands.

NOTE: If the Easicut security option is enabled, input of two letter commands on the Plotter Status page is restricted to the Supervisor user.

Simulate Mode

In the simulate program mode, the Status dialog box serves as a control panel for the cutting simulation function. The dialog box consists of a single Cut Simulation page.



The simulate program mode is used to examine and evaluate the cutting sequence of a drawing file prior to loading that file into the machine. The Status dialog box provides for control of this simulation process.

The left side of the Status dialog box displays an image of the tool used at the current point in the simulation.

Simulation Modes

The Animate and Step radio buttons are used to select the desired simulation mode. The animate mode is an automatic simulation of the entire file displayed in the drawing area. Once started, the animate mode sequentially processes each entity in the drawing file with no further user input required. When the end of the file is reached, the simulation is terminated. The speed of the animation is controlled by the position of the Speed slider

control. The slider may be repositioned at any time during the simulation to adjust the animation speed.

The step mode is a manual simulation which requires a user input at each simulation step. A step consists of moving from the current position in the drawing to the next entity in the drawing. The Speed slider control has no effect on the step mode simulation.

Simulation Controls

The controls on the Cut Simulation page are similar to controls used in software based audio and video control panels. The five buttons at the bottom of the Status dialog box correspond to the rewind, reverse, stop, play and fast forward functions.

In the simulate program mode the white background in the drawing area represents the dimensions of the cutting table as specified in the Machine Options dialog box. A small red circle called the tool position indicator is used to indicate the simulated position of the tool head within the drawing. As the simulation proceeds the tool position indicator is moved within the table area of the drawing.

If the pattern in a drawing file is longer than the available length of the cutting table, the drawing is divided into table bites. Each such bite is processed as an individual pattern. Use the View Menu's Show Table Bites command to identify the table bites in a drawing. When the simulation moves to a new table bite, the drawing is repositioned so that the table bite lies within the limits of the white cutting table area.

The rewind (⏮) button is used to move to the previous table bite in the drawing. The tool position indicator is placed at the end point of the last entity in the table bite. The fast forward (⏭) buttons moves the simulation to the next table bite. The tool position indicator is placed at the start point of the first entity in the table bite. The rewind and fast forward buttons are available before a simulation is started in the animate mode or at any time during a step mode simulation. The rewind and fast forward buttons are not available while an animate mode simulation is running.

In the step mode, the reverse (◀) button moves the tool position indicator to the previous entity in the drawing while the play (▶) button moves the tool position indicator to the next entity in the drawing. If required, the next table bite is placed on the table before the tool position indicator is moved. The reverse and play buttons are always available to start or continue the step mode simulation.

In the animate mode, the reverse (◀) button causes the simulation to run backwards while the play (▶) button causes the simulation to run in a forward direction. The reverse and play buttons are always available to start the animate mode simulation or change its direction.

The stop (■) button is used to erase the tool position indicator and end the simulation. After the stop button is clicked, the reverse and play buttons will always start the simulation at the end or beginning, respectively, of the drawing file. Before the stop button is clicked, the reverse and play button actions are applied at the current simulation position.

Popup Menus

If the right mouse button is clicked while the mouse cursor is within the Status dialog box but not within one of the text box controls, a popup menu is displayed with the following options.

Show Layers
Show Tools
Show Status
Dock Left
Dock Bottom
Reset Splitters

All of these options are found in the main menu bar's View Menu except for the Reset Splitters option. A description of the View Menu options is available in the MENUS section. The Reset Splitters option restores the splitter bars between dialog boxes and the splitter bar between the two layer lists to their default positions.

MENUS

The pull down menus on the menu bar at the top of the Easicut main window provide access to all of the functions available in the Easicut 2.1 program. All menu options that are followed by an ellipsis open a dialog box that prompts for specific information or parameters pertaining to the menu option. Certain menu options refer to a program option which may be turned on or off. Such menu options are preceded by a checkmark if the option is turned on.

Various menu options are enabled or disabled (available or unavailable) based on the current status of the Easicut 2.1 program. Conditions which affect the availability of menu options include the current program mode (layout, simulate or cutting), the security level of the current user, the contents of the drawing area, and whether or not one or more parts are selected within the drawing.

File Menu

The File Menu includes options that provide access to drawing files and allow those files to be manipulated and processed.

New

The New option of the File Menu clears the drawing area of the Easicut main window in preparation for entry of a new drawing file. All layers listed in the Layers and in the Tools dialog boxes are erased. The New option is available in all program modes and will always set the layout program mode. Since Easicut 2.1 has no functions which can draw entities into a blank drawing, the File | New function is typically used only to initiate the formation of a new drawing file by appending two or more files using the File | Append menu option.

The key combination Ctrl+N may be used to select the File | New menu option from the keyboard.

Open…

The Open option of the File Menu is used to recall an existing drawing file into the drawing area of the Easicut main window. The opened file is always added to the file list of the current job if it is not already in the list. The Open option is available in all program modes and will always open a drawing file in the layout program mode. As shown below, the standard Windows Open dialog box is displayed when the File | Open

menu option is selected. Six file types can be selected for display: CMD (*.cmd), DXF (*.dxf), GCODE (*.*), HPGL (*.plt), NTV (*.nst), and NST (*.nst) files. Select the desired file type in the "Files of type" combobox and then select the name of an existing file in the list or just type the name of the drawing file in the "File name" text box. Click the Open button to open the drawing file. The selected file directory (or folder) and the selected file type are saved so the next time the File | Open menu option is invoked, the same directory and file type appear in the Open dialog box as the defaults. If the saved directory refers to a removable disk (e.g., floppy or CD-ROM) and the disk is no longer available, the application's default plot file directory is used the next time the File | Open menu option is invoked.

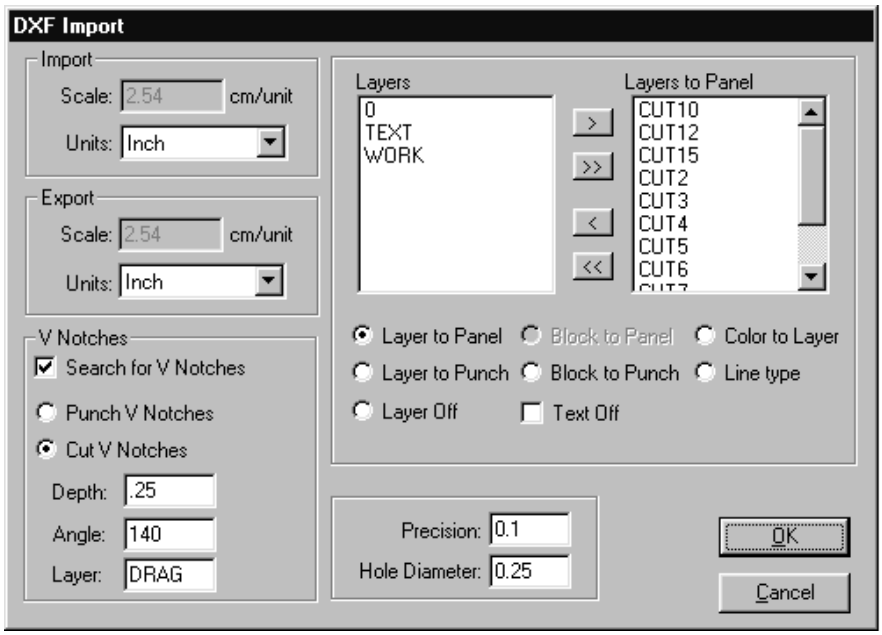
If the selected file is already opened in one of the drawing area's file windows, that window is made the currently active window of the drawing area. No further processing is performed.

The key combination Ctrl+O may be used to select the File | Open menu option from the keyboard.

If a drawing file other than a CMD file type is opened and the File Import option for the file type is checked in the Job Options dialog box, the appropriate Import dialog box is displayed to allow the user to select display and formatting options.

DXF Files

The DXF Import dialog box shown below is displayed when a DXF file is opened. Use the Units comboboxes to specify the scale of the DXF drawing. The Import Units select the units used when the DXF file is read (opened) while the Export Units specify the units at which the drawing should be saved. If the Import and Export Units options are different and the drawing file is saved using the File | Save As menu option, the dimensions in the resulting DXF file are scaled by a factor equal to the Import Scale divided by the Export Scale. If the "User defined" Units option is selected, the associated Scale edit box is enabled for user input. The "User defined" Units option allows you to specify your own scale factor for importing (reading) or exporting (writing) DXF files.



The options accessed by the radio buttons in the right half of the dialog box are used to specify how the various blocks, layers and line types in the DXF drawing are to be treated by Easicut. Select the "Layer to Panel" option if each piece in the DXF file has been placed on a different layer. Select the "Block to Panel" option if each piece in the file has been placed in a different insert block. If the colors used in the DXF file can be related to cutting parameters, use the "Color to Layer" option to associated each DXF file color to an Easicut layer. If one or more DXF layers or insert blocks contain entities to be punched, use the "Layer to Punch" or "Block to Punch" options. If there are certain layers in your DXF files which should always be ignored (for example, layers containing dimensions and/or notes), use the "Layer Off" option to place those layers in the disabled layers list. Drawing entities found on disabled layers will not be read into the Easicut

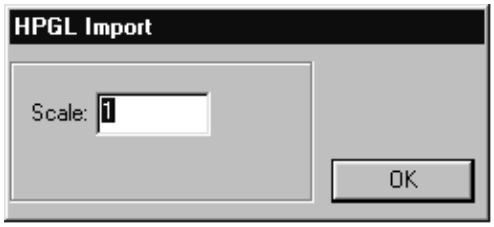
drawing. Any text entities included in the DXF drawing may be ignored by checking the "Text Off" checkbox.

If the drawing has V-notches embedded within panel perimeter lines, these can be extracted and treated as separate punch entities using the options found in the lower left corner of the DXF Import dialog box. Check the "Search for V Notches" checkbox, select whether the V-notches should be punched or cut, specify the notch filter parameters (maximum depth and maximum angle), and indicate the layer to which all V-notches should be moved.

When all options are correct, click the OK button. The selections made in the DXF Import dialog box are saved. When the next DXF file is opened, these settings are used as the defaults.

HPGL Files

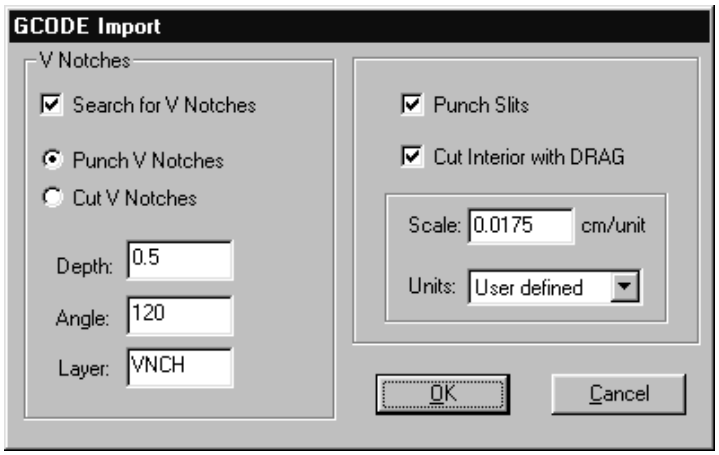
The HPGL Import dialog box shown below is displayed when a HPGL file is opened. Use the Scale text box to specify a scale factor which is applied to all entities in the HPGL drawing. Then click the OK button.



GCODE Files

The GCODE Import dialog box shown below is displayed when a GCODE file is opened. If the drawing has V-notches embedded within panel perimeter lines, these can be extracted and treated as separate punch entities using the options found on the left side of the GCODE Import dialog box. Check the "Search for V Notches" checkbox, select whether the V-notches should be punched or cut, specify the notch filter parameters (maximum depth and maximum angle), and indicate the layer to which all V-notches should be moved.

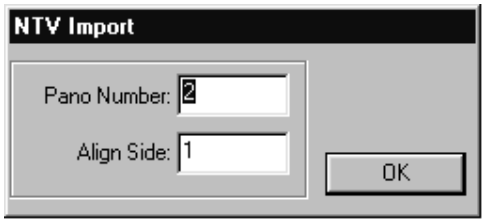
Use the Unit combobox to specify the scale of the GCODE drawing. If the "User defined" Units option is selected, the associated Scale edit box is enabled for user input. The "User defined" Units option allows you to specify your own scale factor when importing (reading) GCODE files.



When all options are correct, click the OK button. The selections made in the GCODE Import dialog box are saved. When the next GCODE file is opened, these settings are used as the defaults.

NTV Files

The NTV Import dialog box shown below is displayed when a NTV file is opened. Enter the desired file formatting parameters and then click the OK button.



NST Files

The NST Import dialog box shown below is displayed when a NST file is opened. Enter the desired file formatting parameters and then click the OK button.

After the Import dialog box is closed, the file is read and its contents are displayed in the drawing area of the Easicut main window. All layers included in the drawing file are listed in the Layers dialog box and all mapped layers are listed in the Tools dialog box below the image of the tools to which they are mapped.

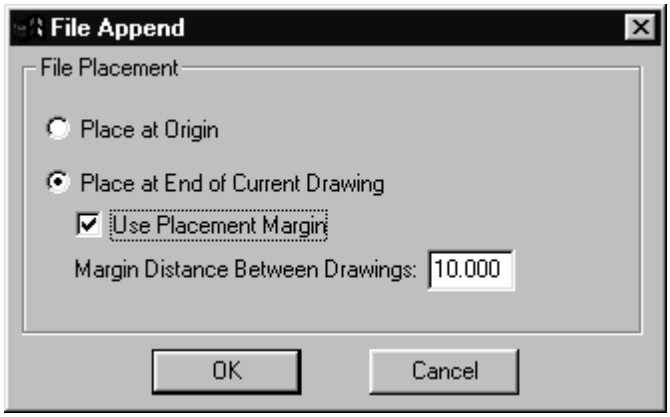
If the file contents are wider than the available table width (as specified in the Machine Options dialog box), the warning message "Marker is wider than Table" is issued. If the file contents are wider than the current material width (as specified in the Material Options or Job Options dialog box), the warning message "Marker is wider than Material" is issued.

Append…

The Append option of the File Menu is used to add the contents of a drawing file to the currently active drawing shown in the drawing area of the Easicut main window. The Append option is only available in the layout program mode.

Since the Append option opens a drawing file, the functionality is very similar to that of the File | Open menu option. The standard Windows Open dialog box is displayed (with the title Append) to process selection and opening of the file to append. If required, one of the five import dialog boxes described in the File | Open menu option is opened to allow you to specify file formatting and preprocessing parameters. Once the selected drawing file is opened and read, the File Append dialog box is displayed.

If the Place at Origin option is selected, the appended drawing file is positioned at the origin of the drawing area. Typically, this will cause the appended file to overlap any existing drawing entities unless the append is to a new (empty) drawing. The appended drawing is placed to the right of the current drawing by selecting the Place at End of Current Drawing option. Check the Use Placement Margin and enter a distance in the Margin Distance text box to leave a gap between any existing drawing and the appended drawing entities. The Margin Distance value must be specified in the currently selected units of measure displayed on the status bar at the bottom of the Easicut main window.



Click OK to add the contents of the selected drawing file to the currently active drawing. If the resulting drawing is wider than the available table width (as specified in the Machine Options dialog box), the warning message "Marker is wider than Table" is issued. If the resulting drawing is wider than the current material width (as specified in the Material Options or Job Options dialog box), the warning message "Marker is wider than Material" is issued.

The key combination Ctrl+E may be used to select the File | Append menu option from the keyboard.

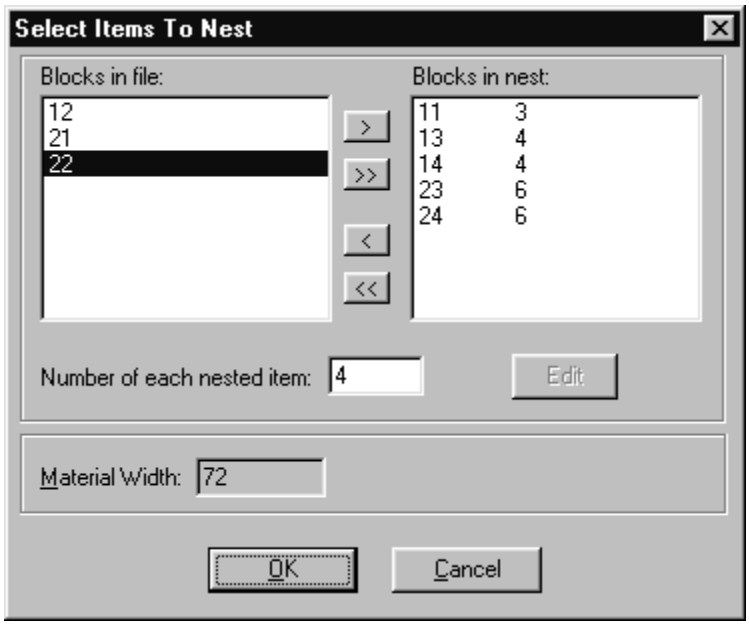
Quick Nest…

The Quick Nest option of the File Menu permits selection of one or more blocks or parts from the currently active drawing file into a new, nested drawing which may be loaded into the cutting machine for processing. The Quick Nest option is only available in the layout program mode when a drawing file is opened. The Select Items to Nest dialog box is displayed when the Quick Nest menu option is invoked.

The names of the blocks or parts in the current drawing are listed in the left listbox while the blocks or parts to cut are listed in the right listbox. Entries in the right listbox also include the quantity of each part to cut. The Material Width specifies the width of the currently selected material available for use in cutting the selected parts. The width value is not editable in this dialog box.

Parts are moved from one list to the other by selecting (highlighting) one or more part entries and then clicking the ">" or "<" button to move the part(s) to the right or to the left list. To select a part click on the listbox line containing the part name. To deselect a

part click on the selected part again. To move all the part entries from one list to the other use the ">>" or "<<" buttons.

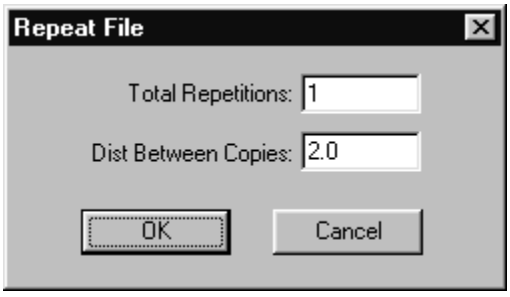


The quantity of parts to cut may be specified in one of two ways. The quantity may be entered in the "Number of each ordered item" prior to moving the part entries to the right (Blocks in nest) list. Alternatively, the quantity for an ordered part may be modified by selecting its entry in the right listbox and clicking the Edit button. Enter the number of parts desired and click OK.

After the desired quantities of each part are specified, click OK. The selected parts are displayed in the drawing area of the Easicut main window. The parts are arranged to make use of the available material width. The filename displayed in the Easicut main window title bar is the original (source) filename with an extension that consists of a number followed by the letter Q. This file may be saved using the File | Save As menu option or loaded into the cutting machine using the File | Cut menu option.

Repeat…

The File Menu's Repeat option is used to duplicate the contents of the currently active drawing a specified number of times. The Repeat option is only available in the layout program mode when a drawing file is opened. The Repeat File dialog box is displayed when the Repeat menu option is clicked.



Enter the number of file repetitions desired in the "Total Repetitions" edit box. The default value of 1 means that only the original copy of the current drawing file will appears in the drawing area, i.e., no copies will be made. Valid entries range from 1 to 99 repetitions. Use the "Dist Between Copies" edit box to specify a separation distance between each copy of the file. The distance must be specified in the currently selected units of measure displayed on the status bar at the bottom of the Easicut main window. Valid distances range from 0.0 to 999.0.

Click the OK button to generate the file repetitions or click Cancel to terminate the Repeat function.

Close

The Close option of the File Menu closes the file displayed in the drawing area of the Easicut main window. The next available file in the Easicut window list is opened in the Easicut drawing area. The Close option is available in all program modes. Closing a drawing file does not remove it from the file list of the current job.

Save

The Save option of the File Menu is used to save the drawing file currently shown in the drawing area of the Easicut main window. The current drawing (including any changes) is saved to the filename that appears in the title bar of the Easicut main window. If an existing file was previously opened and modified, that file is overwritten with the modified file.

The Save option is only available in the layout program mode when a drawing file is opened. If the Disable Save CMD option is checked in the Job Options dialog box, the current file can not be saved as a CMD file; it may be saved as a DXF file. If the Disable Save DXF option is checked in the Job Options dialog box, the current file can not be

saved as a DXF file; it may be saved as a CMD file. If both of these options are checked, the Save option becomes unavailable.

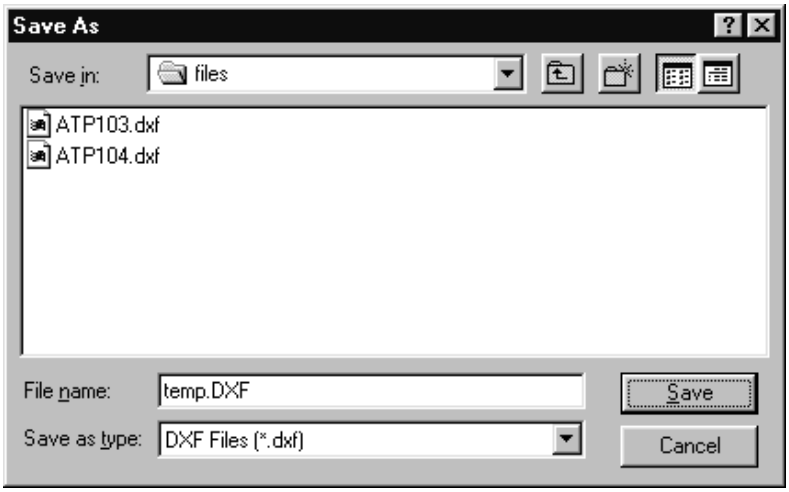
The Save option can only be used if the file being saved is a CMD or DXF file. If the Save option is invoked for a file type other than CMD or DXF, an error message is displayed. To save files of other formats or to save the current file with a different name, use the Save As option of the File Menu and select the CMD or DXF file type.

The key combination Ctrl+S may be used to select the File | Save menu option from the keyboard.

Save As…

The Save As option of the File Menu is used to save the currently active drawing file (the file currently shown in the drawing area of the Easicut main window). This option is used to save the current drawing to a file other than the currently opened file. The current file is not overwritten nor deleted.

The Save As option is only available in the layout program mode when a drawing file is opened. If the Disable Save As CMD option is checked in the Job Options dialog box, the current file can not be saved as a CMD file; it may be saved as a DXF file. If the Disable Save Ax DXF option is checked in the Job Options dialog box, the current file can not be saved as a DXF file; it may be saved as a CMD file. If both of these options are checked, the Save AS option becomes unavailable.



The standard Windows Save As dialog box is opened when the File | Save As menu option is selected. Enter the new name for the current drawing file and select the desired file type in the "Save as type" combobox. Click the Save button. The current drawing file is renamed and the corresponding entry in the file list of the current job is also renamed to the newly specified filename.

Remove From Job

The Remove From Job option of the File Menu closes the file displayed in the drawing area of the Easicut main window. The filename is also removed from the file list of the current job. The next available file in the Easicut window list is opened in the Easicut drawing area.

NOTE: The drawing file is not deleted, simply removed from the current job's file list.

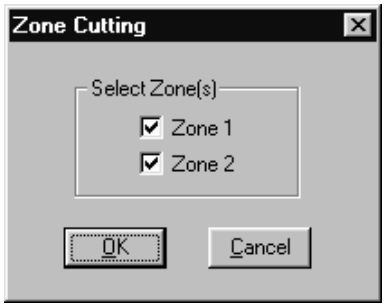
The Remove From Job option is only available in the layout program mode when a drawing file is opened.

Cut

The Cut option of the File Menu attempts to load the file currently displayed in the drawing area of the Easicut main window into the cutting machine. If the file is successfully loaded into the cutting machine, the file is displayed in a cutting mode window (yellow background) and the dialogs area of the Easicut main window is reconfigured for the cutting program mode. The filename displayed in the Easicut main window title bar is the original (source) filename with an extension that consists of a number followed by the a "$" and three asterisks. The text in the Plotter Status tab of the Status dialog indicates that the file was LOADED.

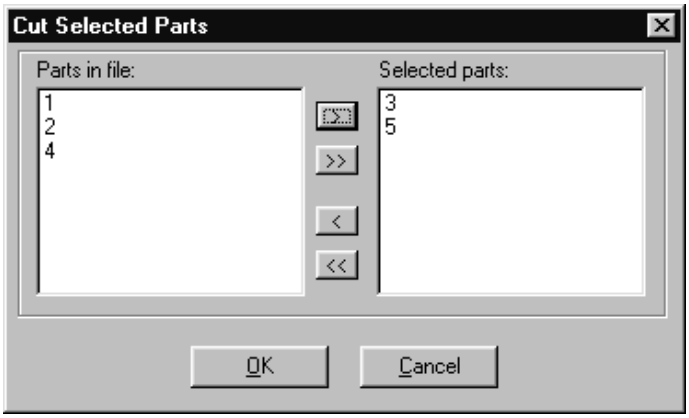
Depending of the output queue setting specified in the Job Options dialog box, the current state of the plot queue and the status of the cutting machine, the Cut menu option may add the current file to the end of the plot queue rather than load the file into the cutting machine. In that case, the following message is displayed.

If zone cutting is enabled ("Number of Zones" is set to 2 in the Job Options dialog box), a zone selection dialog box is displayed if the file being cut is not a zone file. Zone files are CMD type files created using the Stations option of the Options Menu. Check the zone or zones in which the drawing file should be cut. Click OK to load the file into the cutting machine and/or add it to the queue list. Click the Cancel button to terminate the Cut option.



Cut Selected…

The Cut Selected option of the File Menu permits cutting of only selected parts from the currently open drawing file. The Cut Selected option is only available in the layout program mode when a drawing file is opened. This option can be invoked in two different modes. If one or more parts within the current drawing file are selected, the Cut Selected option immediately processes these parts for cutting. Refer to the File | Cut menu option for a description of cut processing.



If no parts are selected within the current drawing, the Cut Selected Parts dialog box is displayed. The names of the parts in the current drawing are listed in the left listbox while the parts selected for cutting appear in the right listbox. Parts are moved from one list to the other by selecting (highlighting) one or more part entries and then clicking the ">" or "<" button to move the part(s) to the right or to the left list. To select a part click on the listbox line containing the part name. To deselect a part click on the selected part again. To move all the part entries from one list to the other use the ">>" or "<<" buttons.

After the desired parts are selected, click OK to process these parts for cutting. . Refer to the File | Cut menu option for a description of cut processing.

Queue…

The Queue option of the File Menu displays the Queue dialog box, providing access to the current contents of the plot or cut file queue. The Queue option is available in all program modes.

The Queue dialog box lists the current contents of the cut file queue. The first column specifies the unique queue item number for the file and the second column gives the name of the drawing file associated with the queue item. If zone cutting is enabled ("Number of Zones" in the Job Options dialog box is greater than 1), a third column specifies the zone in which the file will be cut.

Files are added to the queue by the Cut and Cut Selected options of the File Menu under certain conditions. If the Output Queue setting specified in the Job Options dialog box is set to NONE, drawing files are added to the queue only if zone cutting is enabled. Such a file replaces any and all queued files for that zone. There can be only one file in the queue list for each zone. If the cutting machine is not currently busy cutting a file, the drawing file is also loaded into the machine.

If the Output Queue setting is MANUAL, all cut files are placed in the queue. These file can only be loaded into the cutting machine using the Queue menu option.

If the Output Queue is set to AUTOLOAD, a cut file may be placed in the queue if the cutting machine is currently busy cutting a different file. In this case the file entries are removed from the queue and automatically loaded into the cutting machine when the machine is ready for the next file.

To load a file into the cutting machine, select an entry in the queue listbox and click the Load button. The Queue dialog box is closed and the selected file is processed for cutting. Refer to the File | Cut menu option for a description of cut processing.

To delete a file from the queue, select the entry in the queue listbox and click the Delete button. A prompt is issued asking to confirm deletion of the selected file. Click Yes to delete the file or click No to keep the file.

Click the Clear button to delete all entries from the queue. A prompt is issued asking to confirm deletion of all queue files. Click Yes to delete the files or click No to keep the files.

Click the Close button to close the Queue dialog box and terminate the Queue menu option.

Printer Setup…

The Printer Setup option of the File Menu opens the standard Windows Print Setup dialog box. This dialog box allows selection of the default printer used for all Easicut print functions and allows various printer options to be set (e.g., orientation, paper size, paper tray, etc.) The Printer Setup option is available in all program modes.

Print…

The Print option of the File Menu opens the standard Windows Print dialog box. The Print option is used to print the contents of the currently active drawing area to the selected printer. The Print option is available in all program modes.

The Print function generates a single page which contains that part of the currently active drawing visible in the drawing area. To ensure that the entire contents of the drawing file is printed, use the Zoom All function prior to invoking the File | Print menu option. The Print function output includes the name of the file and the current date and time at the top of the page.

Layout Mode

The Layout Mode option of the File Menu sets the layout program mode for the file displayed in the drawing area of the Easicut main window. Drawing files may be examined, modified and cut from the layout mode. The Layout Mode option is available in the layout and simulate program modes. If the Layout Mode option is checked, the layout program mode is active.

When switching to the layout mode from the simulate mode, the file is displayed in a layout mode window (gray background) and the dialogs area of the Easicut main window is reconfigured for the layout program mode. The white area in the drawing represents the extent of the current drawing.

Simulate Mode

The Simulate Mode option of the File Menu sets the simulate program mode for the file displayed in the drawing area of the Easicut main window. Cutting of the current drawing file may be simulated in the simulate mode using the controls found in the Status dialog box. The Simulate Mode option is available in the layout and simulate program modes. If the Simulate Mode option is checked, the simulate program mode is active.

When switching to the simulate mode from the layout mode, the file is displayed in a simulate mode window (gray background) and the dialogs area of the Easicut main window is reconfigured for the simulate program mode. The white area in the drawing represents the extent of the cutting table as specified in the Machine Options dialog box.

MRU List

The MRU List of the File Menu consists of a list of up to ten of the most recently accessed drawing files. Selecting one of the files in this list opens that file in the drawing area.

If the selected drawing file is not a CMD file and the File Import option for the selected file's type is checked in the Job Options dialog box, the appropriate Import dialog box is displayed to allow the user to select display and formatting options. Refer to the File | Open menu option for a description of these Import dialog boxes.

Exit

The Exit option of the File Menu closes the Easicut main window and terminates the Easicut 2.1 application. All program and machine settings are saved to the appropriate disk files before exiting. If a file is in the process of being cut by the cutting machine, a message is issued stating that the Easicut application can not exit until the cutting process is completed or terminated.

Edit Menu

The Edit Menu includes options to edit the contents of the drawing file shown in the drawing area of the Easicut main window. The changes implemented by any of the options in the Edit menu are not permanent until the Save or Save As option of the File Menu is used to write the changes to a disk file.

Undo

The Undo option of the Edit Menu undoes or removes any changes made to the current drawing file by the latest undoable menu option. After the Undo option reverses the changes of an undoable menu option, the previous undoable menu option becomes the latest option. Therefore, successive execution of the Undo option removes changes from the current drawing file in a reverse order from that in which they were applied.

If the edited file is wider than the available table width (as specified in the Machine Options dialog box), the warning message "Marker is wider than Table" is issued. If the edited file is wider than the current material width (as specified in the Material Options or Job Options dialog box), the warning message "Marker is wider than Material" is issued.

The undoable menu options include all options in the Edit Menu except Undo and Redo, all options in the Modify Menu, the Repeat option in the File Menu and the Auto Join Entities, Auto Sequence Entities, Reverse and Change Start Pt options in the ToolPath Menu.

The Undo option is only available in the layout program mode and only if at least one change has been made to the current drawing file. After the Undo option is used to remove the drawing changes of the last undoable menu option, the Undo option is also not available.

The key combination Ctrl+Z may be used to select the Edit | Undo menu option from the keyboard.

Redo

The Redo option of the Edit Menu redoes or restores any changes removed from the current drawing file by the most recent Undo command. After the Redo option restores the changes of an undone menu option, the previous Undo command becomes the most recent. Therefore, successive execution of the Redo option restores changes to the current drawing file in a reverse order from that in which they were removed by the Undo command.

If the edited file is wider than the available table width (as specified in the Machine Options dialog box), the warning message "Marker is wider than Table" is issued. If the edited file is wider than the current material width (as specified in the Material Options or Job Options dialog box), the warning message "Marker is wider than Material" is issued.

The Redo option is only available in the layout program mode and only if at least one drawing file change has been removed by the Undo menu option. After the Redo option is used to restore the drawing changes of the first Undo command or after the drawing file is changed using an undoable menu option, the Redo option is also not available.

The undoable menu options include all options in the Edit Menu except Undo and Redo, all options in the Modify Menu, the Repeat option in the File Menu and the Auto Join Entities, Auto Sequence Entities, Reverse and Change Start Pt options in the ToolPath Menu.

Move

The Move option of the Edit Menu is used to reposition objects within the current drawing. To move a specific object or objects, first select those objects as described in the Select | Object menu option. If the Move menu option is initiated without making an object selection, all objects in the drawing are automatically selected and moved. The Move option is only available in the layout program mode when a drawing is displayed in the drawing area of the Easicut main window.

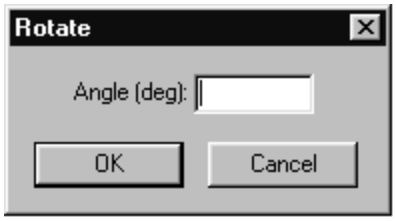
The Move menu option repositions selected drawing object(s) using the mouse. Left click anywhere in the drawing (not necessarily on a selected object or objects), move the mouse until the object is in its new position and left click again. Alternatively, the object may be moved by dragging it with the mouse, i.e., clicking and holding down the left mouse button, moving the mouse to a new position and releasing the left mouse button. As the object is being moved a green line indicates the direction and distance that the selected object(s) are displaced from their original positions.

If the edited file is wider than the available table width (as specified in the Machine Options dialog box), the warning message "Marker is wider than Table" is issued. If the edited file is wider than the current material width (as specified in the Material Options or Job Options dialog box), the warning message "Marker is wider than Material" is issued.

The Edit | Move menu option is the default function for any selected drawing object. This is indicated by the four arrowed mouse cursor which appears when the mouse is moved over the selected object.

Rotate

The Rotate option of the Edit Menu repositions objects within the current drawing by rotating them about a point. To rotate a specific object or objects, first select those objects as described in the Select | Object menu option. If the Rotate menu option is initiated without making an object selection, all objects in the drawing are automatically selected and rotated. The Rotate option is only available in the layout program mode when a drawing is displayed in the drawing area of the Easicut main window.



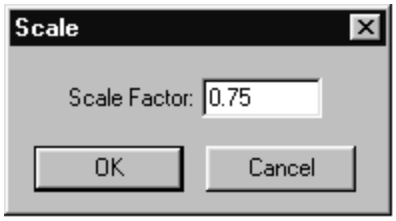
When the Rotate menu option is selected, a dialog box is displayed which prompts for a rotation angle in degrees. A positive angle causes a counterclockwise rotation. Valid rotation angles are in the range -359.999 to 359.999. Click the OK button to perform the rotation or click Cancel to terminate the Rotate function.

The selected objects are rotated about a point centered on all of the selected objects. When one object is selected for rotation, that point is at the center of the selected object. When more than one object is selected for rotation, each object is not rotated about its own center but rather all objects are rotated about a common point which is at the center of all the selected objects.

If the edited file is wider than the available table width (as specified in the Machine Options dialog box), the warning message "Marker is wider than Table" is issued. If the edited file is wider than the current material width (as specified in the Material Options or Job Options dialog box), the warning message "Marker is wider than Material" is issued.

Scale

The Scale option of the Edit Menu resizes objects within the current drawing. To scale a specific object or objects, first select those objects as described in the Select | Object menu option. If the Scale menu option is initiated without making an object selection, all objects in the drawing are automatically selected and scaled. The Scale option is only available in the layout program mode when a drawing is displayed in the drawing area of the Easicut main window.



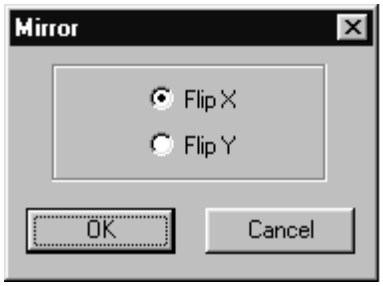
When the Scale menu option is selected, a dialog box is displayed which prompts for a Scale factor. Factors less than 1 reduce the size of the drawing objects while factors greater than one increase the size of the drawing objects. Valid scale factors are in the range 0.001 to 999.999. Click the OK button to perform the scaling or click Cancel to terminate the Scale function.

The reference or anchor point of the scaling is the lower left corner of a rectangle which circumscribes all the objects selected for scaling. This means that scaling of multiple objects not only changes their size but also changes their separation.

If the edited file is wider than the available table width (as specified in the Machine Options dialog box), the warning message "Marker is wider than Table" is issued. If the edited file is wider than the current material width (as specified in the Material Options or Job Options dialog box), the warning message "Marker is wider than Material" is issued.

Mirror

The Mirror option of the Edit Menu flips selected objects within the current drawing about a line which is parallel to the X or Y axis of the drawing and centered on the selected object(s). To mirror a specific object or objects, first select those objects as described in the Select | Object menu option. If the Mirror menu option is initiated without making an object selection, all objects in the drawing are automatically selected and mirrored about a line centered within the drawing. The Mirror option is only available in the layout program mode when a drawing is displayed in the drawing area of the Easicut main window.



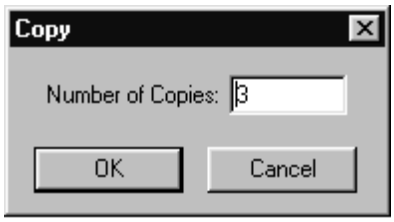
When the Mirror menu option is selected, a dialog box is displayed which prompts for a flip direction. The Flip X option flips the selected objects about a vertical line while the Flip Y

option flips the objects about a horizontal line. Click the OK button to perform the mirroring or click Cancel to terminate the Mirror function.

Note that when more than one object is selected for mirroring, each object is not mirrored about its own center line but rather all objects are mirrored about a common line which bisects a rectangle circumscribing all of the selected objects.

Copy

The Copy option of the Edit Menu duplicates objects within the current drawing. To copy a specific object or objects, first select those objects as described in the Select | Object menu option. If the Copy menu option is initiated without making an object selection, all objects in the drawing are automatically selected and copied. The Copy option is only available in the layout program mode when a drawing is displayed in the drawing area of the Easicut main window.



When the Copy menu option is selected, a dialog box is displayed which prompts for the number of copies to make. Valid numbers are in the range 1 to 99. Click the OK button to initiate the copying or click Cancel to terminate the Copy function.

The position of the object copies relative to the original object is specified using the mouse. Left click anywhere in the drawing (not necessarily on a selected object), move the mouse until the object copy is in the desired position and left click again. Alternatively, the object copy may be positioned by dragging it with the mouse, i.e., clicking and holding the left mouse button, moving the mouse to a new position and releasing the left mouse button. As the object copy is being moved a green line indicates the direction and distance the first copy is displaced from the original object. If more than one copy was specified in the Copy dialog box, each additional object copy is displaced by the same amount from the previous copy.

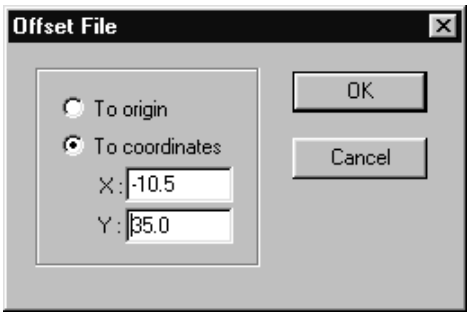
If the edited file is wider than the available table width (as specified in the Machine Options dialog box), the warning message "Marker is wider than Table" is issued. If the edited file is wider than the current material width (as specified in the Material Options or Job Options dialog box), the warning message "Marker is wider than Material" is issued.

Erase

The Erase option of the Edit Menu deletes objects from the current drawing. To erase a specific object or objects, first select those objects as described in the Select | Object menu option. The Erase option is only available in the layout program mode when a drawing is displayed in the drawing area of the Easicut main window and at least one drawing object is selected.

Offset File…

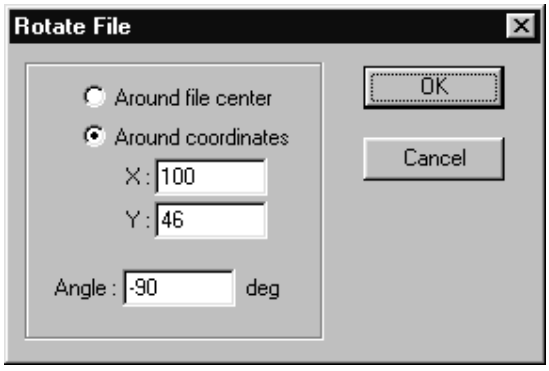
The Offset File option of the Edit Menu repositions the current drawing with respect to the drawing area's coordinate system. The Offset File option is only available in the layout program mode when a drawing is displayed in the drawing area of the Easicut main window.



When the Offset File menu option is selected, a dialog box is displayed which prompts for an offset position. If the "To origin" option is selected, the file is repositioned such that the lower left corner of the rectangle circumscribing the contents of the current drawing is placed at the origin of the drawing area coordinate system. If the "To coordinates" option is selected, enter the X and Y coordinates of the lower left corner of the circumscribing rectangle. The coordinates must be specified in the currently selected units of measure displayed on the status bar at the bottom of the Easicut main window. Click the OK button to perform the offset or click Cancel to terminate the Offset File function.

Rotate File…

The Rotate File option of the Edit Menu repositions objects within the current drawing by rotating them about a point. The Rotate File option is only available in the layout program mode when a drawing is displayed in the drawing area of the Easicut main window.



When the Rotate File menu option is selected, a dialog box is displayed which prompts for a rotation point and rotation angle. Enter the rotation angle in degrees. A positive angle causes a counterclockwise rotation. Valid rotation angles are in the range -359.999 to 359.999.

If the "Around file center" option is selected, the file is rotated around a point that is centered in a rectangle circumscribing the contents of the current drawing. If the "Around coordinates" option is selected, enter the X and Y coordinates of the point around which to rotate the file. The coordinates must be entered in the currently selected units of measure displayed on the status bar. Click the OK button to perform the rotation or click Cancel to terminate the Rotate File function.

If the edited file is wider than the available table width (as specified in the Machine Options dialog box), the warning message "Marker is wider than Table" is issued. If the edited file is wider than the current material width (as specified in the Material Options or Job Options dialog box), the warning message "Marker is wider than Material" is issued.

Scale File…

The Scale File option of the Edit Menu resizes all objects within the current drawing. The Scale File option is only available in the layout program mode when a drawing is displayed in the drawing area of the Easicut main window.

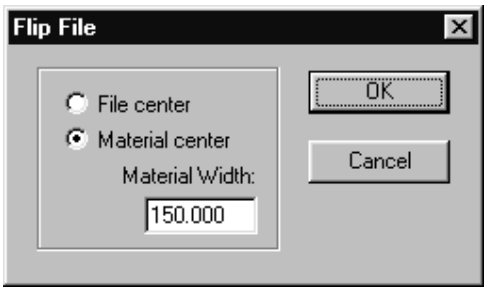
When the Scale File menu option is selected, a dialog box is displayed which prompts for a Scale factor. Factors less than 1 reduce the size of the drawing objects while factors greater than one increase the size of the drawing objects. Valid scale factors are in the range 0.001 to 999.999. Click the OK button to perform the scaling or click Cancel to terminate the Scale File function.

The reference or anchor point of the scaling is the lower left corner of a rectangle which circumscribes all the objects in the drawing. This means that scaling of multiple objects not only changes their size but also changes their separation.

If the edited file is wider than the available table width (as specified in the Machine Options dialog box), the warning message "Marker is wider than Table" is issued. If the edited file is wider than the current material width (as specified in the Material Options or Job Options dialog box), the warning message "Marker is wider than Material" is issued.

Flip File…

The Flip File option of the Edit Menu flips the current drawing about a line which is parallel to the X axis of the drawing (horizontal line). The Flip File option is only available in the layout program mode when a drawing is displayed in the drawing area of the Easicut main window.



When the Flip File menu option is selected, a dialog box is displayed which prompts for the location of the line about which to flip the drawing. Select the "File center" option to flip the drawing about a horizontal line which bisects a rectangle circumscribing all objects in the drawing. Select the "Material center" option to flip the drawing about a horizontal line which bisects the specified material width. The material width must be entered in the currently selected units of measure displayed on the status bar. Click the OK button to execute the flip or click Cancel to terminate the File Flip function.

New Layer…

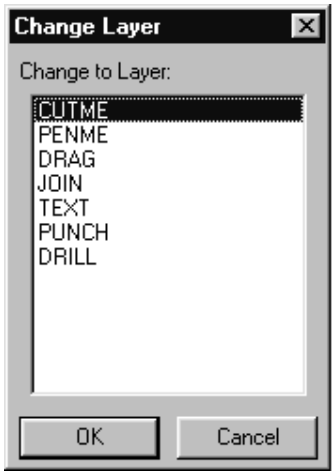
The New Layer option of the Edit Menu adds a new layer to the current job. The New Layer option is only available in the layout program mode.

The Add Layer dialog box is displayed when the New Layer menu option is invoked. Enter the name of the new layer in the "Layer Name" text box. Layer names are case-insensitive and only the first five characters of a layer name are significant.

If the settings of the new layer are nearly identical to those of an existing layer, check the "Use copy from list" option and select the name of the existing layer in the "Copy From" combobox. Otherwise, the new layer settings are assigned default values. Click OK to create the new layer or click Cancel to terminate the New Layer menu option. The settings of the new layer may be edited in the Job Options dialog box.

Change Layer…

The Change Layer option of the Edit Menu places objects within the current drawing on a new drawing layer. To change the layer of a specific object or objects, first select those objects as described in the Select | Object menu option. If the Change Layer menu option is initiated without making an object selection, all objects in the drawing are automatically selected and moved to a specified layer.



The Change Layer option is only available in the layout program mode when a drawing is displayed in the drawing area of the Easicut main window.

When the Change Layer menu option is selected, a dialog box is displayed which lists the layers available in the current job. Select the desired layer in the list and click the OK button to place the drawing objects on the selected layer. Click Cancel to terminate the Change Layer function.

Explode

The Explode option of the Edit Menu separates parts or panels within the current drawing into their individual drawing entities. For example, a single part in a drawing may include a perimeter cut polyline entity, several punch entities, and a text entity which identifies the part. All of these entities are treated as a single drawing object while they are grouped into a part. The Explode function eliminates this grouping. Each entity may be selected and edited as a separate drawing object. The Explode option does not reposition any of the drawing objects.

To explode a specific part or parts, first select those parts as described in the Select | Object menu option. If the Explode menu option is initiated without making a part selection, all parts in the drawing are automatically selected and exploded. The Explode option is only available in the layout program mode when a drawing is displayed in the drawing area of the Easicut main window.

If the Show Part Sequence or Show Part Name option of the ToolPath Menu is enabled, the cutting sequence number or name of an exploded part is erase since it no longer exists

in the drawing as a part. Use the Edit | To Panel menu option to merge drawing entities into a single part again.

To Panel

The To Panel option of the Edit Menu merges selected drawing entities into a single part or panel. Once a set of drawing entities is merged into a single part, the entities within the part may be selected and edited as a single drawing object. The To Panel option does not reposition any of the drawing objects. The To Panel option is only available in the layout program mode when a drawing is displayed in the drawing area of the Easicut main window.

To merge specific drawing entities into a part, first select those entities as described in the Select | Object menu option. If the To Panel menu option is initiated without selecting any drawing entities, all objects in the drawing are automatically selected and merged.

If more than one part (not entity) is selected, an error message is issued and the To Panel function is terminated. If one of the selected drawing objects is a part, all selected drawing objects are added to the selected part.

If none of the selected drawing objects are parts, a dialog box is displayed, prompting for a part or panel name. The next available panel name is the default entry. Enter the desired name for the panel and click OK to merge the selected drawing objects into a single part or panel. Click the Cancel button to terminate the To Panel function without merging the drawing objects.

Use the Edit | Explode menu option to divide the part into its constituent drawing entities again.

Select Menu

The Select Menu includes options that provide different methods of selecting one or more objects in the current drawing file shown in the drawing area of the Easicut main

window. Selected objects may be edited or processed separately from the rest of the objects in the drawing.

Object

The Object option of the Select Menu allows a single drawing object to be added to or removed from the list of selected drawing objects. Selected drawing objects are redrawn in magenta to identify them as being selected. The Object option is only available in the layout program mode when a drawing is displayed in the drawing area of the Easicut main window.

A part or panel is a single drawing object which consists of one or more individual drawing entities. The entire part or panel must be selected and deselected as a single object. In order to select one of the constituent entities of a part, first use the Edit | Explode menu option to separate the part into its individual entities.

A drawing object is selected by positioning the mouse cursor on the object and clicking the left mouse button. If any other objects are selected, these are immediately deselected. The Select | Object menu option is the default function in the layout program mode.

Select an additional drawing object by holding down the Shift key and left clicking on the object. Deselect an object by holding down the Ctrl keys and left clicking on the selected object.

To select all objects in the drawing, hold the Shift key down while clicking the Select | Object menu option. To deselect all objects in the drawing, hold the Ctrl key down while clicking the Select | Object menu option. To invert the selected and deselected objects in the drawing, hold the Shift and Ctrl keys down while clicking the Select | Object menu option.

All

The All option of the Select Menu selects all objects in the current drawing. All drawing objects are redrawn in magenta to identify them as being selected. The All option is only available in the layout program mode when a drawing is displayed in the drawing area of the Easicut main window. This option is equivalent to holding down the Shift key while clicking the Select | Object menu option.

Window

The Window option of the Select Menu selects objects within an area of the current drawing. The area is specified by drawing a rectangular window using the mouse. The specific method of selection depends on whether the window is drawn from left to right

or from right to left. All drawing objects are redrawn in magenta to identify them as being selected. The Window option is only available in the layout program mode when a drawing is displayed in the drawing area of the Easicut main window.

To perform a complete window selection, click the Select | Window option, move the mouse cursor to the upper left or lower left corner of the desired area of interest, and click the left mouse button. Then move the mouse cursor to the lower right or upper right corner of the desired area and left click again. All drawing objects that lie completely within the area outlined in green by the mouse cursor movement are selected.

To perform a partial window selection, click the Select | Window option, move the mouse cursor to the upper right or lower right corner of the desired area of interest, and click the left mouse button. Then move the mouse cursor to the lower left or upper left corner of the desired area and left click again. All drawing objects that lie completely or partially within the area outlined in green by the mouse cursor movement are selected.

Invert

The Invert option of the Select Menu deselects all currently selected objects in the drawing and selects all drawing objects not previously selected. The selected drawing objects are redrawn in magenta to identify them as being selected. The Invert option is only available in the layout program mode when a drawing is displayed in the drawing area of the Easicut main window. This option is equivalent to holding down the Shift and Ctrl keys while clicking the Select | Object menu option.

Deselect All

The Deselect All option of the Select Menu deselects all objects in the current drawing. All drawing objects are redrawn in their normal colors to identify them as not being selected. The Deselect All option is only available in the layout program mode when a drawing is displayed in the drawing area of the Easicut main window. This option is equivalent to holding down the Ctrl key while clicking the Select | Object menu option.

Adjoining

The Adjoining option of the Select Menu selects all objects in the current drawing that are adjacent to the currently selected object or objects. Selected drawing objects are redrawn in magenta to identify them as being selected. The Adjoining option is only available in the layout program mode when a drawing is displayed in the drawing area of the Easicut main window and at least one drawing object is selected.

View Menu

The View Menu options are used to modify the displays within the Easicut main window including the drawing area, toolbar, status bar, and the dialog boxes in the dialogs area. None of the View Menu options affect the contents of a drawing file.

Redraw

The Redraw option of the View Menu simply refreshes the display of the current drawing. No changes are made to the drawing's contents or presentation. The Redraw option may be used to "clean up" the drawing area after edit commands have left artifacts within the drawing area. The Redraw option is available in all program modes.

Pan

The Pan option of the View Menu is used to reposition the drawing within the drawing area. The Pan option moves the center of the current view of the drawing file, allowing other parts of the drawing to be examined at the current zoom or magnification factor. The Pan option is available in all program modes when a drawing is displayed in the drawing area.

After the Pan option is selected, move the mouse cursor to the desired view center point and click the left mouse button. The drawing file view is shifted to place the clicked point at the center of the drawing area.

Zoom All

The Zoom All option of the View Menu resizes the view of the current drawing so that it is at the maximum zoom or magnification and still fits within the drawing area. The Zoom All option ensures a view of the entire contents of the current drawing file. The Zoom All option is available in all program modes.

Zoom Window

The Zoom Window option of the View Menu allows the user to select a particular area of the current drawing for magnification. The Zoom Window option is available in all program modes.

After the Window option is selected, move the mouse cursor to the upper left corner of the desired area of interest and click the left mouse button. Then move the mouse cursor to the lower right corner of the desired area and left click again. Alternatively, click and hold the left mouse button at the upper left corner of the desired area, move the mouse to the lower right corner and release the left mouse button. The area outlined in green by the mouse cursor movement is then expanded to fill the space available in the drawing area.

Zoom Table

The Zoom Table option of the View Menu resizes the view of the current drawing so that it is at the maximum zoom or magnification and the drawing's table area still fits within the drawing area. The table area is the white rectangular area within a drawing that represents the dimensions of the cutting table. Since this table area is only displayed in the simulate and cutting program modes, the Zoom Table option is only available in these two modes. Zoom Table is not available in the layout mode.

Zoom In

The Zoom In option of the View Menu magnifies the view of the current drawing by a factor of two. The center of the view does not change. Therefore, areas of the drawing originally near the edges of the drawing area may no longer be visible after the Zoom In option is selected. The Zoom In option is available in all program modes.

Zoom Out

The Zoom Out option of the View Menu reduces the view of the current drawing by a factor of two. The center of the view does not change. Therefore, areas of the drawing originally outside the edges of the drawing area may become visible after the Zoom Out option is selected. The Zoom Out option is available in all program modes.

Zoom Previous

The Zoom Previous option of the View Menu reverts to the previous view of the current drawing. This option acts as an undo function for the most recently selected zoom option. The Zoom Previous option does not work backwards through an entire sequence of zoom views; selecting the Zoom Previous option several times in succession merely toggles the drawing view between the current view and the previous view. The Zoom Previous option is available in all program modes once at least one other zoom option has been executed.

Show Layers

The Show Layers option of the View Menu is used to display and erase the Layers dialog box within the dialogs area of the Easicut main window. The Show Layers option is available in all program modes.

If the Show Layers option is checked, the Layers dialog box is displayed; clicking the menu option erases the Layers dialog box from the dialogs area and unchecks the menu option. If the Show Layers option is unchecked, the Layers dialog box is not displayed; clicking the menu option adds the Layers dialog box to the dialogs area and checks the menu option.

Show Tools

The Show Tools option of the View Menu is used to display and erase the Tools dialog box within the dialogs area of the Easicut main window. The Show Tools option is available in all program modes.

If the Show Tools option is checked, the Tools dialog box is displayed; clicking the menu option erases the Tools dialog box from the dialogs area and unchecks the menu option. If the Show Tools option is unchecked, the Tools dialog box is not displayed; clicking the menu option adds the Tools dialog box to the dialogs area and checks the menu option.

Show Status

The Show Status option of the View Menu is used to display and erase the Status dialog box within the dialogs area of the Easicut main window. The Show Status option is available in all program modes.

If the Show Status option is checked, the Status dialog box is displayed; clicking the menu option erases the Status dialog box from the dialogs area and unchecks the menu option. If the Show Status option is unchecked, the Status dialog box is not displayed; clicking the menu option adds the Status dialog box to the dialogs area and checks the menu option.

Show Toolbar

The Show Toolbar option of the View Menu is used to display and erase the toolbar found just beneath the main menu bar at the top of the Easicut main window. The Show Toolbar option is available in all program modes.

If the Show Toolbar option is checked, the toolbar is displayed; clicking the menu option erases the toolbar from the Easicut main window and unchecks the menu option. If the Show Toolbar option is unchecked, the toolbar is not displayed; clicking the menu option adds the toolbar to the Easicut main window and checks the menu option.

Show Status Bar

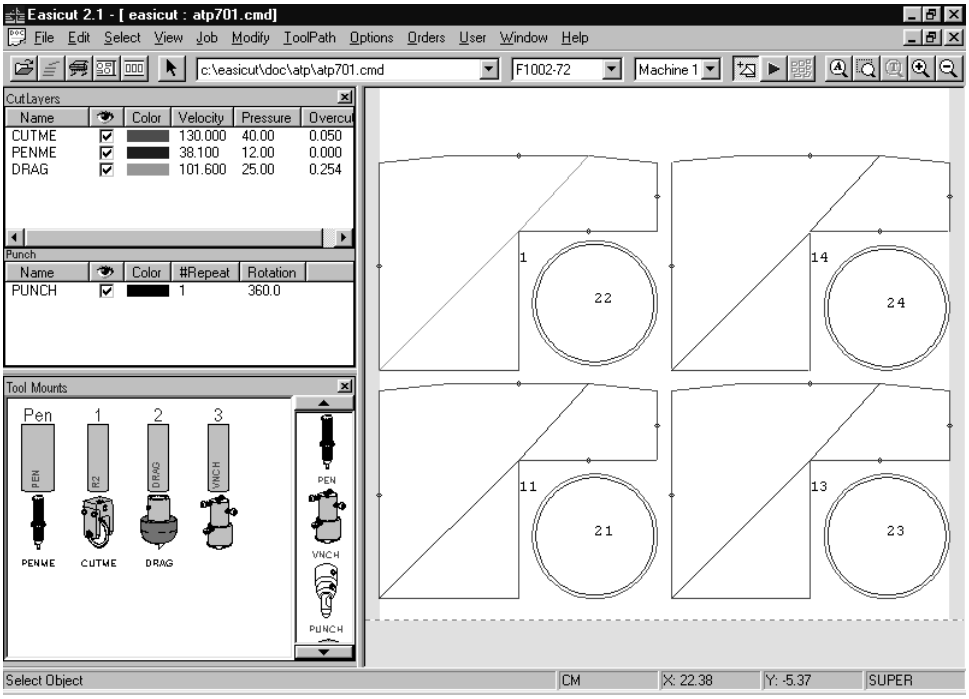
The Show Status Bar option of the View Menu is used to display and erase the status bar found at the bottom of the Easicut main window. The Show Status Bar option is available in all program modes.

If the Show Status Bar option is checked, the status bar is displayed; clicking the menu option erases the status bar from the Easicut main window and unchecks the menu option. If the Show Status Bar option is unchecked, the status bar is not displayed; clicking the menu option adds the status bar to the Easicut main window and checks the menu option.

Dock Left

The Dock Left option of the View Menu is used to position the dialogs area at the left edge of the Easicut main window. The Dock Left option is available in all program modes.

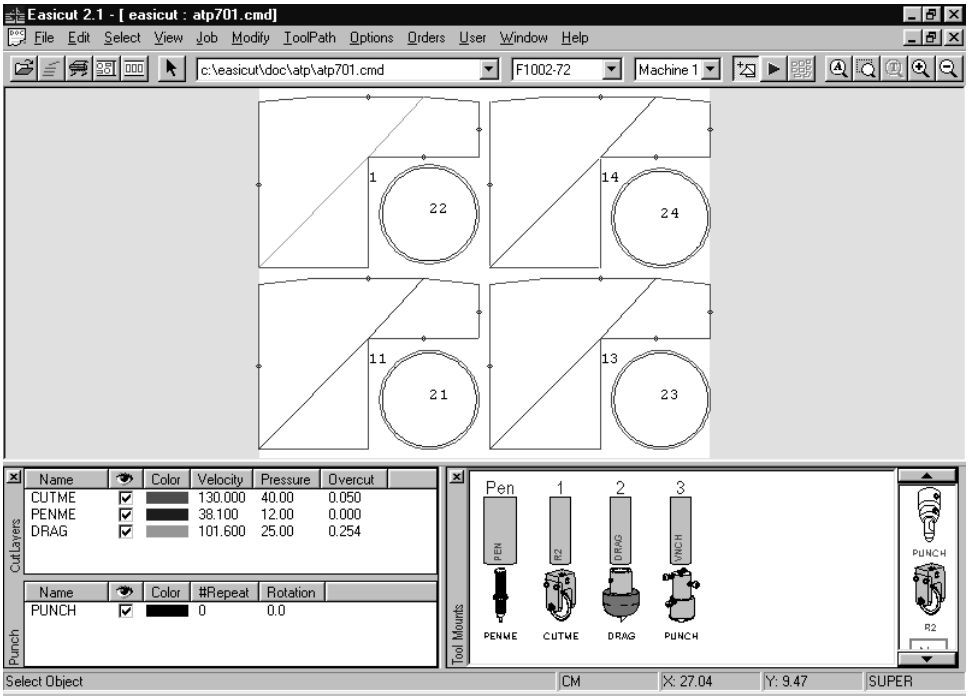
If the Dock Left option is unchecked, the dialogs area is displayed at the bottom edge of the main window; clicking the menu option repositions the dialogs area at the left edge of the Easicut main window and checks the menu option. Clicking the Dock Left menu option when it is already checked has no effect. To uncheck the Dock Left option, select the Dock Bottom option of the View Menu.



Dock Bottom

The Dock Bottom option of the View Menu is used to position the dialogs area at the bottom edge of the Easicut main window. The Dock Bottom option is available in all program modes.

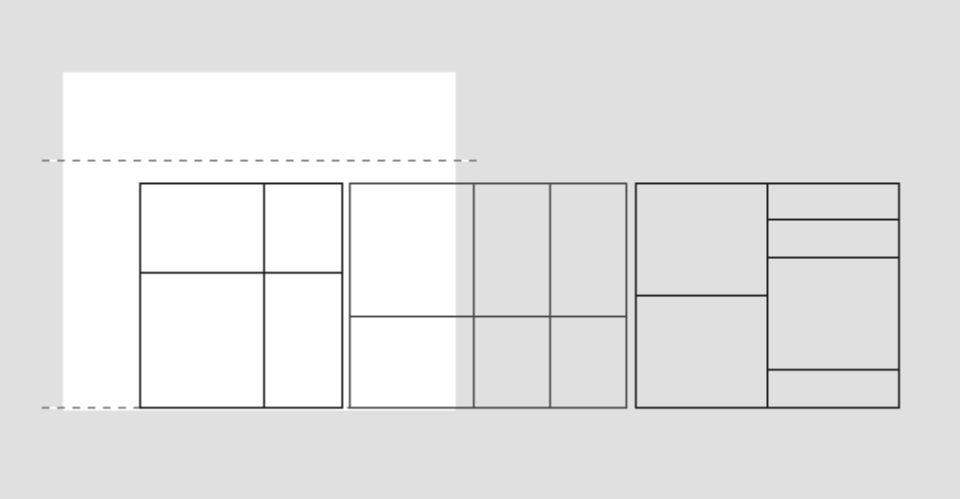
If the Dock Bottom option is unchecked, the dialogs area is displayed at the left edge of the main window; clicking the menu option repositions the dialogs area at the bottom edge of the Easicut main window and checks the menu option. Clicking the Dock Bottom menu option when it is already checked has no effect. To uncheck the Dock Bottom option, select the Dock Left option of the View Menu.



Show Table Bites

The Show Table Bites option of the View Menu is used to identify the table bites within the current drawing file. The Show Table Bites option is only available in the simulate and cutting program modes.

If the pattern within the current drawing file is longer than the available length of the cutting table, the drawing is divided into table bites. Each such bite is processed or cut as an individual pattern. The Show Table Bites option tags all drawing objects that are in the same table bite with the same color. Moving from left to right in the drawing, the table bite colors alternate between blue and red.



If the Show Table Bites option is checked, the table bites are shown in the drawing in alternating blue and red colors; clicking the menu option displays the drawing in its normal layer-dependent colors and unchecks the menu option. If the Show Table Bites option is unchecked, the current drawing is displayed in its normal layer-dependent colors; clicking the menu option shows the drawing's table bites in alternating blue and red colors and checks the menu option.

Job Menu

The Job Menu includes options that provide access to Easicut job files and allow those files to be created and modified.

New Job…

The New Job option of the Job Menu creates a new job file and saves the current job parameters in that file. The New Job option is available in all program modes. A New Job dialog box is opened when the New Job menu option is selected.

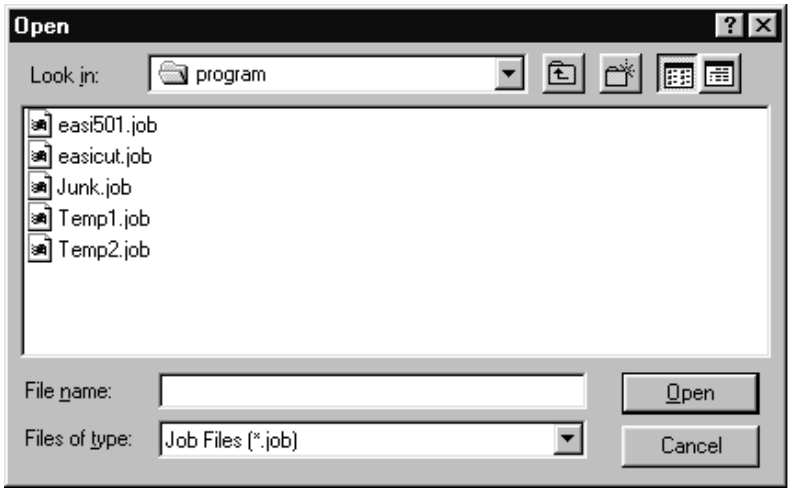
Specify a new job name and/or job path in the text boxes provided. Enter the name of an existing job file in the "Copy from Job" text box to initialize the new job file with that file's settings. If no entry is made in the "Copy from Job" text box, the new job settings are all set to default values. It is recommended that the default job file EASICUT.JOB be used to initialize any new job file.

The button to the right of the "Job Path" text box opens a folder or directory browser dialog box to help search for an existing path for the new job file. The button to the right of the "Copy from Job" text box opens a File Open dialog box to help search for and select an existing job file.

Click the OK button to create the new job file and make it the current job. The program is placed in the layout mode and the drawing area is cleared. The name of the new job file is included in the title bar of the Easicut main window. Click the Cancel button to abort the New Job option.

Open Job…

The Open Job option of the Job Menu is used to open an existing Easicut job file and to recall the file's job settings. The Open Job option is available in all program modes. As shown below, the standard Windows Open dialog box is displayed when the Job | Open Job menu option is selected.



Select the name of an existing job file in the list or just type the name of the job file in the "File name" text box.

Click the Open button to open the selected job file and make it the current job. The program is placed in the layout mode and the drawing area is cleared. The name of the opened job file is included in the title bar of the Easicut main window. Click the Cancel button to abort the Open Job option.

The key combination Ctrl+J may be used to select the Job | Open Job menu option from the keyboard.

Save Job

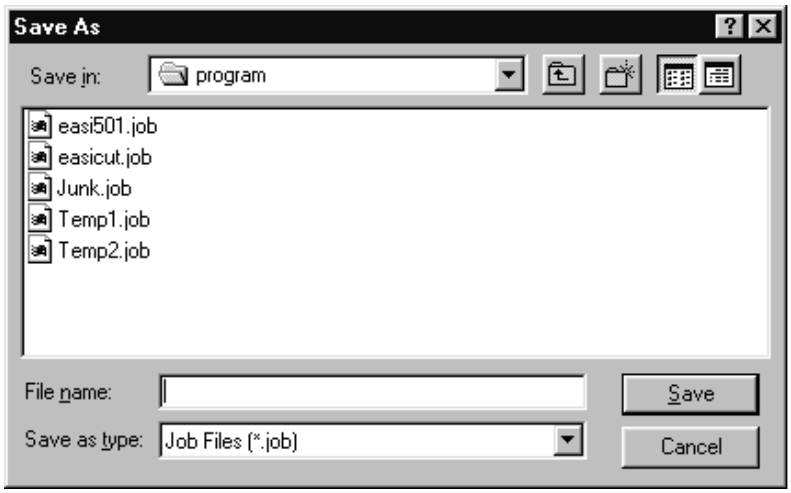
The Save Job option of the Job Menu is used to save the current job settings to the current job file named in the title bar of the Easicut main window. If an existing job file was previously opened and modified, that file is overwritten with the modified settings. The Save Job option is available in all program modes.

Save Job As…

The Save Job As option of the Job Menu is used to save the current job settings to a job file other than the currently opened job file. The current job file is not overwritten nor deleted. The Save Job As option is available in all program modes.

The standard Windows Save As dialog box is opened when the Job | Save Job As menu option is selected. Enter the new name for the current job settings in the "File name" text

box. Click the Save button. The saved job file becomes the current job file. Its name is added to the title bar of the Easicut main window.



Close Job

The Close Job option of the Job Menu closes the current job file named in the title bar of the Easicut main window. The default Easicut.job file becomes the current job file. If Easicut.job is the current job file, a message is issued stating that the default job file may not be closed; Easicut 2.1 requires that a job file be opened at all times. The Close Job option is available in all program modes.

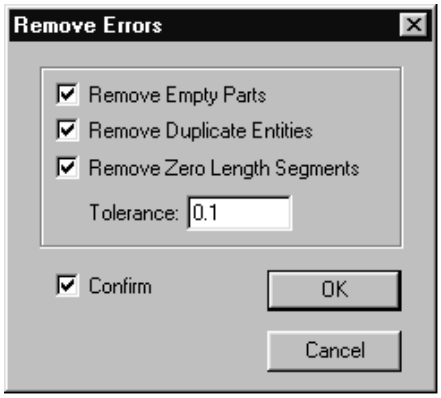
Modify Menu

The Modify Menu includes options that edit the contents of the current drawing file based on cutting machine performance and user processing preferences. These options are generally intended to increase cutting efficiency or improve the results of the cutting.

Remove Errors…

The Remove Errors option of the Modify Menu provides a method for deleting certain anomalies from drawing files. These anomalies can be caused under certain

circumstances by the CAD software used to generate the drawing files. The Remove Errors option is only available in the layout program mode when a drawing file is opened.

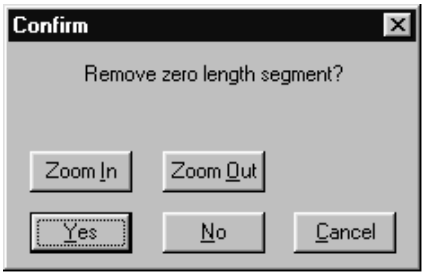


A dialog box is opened when the Remove Errors menu option is selected. The default entries included in this dialog box are copied from entries made on the Optimize tab of the Job Options dialog box. Check the types of errors to remove from the current drawing. The "Remove Empty Parts" option deletes all blocks or panels within the drawing which contain no drawing objects or entities. The "Remove Duplicate Entities" option deletes all drawing entities which are duplicates of other entities. An entity is a duplicate of another entity if it is the same type of entity, is on the same layer of the drawing and its points are all within the specified Tolerance distance of the corresponding points in the other entity. A tolerance of 0 means that the points of the two entities must be at exactly the same coordinates to be considered duplicates. The "Remove Zero Length Segments" option deletes all line or arc segments within drawing entities which are shorter than the specified Tolerance distance. A tolerance of 0 means that the line segments must have a length of zero to be removed. If all segments of a drawing entity are considered zero length, the entity is replaced by a punch point entity.

The Tolerance distance must be entered in the currently selected units displayed on the status bar. Valid tolerance distances are in the range of 0 to 100 centimeters.

Check the "Confirm" option if you want to be informed of each entity being removed from the drawing and would like to confirm the entity's removal. If the Confirm option is not checked, all errors of the selected type(s) that meet the specified tolerance criteria are deleted from the drawing and the Remove Errors dialog box is closed.

If the Confirm option is checked, a Confirm dialog box is displayed each time an error meeting the specified type and tolerance criteria is located.



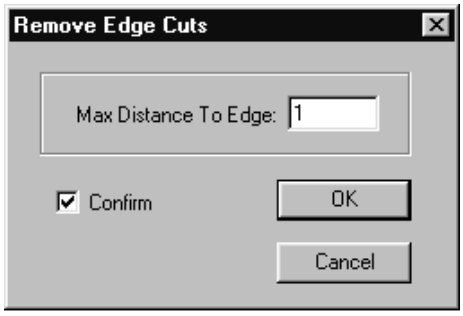
The message in the dialog box varies with the type of error located. The error entity is highlighted in green in the drawing. The Zoom In and Zoom Out buttons are used to adjust the magnification of the drawing. Use Zoom In to view the details of a small entity. Use Zoom Out to view the drawing context of an error entity.

Click Yes to remove the identified entity from the drawing, click No to keep the entity in the drawing and continue Remove Errors processing, and click Cancel to abort the Remove Errors option. If Cancel is clicked, all changes made to the drawing by the Remove Errors option are cancelled.

Remove Edge Cuts…

The Remove Edge Cuts option of the Modify Menu provides a method for deleting drawing entities or parts of drawing entities that lie along the top and bottom edges of the material being cut. The bottom edge of the material is always assumed to be along the X axis of the drawing coordinate system, i.e., at the horizontal line defined by Y = 0. The top edge of the material lies at a distance equal to the current material width above the X axis, i.e., at the horizontal line defined by Y = material width. If a material is specified for the current drawing file, the width of that material is used. If no material is specified, the default material width specified in the Job Options dialog box is used. The current material width can be indicated in the drawing area by checking the "Show Material Width" option on the Prefs tab of the Job Options dialog box.

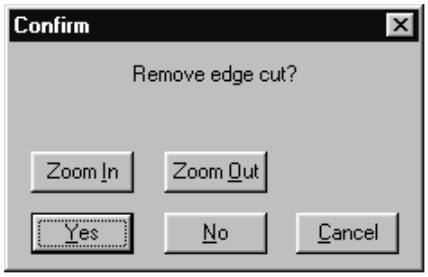
The Remove Edge Cuts option is only available in the layout program mode when a drawing file is opened.



A dialog box is opened when the Remove Edge Cuts menu option is selected. The default entries included in this dialog box are copied from entries made on the Optimize tab of the Job Options dialog box. Enter into the "Max Distance To Edge" text box the maximum distance an entity may be from the material edge and still be trimmed or removed from the drawing. A distance of 0 trims only those parts of the drawing that are exactly on or are outside of the edges of the material. The distance must be entered in the currently selected units displayed on the status bar. Valid distances are in the range of 0 to 5 centimeters.

Check the "Confirm" option if you want to be informed of each entity or entity segment being removed from the drawing and would like to confirm the removal. If the Confirm option is not checked, all drawing entities or parts of entities that meet the specified distance criteria are removed from the drawing and the Remove Edge Cuts dialog box is closed.

If the Confirm option is checked, a Confirm dialog box is displayed each time an entity meeting the specified distance criteria is located. The part of the entity which is to be trimmed is highlighted in green in the drawing area.



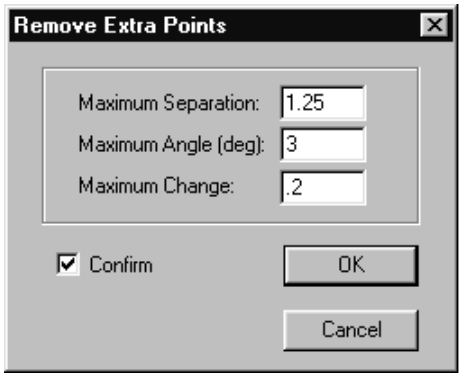
The Zoom In and Zoom Out buttons are used to adjust the magnification of the drawing. Use Zoom In to view the details of a small entity. Use Zoom Out to view the drawing context of an entity.

Click Yes to remove the identified entity or part of an entity from the drawing, click No to keep the entity in the drawing and continue Remove Edge Cuts processing, and click Cancel to abort the Remove Edge Cuts option. If Cancel is clicked, all changes made to the drawing by the Remove Edge Cuts option are cancelled.

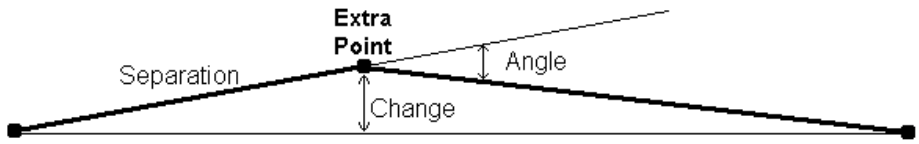
Remove Extra Pts…

The Remove Extra Pts option of the Modify Menu is used to delete superfluous points from within polyline drawing entities. This option only removes points along a polyline which lie between two linear segments; points at the start or end of a curve are never removed. A superfluous point is one which, if removed, has little or no affect on the shape or cutting results of the drawing. Such points add to the processing time of a file but contribute nothing to the final results of the cutting. The Remove Extra Pts option is only available in the layout program mode when a drawing file is opened.

A dialog box is opened when the Remove Extra Pts menu option is selected. The default entries included in this dialog box are copied from entries made on the Optimize tab of the Job Options dialog box. Enter into the "Maximum Separation", "Maximum Angle" and "Maximum Change" text boxes the criteria for removal of extra points from the drawing.



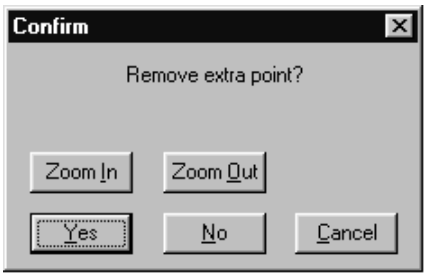
The "Maximum Separation" and "Maximum Change" distances must be entered in the currently selected units displayed on the status bar. Valid "Maximum Separation" distances are in the range of 0 to 1000 centimeters. Valid values for the "Maximum Angle" are in the range of 0 to 45 degrees. Valid "Maximum Change" distances are in the range of 0 to 10 centimeters.



If the distance between a point and its nearest neighbor is greater than or equal to the "Maximum Separation" distance, the point is **not** removed from the drawing. If the break angle between the two line segments meeting at a point is greater than or equal to the "Maximum Angle", the point is **not** removed from the drawing. If the shift in the cut line position due to removal of a point is greater than or equal to the "Maximum Change" distance, the point is **not** removed from the drawing.

Check the "Confirm" option if you want to be informed of each point being removed from the drawing and would like to confirm the point's removal. If the Confirm option is not checked, all points that meet the specified criteria are removed from the drawing and the Remove Extra Points dialog box is closed.

If the Confirm option is checked, a Confirm dialog box is displayed each time a point meeting the specified criteria is located.



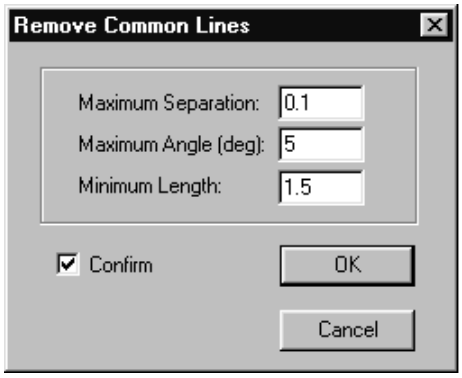
A green circle is drawn around the point which is to be removed. The Zoom In and Zoom Out buttons are used to adjust the magnification of the drawing. Use Zoom In to view the details near a point. Use Zoom Out to view the drawing context of a point.

Click Yes to remove the identified point from the drawing, click No to keep the point in the drawing and continue Remove Extra Points processing, and click Cancel to abort the Remove Extra Pts option. If Cancel is clicked, all changes made to the drawing by the Remove Extra Pts option are cancelled.

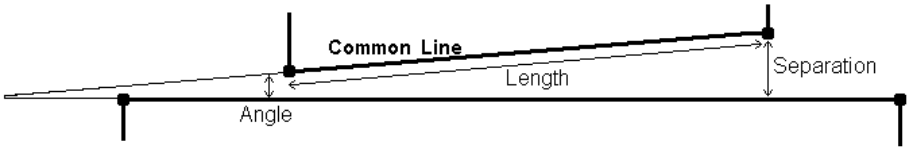
Remove Common Lines…

The Remove Common Lines option of the Modify Menu is used to delete superfluous or duplicate cut lines from the current drawing. A superfluous cut line is one which, if removed, has little or no affect on the cutting results of the drawing. Such lines add to the processing time of a file but contribute nothing to the final results of the cutting. The Remove Common Lines option is only available in the layout program mode when a drawing file is opened.

A dialog box is opened when the Remove Common Lines menu option is selected. The default entries included in this dialog box are copied from entries made on the Optimize tab of the Job Options dialog box. Enter into the "Maximum Separation", "Maximum Angle" and "Minimum Length" text boxes the criteria for removal of common lines from the drawing.



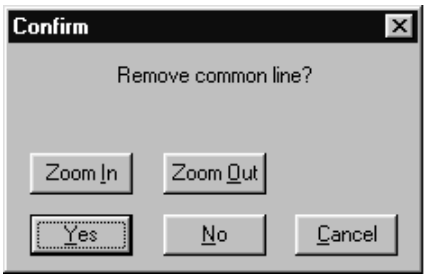
The "Maximum Separation" and "Minimum Length" distances must be entered in the currently selected units displayed on the status bar. Valid "Maximum Separation" distances are in the range of 0 to 10 centimeters. Valid values for the "Maximum Angle" are in the range of 0 to 30 degrees. Valid "Minimum Length" distances are in the range of 0 to 1000 centimeters.



Two lines may be considered common only if they are both on the same drawing layer. If the distance between at least one of a line's points and another line is greater than the "Maximum Separation" distance, the line is **not** removed from the drawing. If the angle made by a line and another line is greater than the "Maximum Angle", the line is **not** removed from the drawing. If the length of a line is less than the "Minimum Length" distance, the line is **not** removed from the drawing.

Check the "Confirm" option if you want to be informed of each line being removed from the drawing and would like to confirm the line's removal. If the Confirm option is not checked, all lines that meet the specified criteria are removed from the drawing and the Remove Common Lines dialog box is closed.

If the Confirm option is checked, a Confirm dialog box is displayed each time a line meeting the specified criteria is located.



The line which is to be removed is highlighted in green in the drawing area. The Zoom In and Zoom Out buttons are used to adjust the magnification of the drawing. Use Zoom In to view the details of a short line. Use Zoom Out to view the drawing context of a line.

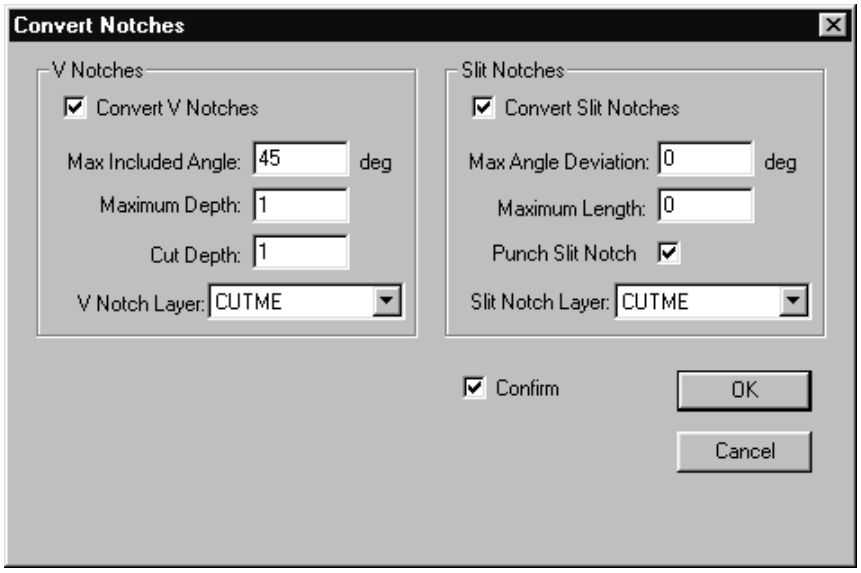
Click Yes to remove the identified line from the drawing, click No to keep the line in the drawing and continue Remove Common Lines processing, and click Cancel to abort the Remove Common Lines option. If Cancel is clicked, all changes made to the drawing by the Remove Common Lines option are cancelled.

Convert Notches…

The Convert Notches option of the Modify Menu searches for V notches and slit notches within the cut perimeters of all drawing objects and converts these cuts to notch or punch entities which may be separately processed and cut (punched) with a different tool. The

Convert Notches option is only available in the layout program mode when a drawing file is opened.

A dialog box is opened when the Convert Notches menu option is selected. The default entries included in this dialog box are copied from entries made on the Edit tab of the Job Options dialog box. Check the "Convert V Notches" option to search for and convert perimeter V notches. Check the "Convert Slit Notches" option to search for and convert perimeter slit notches.



If the "Convert V Notches" option is checked, select a drawing layer in the "V Notch Layer" combobox. All converted V notches are placed on this layer. The selected layer determines which tool will be used to cut or punch the V notches. Enter into the "Max Included Angle" and "Maximum Depth" text boxes the search criteria for perimeter V notches. Enter into the "Cut Depth" text box the desired depth of the converted V notch if the notches are to be cut rather than punched. The depth is the distance from the perimeter to the peak of the notch. The "Maximum Depth" and "Cut Depth" distances must be entered in the currently selected units displayed on the status bar. Valid values for the "Max Included Angle" are in the range of 0 to 180 degrees. Valid "Maximum Depth" and "Cut Depth" distances are in the range of 0 to 10 centimeters.

If the interior angle of a perimeter V notch is greater than the "Max Included Angle", the V notch is **not** converted to a V notch entity. If the distance for the base to the peak of a

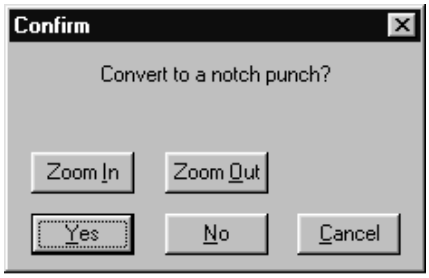
perimeter V notch is greater than the "Maximum Depth" distance, the V notch is **not** converted to a V notch entity.

If the "Convert Slit Notches" option is checked, select a drawing layer in the "Slit Notch Layer" combobox. All converted slit notches are placed on this layer. The selected layer determines which tool will be used to cut or punch the slit notches. Check the "Punch Slit Notch" option to punch the converted slit notches even if a layer mapped to a cutting tool is selected. Enter into the "Max Angle Deviation" and "Maximum Length" text boxes the search criteria for perimeter slit notches. The "Maximum Length" distance must be entered in the currently selected units displayed on the status bar. Valid values for the "Max Angle Deviation" are in the range of 0 to 90 degrees. Valid "Maximum Length" distances are in the range of 0 to 10 centimeters.

If the angle the perimeter slit notch makes with the perimeter line deviates from the perpendicular (90 degrees) by more than the "Max Angle Deviation", the slit notch is **not** converted to a slit notch entity. If the distance for the base to the peak of a perimeter slit notch (the length of the slit notch) is greater than the "Maximum Length" distance, the slit notch is **not** converted to a slit notch entity.

Check the "Confirm" option if you want to be informed of each perimeter notch being converted and would like to confirm the notch's conversion. If the Confirm option is not checked, all perimeter notches that meet the specified criteria are converted to notch entities and the Convert Notches dialog box is closed.

If the Confirm option is checked, a Confirm dialog box is displayed each time a notch meeting the specified criteria is located.

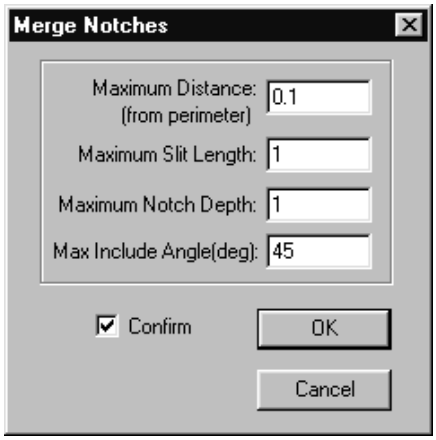


The message in the Confirm dialog box varies depending of the type of notch being converted. The perimeter notch which is to be converted is highlighted in green in the drawing area. The Zoom In and Zoom Out buttons are used to adjust the magnification of the drawing. Use Zoom In to view the details of a notch. Use Zoom Out to view the drawing context of a notch.

Click Yes to convert the identified perimeter notch to a notch entity, click No to keep the notch in the perimeter and continue Convert Notches processing, and click Cancel to abort the Convert Notches option. If Cancel is clicked, all changes made to the drawing by the Convert Notches option are cancelled.

Merge Notches…

The Merge Notches option of the Modify Menu searches for V notch and slit notch entities near the cut perimeters of all drawing objects, converts the notch entities to cuts and merges these cuts into the object perimeters. Such merged V notches and slit notches are cut using the same tool that performs the perimeter cut. The Merge Notches option is only available in the layout program mode when a drawing file is opened.



A dialog box is opened when the Merge Notches menu option is selected. The default entries included in this dialog box are copied from entries made on the Edit tab of the Job Options dialog box. Enter the "Maximum Distance" a notch entity may be from the perimeter line and still be merged into the perimeter. This distance should be small since the perimeter line will be adjusted to meet the base points of any merged notch entities. Enter the "Maximum Slit Length" and "Maximum Notch Depth" criteria to limit the size of the notch entities to merge. The depth of a V notch is the distance from the base line to the peak point of the notch. Enter the "Max Include Angle" criteria to limit the shapes of the V notch entities to merge. The included angle of a V notch entity is the angle formed at the peak of the notch.

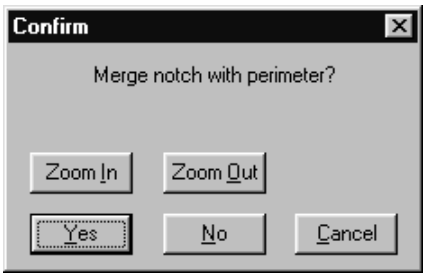
The "Maximum Distance", "Maximum Slit Length" and "Maximum Notch Depth" values must be entered in the currently selected units displayed on the status bar. Valid "Maximum Distance", "Maximum Slit Length" and "Maximum Notch Depth" values are

in the range of 0 to 10 centimeters. Valid values for the "Max Include Angle" are in the range of 0 to 180 degrees.

Slit and V notch entities which were cut retain their original size and shape after they are merged with the perimeter. Punch entities located along a perimeter line are converted to a cut V notch prior to merging with the perimeter line. The "Maximum Notch Depth" value is used as the depth of the V notch and the included angle is set to 60 degrees.

Check the "Confirm" option if you want to be informed of each slit or V notch entity being merged with a perimeter line and would like to confirm the notch's merger. If the Confirm option is not checked, all notch entities that meet the specified criteria are merged into a perimeter line and the Merge Notches dialog box is closed.

If the Confirm option is checked, a Confirm dialog box is displayed each time a notch meeting the specified criteria is located.



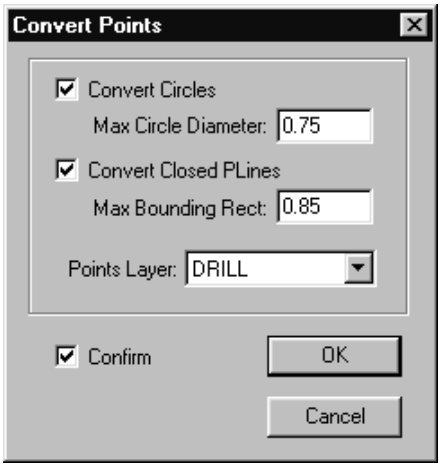
The notch entity which is to be merged is highlighted with a green circle in the drawing area. The Zoom In and Zoom Out buttons are used to adjust the magnification of the drawing. Use Zoom In to view the details of a notch. Use Zoom Out to view the drawing context of a notch.

Click Yes to merge the identified notch entity into the adjacent perimeter line, click No to keep the notch entity and continue Merge Notches processing, and click Cancel to abort the Merge Notches option. If Cancel is clicked, all changes made to the drawing by the Merge Notches option are cancelled.

Convert Points…

The Convert Points option of the Modify Menu searches for small circle or closed polyline entities in the current drawing and converts these entities to punch points. The Convert Points option is only available in the layout program mode when a drawing file is opened.

A dialog box is opened when the Convert Points menu option is selected. The default entries included in this dialog box are copied from entries made on the Edit tab of the Job Options dialog box.

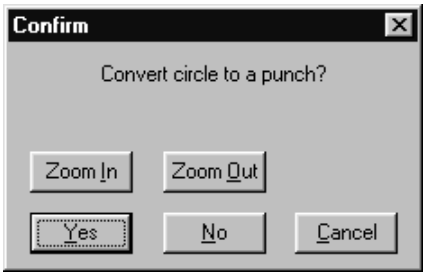


Check the "Convert Circles" option to search for and convert circle entities to punch points. Check the "Convert Closed PLines" option to search for and convert closed polyline entities to punch points. Select a drawing layer in the "Points Layer" combobox. All converted punch points are placed on this layer. The selected layer determines which tool will be used to punch the converted point entities.

If the "Convert Circles" option is checked, enter the "Max Circle Diameter" criteria to limit the size of the circle entities that are converted. If the "Convert Closed PLines" option is checked, enter the "Max Bounding Rect" criteria to limit the size of the polyline entities that are converted. The "Max Circle Diameter" and "Max Bounding Rect" values must be entered in the currently selected units displayed on the status bar. Valid values for these two settings are in the range of 0 to 10 centimeters.

Check the "Confirm" option if you want to be informed of each circle or closed polyline entity being converted to a punch point and would like to confirm the entity's conversion. If the Confirm option is not checked, all circle and closed polyline entities that meet the specified size criteria are converted to punch points and the Convert Points dialog box is closed.

If the Confirm option is checked, a Confirm dialog box is displayed each time a circle or closed polyline entity meeting the specified criteria is located.



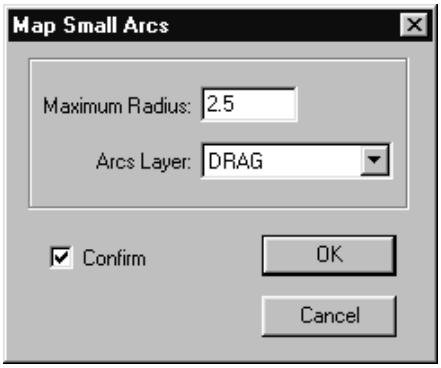
The message in the Confirm dialog box varies depending of the type of entity being converted. The entity which is to be converted is highlighted with a green circle in the drawing area. The Zoom In and Zoom Out buttons are used to adjust the magnification of the drawing. Use Zoom In to view the details of the circle or polyline entity. Use Zoom Out to view the drawing context of the entity.

Click Yes to convert the identified entity into a punch point, click No to keep the entity and continue Convert Points processing, and click Cancel to abort the Convert Points option. If Cancel is clicked, all changes made to the drawing by the Convert Points option are cancelled.

Map Small Arcs…

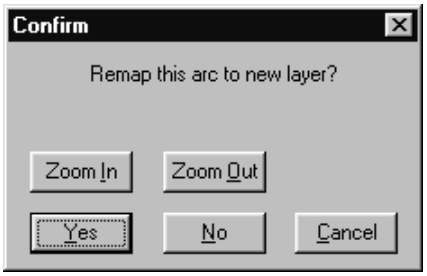
The Map Small Arcs option of the Modify Menu searches the current drawing for arcs or circles with small radii and moves these segments to a new drawing layer. The Mag Small Arcs processing also includes segmented arcs or arcs that are formed by several short line segments. The new arc drawing layer determines the tool that will be used to cut these curved or circular drawing segments. This tool should have the capability of properly cutting small radius curves. The Map Small Arcs processing does not alter the shape of any drawing objects. The Map Small Arcs option is only available in the layout program mode when a drawing file is opened.

A dialog box is opened when the Map Small Arcs menu option is selected. Enter into the "Maximum Radius" text box the largest circle or arc radius to be mapped to a new drawing layer. The "Maximum Radius" value must be entered in the currently selected units displayed on the status bar. Valid values are in the range of 0 to 10 centimeters. Select a drawing layer in the "Arcs Layer" combobox. All remapped small arcs are placed on this layer. The selected layer determines which tool will be used to cut the remapped circle and arc entities.



Check the "Confirm" option if you want to be informed of each arc or circle being mapped to the arcs layer and would like to confirm the mapping. If the Confirm option is not checked, all arcs and circles that meet the specified radius criteria are mapped to the specified drawing layer and the Map Small Arcs dialog box is closed.

If the Confirm option is checked, a Confirm dialog box is displayed each time an arc or circle meeting the specified radius criteria is located.



The message in the Confirm dialog box varies depending of the type of entity being mapped. The arc or circle entity to be mapped is highlighted in green within the drawing area. The Zoom In and Zoom Out buttons are used to adjust the magnification of the drawing. Use Zoom In to view the details of an arc or circle. Use Zoom Out to view the drawing context of an arc or circle.

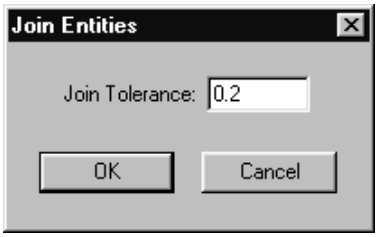
Click Yes to map the identified arc or circle to the specified drawing layer, click No to keep the arc or circle on its current layer and continue Map Small Arcs processing, and click Cancel to abort the Map Small Arcs option. If Cancel is clicked, all changes made to the drawing by the Map Small Arcs option are cancelled.

ToolPath Menu

The ToolPath Menu includes options that are used to examine or to modify the way that drawing objects will be cut on the cutting table.

Auto Join Entities

The Auto Join Entities option of the ToolPath Menu connects one or more lines and/or polyline segments into a single continuous polyline if the endpoints of the individual segments are less than a maximum distance apart. This reduces the number of drawing entities that must be processed by the cutting machine, thereby reducing the cutting time of the file. The Auto Join Entities option is only available in the layout program mode when a drawing file is opened.

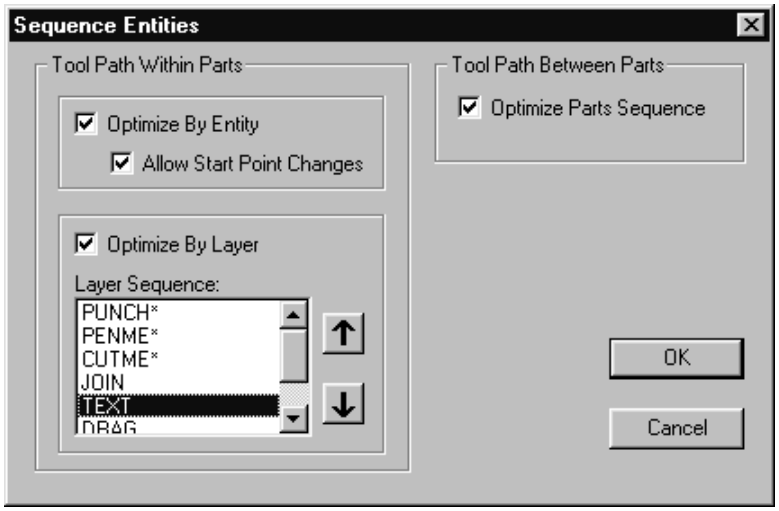


A dialog box is opened when the Auto Join Entities menu option is selected. The default entry in this dialog box is copied from the entry made on the ToolPath tab of the Job Options dialog box. Enter into the "Join tolerance" text box the maximum separation between the end points of lines or polyline segments that will still be joined together. The "Join Tolerance" value must be entered in the currently selected units displayed on the status bar. Valid values are in the range of 0 to 10 centimeters.

Click OK to join all lines and polyline segments within the current drawing that meet the specified join tolerance. Click the Cancel button to terminate the Auto Join Entities option.

Auto Sequence Entities

The Auto Sequence Entities option of the ToolPath Menu attempts to minimize the cutting time of the current drawing file by optimizing the cutting sequence of parts and the drawing entities within each part in the drawing. This optimization attempts to minimize the total distance the tool head is moved without cutting and to minimize the number of tool changes. The cutting sequence optimization is first performed for entities within each part or panel and then for the parts within the drawing. The Auto Sequence Entities option is only available in the layout program mode when a drawing file is opened.



A dialog box is opened when the Auto Sequence Entities menu option is selected. The default entries included in this dialog box are copied from entries made on the ToolPath tab of the Job Options dialog box. Select the desired cutting sequence optimizations by checking the "Optimize By Entity", "Optimize By Layer" and/or "Optimize Parts Sequence" options. Check the "Allow Start Point Changes" option if cutting sequence optimization within a part should include adjusting the start point of drawing entities.

If the "Optimize By Layer" option is checked, specify the desired layer sequence. Entities on the first layer in the list will be cut before any entities on the second layer, entities on the second layer in the list will be cut before any entities on the third layer, and so forth. The list always includes all layers defined within the current job. Any layers containing entities from the current drawing are identified by an asterisk. To change a layer's position within the list, select that layer by clicking on it. Then click one of the two arrow buttons to move the layer name within the list. Click the up arrow button to move the layer towards the top of the list and click the down arrow button to move the layer towards the bottom of the list.

Click OK to perform the selected cutting sequence optimizations. If the "Optimize By Entity" option is checked and the "Optimize By Layer" option is not checked, the cutting sequence of drawing entities within each part is optimized based solely on entity position. If both the "Optimize By Entity" option and the "Optimize By Layer" option are checked, the cutting sequence of drawing entities within each part is optimized based on entity position but on a layer by layer basis. Finally, if the "Optimize Parts Sequence" option is

checked, the cutting sequence of the parts within the drawing is optimized based on part position and the first and last point cut within each part.

Click the Cancel button in the dialog box to terminate the Auto Sequence Entities option.

Use the simulate program mode to view the cutting sequence prior to and after using the Auto Sequence Entities function. Use the ToolPath | Show Part Sequence option to show the part cutting sequence prior to and after using the Auto Sequence Entities function.

Reverse

The Reverse option of the ToolPath Menu reverses the cutting direction of selected drawing objects. To reverse the cutting direction of one or more drawing objects, select the objects as described in the Select | Object menu option. The Reverse option is only available in the layout program mode when a drawing file is opened and at least one drawing object is selected.

When the Reverse menu option is selected, the plotting direction of each selected drawing object is reversed. Use the Explode and To Panel options of the Edit Menu to gain access to individual drawing entities within a part or panel.

Use the ToolPath | Show Direction option to show the plotting direction prior to and after using the Reverse function.

Change Start Pt

The Change Start Pt option of the ToolPath Menu changes the cutting start point of selected drawing objects. To change the start point of one or more drawing objects, select the objects as described in the Select | Object menu option. The Change Start Pt option is only available in the layout program mode when a drawing file is opened and at least one drawing object is selected.

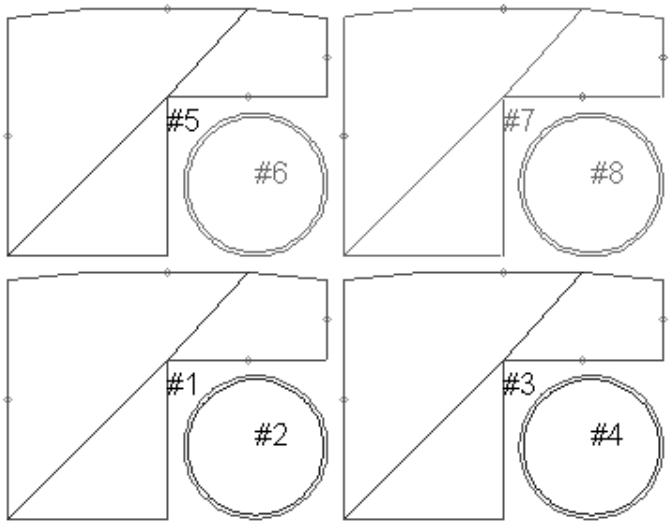
When the Change Start Pt menu option is selected, position the mouse cursor near the desired start point and click the left mouse button. The start points of the selected line segments or polylines are moved to the point included within the selected object that is nearest to the mouse click point. In the case of a closed polyline, any point or vertex of the polyline may become the start point. However, only the two endpoints of an opened polyline are available as possible start points. (The Change Start Pt processing never breaks a drawing entity into two parts in order to set a new start point.)

Use the ToolPath | Show Start Pt option to show the starting point prior to and after using the Change Start Pt function.

Change Part Sequence

The Change Part Sequence option of the ToolPath Menu establishes the cutting order of the parts within the current drawing. Note that if a drawing must be divided into table bites because it does not fit within the available cutting table area, the specified part cutting sequence may be superseded by the table bite sequence. However, the part sequence within a table bites will still be cut in the sequence specified using the Change Part Sequence option. The Change Part Sequence option is only available in the layout program mode when a drawing file is opened.

Use the ToolPath | Show Part Sequence option to show the part cutting sequence prior to using the Change Part Sequence function.



When the Change Part Sequence menu option is selected, the current cutting sequence is displayed within the drawing as #1, #2, #3, etc. All drawing parts are selected, i.e., redrawn in magenta. Any drawing entities not selected at the start of the Change Part Sequence option processing do not belong to a part. Position the mouse cursor and click on each of the drawing parts in the sequence they should be cut. As each part is clicked its sequence number is adjusted to match its selection sequence and the part is redrawn in its layer-defined colors, i.e., it is deselected.

After the last part is clicked, the Change Part Sequence function is automatically terminated. If the Show Part Sequence option is not checked, the part sequence numbers are erased from the drawing.

Enable CutOff

The Enable CutOff option of the ToolPath Menu allows you to quickly enable or disable the material cutoff option currently selected on the CMD tab of the Job Options dialog. While the Job Options dialog is only accessible to the Supervisor user, the Enable CutOff menu option is available to all users. The Enable CutOff option is only available in the layout mode when a drawing file is opened and a cutoff option has been selected.

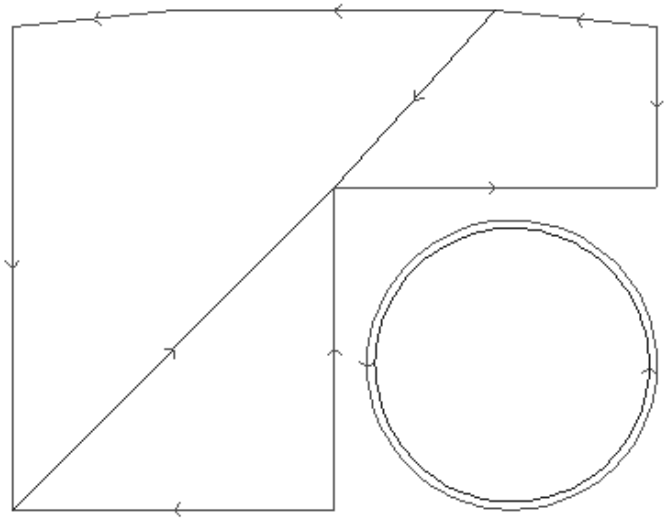
If the Enable CutOff option is checked, a red material cutoff line is displayed at the left or right end of the drawing file; clicking the menu option erases the cutoff line from the drawing area and unchecks the menu option. If the Enable CutOff option is unchecked, the cutoff line is not displayed; clicking the menu option adds a red cutoff line to the left or right end of the current drawing and checks the menu option. If the current drawing file is loaded into the cutting machine using the File | Cut menu option when the Enable CutOff option is checked, the cutoff line shown in the drawing area indicates where the cutting machine will perform a cut across the width of the material.

If the cutoff line is displayed in the current drawing when the File | Print menu option is selected, the cutoff line is included in the printed copy of the drawing.

Show Direction

The Show Direction option of the ToolPath Menu is used to display and erase the arrows that are added to the current drawing to show the direction in which each drawing entity will be cut by the cutting machine. The Show Direction option is available in all program modes when a drawing file is opened.

If the Show Direction option is checked, the direction arrows are displayed; clicking the menu option erases the arrows from the drawing area and unchecks the menu option. If the Show Direction option is unchecked, the arrows are not displayed; clicking the menu option adds the direction arrows to the current drawing and checks the menu option.

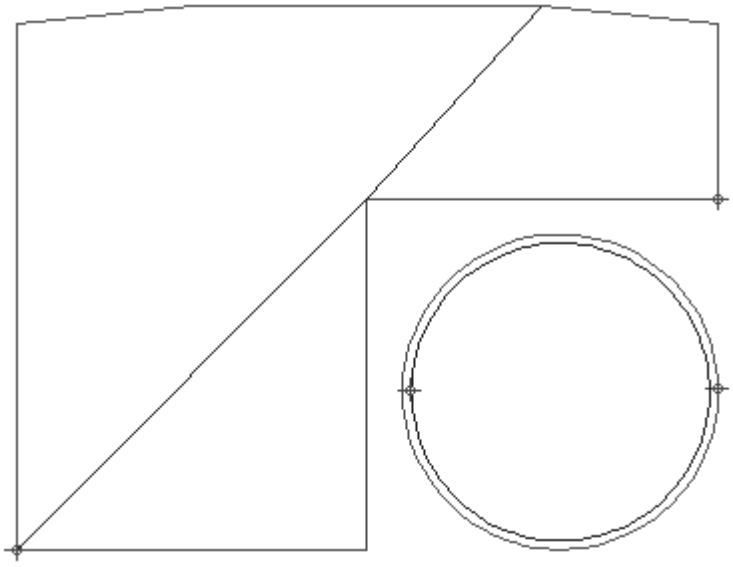


If the direction arrows are displayed in the current drawing when the File | Print menu option is selected, the direction arrows are included in the printed copy of the drawing.

Show Start Pt

The Show Start Pt option of the ToolPath Menu is used to display and erase the indicators (a circle with a cross drawn through it) that are added to the current drawing to show the point at which the cutting of each drawing entity will begin. The Show Start Pt option is available in all program modes when a drawing file is opened.

If the Show Start Pt option is checked, the start point indicators are displayed; clicking the menu option erases the indicators from the drawing area and unchecks the menu option. If the Show Start Pt option is unchecked, the indicators are not displayed; clicking the menu option adds the start point indicators to the current drawing and checks the menu option.



If the start point indicators are displayed in the current drawing when the File | Print menu option is selected, the start point indicators are included in the printed copy of the drawing.

Show Part Sequence

The Show Part Sequence option of the ToolPath Menu is used to display and erase the sequence numbers added to the current drawing to show the order in which the drawing's parts or panels will be cut by the cutting machine. The cutting sequence numbers are drawn in black as #1, #2, #3, etc. The Show Part Sequence option is available in all program modes when a drawing file is opened.

If the Show Part Sequence option is checked, the sequence numbers are displayed; clicking the menu option erases the sequence numbers from the drawing area and unchecks the menu option. If the Show Part Sequence option is unchecked, the sequence numbers are not displayed; clicking the menu option adds the sequence numbers to the current drawing and checks the menu option.

If sequence numbers are displayed in the current drawing when the File | Print menu option is selected, the sequence numbers are included in the printed copy of the drawing.

If the Show Part Sequence option is selected to add cutting sequence numbers to the current drawing and the ToolPath | Show Part Name option is checked, the part names are erased before the sequence numbers are displayed.

Show Part Name

The Show Part Name option of the ToolPath Menu is used to display and erase the part or panel names in the current drawing. The part names are always drawn in black and centered on the part. The Show Part Name option is available in all program modes when a drawing file is opened.

If the Show Part Name option is checked, the part names are displayed; clicking the menu option erases the names from the drawing area and unchecks the menu option. If the Show Part Name option is unchecked, the part names are not displayed; clicking the menu option adds the names to the current drawing and checks the menu option.

If part names are displayed in the current drawing when the File | Print menu option is selected, the part names are included in the printed copy of the drawing.

If the Show Part Name option is selected to add part names to the current drawing and the ToolPath | Show Part Sequence option is checked, the cutting sequence numbers are erased before the part names are displayed.

Options Menu

The Options Menu provides access to the Easicut 2.1 software and cutting machine hardware configuration settings. These settings are saved in a number of different initialization disk files which are opened and read each time the Easicut 2.1 application is started.

NOTE: If the Easicut security option is enabled, access to all Options Menu options is restricted to the Supervisor user.

Machine…

The Machine option of the Options Menu accesses the configuration parameters and operating settings for the cutting machine hardware. These parameters and settings are saved in the MACHINE.INI disk file. The Machine option is available in all program modes.

NOTE: If the Easicut security option is enabled, access to the Machine option is restricted to the Supervisor user.

The Machine Options dialog box is opened when the Machine menu option is selected. This dialog box consists of nine pages of settings grouped according to function. Each of these pages is accessed by a tab located at the top of the dialog box. Several settings are not editable by the user and appear in disabled (grayed out) text boxes or comboboxes. These settings pertain to the specific configuration of your cutting machine and should not be changed.

After all machine settings changes are completed, click the OK button to save the settings to the MACHINE.INI file. Click the Cancel button to ignore all changes made on all pages (tabs) of the Machine Options dialog box.

Click Restore Defaults button to reload the default machine settings previously saved with the Save Defaults function. The Save Defaults button is only available to Eastman technicians who will save a copy of the default machine settings during the system installation procedure. The default settings will not take effect until the OK button is clicked and the settings are saved to the MACHINE.INI file.

System Tab

The System tab or page of the Machine Options dialog box displays parameters that specify the type of cutting machine interfaced to the Easicut 2.1 software.

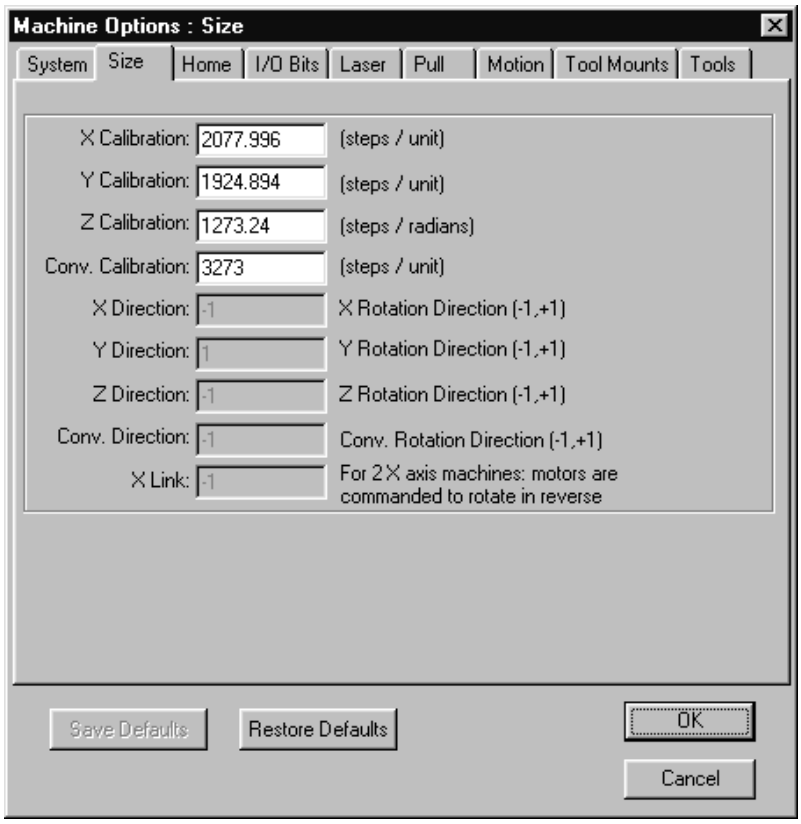
Only two settings on this page are editable by the user. Select the method used in applying pressure to tools in the "Pressure Type" combobox. Select MANUAL if the cutting machine has a manually operated pressure regulator. Select PROPAIR it the machine uses the computer controlled Proportion Air device. Check the "Enable DTR" option to enable use of the serial port's Data Terminal Ready signal. If this option is incorrectly selected, the User Interface Terminal will not function.

All other parameters on the System page are set at the time the cutting machine is installed. These parameters may vary from the values shown in the above figure.

Size Tab

The Size tab or page of the Machine Options dialog box displays parameters that specify various calibration and rotation direction settings for the cutting machine.

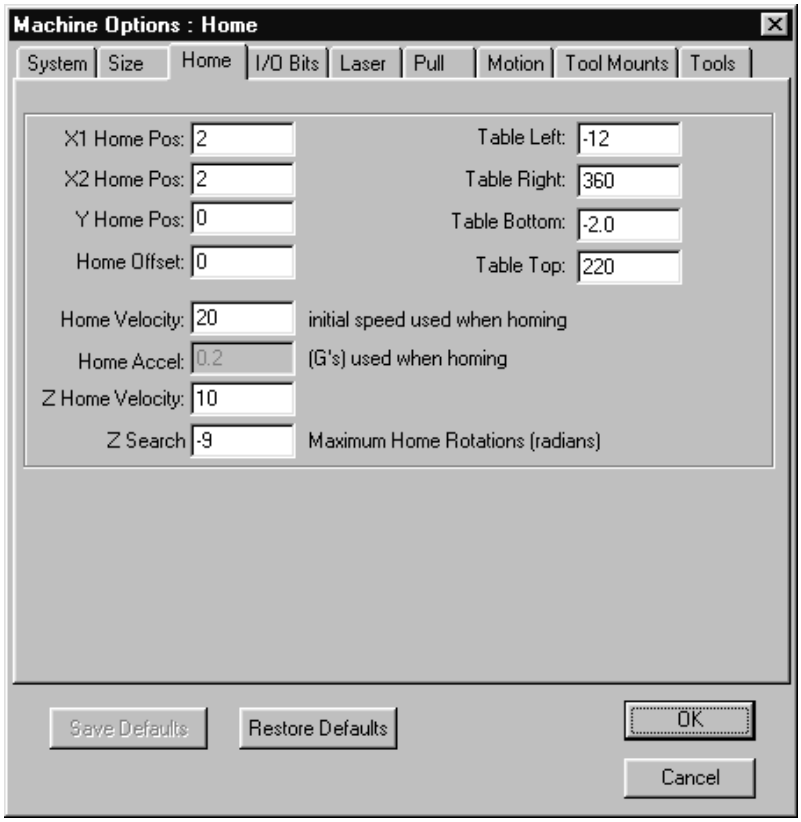
Only the four calibration settings on this page are editable by the user. The calibration settings are used to establish a correlation between the steps or counts used by the motion control software and the actual unit of movement or rotation. A unit of movement in the X or Y direction corresponds to the currently selected unit of measure displayed on the status bar. Increasing the value of a calibration setting decreases the scale of the movement or rotation in that direction. Generally, these settings are not edited but rather are updated using the Calibration option of the Options Menu.



All other parameters on the Size page are set at the time the cutting machine is installed and may not be edited. These parameters may vary from the values shown in the figure.

Home Tab

The Home tab or page of the Machine Options dialog box displays the settings which specify the dimensions of the cutting table, the location of the origin of the table's coordinate system (table home) and the velocity and acceleration parameters used by the plotter carriage or gantry when returning to the table home position.



The X and Y home position settings physically locate the origin of the table's coordinate system (table home). The "X1 Home Pos" setting specifies an offset from the table's X1 home switch. This setting is only used on twin motor X drive machines such as the M9000. It is used in conjunction with "X2 Home Pos" to compensate for any skew between the two tracks used to transport the plotter carriage or gantry in the X direction. The "X2 Home Pos" setting specifies an offset from the table's X axis home switch. This setting is used on all machines and is the only home reference for single motor X drive machines (M9200 with torque tube). The "X1 Home Pos" and "X2 Home Pos" settings should initially be set to the same value. Use the Calibration option of the Options Menu to make any alignment corrections. Enter into "Y Home Pos" the offset of the table's Y axis origin from the Y axis home switch. All Home Pos settings must be entered in the currently selected unit of measure displayed on the status bar.

The "Table Left", "Table Right", "Table Bottom" and "Table Top" settings establish the size of the available cutting table area around the table home position. Left and right refer to the directions along the table as you face the operator keypad of the User Interface Terminal. Bottom refers to the operator's side of the table while top refers to the far side of the table. These four settings are expressed as distances relative to the table home position on the table. Therefore, the origin of the coordinate system established by these four settings is located at the table home position. These settings must be entered in the currently selected unit of measure.

The "Table Top" and "Table Bottom" settings must be specified so that the machine does not reach the corresponding Y axis limit switches. Likewise, the "Table Left" and "Table Right" settings must be specified so that the machine does not reach the corresponding X axis limit switches. If your system includes an EasiPull gripper, the "Table Left" limit must allow sufficient travel to allow the gripper to reach the material. This generally will require travel beyond the home switches, i.e., a negative number.

The "Home Velocity" specifies the maximum machine speed during the homing sequence. This setting should always be a relatively slow speed. The value must be entered in the currently selected unit of measure.

The "Home Accel" parameter on the Home page is set at the time the cutting machine is installed and may not be edited. The value of this parameter may vary from the value shown in the figure.

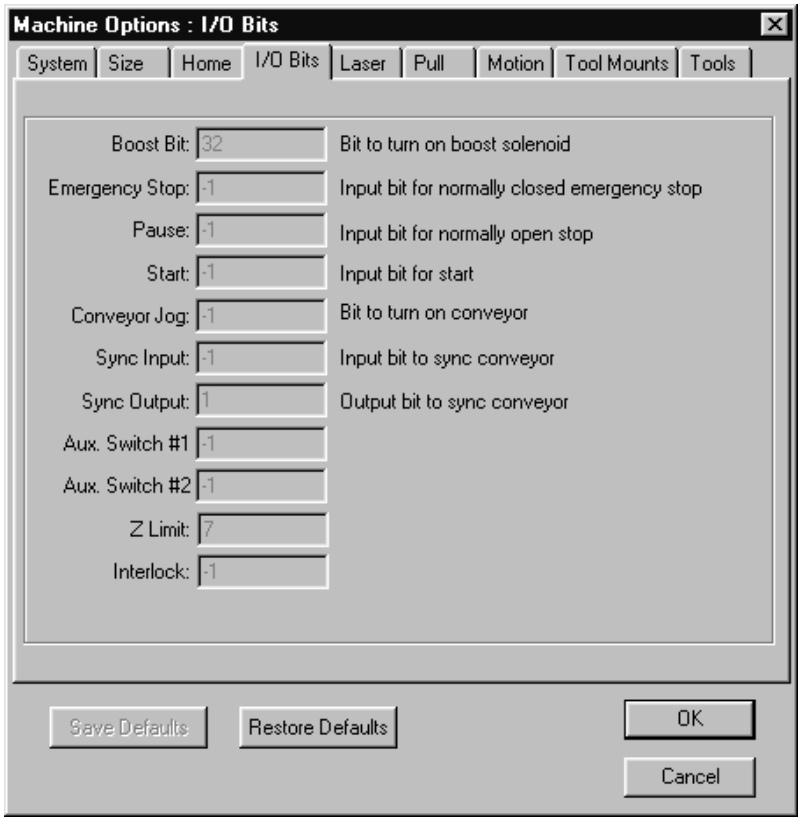
The "Z Home Velocity" setting specifies the tool rotational velocity used during table home, table zero and panel zero functions. It is specified in radians per second.

The "Z Search" setting specifies the maximum number of radians allowed to search for the Z home sensor. (A value of 9 radians is approximately 1½ rotations.) The value may be negative or positive, depending on which direction the motor is to spin during its search. Note that if for any reason the sign (search direction) of this setting is changed, the Z offset for all tool mounts must be recalibrated using the Calibration option of the Options Menu.

I/O Bits Tab

The I/O Bits tab or page of the Machine Options dialog box displays the bit positions used to carry various control signals between the cutting table hardware and the motion control software. These settings are made at the time the cutting machine is installed and may not be edited. The value of these parameters may vary from the values shown in the figure.

Altering the bit settings will cause improper functioning or failure of the cutting machine and may cause the emergency stop switches to become inoperative.



Laser Tab

The Laser tab or page of the Machine Options dialog box displays the control settings used by a laser cutter. These settings only apply to systems which actually have a laser cutter installed on the cutting machine.

The "Min Velocity" setting specifies the minimum velocity at which the laser fires. A correct setting reduces kerf at the beginning and end of cuts. The value must be specified in the currently selected unit of measure specified on the status bar.

The "Max Power" setting limits the maximum power of the laser. This value may need to be adjusted for cutting different types of material. The value is specified as a fraction from 0 to 1.

The motion control software incorporates a laser power ramping system which adjusts the power in relation to the machine's speed. The "Min Power" setting determines the minimum power used to fire the laser. A typical laser will not fire below 20% of its maximum power.

The "Laser Power Bit" parameter on the Laser page is set at the time the cutting machine is installed and may not be edited. The value of this parameter may vary from the value shown in the figure.

The "Laser On" parameter identifies the control bit used to turn laser power on and off.

The "Modulation" parameter specifies the modulation frequency to apply to the laser output.

Pull Tab

The Pull tab or page of the Machine Options dialog box displays the control settings used by the EasiPull system. These settings only apply to cutting machines which actually have an EasiPull system installed.

The "Start Gripper" setting specifies the distance from table home (X = 0.0) that the machine moves to start the gripper. This value is negative in order to move the machine backwards from table home. The value must be entered in the currently selected unit of measure listed on the status bar.

The default "Pull Length" is used if no cut file is loaded in the machine and is used as the default pull length when the operator initiates a manual pull at the table's User Interface Terminal. Enter the length using the currently selected unit of measure. Note that if a cut file is loaded, the software computes the pull length based on the table length (specified on the Home tab of the Machine Options dialog box) and the length of the patterns in the cut file.

The "Pull Extra" setting accounts for the distance from the end cutter to table home. The material must be pulled an extra amount to allow the gripper assembly on the gantry to clear the end cutter while cutting at or near the table home end of the table. After the material is cut, the machine pulls the material this specified extra distance. The value must be entered in the currently selected unit of measure.

The "Gripper Bit", "End Cut Bit" and "Clamp Bit" control bit parameters specify the bit positions used to carry various control signals between the EasiPull hardware and the motion control software. These values are set at the time the EasiPull system is installed and may not be edited. The values of these parameters may vary from the value shown in the figure.

The "Gripper Delay" is the time in seconds the machine allows for the material to be gripped before starting to pull.

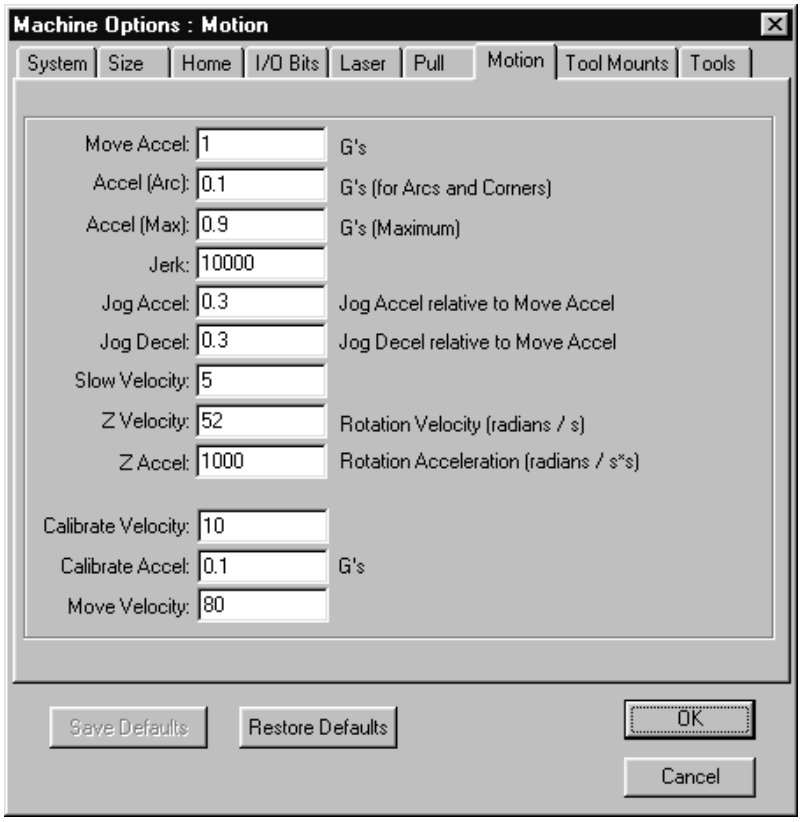
The "End Cut Delay" is the time in seconds allowed for the end cutter to cut the material. After this time has elapsed, the machine pulls the "Pull Extra" length.

The "Clamp Delay" is the time allowed for the clamp to actuate before starting the knife.

The "Pull Velocity" specifies the maximum speed of the machine while pulling. The "Pull Accel" specifies the acceleration of the machine while pulling and determines how quickly the "Pull Velocity" is reached. The acceleration rate should be relatively low. Both the velocity and acceleration values must be entered in the currently selected unit of measure.

Motion Tab

The Motion tab or page of the Machine Options dialog box displays the velocity and acceleration settings used to control the motion of the tool, tool head and gantry. These settings apply to both automatic and manual movements. Note that Z axis motion refers to tool rotation.



The "Move Accel" setting specifies the machine's base acceleration and deceleration, controlling how quickly the machine reaches full speed and how quickly it comes to a stop. The value is specified in Gs (units of 980 cm/sec²).

The "Accel (Arc)" setting determines how quickly the machine cuts along arcs or around corners. If the machine experiences difficulties negotiating small radius arcs, this value should be decreased. Conversely, throughput may be reduced if "Accel (Arc)" is set too low. The value is specified in Gs (units of 980 cm/sec²).

The "Accel (Max)" setting determines machine acceleration on short movements when the maximum velocity will not be reached. Such movements may be executed at higher than normal accelerations. In general, "Accel (Max)" may be set about 50% greater than "Move Accel". However, if the machine experiences difficulties or the machine shakes during short moves, this value should be decreased. "Accel (Max)" also controls motion for the abort and limit switches. The value is specified in Gs (units of 980 cm/sec^2).

The "Jerk" parameter is the rate of change of a motion's acceleration. This parameter determines how quickly the maximum acceleration is achieved. Normally, the machine accelerates and decelerates at a constant rate. When jerk is used, the machine begins moving at a lower acceleration rate, increasing acceleration until reaching the level set in "Move Accel" or "Accel (Max)" (whichever is appropriate to the movement being made) and then decreasing acceleration as the maximum velocity is approached. This results in smoother motion, particularly if the cut path is intricate. Jerk is typically set somewhere between 100 and 1000 cm/sec^3, depending on the application. A smaller value results in smoother motion. Setting "Jerk" to zero disables the feature. The jerk value must be entered in the currently selected unit of measure displayed on the status bar.

The "Jog Accel" and "Jog Decel" settings control the acceleration and deceleration of the machine while manually jogging it using the joystick or the arrow keys on the User Interface Terminal. The acceleration and deceleration are computed by multiplying the value of these settings by the acceleration specified in "Move Accel". For example, with a "Jog Accel" of 0.8 and a "Move Accel" of 0.4 G, the resulting jog acceleration is 0.32 G.

The "Slow Velocity" setting is the maximum machine velocity while in the limp mode. Limp mode is toggled on and off by the Jog key on the User Interface Terminal keypad. This value must be entered in terms of the currently selected unit of measure.

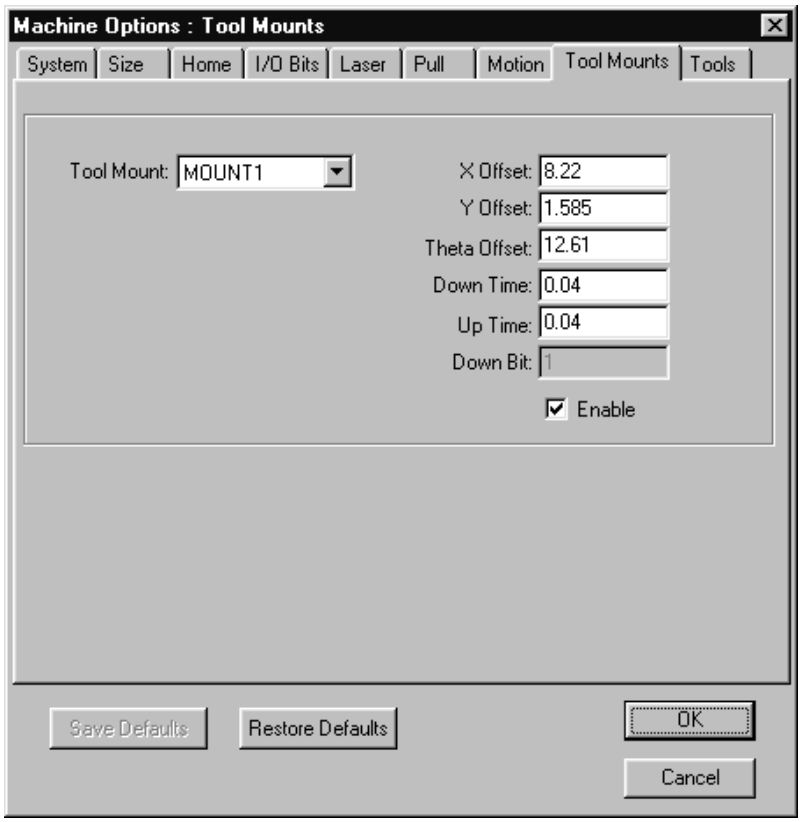
The "Z Velocity" specifies the maximum rotational velocity (in radians per second) used to position tools. The "Z Accel" specifies the rotational acceleration (in radians per second^2) used to position tools.

The "Calibrate Velocity" and "Calibrate Accel" settings are used during table and tool calibration processing. The velocity must be entered in terms of the currently selected unit of measure. The acceleration is specified in Gs (units of 980 cm/sec^2).

The "Move Velocity" is the maximum velocity of the machine while not cutting (e.g., moving to the next part to cut.) This value must be entered in terms of the currently selected unit of measure.

Tool Mounts Tab

The Tool Mounts tab or page of the Machine Options dialog box displays calibration and control settings for the tool mounts located on the cutting machine's tool head.



Select an available mount in the "Tool Mount" combobox. The pen holder is named PEN1, the laser mount is named LASER and the cutting tool mounts are named MOUNTn where n ranges from 1 to the total number of mounts supported by the tool head type installed on the machine. The settings for the selected mount are displayed to the right.

The three offset parameters are used to calibrate the position and orientation of the currently selected tool mount and, therefore, any tool attached to the mount. Generally, the three offset settings are not edited but rather are updated using the Calibration option of the Options Menu.

The "X Offset" and "Y Offset" settings specify the mount's X and Y distances from the laser pointer and must be entered in the currently selected units of measure displayed on the status bar. The "Theta Offset" specifies how far the selected mount rotates from the Z

axis sensor during the Table Zero and Panel Zero functions. The "Theta Offset" is used to center a mount's rotational direction. It is specified in degrees.

The "Down Time" specifies the time, in seconds, that the machine pauses after the selected tool mount is dropped and before the machine begins to move.

The "Up Time" specifies the time, in seconds, that the machine pauses after the selected tool mount is lifted and before the machine begins to move.

The "Down Bit" parameter on the Tool Mounts page is set for each tool mount at the time the cutting machine is installed and may not be edited. The value of this parameter may vary from the value shown in the figure.

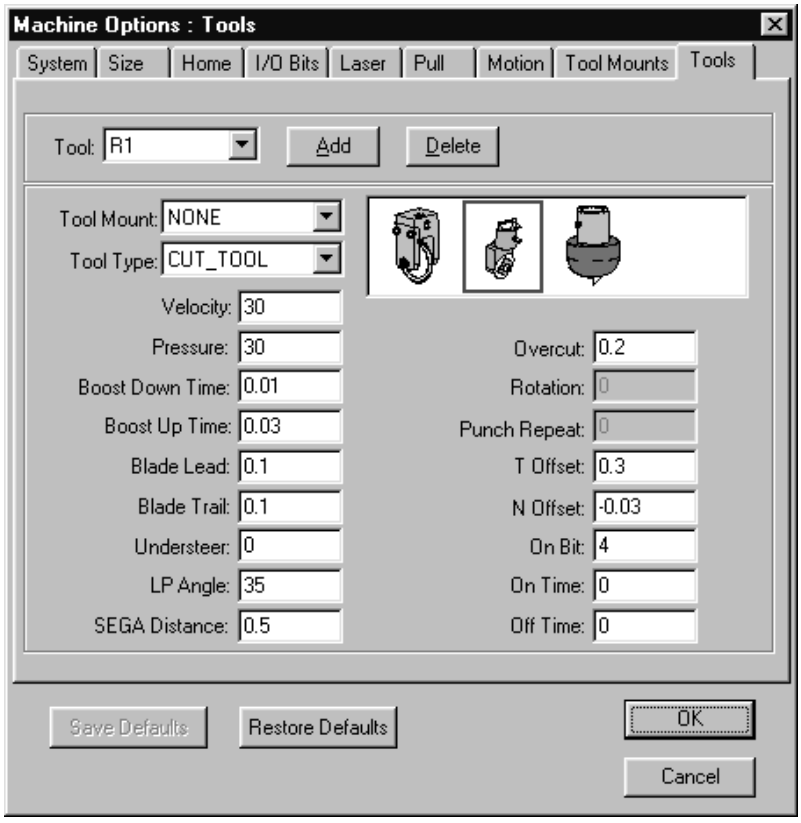
Use the "Enable" option to turn the tool attached to the selected mount on or off. If the tool mount is turned off ("Enable" not checked), the attached tool is not used to process any cut files regardless of what tool or layer settings are specified in the file.

Tools Tab

The Tools tab or page of the Machine Options dialog box displays the identification and mounting parameters and the operating settings for all available tools. The list of available tools may include entries for tools not currently mounted on the cutting machine's tool head.

Select an available tool in the "Tool" combobox. The current settings and parameters for the selected tool are displayed. All tool settings are available for editing. If a setting is not enabled for editing, that setting is not applicable to the currently selected tool type.

The tool mount to which the currently selected tool is actually attached must be selected in the "Tool Mount" combobox. Select NONE in the "Tool Mount" combobox for a tool that is not currently installed on the cutting machine. Select the PEN1 tool mount for a pen or marker tool, select LASER for a laser tool, and select a MOUNTn tool mount for a cutting or punch tool. The number n ranges from 1 to the total number of cutting tool mounts supported by the tool head type installed on the machine. It is important to note that selecting a different tool mount **does not** select a different tool but rather attaches the current tool to the selected mount.

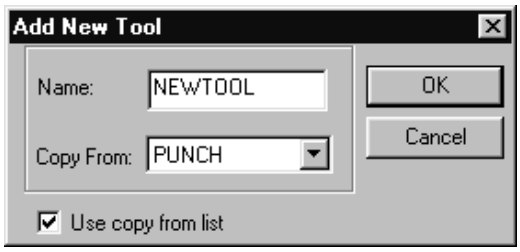


The tool type of the currently selected tool is specified in the "Tool Type" combobox. Only tool types applicable to the selected tool mount are included in the tool type list. On the PEN1 mount select PEN TOOL or INK JET, on the LASER mount select LASER, and on a MOUNTn mount select CUT TOOL, PUNCH or WATER JET. The tool type NO TOOL is available for all tool mount styles. Selecting the NO TOOL tool type makes the tool unavailable for use in cutting.

Once a tool type is selected, select the appropriate tool bitmap or tool image located to the right of the "Tool Type" combobox. This image is used to represent the tool in the Tools dialog box. Click on the appropriate image to select it. A red rectangle is drawn around the selected tool image.

Click the Delete button to delete the currently selected tool. A message is always displayed asking to confirm the deletion of the tool. If the tool is deleted, it is removed from the list of available tools.

Click the Add button to add a new tool to the list of available tools. The "Add New Tool" dialog box is displayed. Enter the name of the new tool in the "Name" text box. If the settings of the new tool are nearly identical to those of an existing tool, check the "Use copy from list" option and select the name of the existing tool in the "Copy From" combobox. Otherwise, the new tool settings are assigned default values. Click OK to create the new tool or click Cancel to terminate the Add function. The added tool appears in the "Tool" combobox and its settings may be examined and edited on the Tools tab.



To edit tool settings, select the tool in the Tool combobox and then make the appropriate entries in the text boxes provided. The "Velocity", "Blade Lead", "Blade Trail", "Understeer", "SEGA Distance", "Overcut", "T Offset" and "N Offset" settings must be entered in the currently selected units of measure displayed on the status bar.

The "Velocity" specifies the maximum velocity of the tool. This setting is not available for punch tools. Valid values are in the range from 0.1 to 180 cm/sec (0.04 to 70 in/sec).

The "Pressure" setting indicates the pressure in PSI that is applied to the tool while it is in use. The pressure setting should be set as low as possible to minimize table surface wear. However, the pressure must be set high enough to ensure complete cutting of the material. Valid values are in the range from 1 to 100 PSI.

The "Boost Down Time" and "Boost Up Time" specify short time intervals during which high pressure is applied to the tool while it is being dropped and lifted. The added pressure is used to speed up the drop and lift actions and, in the case of the "Boost Up Time", to assist in disengaging the tool from the material being cut.

The "Blade Lead" setting adjusts the leading edge travel of a tool at the end of a cut, thereby controlling overcut. A larger number will reduce overcut while a smaller number will increase it. The "Blade Lead" setting is often a negative value. This setting is not available for punch tools.

The "Blade Trail" setting adjusts the trailing edge travel of a tool at the beginning of a cut, thereby controlling overcut. A larger number will reduce overcut while a smaller number will increase it. This setting is not available for punch tools.

The "Understeer" setting controls the behavior of a cutting tool as it travels around curves. Understeer is specified as a blade length whose endpoints are steered around curves. Understeer opens or closes the trailing end of the blade to make more accurate cuts around curves. This setting is not available for punch tools.

A good test to see the effect of Understeer is to cut a 10 or 15 cm circle at a cutting speed of 5 cm/sec. As the tool finishes each quarter (90 degrees) of the circle, press ABORT on the User Interface Terminal. This causes the tool to lift. Press NEXT to drop the tool back down and continue the circle. Examine the points along the circle where the tool was lifted and dropped again. If the trailing edge of the blade fell outside the circle, increase "Understeer". Conversely, if the trailing edge of the blade fell inside the circle, reduce "Understeer".

The "LP Angle" or Lift/Plunge Angle sets the maximum turn angle for which a tool is turned while on the table rather than being lifted, turned and plunged to continue a cut. This setting is necessary to minimize table wear while maintaining good throughput. Since the machine takes a longer time to perform a tool lift/plunge sequence than to simply steer around a tight arc, a higher "LP Angle" reduces the cutting time and increases throughput. However, a tool going around a tight arc (particularly a round knife) tends to scrape the table surface. The "LP Angle" for a round knife should typically be set between 25 and 35 degrees. Drag knives, being far less damaging to the table while going around an arc, may be set around 170 degrees. This setting is not available for punch tools.

The SEGA command is used in CMD files to specify polylines with fillets at each corner point. The radius of each fillet is determined by fitting a circle tangent to the two lines joining at the point in the polyline at the "SEGA Distance" from that point. This setting is not available for punch tools.

The "Overcut" specifies any added length that should be applied to the beginning and end of each cut using the selected tool. This setting is not available for punch tools. Valid values are in the range from -10.0 to 10 cm (-3.9 to 3.9 in).

The "Rotation" setting specifies the angle, in degrees, that a punch tool is rotated while it is down on the material. This setting is not available for cutting tools.

The "Punch Repeat" setting specifies the number of times that a punch tool is plunged into the material. A punch tool is always plunged at least once. This setting is not available for cutting tools.

The "T Offset" sets the tangent offset for the selected tool. The tangent offset is the distance between the actual cut line of the tool and the center of the spindle to which it is mounted. Most tool types when properly mounted do not require a tangent offset adjustment. Note that changes of 0.001 cm (0.0004 in) are significant.

The "N Offset" sets the normal offset for the selected tool. The normal offset is the distance perpendicular to the cut line between the cutting tool and the center of the spindle to which it is mounted. Most tool types when properly mounted do not require a normal offset adjustment.

The "On Bit" parameter identifies the control bit used for switchable tools such as the cold wheel cutter or ultrasonic knife.

The "On Time" is a time interval, in seconds, to wait before starting a switchable tool after it has been plunged to the table. The "Off Time" is a time interval, in seconds, to wait for a switchable tool to stop after it has been lifted from the table. In certain cutting machine configurations, these two time values are used to activate reciprocation of a round knife tool. Any nonzero value activates tool reciprocation while a zero value causes the round knife tool to operate in the standard, non-reciprocating mode.

Job…

The Job option of the Options Menu accesses the parameters in the currently opened job file (filename extension JOB). The default job file is named EASICUT.JOB. Job parameters include Easicut 2.1 environment settings, drawing file preprocessing options, and file cutting and formatting options. The Job option is available in all program modes.

NOTE: If the Easicut security option is enabled, access to the Job option is restricted to the Supervisor user.

The Job Options dialog box is opened when the Job menu option is selected. This dialog box consists of ten pages of settings grouped according to function. Each of these pages is accessed by a tab located at the top of the dialog box. After all job settings changes are completed, click the OK button to save the settings to the current job file. Click the Cancel button to ignore all changes made on all pages (tabs) of the Job Options dialog box.

Click the Restore Defaults button to reload the default job settings previously saved with the Save Defaults function. The Save Defaults button is only available to Eastman technicians who will save a copy of the default job settings during the system installation procedure. The default settings will not take effect until the OK button is clicked and the settings are saved to the current job file.

Prefs Tab

The Prefs tab or page of the Job Options dialog box displays various Easicut 2.1 program preferences.

Select one of the "Units" options to determine the units of measure used by Easicut 2.1 to display position, length, distance, speed and other related values. The currently selected units are displayed on the status bar at the bottom of the Easicut main window.

Check the preferred "Screen Layout" options to determine the format of the Easicut main screen when the program is started. Check the "Open Maximized" option to force the Easicut main window to be maximized whenever the program is started. Check the "Maximize Drawing" option to maximize all drawing file windows within the drawing area of the Easicut main window. If this option is set, the entire drawing area is available to display a drawing file but only one drawing file is visible at any one time. The "Show Layers", "Show Tool Mounts" and "Show Plotter Status" options are checked to display the Layers, Tools and Status dialog boxes, respectively, in the layout program mode.

Select the "Left" or "Bottom" option in the "Dock Dialogs" frame to determine where the dialogs area is positioned within the Easicut main window when Easicut 2.1 is started. The selected docking mode applies to all three program modes.

The "Show Vertical Dividers" and "Dist" settings in the "Drawing Markings" frame determine whether or not vertical, gray dashed divider lines are drawn within the white "table" area of a drawing and at what interval the divider lines should be drawn. These divider lines mark off regular intervals along the length of the table starting at table home. The "Dist" setting must be entered in the currently selected units.
The "Show Horizontal Dividers" and "Dist" settings in the "Drawing Markings" frame determine whether or not horizontal, gray dashed divider lines are drawn within the white "table" area of a drawing and at what interval the divider lines should be drawn. These divider lines mark off regular intervals along the width of the table starting at the bottom of the table. The "Dist" setting must be entered in the currently selected units.

Check the "Show Material Width" option to add two horizontal, gray dotted lines that mark off the width of the currently selected material. The material width indicator lines are drawn in all program modes.

Check the "Auto Close After Cut" option to close the layout mode drawing file window after the file has been cut by the cutting machine and a new file has been loaded.

If the "Auto Return To Layout" option is checked, the program switches to the layout mode window of a drawing file after the cutting machine completes cutting of that file.

The "Disable Save CMD" and "Disable Save DXF" options are used to prevent the File | Save menu option from saving drawing files as CMD and/or DXF files. If both options are checked, the File | Save menu option is disabled. If only one of these options is checked, users are not able to save drawing files to the selected format using the File | Save menu option.

The "Disable Save As CMD" and "Disable Save As DXF" options are used to prevent the File | Save As menu option from saving drawing files as CMD and/or DXF files. If both options are checked, the File | Save As menu option is disabled. If only one of these options is checked, users are not able to save drawing files to the selected format using the File | Save As menu option.

Use the "Cut File" combobox in the Auto Print frame to select an automatic print mode for drawing files loaded into the cutting machine. The "Before File" option causes the cut file to be printed when it is loaded into the cutting machine. The "After File" option prints the cut file after the cutting machine has completed cutting the file. The "Before Bite" and "After Bite" print options generate a print out of each bite as it is processed by the cutting machine. Select "(None)" to disable automatic printing of cut files.

If Easicut 2.1 is configured to operate in conjunction with the EasiOrder order entry application, the Job Labels combobox is available for selection of a label size to use for printing panel identification labels. The options in this combobox refer to standard Avery label formats. Each label includes the panel number (as shown by the ToolPath | Show Part Name menu option) and the order number, order item number and piece identifier obtained from the Orders database.

Labels are printed whenever a drawing file or a bite of a drawing file is printed, either manually using the File | Print menu option or automatically if one of the Cut File print options described above is selected. Labels are only printed if the drawing file was generated with the Orders | Open Cut Job menu option. Select "(None)" to disable label printing.

Motion Tab

The Motion tab or page of the Job Options dialog box displays three motion settings used during cutting. All three settings must be entered in the currently selected unit of measure displayed on the status bar.

The "Overall Velocity" sets the overall speed used by the cutting machine during cut file processing.

The "Conveyor Velocity" and "Conveyor Accel" settings specify the maximum speed and acceleration used when repositioning the table's conveyor. These two settings only apply to tables that include a conveyor system.

Primary Tools Tab

The Primary Tools tab or page of the Job Options dialog box displays the three currently selected primary tools.

Use the "Primary Cutter" combobox to select the primary cutter tool. The combobox list only includes cutting type tools from the list of available tools. Use the Machine Options dialog box to add tools to the list. The primary cutter tool is the tool accessed by the Options Mode command at the User Interface Terminal.

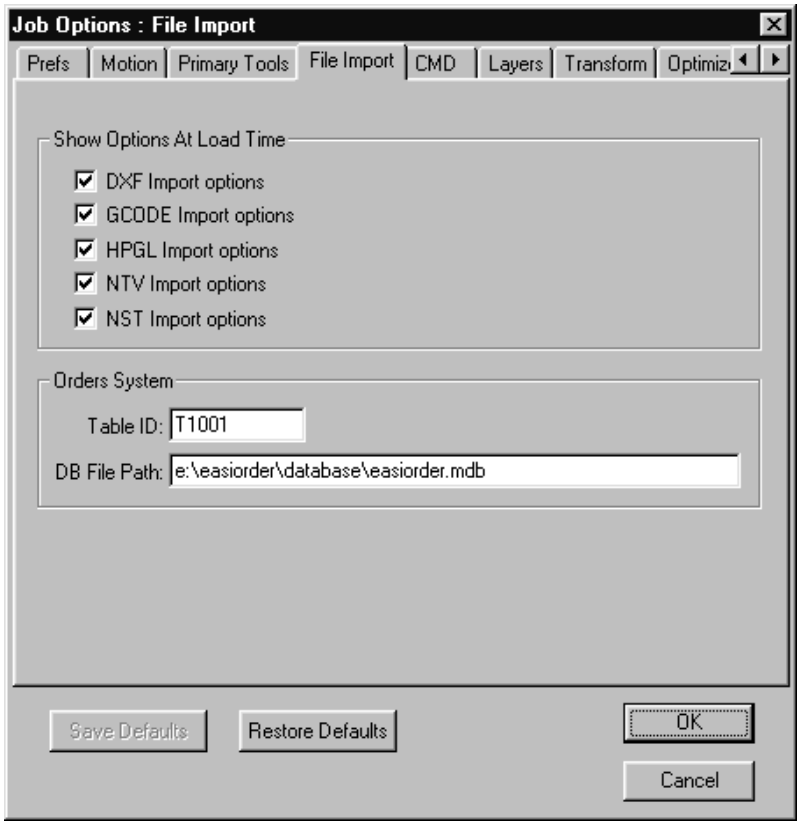
If the cutting machine has more than one marking device, use the "Primary Marker" combobox to select the primary marker tool. The combobox list only includes pen type tools from the list of available tools.

If the cutting machine is equipped with more than one pointing device, use the "Primary Pointer" combobox to select the primary pointer tool. The combobox list only includes the pointer and all pen type tools from the list of available tools.

File Import Tab

The File Import tab or page of the Job Options dialog box displays the current settings for the show import dialog box option for each supported type of drawing file as well as information needed to interface to the EasiOrder order entry system, if available.

If an Import Option is checked, the appropriate Import dialog box is displayed whenever a drawing file of that type is opened. If an option is not checked, no Import dialog box is displayed; the opened drawing files are processed and formatted using the most recently entered import options for that file type. There is no such option for CMD type drawing files since these files require no special preprocessing when they are opened and read by Easicut 2.1.



If all files of a particular type always require the same import option settings, those settings may be specified once using the appropriate Import dialog box. Then the display

of the Import dialog box may be disabled by unchecking the option on the File Import Tab. After that, each time a file of that type is opened, the previously entered import options are used to process the contents of the file. There is no need to view or respond to an Import dialog box again.

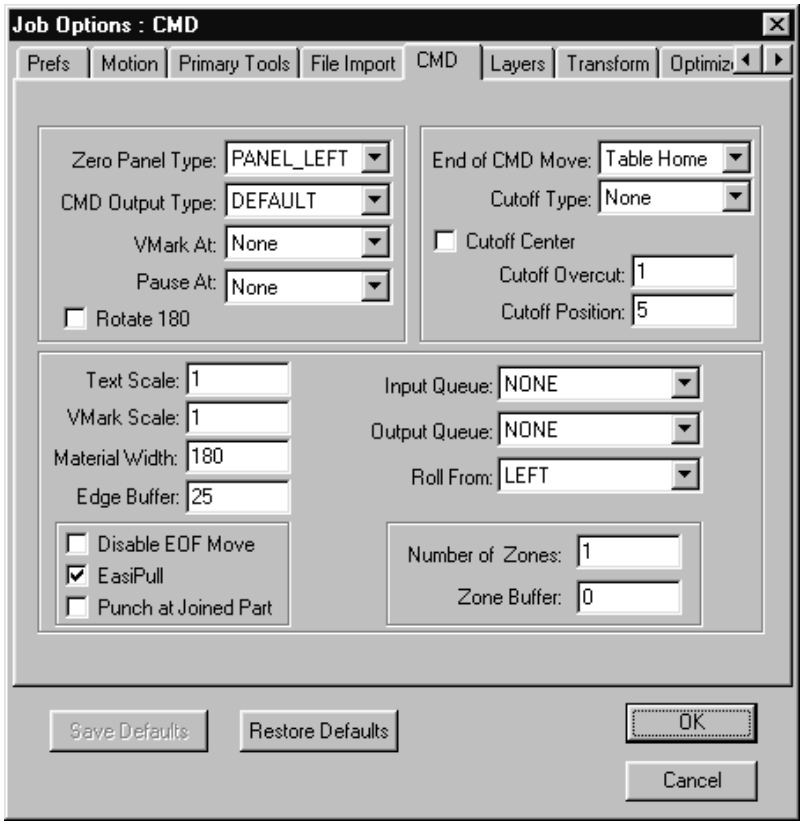
If the Easicut 2.1 program is configured with the EasiOrder order entry system, enter the table identification in the Table ID edit box and the full path and file name of the EasiOrder database file in the DB File Path. In order to properly interface to the EasiOrder application, the database filename "easiorder.mdb" must be used; the drive and directory will depend on where the EasiOrder application was installed. If the EasiOrder application and database are not available, leave the Table ID and DB File Path blank.

CMD Tab

The CMD tab or page of the Job Options dialog box provides access to a variety of parameters that pertain to how drawing files are processed when they are loaded into and cut by the cutting machine.

The "Zero Panel Type" setting specifies the method used for assigning a local origin point for the drawing file pattern when the ZERO PANEL key is pressed on the User Interface Terminal. If NONE is selected, the lower left corner of the drawing file pattern is positioned at the table location indicated by the pointer tool. If PANEL LEFT or PANEL RIGHT is selected, the lower left or lower right corner of the current panel within the drawing file is positioned at the table location indicated by the pointer tool. If there is no current panel (e.g., the file was just loaded), PANEL LEFT and PANEL RIGHT work just like NONE. If the TABLE LEFT option is selected, the ZERO PANEL key has no affect on drawing file placement; the origin point of the loaded drawing file is always positioned at the table's origin point (table home).

The "CMD Output Type" selection determines how the CMD drawing file that is loaded into the cutting table is generated. The COPY option creates a copy of the drawing file to load into the cutting table. Since the cutting table only accepts CMD files, the COPY option has limited uses. The DEFAULT option applies current table parameters and cutting settings to the drawing file to generate a new CMD file. This CMD file is loaded into the cutting table.



Select where V marks should be drawn on the material during cutting using the options in the "V Mark At" combobox. Select None to disable V mark generation, select Piece to draw V marks at each piece or panel, select Table to draw V marks at each table bite, or select Piece and Table to draw V marks at each piece and each table bite.

Select where cutting should pause using the options in the "Pause At" combobox. Select None to disable cutting pauses, select Piece to pause at each piece or panel, select Table to pause at each table bite, or select Piece and Table to pause at each piece and each table bite.

Check the "Rotate 180" to rotate a drawing file 180 degrees prior to loading it into the cutting machine.

The "End of CMD Move" setting determines where the tool head moves after a drawing file has been cut. Select No Move, Table Home, End of Table, Job Home, End of Job, or End of Zone. The End of Zone option is only applicable when zone cutting is enabled,

i.e., the "Number of Zones" setting on the CMD tab is greater than 1. If zone cutting is not enabled, End of Zone is equivalent to End of Table.

The "Cutoff Type" setting determines if and where commands are added to the loaded drawing file that will cut across the material. The available options are None (no cut off commands added to the file), Before Job (cut off commands added to cut material before the file is cut), After Job (cut off commands added to cut material after the file is cut) and On The Fly (cut off commands added to cut material after the file is cut).

If a "Cutoff Type" other than None is selected, the "Cutoff Center", "Cutoff Overcut" and "Cutoff Position" settings should be assigned. If the "Cutoff Center" option is checked, the cut commands added to the drawing file will cut the material using two cuts, both starting at the center of the material and moving outward to the opposite edges of the material. The "Cutoff Overcut" setting determines the amount the cut extends beyond the edge of the material and the "Cutoff Position" specifies the amount of additional material allocated for the cut. Both the "Cutoff Overcut" and the "Cutoff Position" must be entered in the currently selected unit of measure. The starting point of the cuts and the length of the cuts are both determined by the material width. This will be the "Material Width" value on the CMD tab of the Job Options dialog box if no material is selected for the drawing file or the "Material Width" specified in the Material Options dialog box for the file's selected material.

The "Text Scale" setting is used to scale the size of all text entities included in drawing files. When Text Scale is set to 1, the text size specified in the drawing file is used to display text at the PC and to print text on the cutting machine. Increase the value of the Text Scale setting to display and print proportionately larger characters.

Use the "V Mark Scale" setting to adjust the size of a V Mark mark. A value of 1 results in a 2cm by 2cm mark. Reduce or increase the setting value to make smaller or larger V Marks.

The "Material Width" is used as the default material width value when no material type is specified for a drawing file. This value must be entered in the currently selected unit of measure.

The "Edge Buffer" setting specifies the length added to the ends of the pulled material beyond the edges of the cut file. This setting is helpful in controlling material movement on the edges. Use the currently selected unit of measure when entering an "Edge Buffer" value. This setting is only used if the machine is equipped with an EasiPull system and it is enabled. Enable the EasiPull system by checking the EasiPull checkbox.

Files generated with Eastman Pool Design Suite software contain SKIP commands at the end which automatically return the plotter to the global origin. These commands are ignored by the machine's motion control software when the "Disable EOF Move" option is checked.

When a large part or panel extends beyond the length of the cutting machine table, it is divided into multiple sections. Check the "Punch at Joined Part" option to have punches added at the points where the cut lines for such large parts cross the table limit boundary, i.e., where the large part is divided.

The "Input Queue" specifies the source of input files. Select NONE or SCANVEC.

The "Output Queue" specifies how drawing files are handled by the Cut and Cut Selected options of the File Menu. If NONE is selected and zone cutting is not enabled ("Number of Zones" is less than 2), the drawing file is immediately loaded into the cutting machine. If the machine is already cutting a file, a message informs you that the machine is busy and the file was not loaded. If NONE is selected and zone cutting is enabled, drawing files are added to the queue, replacing any and all queued files for that zone. There can be only one file in the queue list for each zone. If the cutting machine is not currently busy cutting a file, the drawing file is also loaded into the machine. If MANUAL is selected, the Cut and Cut Selected options place all drawing files at the end of the cutting queue. The File Menu's Queue option must be used to load a queued file into the cutting machine. If AUTOLOAD is selected, a drawing file is loaded into the cutting machine if the machine is not busy. Otherwise, the drawing file is added to the end of the queue list. When the cutting machine completes a file, the first file in the queue is automatically loaded into the cutting machine and removed from the queue list. If zone cutting is enabled, files are loaded into alternate zones of the cutting machine. This could mean that the first queue list item is not loaded.

Use the "Roll From" combobox to select the direction from which material is fed onto the cutting table. This setting also determines the direction from which table bites are moved onto the cutting table. The available options are LEFT, RIGHT, and SPLIT. The SPLIT option is used when rolls of material are available at both ends of the table. This option is typically used when zone cutting is enabled (i.e., "Number of Zones" is greater than 1.)

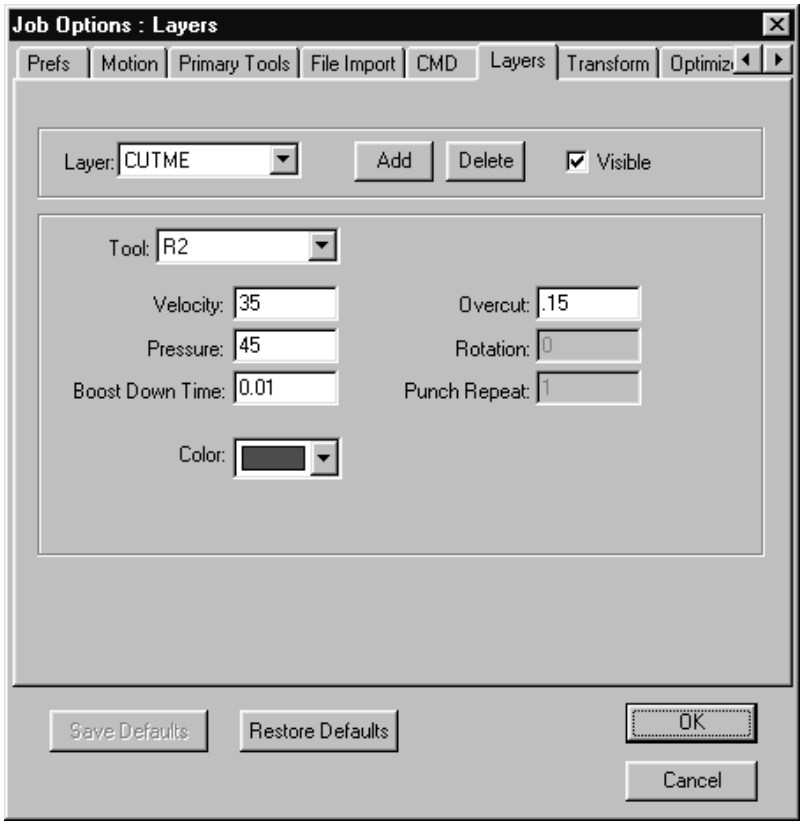
Enter a 2 for the "Number of Zones" setting to divide the table into two equal sections or zones. This enables zone cutting. Zone cutting is not available on conveyor tables. If zone cutting is not required, enter a value of 0 or 1.

The "Zone Buffer" setting is used to specify a buffer or cutter exclusion area between zones. The zone buffer is centered around the dividing line between zones. This setting has no affect on cutting operations if the number of zones is set to less than 2 (zone cutting not enabled). The value must be entered in the currently selected unit of measure.

Layers Tab

The Layers tab or page of the Job Options dialog box is used to map or assign each drawing layer name to a cutting machine tool. Each layer mapping also includes certain

tool operating parameters that will be used when drawing entities on that layer are cut. These tool settings override the values of the corresponding tool settings in the Machine Options dialog box.



Select an available layer in the "Layer" combobox. The current settings and parameters for the selected layer are displayed.

Map the currently selected layer to a tool by selecting a toll in the "Tool" combobox. Mapping a layer to a tool determines which tool the cutting machine will use when cutting drawing entities on that layer. Select NO TOOL if the layer is not to be mapped to any tool. Otherwise, select from the list of available tools. Drawing entities on the currently selected layer will not be cut if the layer's tool is set to NO TOOL. It is important to note that selecting a different tool **does not** select a different layer but rather maps the current layer to the selected tool.

Click the Delete button to delete the currently selected layer. A message is always displayed asking to confirm the deletion of the layer. If the layer is deleted, it is removed from the list of available layers.

Click the Add button to add a new layer to the list of available layers. The Add Layer dialog box is displayed. Enter the name of the new layer in the "Layer Name" text box. Layer names are case-insensitive and only the first five characters of a layer name are significant. If the settings of the new layer are nearly identical to those of an existing layer, check the "Use copy from list" option and select the name of the existing layer in the "Copy From" combobox. Otherwise, the new layer settings are assigned default values. Click OK to create the new layer or click Cancel to terminate the Add function. The added layer appears in the "Layer" combobox and its settings may be examined and edited on the Layers tab.

The layer's "Visible" status is toggled by clicking the checkbox. All drawing entities on the selected layer are visible in the drawing area only when this checkbox is checked.

Select the desired layer color in the "Color" combobox. A total of 16 different colored rectangles is displayed in the combobox's dropdown list. Use the mouse to scroll the list and click on the layer's new color. All drawing entities on the selected layer are drawn using the selected color.

To edit the layer's tool settings, select the layer in the Layer combobox, select the tool to which the layer should be mapped and then make the appropriate entries in the text boxes provided. The "Velocity" and "Overcut" settings must be entered in the currently selected units of measure displayed on the status bar. Tool settings not available for editing are not applicable to the tool to which the currently selected layer is mapped.

The "Velocity" specifies the maximum velocity of the layer's tool. This setting is not available for punch tools. Valid values are in the range from 0.1 to 180 cm/sec (0.04 to 70 in/sec).

The "Pressure" setting indicates the pressure in PSI that is applied to the layer's tool while it is in use. The pressure setting should be set as low as possible to minimize table surface

wear. However, the pressure must be set high enough to ensure complete cutting of the material. Valid values are in the range from 1 to 100 PSI.

The "Boost Down Time" specifies a short time interval during which high pressure is applied to the layer's tool while it is being dropped to the table. The added pressure is used to speed up the drop.

The "Overcut" specifies any added length that should be applied to the beginning and end of each cut using the layer's tool. This setting is not available for punch tools. Valid values are in the range from -10.0 to 10 cm (-3.9 to 3.9 in).

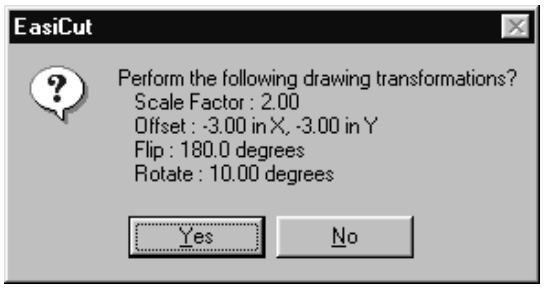
The "Rotation" setting specifies the angle, in degrees, that a punch tool is rotated while it is down on the material. This setting is not available for cutting tools.

The "Punch Repeat" setting specifies the number of times that a punch tool is plunged into the material. A punch tool is always plunged at least once. This setting is not available for cutting tools.

Transform Tab

The Transform tab or page of the Job Options dialog box specifies the types of geometric transformations to apply to each drawing file when it is opened. Each of the selected (checked) transformation options may be automatically applied to every newly opened drawing file.

If at least one transformation option is checked, a message box is issued each time a drawing file is opened. The message text specifies the types of transformations to be applied to the drawing file. Click Yes to perform the transformations or click No to leave the drawing file unchanged.

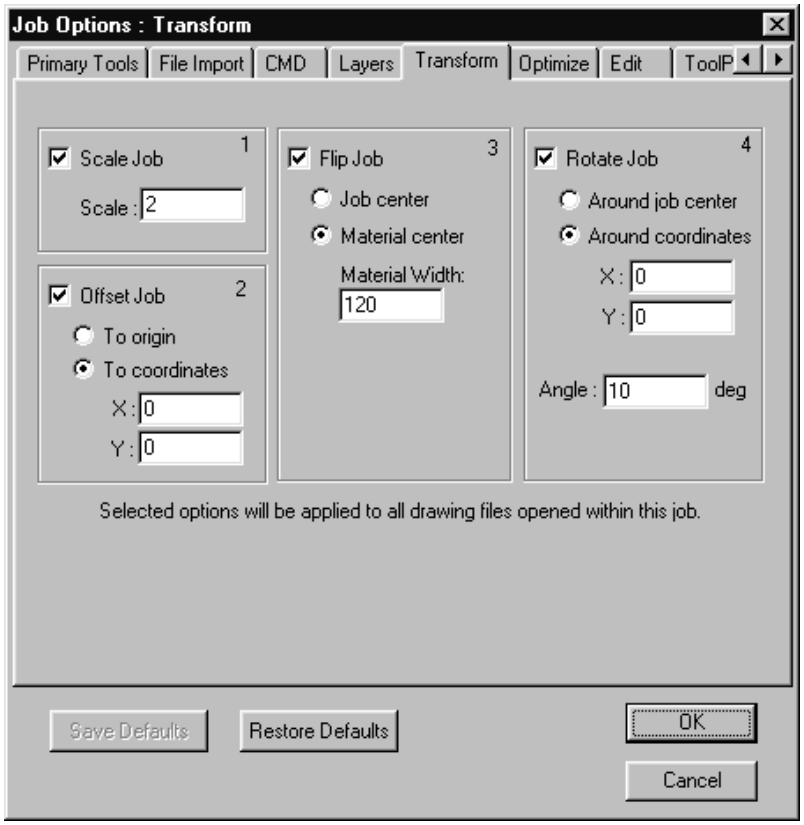


When more than one transformation option is selected, the transformations are performed in the order specified by the numbers that appear in the upper right corner of the frames surrounding the transformation options settings: scale, offset, flip then rotate.

Check the "Scale Job" option to resize all objects within a drawing file. Enter the scale factor in the "Scale" text box. Factors less than 1 reduce the size of the drawing objects while factors greater than one increase the size of the drawing objects. Valid scale factors are in the range 0.001 to 999.999.

The reference or anchor point of the scaling is the lower left corner of a rectangle which circumscribes all the objects in the drawing. This means that scaling of multiple objects not only changes their size but also changes their separation.

Check the "Offset Job" option to repositions the contents of a drawing with respect to the drawing area's coordinate system. Select the "To origin" option to repositioned the file such that the lower left corner of the rectangle circumscribing the contents of the drawing file is placed at the origin of the drawing area coordinate system. If the "To coordinates" option is selected, enter the X and Y coordinates of the lower left corner of the circumscribing rectangle. The coordinates must be specified in the currently selected units of measure displayed on the status bar at the bottom of the Easicut main window.

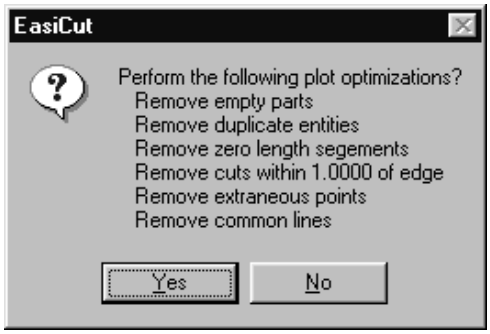


Check the "Flip Job" option to flip the drawing file contents about a line which is parallel to the X axis of the drawing (horizontal line). Select the "Job center" option to flip the drawing about a horizontal line which bisects a rectangle circumscribing all objects in the drawing file. Select the "Material center" option to flip the drawing about a horizontal line which bisects the specified material width. The material width must be entered in the currently selected units of measure displayed on the status bar.

Check the "Rotate Job" option to reposition the objects within a drawing file by rotating them all about a point. Enter the rotation "Angle" in degrees. A positive angle causes a counterclockwise rotation. Valid rotation angles are in the range -359.999 to 359.999. If the "Around job center" option is selected, the file is rotated around a point that is centered in a rectangle circumscribing the contents of the current drawing. If the "Around coordinates" option is selected, enter the X and Y coordinates of the point around which to rotate the file. The coordinates must be entered in the currently selected units of measure displayed on the status bar.

Optimize Tab

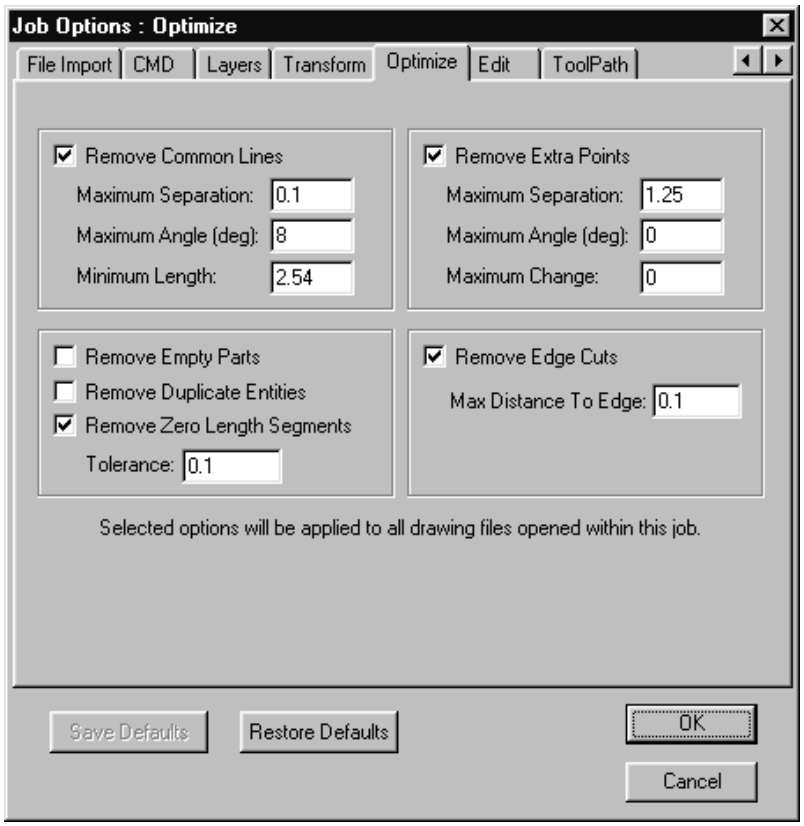
The Optimize tab or page of the Job Options dialog box specifies the types of drawing optimizations to apply to each drawing file when it is opened. Each of the selected (checked) optimization options may be automatically applied to every newly opened drawing file.



If at least one optimization option is checked, a message box is issued each time a drawing file is opened. The message text specifies the types of optimization to be applied to the drawing file. Click Yes to perform the optimizations or click No to leave the drawing file unchanged.

The settings made in the Optimize tab of the Job Options dialog box are also used as the default values for the Remove Errors, Remove Edge Cuts, Remove Extra Pts and Remove Common Lines options of the Modify Menu. These default values are used in the menu option dialog box even if the corresponding optimization option is not checked in the Optimize tab.

Check the "Remove Common Lines" option to delete superfluous or duplicate cut lines from a drawing file. A superfluous cut line is one which, if removed, has little or no affect on the cutting results of the drawing. Such lines add to the processing time of a file but contribute nothing to the final results of the cutting. Enter into the "Maximum Separation", "Maximum Angle" and "Minimum Length" text boxes the criteria for removal of common lines from the drawing. The "Maximum Separation" and "Minimum Length" distances must be entered in the currently selected units displayed on the status bar. Valid "Maximum Separation" distances are in the range of 0 to 10 centimeters. Valid values for the "Maximum Angle" are in the range of 0 to 30 degrees. Valid "Minimum Length" distances are in the range of 0 to 1000 centimeters.



Two lines are considered common only if they are both on the same drawing layer. If the distance between at least one of a line's points and another line is greater than the "Maximum Separation" distance, the line is **not** removed from the drawing file. If the angle made by a line and another line is greater than the "Maximum Angle", the line is **not** removed from the drawing file. If the length of a line is less than the "Minimum Length" distance, the line is **not** removed from the drawing file.

Check the "Remove Extra Points" option to delete superfluous points from within polyline entities in a drawing file. This option only removes points along a polyline which lie between two linear segments; points at the start or end of a curve are never removed. A superfluous point is one which, if removed, has little or no affect on the shape or cutting results of the drawing. Such points add to the processing time of a file but contribute nothing to the final results of the cutting. Enter into the "Maximum Separation", "Maximum Angle" and "Maximum Change" text boxes the criteria for removal of extra points from the drawing file. The "Maximum Separation" and

"Maximum Change" distances must be entered in the currently selected units displayed on the status bar. Valid "Maximum Separation" distances are in the range of 0 to 1000 centimeters. Valid values for the "Maximum Angle" are in the range of 0 to 45 degrees. Valid "Maximum Change" distances are in the range of 0 to 10 centimeters.

If the distance between a point and its nearest neighbor is greater than or equal to the "Maximum Separation" distance, the point is **not** removed from the drawing file. If the break angle between the two line segments meeting at a point is greater than or equal to the "Maximum Angle", the point is **not** removed from the drawing file. If the shift in the cut line position due to removal of a point is greater than or equal to the "Maximum Change" distance, the point is **not** removed from the drawing file.

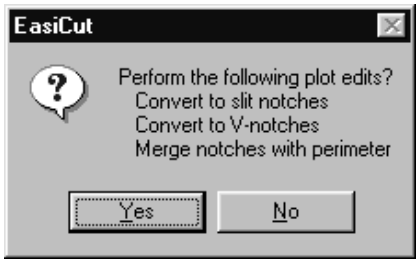
Check the "Remove Empty Parts" option to delete all blocks or panels within the drawing file which contain no drawing objects or entities. Check the "Remove Duplicate Entities" option to delete all drawing file entities which are duplicates of other entities. An entity is a duplicate of another entity if it is the same type of entity, is on the same layer of the drawing and its points are all within the specified "Tolerance" distance of the corresponding points in the other entity. A tolerance of 0 means that the points of the two entities must be at exactly the same coordinates to be considered duplicates. Check the "Remove Zero Length Segments" option to delete all line or arc segments within drawing file entities which are shorter than the specified Tolerance distance. A tolerance of 0 means that the line segments must be zero length to be removed. If all segments of a drawing entity are considered zero length, the entity is replaced by a punch point entity.

The "Tolerance" distance must be entered in the currently selected units displayed on the status bar. Valid tolerance distances are in the range of 0 to 100 centimeters.

Check the "Remove Edge Cuts" option to delete drawing entities or parts of entities for the drawing file that lie along the top and bottom edges of the material being cut. The bottom edge of the material is always assumed to be along the X axis of the drawing coordinate system, i.e., at the horizontal line defined by Y = 0. The top edge of the material lies at a distance equal to the file's material width above the X axis, i.e., at the horizontal line defined by Y = material width. If a material is specified for the drawing file, the width of that material is used. If no material is specified, the default material width specified in the Job Options dialog box is used. Enter into the "Max Distance To Edge" text box the maximum distance an entity may be from the material edge and still be trimmed or removed from the drawing. A distance of 0 trims only those parts of the drawing file that are exactly on or are outside of the edges of the material. The distance must be entered in the currently selected units displayed on the status bar. Valid distances are in the range of 0 to 5 centimeters.

Edit Tab

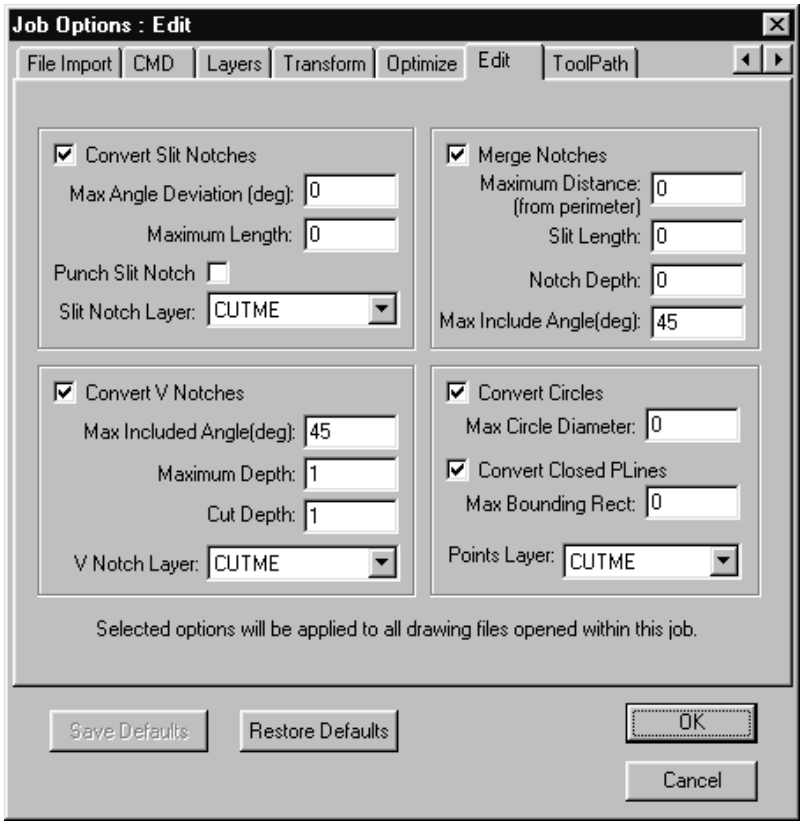
The Edit tab or page of the Job Options dialog box is used to select various edit options which actually edit or modify one or more entities within a drawing file. Each of the selected (checked) edit options may be automatically applied to every newly opened drawing file.



If at least one edit option is checked, a message box is issued each time a drawing file is opened. The message text specifies the edit operations to be applied to the drawing file. Click Yes to perform the edits or click No to leave the drawing file unchanged.

The settings made in the Edit tab of the Job Options dialog box are also used as the default values for the Convert Notches, Merge Notches and Convert Points options of the Modify Menu. These default values are used in the menu option dialog box even if the corresponding edit option is not checked in the Edit tab.

Check the "Convert Slit Notches" option to search for slit notches within the cut perimeters of all drawing file objects and convert these cuts to slit entities which may be separately processed and cut or punched with a different tool. Select a drawing layer in the "Slit Notch Layer" combobox. All converted slit notches are placed on this layer. The selected layer determines the tool that will be used to cut or punch the slit notches. Check the "Punch Slit Notch" option to punch the converted slit notches even if a layer mapped to a cutting tool is selected. Enter into the "Max Angle Deviation" and "Maximum Length" text boxes the search criteria for perimeter slit notches. The "Maximum Length" distance must be entered in the currently selected units displayed on the status bar. Valid values for the "Max Angle Deviation" are in the range of 0 to 90 degrees. Valid "Maximum Length" distances are in the range of 0 to 10 centimeters.



If the angle the perimeter slit notch makes with the perimeter line deviates from the perpendicular (90 degrees) by more than the "Max Angle Deviation", the slit notch is **not** converted to a slit notch entity. If the distance for the base to the peak of a perimeter slit notch (the length of the slit notch) is greater than the "Maximum Length" distance, the slit notch is **not** converted to a slit notch entity.

Check the "Convert V Notches" option to search for V notches within the cut perimeters of all drawing file objects and convert these cuts to notch entities which may be separately processed and cut or punched with a different tool. Select a drawing layer in the "V Notch Layer" combobox. All converted V notches are placed on this layer. The selected layer determines the tool that will be used to cut or punch the V notches. Enter into the "Max Included Angle" and "Maximum Depth" text boxes the search criteria for perimeter V notches. Enter into the "Cut Depth" text box the desired depth of the converted V notch if the notches are to be cut rather than punched. The depth is the distance from the perimeter to the peak of the notch. The "Maximum Depth" and "Cut Depth" distances must be entered in the currently selected units displayed on the status

bar. Valid values for the "Max Included Angle" are in the range of 0 to 180 degrees. Valid "Maximum Depth" and "Cut Depth" distances are in the range of 0 to 10 centimeters.

If the interior angle of a perimeter V notch is greater than the "Max Included Angle", the V notch is **not** converted to a V notch entity. If the distance for the base to the peak of a perimeter V notch is greater than the "Maximum Depth" distance, the V notch is **not** converted to a V notch entity.

Check the "Merge Notches" option to search for V notch and slit notch entities near the cut perimeters of all drawing file objects, convert the notch entities to cuts and merge these cuts into the object perimeters. Such merged V notches and slit notches are cut using the same tool that performs the perimeter cut. Enter the "Maximum Distance" a notch entity may be from the perimeter line and still be merged into the perimeter. This distance should be small since the perimeter line will be adjusted to meet the base points of any merged notch entities. Enter the "Maximum Slit Length" and "Maximum Notch Depth" criteria to limit the size of the notch entities to merge. The depth of a V notch is the distance from the base line to the peak point of the notch. Enter the "Max Include Angle" criteria to limit the shapes of the V notch entities to merge. The included angle of a V notch entity is the angle formed at the peak of the notch.

The "Maximum Distance", "Maximum Slit Length" and "Maximum Notch Depth" values must all be entered in the currently selected units displayed on the status bar. Valid "Maximum Distance", "Maximum Slit Length" and "Maximum Notch Depth" values are in the range of 0 to 10 centimeters. Valid values for the "Max Include Angle" are in the range of 0 to 180 degrees.

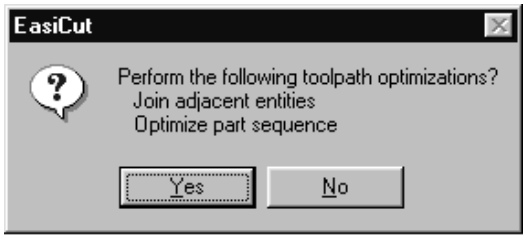
Slit and V notch entities which were cut retain their original size and shape after they are merged with the perimeter. Punch entities located along a perimeter line are converted to a cut V notch prior to merging with the perimeter line. The "Maximum Notch Depth" value is used as the depth of the V notch and the included angle is set to 60 degrees.

Check the "Convert Circles" option to search for and convert circle entities in a drawing file to punch points. Check the "Convert Closed PLines" option to search for and convert closed polyline entities to punch points. Select a drawing layer in the "Points Layer" combobox. All converted punch points are placed on this layer. The selected layer determines which tool will be used to punch the converted point entities. If the "Convert Circles" option is checked, enter the "Max Circle Diameter" criteria to limit the size of the circle entities that are converted. If the "Convert Closed PLines" option is checked, enter the "Max Bounding Rect" criteria to limit the size of the polyline entities that are converted. The "Max Circle Diameter" and "Max Bounding Rect" values must be entered in the currently selected units displayed on the status bar. Valid values for these two settings are in the range of 0 to 10 centimeters.

ToolPath Tab

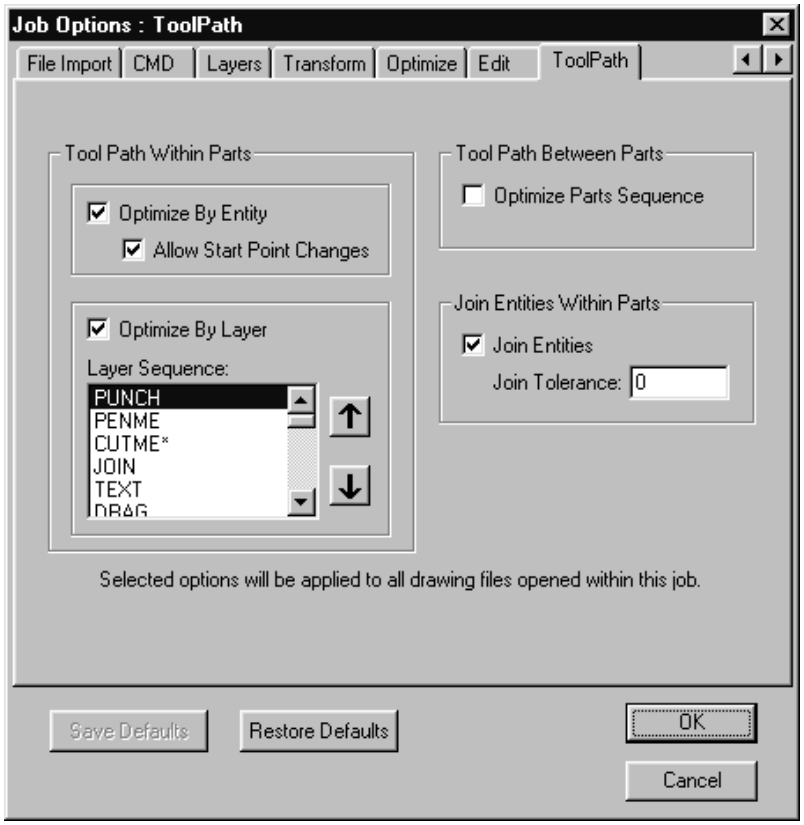
Use the ToolPath tab or page of the Job Options dialog box to select various methods to optimize the sequence in which drawing file entities are processed (cut) by the cutting machine. Each of the selected (checked) toolpathing options may be automatically applied to every newly opened drawing file.

The toolpath optimizations available on the ToolPath tab all attempt to minimize the cutting time of a drawing file by optimizing the cutting sequence of the parts and the entities within each part in the drawing file. This optimization attempts to minimize the total distance the tool head is moved without cutting and to minimize the number of tool changes. The cutting sequence optimization is always performed first for entities within each part or panel and then for the parts within the drawing file.



If at least one toolpathing option is checked, a message box is issued each time a drawing file is opened. The message text specifies the toolpathing operations to be applied to the drawing file. Click Yes to perform the toolpathing options or click No to leave the drawing file unchanged.

The settings made in the ToolPath tab of the Job Options dialog box are also used as the default values for the Auto Join Entities and the Auto Sequence Entities options of the ToolPath Menu. These default values are used in the menu option dialog box even if the corresponding toolpathing option is not checked in the ToolPath tab.



Select the desired cutting sequence optimizations by checking the "Optimize By Entity", "Optimize By Layer" and/or "Optimize Parts Sequence" options. Check the "Allow Start Point Changes" option if cutting sequence optimization within a part should include adjusting the start point of drawing entities.

If the "Optimize By Layer" option is checked, specify the desired layer sequence. Entities on the first layer in the list will be cut before any entities on the second layer, entities on the second layer in the list will be cut before any entities on the third layer, and so forth. The list always includes all layers defined within the current job. To change a layer's position within the list, select that layer by clicking on it. Then click one of the two arrow buttons to move the layer name within the list. Click the up arrow button to move the layer towards the top of the list and click the down arrow button to move the layer towards the bottom of the list.

If the "Optimize By Entity" option is checked and the "Optimize By Layer" option is not checked, the cutting sequence of drawing entities within each part is optimized based

solely on entity position. If both the "Optimize By Entity" option and the "Optimize By Layer" option are checked, the cutting sequence of drawing entities within each part is optimized based on entity position but on a layer by layer basis. Finally, if the "Optimize Parts Sequence" option is checked, the cutting sequence of the parts within the drawing file is optimized based on part position and the first and last point cut within each part.

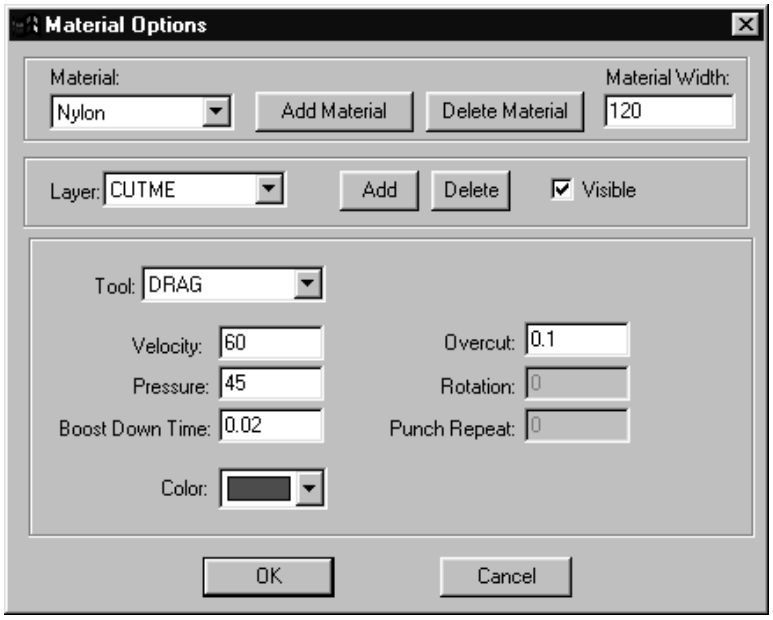
Check the "Join Entities" option to connect one or more lines and/or polyline segments into a single continuous polyline if the endpoints of the individual segments are less than a maximum distance apart. This reduces the number of drawing entities that must be processed by the cutting machine, thereby reducing the cutting time of the file. Enter into the "Join tolerance" text box the maximum separation between the end points of lines or polyline segments that will still be joined together. The "Join Tolerance" value must be entered in the currently selected units displayed on the status bar. Valid values are in the range of 0 to 10 centimeters.

Material…

The Material option of the Options Menu accesses the material width parameter and layer mappings for all defined material types. This information is saved in the MATERIAL.INI disk file. The Material option is available in all program modes.

NOTE: If the Easicut security option is enabled, access to the Material option is restricted to the Supervisor user.

The Material Options dialog box is opened when the Material menu option is selected. This dialog box provides controls for viewing, editing, adding and deleting material definitions. After all material definition changes are completed, click the OK button to save the settings to the MATERIAL.INI file. Click the Cancel button to ignore all changes made in the Material Options dialog box.



Begin by selecting an available material definition in the "Material" combobox. The current settings and parameters for the selected material are displayed.

To create a new material definition, click the "Add Material" button. The Add Material dialog box is displayed. Enter the name of the new material in the "Name" text box. If the settings of the new material are nearly identical to those of an existing material, check the "Use copy from list" option and select the name of the existing material in the "Copy From" combobox. Otherwise, the new material settings are assigned default values. Click OK to create the new material or click Cancel to terminate the Add function. The added material appears in the "Material" combobox and its settings may be examined and edited on the Material Options dialog box.

Click the "Delete Material" button to delete the currently selected material. A message is always displayed asking to confirm the deletion of the material. If the material is deleted, it is removed from the list of available materials.

Each material definition requires a material width setting. One or more layer mappings may also be specified for each material. The "Material Width" specifies the actual width of the currently selected material. This value must be entered in the currently selected unit of measure listed on the status bar. Valid material widths are in the range from 1 to 1000 cm (0.4 to 393 in).

Each layer mapping in the Material Options dialog box maps or assigns a drawing layer name to a cutting machine tool. Each layer mapping also includes certain tool operating parameters that will be used when drawing entities on that layer are cut in the currently selected material. Although the layer mappings specified for a material serve the same purpose as those entered in the Job Options dialog box, they are not the same layer mappings. When a material is selected for (associated with) a drawing file, that material's layer mappings supersede any layer mappings with the same name that are included in the currently opened job file (i.e., listed in the Layers tab of the Job Options dialog box.) This allows the same layer to be cut using the same tool but that tool can be assigned different settings depending on the material being cut. If a layer mapping is not specified for a material, the layer mapping specified in the Job Options dialog box is used by default. If no specific material is selected for a drawing file, the tool settings specified in the Layers tab of the Job Options dialog box are used; all material settings are ignored.

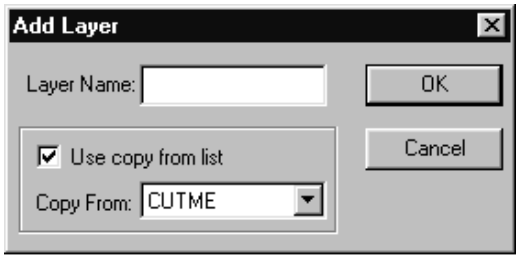
Select an available layer in the "Layer" combobox. The current settings and parameters for the selected material layer are displayed.

The tool to which the currently selected material layer is mapped is selected in the "Tool" combobox. Mapping a material layer to a tool determines which tool the cutting machine will use when cutting drawing entities on that layer. Select NO TOOL if the layer is not to be mapped to any tool. Otherwise, select from the list of available tools. It is important to note that selecting a different tool **does not** select a different layer but rather maps the current material layer to the selected tool.

Click the Delete button to delete the currently selected layer from the current material definition. A message is always displayed asking to confirm the deletion of the layer. If the layer is deleted, it is removed from the list of available material layers.

Click the Add button to add a new layer to the current material's list of available layers. The Add Layer dialog box is displayed. Enter the name of the new material layer in the "Layer Name" text box. Layer names are case-insensitive and only the first five characters of a layer name are significant. If the settings of the new material layer are nearly identical to those of an existing material layer, check the "Use copy from list" option and select the name of the existing material layer in the "Copy From" combobox. Otherwise, the new material layer settings are assigned default values. Click OK to create

the new material layer or click Cancel to terminate the Add function. The added material layer appears in the "Layer" combobox and its settings may be examined and edited in the Material Options dialog box.



The material layer's "Visible" status is toggled by clicking the checkbox. All drawing entities on the selected material layer are visible in the drawing area only when this checkbox is checked.

Select the desired layer color in the "Color" combobox. A total of 16 different colored rectangles is displayed in the combobox's dropdown list. Use the mouse to scroll the list and click on the layer's new color. All drawing entities on the selected material layer are drawn using the selected color.

To edit the material layer's tool settings, select the layer in the Layer combobox, select the tool to which the material layer should be mapped and then make the appropriate entries in the text boxes provided. The "Velocity" and "Overcut" settings must be entered in the currently selected units of measure displayed on the status bar. Tool settings not available for editing are not applicable to the tool to which the currently selected material layer is mapped.

The "Velocity" specifies the maximum velocity of the material layer's tool. This setting is not available for punch tools. Valid values are in the range from 0.1 to 180 cm/sec (0.04 to 70 in/sec).

The "Pressure" setting indicates the pressure in PSI that is applied to the material layer's tool while it is in use. The pressure setting should be set as low as possible to minimize table surface wear. However, the pressure must be set high enough to ensure complete cutting of the material. Valid values are in the range from 1 to 100 PSI.

The "Boost Down Time" specifies a short time interval during which high pressure is applied to the material layer's tool while it is being dropped to the table. The added pressure is used to speed up the drop.

The "Overcut" specifies any added length that should be applied to the beginning and end of each cut using the material layer's tool. This setting is not available for punch tools. Valid values are in the range from -10.0 to 10 cm (-3.9 to 3.9 in).

The "Rotation" setting specifies the angle, in degrees, that a punch tool is rotated while it is down on the material. This setting is not available for cutting tools.

The "Punch Repeat" setting specifies the number of times that a punch tool is plunged into the material. A punch tool is always plunged at least once. This setting is not available for cutting tools.

Calibration…

The Calibration option of the Options Menu is used to make adjustments to several machine, tool and tool mount settings which affect cutting machine accuracy. This calibration must be performed when the cutting machine is first installed, when a new tool head or new tool is installed, or following any disassembly of cutting machine drive components. To ensure optimum performance of the cutting machine, it is recommended that the calibration of the machine be checked periodically. All calibration settings are saved in the MACHINE.INI disk file. The Calibration option is available in all program modes.

NOTE: If the Easicut security option is enabled, access to the Calibration option is restricted to the Supervisor user.

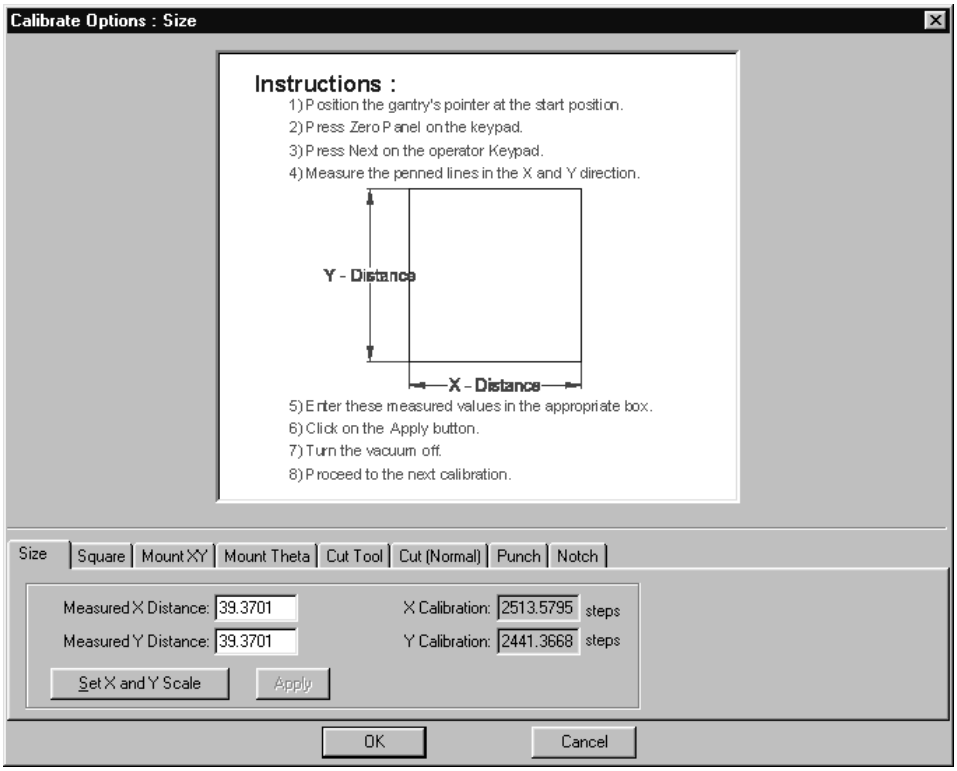
The Calibration Options dialog box is opened when the Calibration menu option is selected. This dialog box includes a large area where user instructions are posted. Eight calibration procedures are accessed using tabs located below the user instructions window. It is important that the calibration procedures be performed in the order in which the tabs appear.

Once all calibration procedures are completed, click the OK button to save the calibration settings to the MACHINE.INI file. Click the Cancel button to ignore all changes made on all pages (tabs) of the Calibration Options dialog box.

Size Tab

The Size tab or page of the Calibration Options dialog box allows the size or scale of all cuts to be calibrated. The current size calibration settings are shown at lower center of the Size page. Performing the Size calibration may modify the value of these settings.

Follow the user instructions provided on the Size tab to set up the cutting machine for this calibration test. When setup is complete, click the "Set X and Y Scale" button to load a calibration test file into the cutting machine.

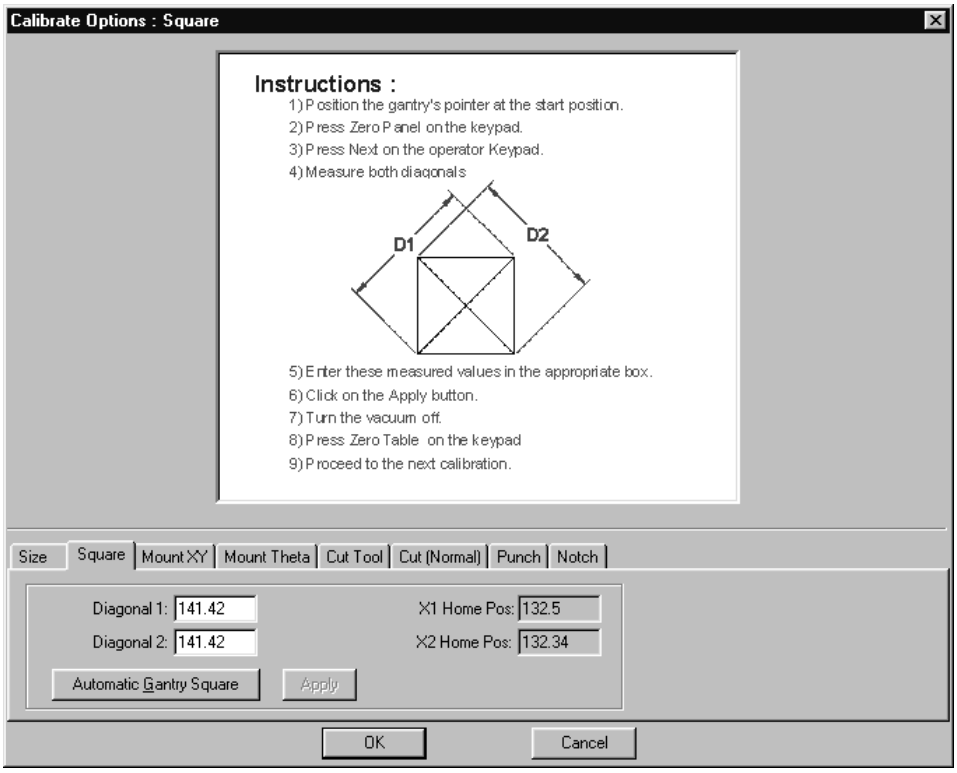


Follow the new instructions displayed on the Size tab to execute the calibration test file. This test file draws a 100 cm square. Measure the X and the Y distances along the sides of the square and, if either distance is not equal to 100 cm (39.37 in), enter the distances into the "Measured X Distance" and "Measured Y Distance" text boxes. These distances must be specified in the currently selected unit of measure displayed on the status bar. If the contents of either text box is modified, the Apply button becomes enabled. Click the Apply button to compute new values for the "X Calibration" and "Y Calibration" settings and to transfer those settings to the cutting machine. The displayed values for "Measured X Distance" and "Measured Y Distance" are reset to 100 cm (39.37 in).

Square Tab

The Square tab or page of the Calibration Options dialog box is used to verify that the tool head carriage or gantry is square or perpendicular to the table's length. The current

values of the "X1 Home Pos" and "X2 Home Pos" settings are shown at lower center of the Square page. Performing the Square calibration may modify the value of these settings.



Follow the user instructions provided on the Square tab to set up the cutting machine for this calibration test. When setup is complete, click the "Automatic Gantry Square" button to load a calibration test file into the cutting machine.

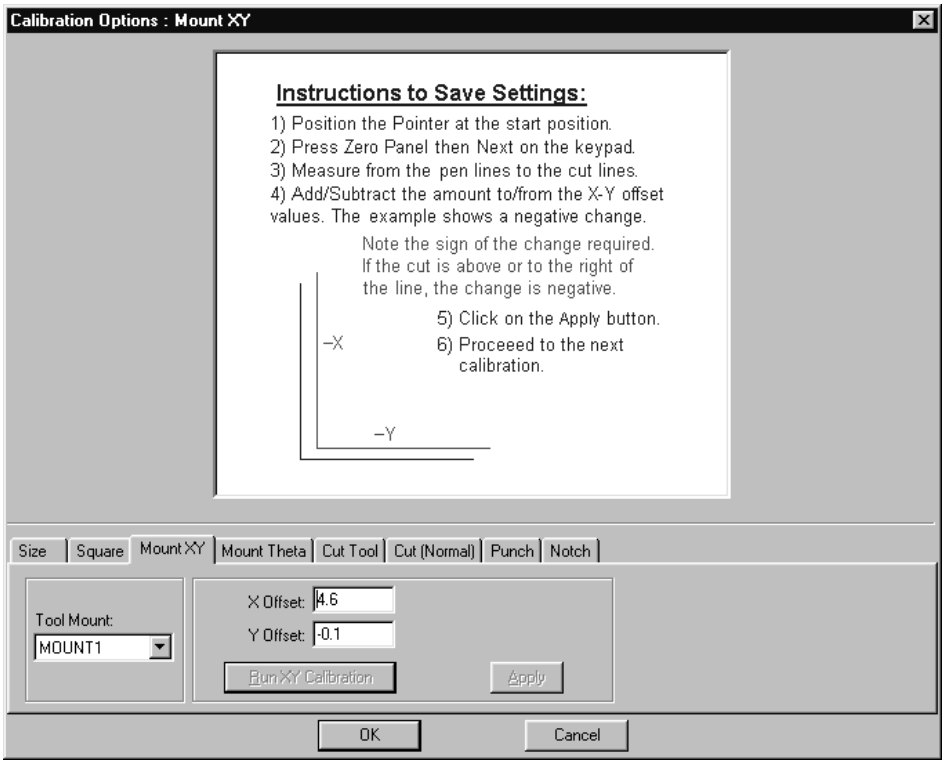
Follow the new instructions displayed on the Square tab to execute the calibration test file. This test file draws a 100 cm square with two diagonals. Measure the length of the two diagonal lines and, if their lengths are not equal, enter the two diagonal lengths into the "Diagonal 1" and "Diagonal 2" text boxes. These distances must be specified in the currently selected unit of measure displayed on the status bar. If the contents of either text box is modified, the Apply button becomes enabled. Click the Apply button to compute a new value for the "X2 Home Pos" setting and to transfer that setting to the cutting machine. The displayed values for "Diagonal 1" and "Diagonal 2" are reset to 141.42 cm (55.6772 in).

Mount XY Tab

The Mount XY tab or page of the Calibration Options dialog box allows the X and Y offsets of each tool mount to be calibrated. The X and Y offsets of all cutting machine tool mounts must be adjusted so that all tools operate from the same origin point. This common origin point is generally set to the location of the laser pointer.

Select the tool mount to be calibrated in the "Tool Mount" combobox. The current values of the "X Offset" and "Y Offset" settings for the selected mount are shown at lower center of the Mount XY page. The offset settings are displayed in the currently selected unit of measure.

Follow the user instructions provided on the Mount XY tab to set up the cutting machine for this calibration test. When setup is complete, click the "Run XY Calibration" button to load a calibration test file into the cutting machine.



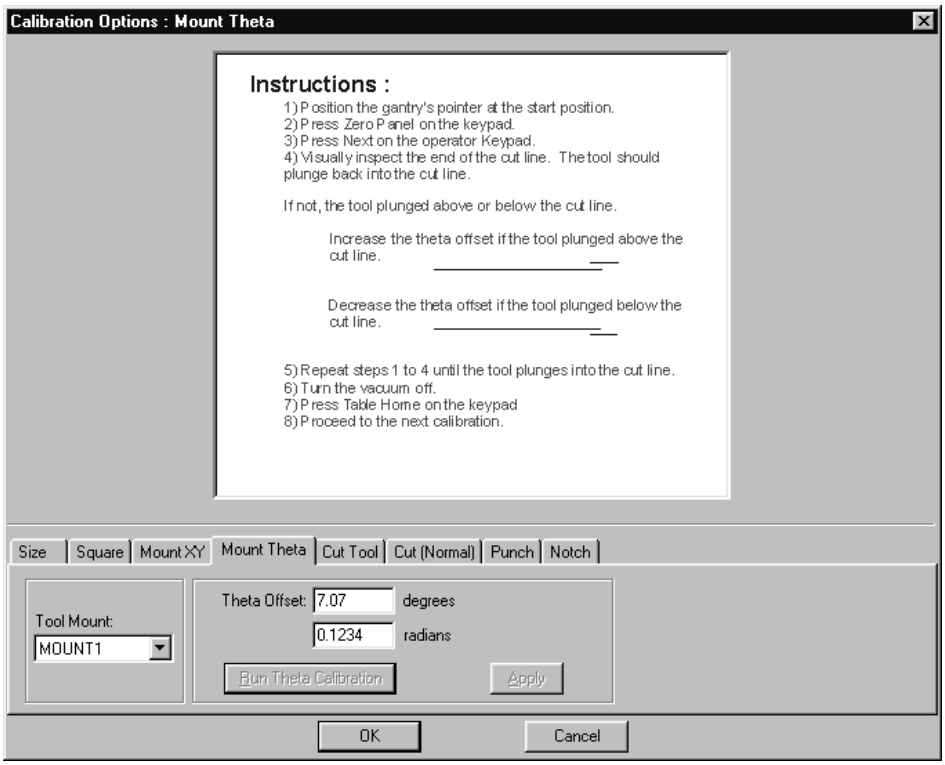
Follow the new instructions displayed on the Mount XY tab to execute the calibration test file. This test file draws two 20 cm lines that meet at right angles and then cuts the same two lines with the tool attached to the selected tool mount. Measure the distance (offset) of the cut lines from the pen lines and, if either distance is not zero, adjust the "X Offset" and/or "Y Offset" setting for the tool mount. These offset distances must be specified in the currently selected unit of measure displayed on the status bar. If the contents of either text box is modified, the Apply button becomes enabled. Click the Apply button to transfer the new offset settings to the cutting machine.

Select a new tool mount in the "Tool Mount" combobox control to initiate calibration of another mount. The current X and Y offset settings for the new mount are displayed and the "Run XY Calibration" button is enabled. When the cutting machine is properly set up for the calibration test (per the displayed instructions), click the "Run XY Calibration" button and repeat the procedure described in the previous paragraph.

Mount Theta Tab

The Mount Theta tab or page of the Calibration Options dialog box allows the Theta or Z offset of each tool mount to be calibrated. The theta offsets of all cutting machine tool mounts must be adjusted so that all tools are properly aligned with the movement of the tool head carriage or gantry. If the theta offset of a tool mount is not properly calibrated, a cutting tool tends to steer itself as it cuts which greatly reduces the life of the tool and the accuracy of the cuts.

Select the tool mount to be calibrated in the "Tool Mount" combobox. The current value of the "Theta Offset" setting for the selected mount is shown at lower center of the Mount Theta page.



Follow the user instructions provided on the Mount Theta tab to set up the cutting machine for this calibration test. When setup is complete, click the "Run Theta Calibration" button to load a calibration test file into the cutting machine.

Follow the new instructions displayed on the Mount Theta tab to execute the calibration test file. This test file cuts a 20 cm line lengthwise along the table using the tool attached to the selected mount and then lifts and plunges the tool at the end of that line. If the tool does

not return to the end of the cut line, adjust the "Theta Offset" setting according to the displayed instructions. Note that the offset may be entered in degrees or radians; changing the entry in one text box immediately changes the value in the other text box. If the contents of either text box is modified, the Apply button becomes enabled. Click the Apply button to transfer the new theta offset setting to the cutting machine.

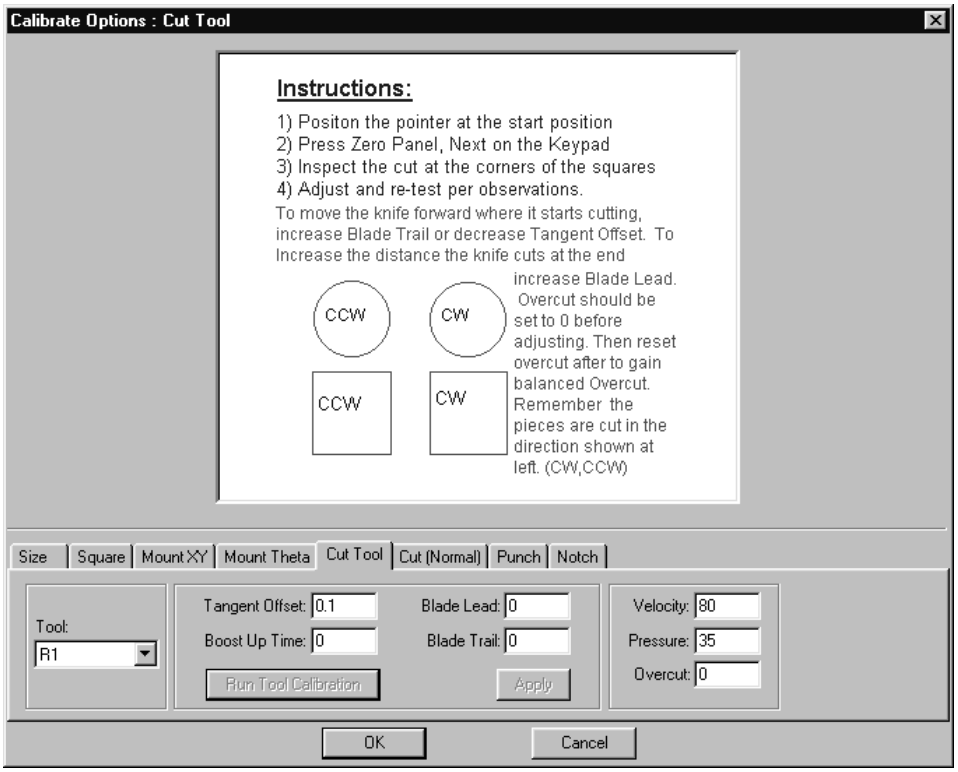
Select a new tool mount in the "Tool Mount" combobox control to initiate calibration of another mount. The current theta (Z) offset setting for the new mount is displayed and the "Run Theta Calibration" button is enabled. When the cutting machine is properly set up for the calibration test (per the displayed instructions), click the "Run Theta Calibration" button and repeat the procedure described in the previous paragraph.

Cut Tool Tab

The Cut Tool tab or page of the Calibration Options dialog box allows calibration of the "Blade Lead" and "Blade Trail" for each cutting tool. This calibration adjustment ensures that patterns are completely cut and can be lifted from the table without snagging in the corners. Each cutting tool should be individually calibrated.

Select the cutting tool to be calibrated in the "Tool" combobox. The current values of the selected tool's calibration settings are shown at the bottom of the Cut Tool page.

Follow the user instructions provided on the Cut Tool tab to set up the cutting machine for this calibration test. Be sure that the tool's "Overcut" setting is zero. The "Velocity" and "Pressure" settings may also be adjusted as required. The "Velocity" must be specified in the currently selected unit of measure. When setup is complete, click the "Run Tool Calibration" button to load a calibration test file into the cutting machine.



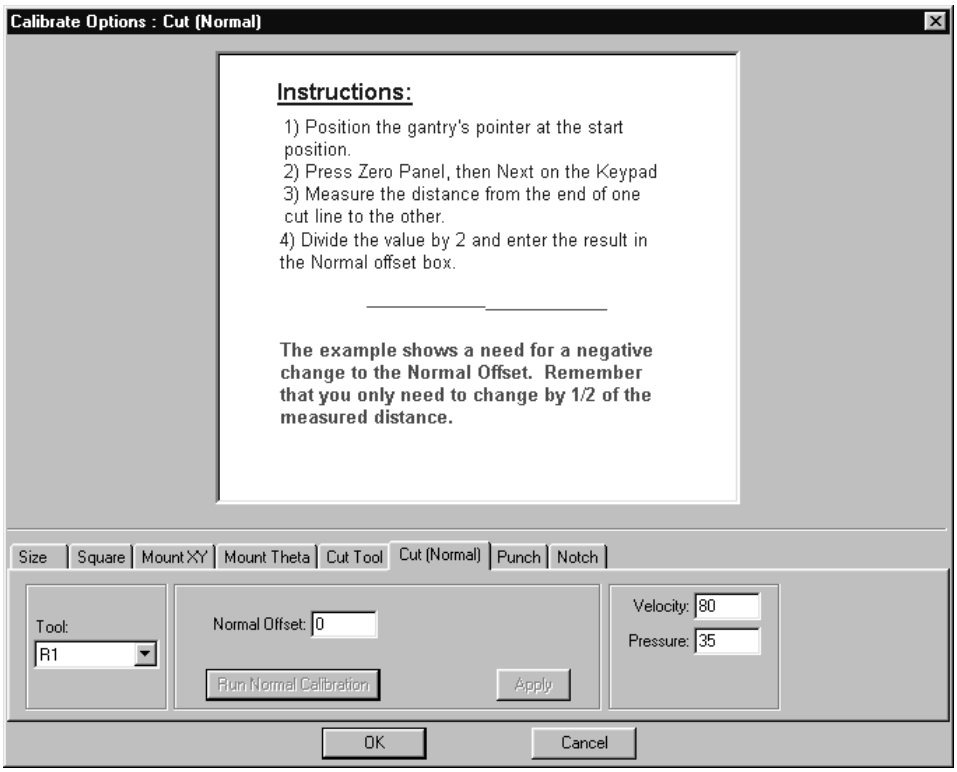
Follow the new instructions displayed on the Cut Tool tab to execute the calibration test file. This test file draws two 10 cm squares and two 10 cm circles and then cuts the same pattern using the selected cutting tool. If necessary, adjust the tool's "Tangent Offset", "Blade Lead" and/or "Blade Trail" settings according to the displayed instructions. These three settings must be entered using the currently selected unit of measure displayed on the status bar. If necessary, adjust the "Boost Up Time" to improve tool disengagement from the material being cut. The "Boost Up Time" setting is independent of the other calibration settings being adjusted during this test. If the contents of any text box is modified, the Apply button becomes enabled. Click the Apply button to transfer the new calibration settings to the cutting machine.

Select a new tool in the "Tool" combobox control to initiate calibration of another cutting tool. The current calibration settings for the new tool are displayed and the "Run Tool Calibration" button is enabled. When the cutting machine is properly set up for the calibration test (per the displayed instructions), click the "Run Tool Calibration" button and repeat the procedure described in the previous paragraph.

Cut (Normal) Tab

The Cut (Normal) tab or page of the Calibration Options dialog box allows calibration of each tool's "Normal Offset" setting. This calibration adjustment ensures that the location of a cut is independent of the direction in which the cut was performed, i.e., the tool's rotation axis is centered on the tool's cut. Each cutting tool should be individually calibrated.

Select the cutting tool to be calibrated in the "Tool" combobox. The current value of the selected tool's "Normal Offset" settings is shown at the bottom of the Cut Tool page. The offset setting is displayed in the currently selected unit of measure.



Follow the user instructions provided on the Cut (Normal) tab to set up the cutting machine for this calibration test. The "Velocity" and "Pressure" settings may be adjusted as required. The "Velocity" must be specified in the currently selected unit of measure.

When setup is complete, click the "Run Normal Calibration" button to load a calibration test file into the cutting machine.

Follow the new instructions displayed on the Cut (Normal) tab to execute the calibration test file. This test file cuts two 10 cm lines that start at the same point but are cut in opposite directions. If the starting points of the two lines do not coincide, adjust the tool's "Normal Offset" setting according to the displayed instructions. The setting must be entered using the currently selected unit of measure displayed on the status bar. If the contents of any text box is modified, the Apply button becomes enabled. Click the Apply button to transfer the new calibration settings to the cutting machine.

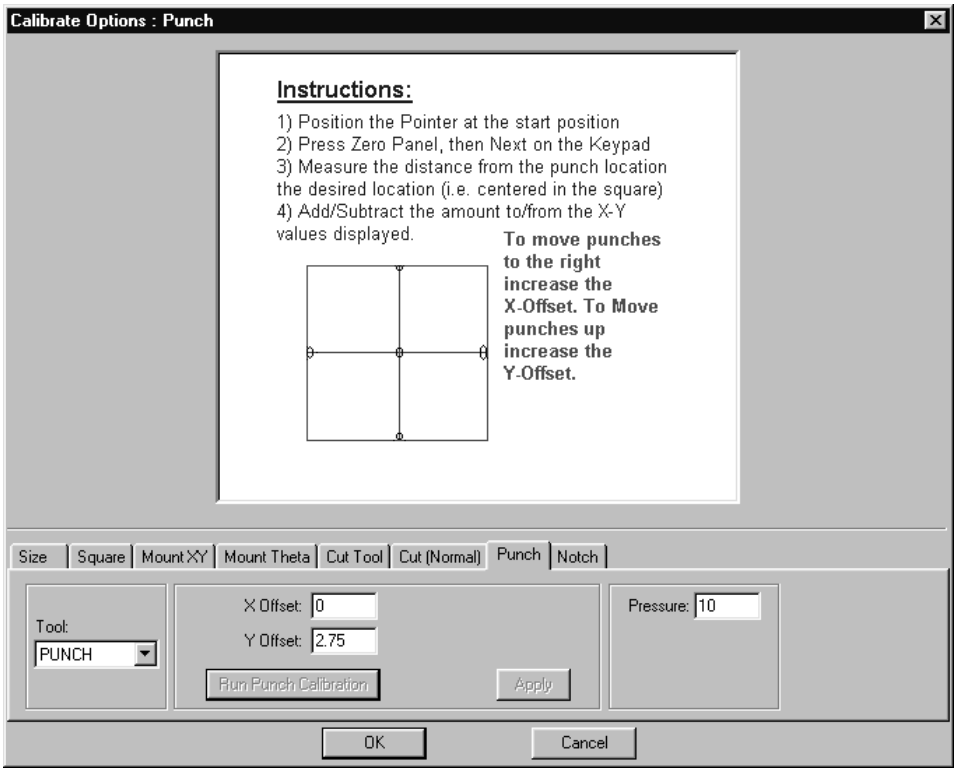
Select a new tool in the "Tool" combobox control to initiate calibration of another cutting tool. The current calibration settings for the new tool are displayed and the "Run Normal Calibration" button is enabled. When the cutting machine is properly set up for the calibration test (per the displayed instructions), click the "Run Normal Calibration" button and repeat the procedure described in the previous paragraph.

Punch Tab

The Punch tab or page of the Calibration Options dialog box allows the X and Y offsets of each punch tool to be calibrated so that the resulting punches are properly positioned regardless of the tool angle or direction.

Select the punch tool to be calibrated in the "Tool" combobox. The current values of the "X Offset" and "Y Offset" settings for the selected punch tool are shown at lower center of the Punch page. The offset settings are displayed in the currently selected unit of measure.

Follow the user instructions provided on the Punch tab to set up the cutting machine for this calibration test. The tool's "Pressure" setting may be adjusted as required. When setup is complete, click the "Run Punch Calibration" button to load a calibration test file into the cutting machine.



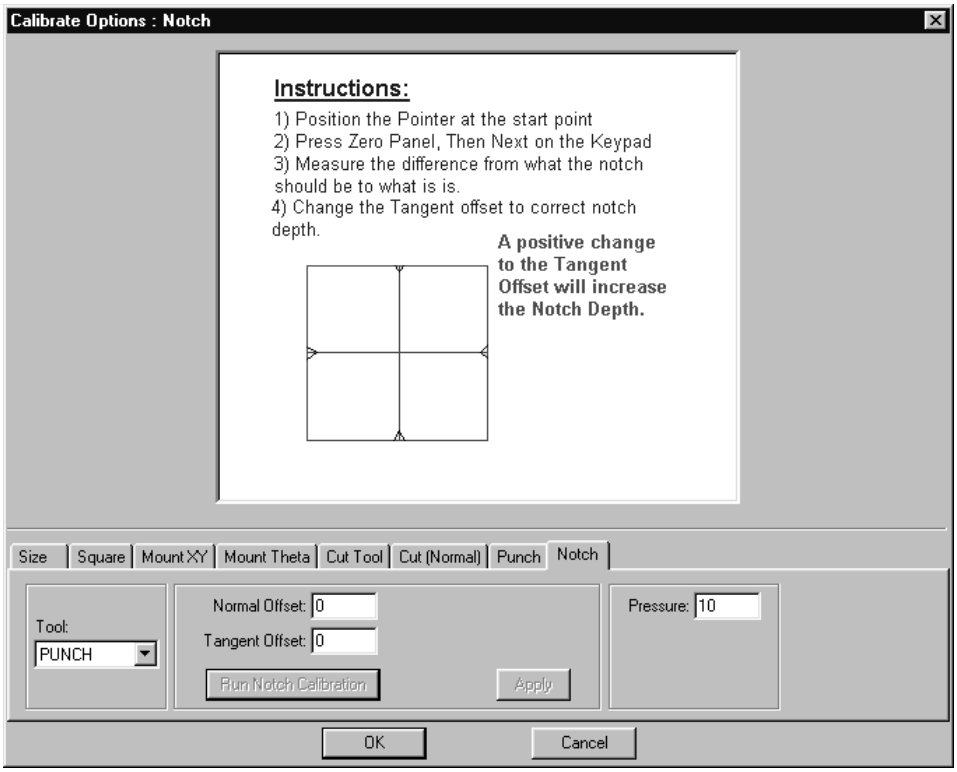
Follow the new instructions displayed on the Punch tab to execute the calibration test file. This test file draws two perpendicular lines 10 cm long and places a punch mark at the ends of each line and at the point where the lines intersect. Measure the distance (offset) of the punches from the pen lines and, if required, adjust the "X Offset" and/or "Y Offset" setting for the tool. These offset distances must be specified in the currently selected unit of measure displayed on the status bar. If the contents of either text box is modified, the Apply button becomes enabled. Click the Apply button to transfer the new offset settings to the cutting machine.

Select a new punch tool in the "Tool" combobox control to initiate calibration of another tool. The current X and Y offset settings for the new tool are displayed and the "Run Punch Calibration" button is enabled. When the cutting machine is properly set up for the calibration test (per the displayed instructions), click the "Run Punch Calibration" button and repeat the procedure described in the previous paragraph.

Notch Tab

The Notch tab or page of the Calibration Options dialog box is used to ensure that notches can be accurately placed along a line regardless of the orientation or angle of the notch.

Select the notch tool to be calibrated in the "Tool" combobox. The current values of the "Normal Offset" and "Tangent Offset" settings for the selected notch tool are shown at lower center of the Notch page. The offset settings are displayed in the currently selected unit of measure.



Follow the user instructions provided on the Notch tab to set up the cutting machine for this calibration test. The tool's "Pressure" setting may be adjusted as required. When setup is complete, click the "Run Notch Calibration" button to load a calibration test file into the cutting machine.

Follow the new instructions displayed on the Notch tab to execute the calibration test file. This test file draws a 10 cm square and two perpendicular lines within the square. V notches are placed along the perimeter of the square at the ends of the two lines and two opposing V notches are placed at the center of the square where the two lines intersect. Measure the distance (offset) of the punches from the pen lines and, if required, adjust the "Tangent Offset" and/or "Normal Offset" setting for the tool. These offset distances must be specified in the currently selected unit of measure displayed on the status bar. If the contents of either text box is modified, the Apply button becomes enabled. Click the Apply button to transfer the new offset settings to the cutting machine.

Select a new notch tool in the "Tool" combobox control to initiate calibration of another tool. The current tangent and normal offset settings for the new tool are displayed and the "Run Notch Calibration" button is enabled. When the cutting machine is properly set up for the calibration test (per the displayed instructions), click the "Run Notch Calibration" button and repeat the procedure described in the previous paragraph.

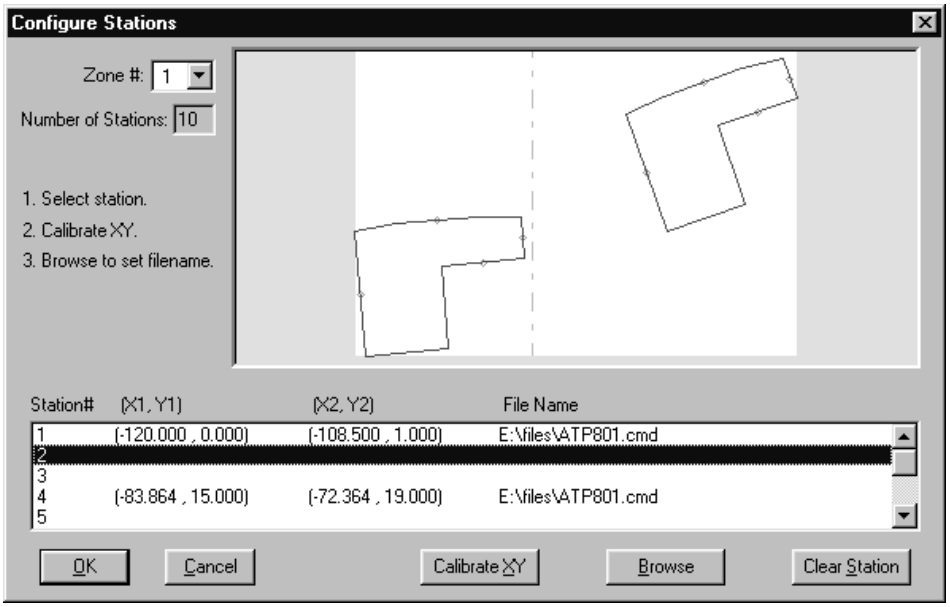
Stations…

The Stations option of the Options Menu provides the ability to cut individual parts at specific locations (called stations) on the table. A different set of stations may be defined for each table zone. The Stations option is available in all program modes but only if zone cutting is enabled. Zone cutting is enabled if the "Number of Zones" setting in the Job Options dialog box is greater than 1 and the "Machine Type" setting in the Machine Options dialog box specifies a static table (i.e., not a conveyor table).

NOTE: If the Easicut security option is enabled, access to the Stations option is restricted to the Supervisor user.

The plot data for these stations is saved to a CMD file named ZONEn.CMD where n identifies the table zone in which the stations lie. For a two zone table, the station plot data is saved in ZONE1.CMD and ZONE2.CMD files. Information about the contents of each zone's plot file is saved in the STATION.INI file.

When the Stations menu option is selected, the Configure Stations dialog box is displayed. In the upper right portion of this dialog box is a drawing window which shows the contents of all the programmed station drawing files in the currently selected zone. Other controls in the dialog box include a "Zone#" combobox, a "Number of Stations" edit box, a stations listbox and five command buttons: "OK", "Cancel", "Calibrate XY", "Browse", and "Clear Station".



Zone selection is performed using the combobox control in the upper left of the dialog box. The dropdown list of this combobox includes the numbers of all available table zones. The user may switch between available zones at any time during the station configuration process. All modifications made to stations in one zone are retained when switching to another zone. When a different zone is selected, the zone drawing window and the station list are updated to show the contents of the new zone's drawing file.

The number of stations shown below the Zone# combobox is the maximum number of stations which may be specified for any one zone. Currently, this number is fixed at 10 and can not be edited.

Below the zone drawing window is a list of the stations for the currently selected zone. The list consists of four columns of information. The first column is the station number. This number is maintained by the software and can not be edited. The second and third columns list the station's calibration points. These points are used to position and orient the part to be cut at the station. The first calibration point (X1, Y1) determines the offset of the part's coordinate system origin from the table's coordinate system origin. The direction from the first calibration point to the second calibration point (X2, Y2) determines the orientation of the part's coordinate system X-axis. By specifying these two points the user may position and align a part anywhere within the currently selected table zone. Use the "Calibrate XY" button located below the station list to enter calibration points for a station. The fourth column of the stations list specifies the drawing file used to generate the plot data for the station. Typically, this file contains plotting specifications for a single part or panel but a

file with multiple parts may also be used. The software currently limits the number of panels at each station to 10. Therefore, if a plot file with more than 10 panels is specified for a station, only the first 10 are included in the station (i.e., added to the ZONEn.CMD file). Use the "Browse" button located below the station list to select a station plot file.

All station modifications are performed on the currently selected station. Select a station by clicking anywhere on the station's entry in the station list. If the station entry is not visible, use the vertical scroll bar to scroll the list until the station is accessible. The currently selected station is highlighted in the list.

The "Calibrate XY" button initiates entry of two (X,Y) coordinates. After clicking the "Calibrate XY" button, a Cancel dialog box appears on the screen. Input of both calibration points is performed at the cutting machine's User Interface Terminal. This procedure is described in the cutting machine's user manual. The station calibration process may be terminated at any time by clicking the Cancel button in the Cancel dialog box. If calibration is cancelled, the calibration points for the currently selected station remain unchanged. If two calibration points are entered using the machine's keypad, these points are added to the station entry text in the station list and, if a drawing file is already specified for the station, station part(s) are moved and reoriented based on the newly entered calibration points. The changes are shown in the zone drawing window.

The "Browse" button opens a standard Windows Open dialog box which allows association of an existing drawing file (CMD, DXF, HPGL, etc) with the currently selected station. Once a valid drawing file is selected, it is added to the station's list entry and the zone drawing window is updated to include the change made to the selected station. If a file other than a CMD file is selected for the station, a file Import dialog box may appear. Refer to the Open option of the File Menu for a description of the various file Import dialog boxes.

The parts or panels of each station are labeled according to their station number. The first part for station 1 is labeled "10", the next part is labeled "11" and so on. The parts for station 2 are labeled "20", "21" and so on. This identifies the parts belonging to each station. The part(s) taken from each station drawing file are positioned and oriented within the zone drawing window (and in the ZONEn.CMD file) according to the information provided by the two calibration points shown in columns two and three of the station list. If no calibration points have been specified for the station when a station plot file is selected, default points of (0,0) and (1,0) are used. This places the station's parts at the zone origin and orients their X and Y axes parallel to the table's X and Y axes.

Clicking the "Clear Stations" button erases the contents of the currently selected station. The station's panels are removed from the zone drawing window and from the ZONEn.CMD file.

When the station configuration process is complete, click the "OK" button to save all the changes to the STATION.INI file and to all the appropriate ZONEn.CMD files. The

ZONEn.CMD files generated by the station configuration process may be accessed by any EasiCut function where a CMD file may be specified.

Click on the "Cancel" button to abort station configuration. All changes made to the station configuration of all available zones (not just the currently selected zone) are lost.

Orders Menu

The Orders Menu includes options that support the processing of customer orders that were entered using the EasiOrder application. The options in this menu are only available if your Easicut 2.1 installation includes EasiOrder.

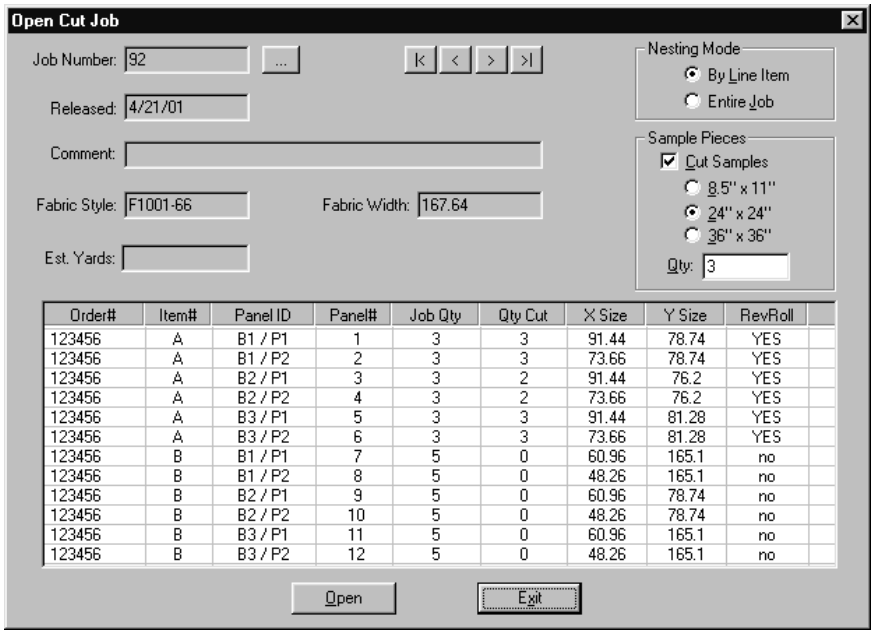
Open Cut Job…

The Open Cut Job option of the Orders Menu lists any cut jobs read from the EasiOrder database and not yet completely cut. The user may select a cut job and "open" it into a drawing file and then load that file into the cutting machine for processing. The Open Cut Job option is available in all program modes.

The location of the EasiOrder database is specified on the File Import tab of the Job Options dialog box. If your Easicut 2.1 installation includes the EasiOrder option but the Open Cut Job menu option is not available or a database error is reported when accessing the Open Cut Job option, verify that the path and filename of the EasiOrder database is entered correctly. If the EasiOrder database file is on another computer, make certain that the network path and the database file are accessible from the Easicut computer by the user currently logged into the network.

The Open Cut Job dialog box displays the first available cut job. Information pertaining to the cut job is shown in the upper left portion of the dialog box. This information includes the job number, release date and fabric or material data. The table shown in the lower half of the dialog box lists each panel or piece making up the cut job. Each line in this table includes the order and item number in which the panel was specified, a panel identification generated by EasiOrder, a panel number, the quantity required to complete the job and the quantity actually cut thus far, the X and Y dimensions of the panel and a reverse roll indicator entered in EasiOrder for the order line item. The panel number included in the table corresponds to the number that is displayed in the drawing area when the Show Part Name option of the ToolPath Menu is selected.

The arrow keys found at the top of the dialog box are used to move forward and backwards through the list of available cut jobs. The button functions are, from left to right, first job, previous job, next job and last job.



Order#	Item#	Panel ID	Panel#	Job Qty	Qty Cut	X Size	Y Size	RevRoll
123456	A	B1 / P1	1	3	3	91.44	78.74	YES
123456	A	B1 / P2	2	3	3	73.66	78.74	YES
123456	A	B2 / P1	3	3	2	91.44	76.2	YES
123456	A	B2 / P2	4	3	2	73.66	76.2	YES
123456	A	B3 / P1	5	3	3	91.44	81.28	YES
123456	A	B3 / P2	6	3	3	73.66	81.28	YES
123456	B	B1 / P1	7	5	0	60.96	165.1	no
123456	B	B1 / P2	8	5	0	48.26	165.1	no
123456	B	B2 / P1	9	5	0	60.96	78.74	no
123456	B	B2 / P2	10	5	0	48.26	78.74	no
123456	B	B3 / P1	11	5	0	60.96	165.1	no
123456	B	B3 / P2	12	5	0	48.26	165.1	no

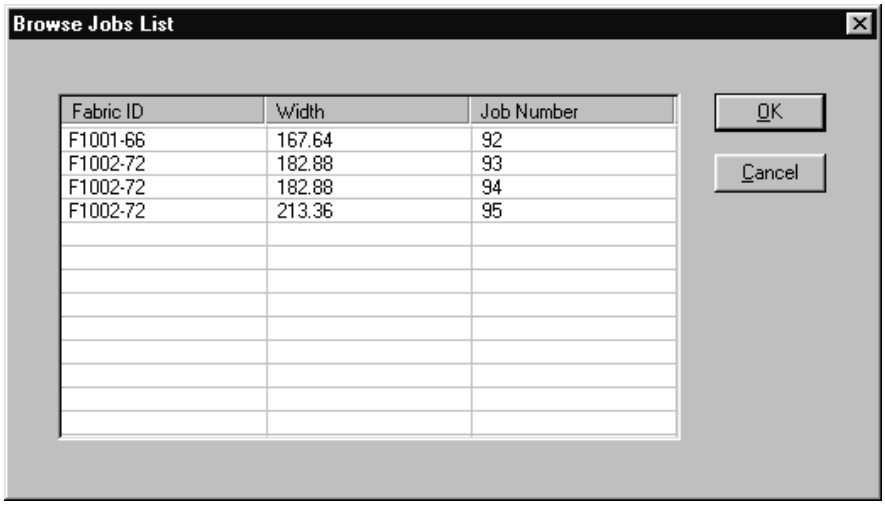
The options found in the Nesting Mode frame are used to select the range over which panels are nested or fitted to the specified material width. If the "By Line Item" option is selected, panels from each order line item are nested as a group. The nesting process only examines panels in a single order line item when determining the best way to nest or fit panels into a drawing file. The "Entire Job" option looks at all panels in the job when performing the nesting process.

If the "Cut Samples" option is checked, the nesting process adds the specified number of rectangles of the selected size to the drawing file while it is nesting the panels. The sample pieces are added to the drawing file where space is available; placing job panels always take precedence over sample pieces.

Click the Open button to convert the information in the displayed job into a drawing file. The Open Cut Job dialog box is closed and the generated drawing file is opened in a layout mode window. The name of the generated file is formatted as "JOB#####" where ##### refers to the job number. Use the File | Cut menu option to cut the job panels.

To quickly locate a cut job from a long list of available jobs, click the browse button found just to the right of the job number. A list of the available jobs with their associated material (fabric) information is displayed in the Browse Jobs List dialog box. Select a job by clicking on the desired line in the list and then click the OK button to select that job.

Alternatively, you may double click the job line. The Browse Jobs List dialog box is then closed and the selected job is displayed in the Open Cut Job dialog box.



Click the Exit button to close the Open Cut Job dialog box and terminate the Open Cut Job menu option.

Refresh

The Refresh option of the Orders Menu updates the Easicut 2.1 Orders database with information found in the EasiOrder database. The Refresh option is available in all program modes. However, because of the potential for processing delays in accessing a remote database file, the Refresh option can not be executed while a file is being cut by the cutting machine. The message "A CMD file is running. Try later." is displayed.

The location of the EasiOrder database is specified on the File Import tab of the Job Options dialog box. If your Easicut 2.1 installation includes the EasiOrder option but the Refresh menu option is not available or a database error is reported when accessing the Refresh option, verify that the path and filename of the EasiOrder database is entered correctly. If the EasiOrder database file is on another computer, make certain that the network path and the database file are accessible from the Easicut computer by the user currently logged into the network.

The Refresh option performs two types of database updates. First, any new cut jobs found in the EasiOrder database are transferred to the Easicut 2.1 Orders database. These new cut jobs then become available for processing using the Open Cut Jobs option of the Orders Menu. Second, any completed jobs that have been updated in the EasiOrder database are deleted from the Easicut 2.1 database. Once completed, the Refresh function displays a message specifying the number of new cut jobs added to the Easicut 2.1 database and/or the number of completed cut jobs deleted from the Easicut 2.1 database.

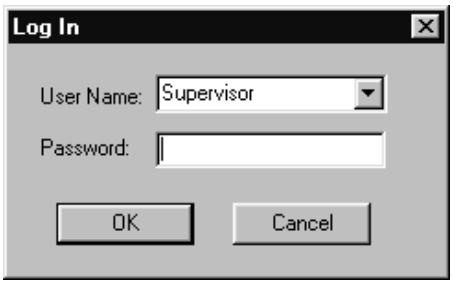
If there were no new cut jobs copied from the EasiOrder database and no completed orders deleted from the Easicut 2.1 database, the message "No database updates were necessary" is issued.

User Menu

The User Menu includes options that control the Easicut 2.1 security features and provide user access to various levels of functionality within the Easicut 2.1 application.

Log In…

The Log In option of the User Menu provides user access to Easicut 2.1 when the security feature is enabled. If security is not enabled, the Log In menu option is not available and there is no control of user access to the Easicut 2.1 application. If security is enabled and no user is currently logged in, the Log In dialog box is opened when the Log In menu option is selected.



Select or type your user name in the "User Name" combobox and enter your password in the "Password" text box. All characters typed in the "Password" text box are echoed as asterisks. Then click the OK button. If a valid user name and password are entered, the named user is logged in and has access to all Easicut 2.1 functions available to that user level. Once a valid user is logged into the Easicut 2.1 security system, the Log In option is no longer available in the User Menu. The current user must log out before a new user may log in.

The level of the current user is displayed at the right end of the status bar found at the bottom of the Easicut main window. Possible user levels are NONE, NO USER, USER, SUPER and ETS. If the user level is NONE, the security feature of Easicut 2.1 is disabled. User log ins are not processed. The NO USER level indicates that security is enabled and no user is logged in. Only the User Menu and the Help Menu are available. The USER level indicates that a user other than the Supervisor user is logged in while SUPER indicates that the Supervisor user is currently logged in. The ETS user level is only available to Eastman personnel when performing installation and service procedures on the system.

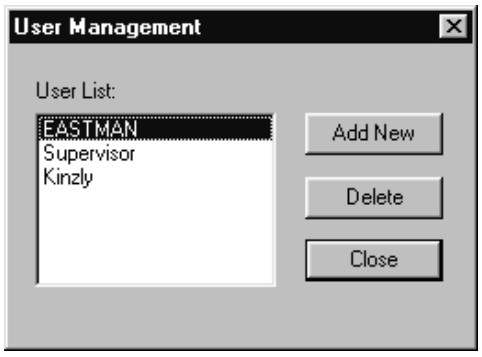
Log Out

The Log Out option of the User Menu terminates access to the Easicut 2.1 functions for the currently logged in user. If security is not enabled, the Log Out menu option is not available and there is no control of user access to the Easicut 2.1 application. If security is enabled and a user is currently logged in, select the Log Out menu option to terminate access to Easicut 2.1. A message is displayed asking to confirm the log out process. Click Yes to log out or click No to remain logged in.

Once a user logs out, the current user level displayed on the status bar is NO USER and the only menu options available are the User Menu and the Help Menu. All other Easicut 2.1 functions are disabled.

User Management…

The User Management option of the User Menu is only available when the supervisor user is logged in. This option provides access to the current list of authorized users and provides functions to modify the list.

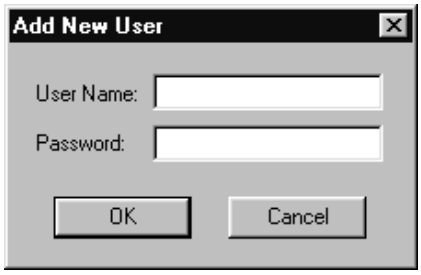


The User Management dialog box is displayed when the User Management option is selected. The "User List" displays all authorized users. The list always shows the EASTMAN user and the Supervisor user. The EASTMAN user is only available to Eastman personnel during installation and service procedures; this user may not be deleted from the list. The Supervisor user is the Easicut 2.1 system manager or system administrator. This user has the highest available privilege level and is the only user authorized to access the User Management option.

To remove a user from the list, select the user name by clicking on it. Then click the "Delete" button. A message asking for confirmation of the deletion is displayed. Click "Yes" to deleted the user or click "No" to terminate user deletion and keep the selected

user in the list. Neither the EASTMAN nor the Supervisor user may be deleted from the list.

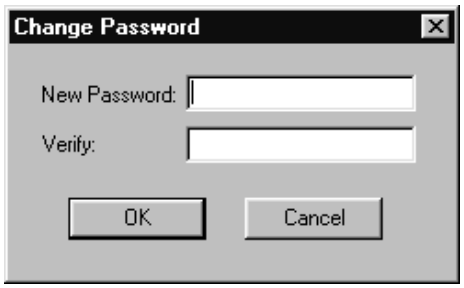
Click the "Add New" button to add a new user to the list. The Add New User dialog box is displayed. Enter the new user's name and password. All characters typed in the "Password" text box are echoed as asterisks. Then click OK to add the new user to the list. Click the Cancel button to terminate adding the new user. The user names "eastman" and "supervisor" are reserved user names. Neither of these names may be assigned to a new user.



When all changes to the user list have been completed, click the "Close" button to exit the User Management function.

Change Password…

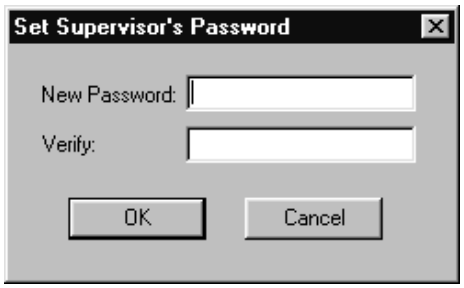
The Change Password option of the User Menu is available any time a user is logged into the Easicut 2.1 security system. This option allows any user to modify his/her password.



The Change Password dialog box is displayed when the Change Password option is selected. Enter the new password in the "New Password" text box and again in the "Verify" text box. All characters typed in these text boxes are echoed as asterisks. Click OK to change the current user password. To keep the original password, click the Cancel button.

Enable Security

The Enable Security option of the User Menu is only available when the Easicut 2.1 security system is not enabled. This option initiates the security system and creates a new supervisor user.

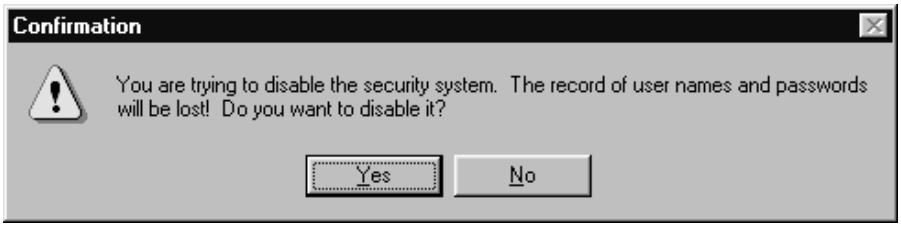


The Set Supervisor's Password dialog box is displayed when the Enable Security option is selected. Enter the new supervisor password in the "New Password" text box and again in the "Verify" text box. All characters typed in these text boxes are echoed as asterisks. Click OK to initialize the security system and establish the supervisor user with the specified password. To terminate initiation of the security system, click the Cancel button.

When the security system is initiated the supervisor user is the current user.

Disable Security

The Disable Security option of the User Menu is only available when the Easicut 2.1 security system is enabled and only when the supervisor user is logged in. This option terminates the security system.



When the Disable Security option is selected, a confirmation message is displayed. This message indicates that all user names and passwords in the current user list will be deleted if security is disabled. Click "Yes" to delete the user list and disable the security system. To keep the user list and maintain the security system, click "No".

Window Menu

The Window Menu includes standard menu options included in all Windows 98® application programs.

Cascade

The Cascade option of the Window Menu staggers all opened drawing file windows within the drawing area of the Easicut main window. The first drawing file window is positioned at the upper left corner of the drawing area. All subsequent windows are moved down and to the right an amount which allows the window title bar to be visible and are placed on top of all preceding windows. The currently active window is the uppermost window.

If the drawing windows were maximized prior to selecting the Cascade option, they are no longer maximized.

Tile Horizontally and Tile Vertically

The Tile Horizontally and Tile Vertically options of the Window Menu arrange and size all opened drawing file windows to make complete use of the drawing area of the Easicut main window. All drawing file windows are completely visible; there is no overlap between windows.

If the drawing windows were maximized prior to selecting the Cascade option, they are no longer maximized.

Window List

The Window List of the Window Menu displays the contents of the window title bar for all opened drawing file windows. The window title bar of a drawing file includes the name of the current job file and the name of the drawing file opened within that window. The cutting mode window is identified by three asterisks following the drawing file name.

The entry in the window list for the currently active window is always checked.

Help Menu

The Help Menu includes options that provide information about the Easicut 2.1 application.

Contents

The Contents option of the Help Menu provides access to one or more help files that include instructions on how to use the Easicut 2.1 application.

The F1 key may be used to select the Help | Contents menu option from the keyboard.

Using Help

The Using Help option of the Help Menu provides access to information about the Windows help system, how to use it and how to customize it.

About Easicut…

The About Easicut option of the Help Menu displays a dialog box that provides the title, version number and copyright information about the Easicut 2.1 application.

TOOLBAR

The Easicut 2.1 application includes a toolbar for quick and easy access to frequently used functions. Most of the functions accessible on the toolbar are also available as menu options.

The toolbar appears at the top of the Easicut main window just below the main menu bar and just above the drawing area. If the toolbar is not visible, use the Show Toolbar option of the View Menu to display it.

Buttons

The toolbar includes 14 buttons that may be used to quickly access the corresponding menu option. A description of the available toolbar buttons is provided in this section.

Open

The Open toolbar button is used to recall an existing drawing file into the drawing area of the Easicut main window. The Open button is available in all program modes and will always open a drawing file in the layout program mode. The functionality of this button is identical to that of the Open option of the File Menu.

Queue

The Queue toolbar button displays the Queue dialog box, providing access to the current contents of the plot or cut file queue. The Queue button is available in all program modes. The functionality of this button is identical to that of the Queue option of the File Menu.

Cut

The Cut toolbar button attempts to load the file currently displayed in the drawing area of the Easicut main window into the cutting machine. If the file is loaded into the cutting machine, the file is displayed in a cutting mode window (yellow background) and the dialogs area of the Easicut main window is reconfigured for the cutting program mode. The Cut button is only available in the layout mode when a drawing file is opened in the drawing area. The functionality of this button is identical to that of the Cut option of the File Menu.

Enable CutOff

The Enable CutOff toolbar button allows you to quickly enable or disable the material cutoff option currently selected on the CMD tab of the Job Options dialog. While the Job Options dialog is only accessible to the Supervisor user, the Enable CutOff button is available to all users. The Enable CutOff button is only available in the layout mode when a drawing file is opened and a cutoff option has been selected.

Click the Enable CutOff button to add a material cutoff line at the left or right end of the drawing file. Click the button again to remove the cutoff line. If the Enable CutOff option in the ToolPath Menu is checked, the Enable CutOff button is depressed. The functionality of this button is identical to that of the Enable CutOff option of the ToolPath Menu.

Repeat

The Repeat toolbar button is used to duplicate the contents of the currently active drawing a specified number of times. The Repeat button is only available in the layout program mode when a drawing file is opened. The functionality of this button is identical to that of the Repeat option of the File Menu.

Select Object

The Select Object toolbar button allows a single drawing object to be added to or removed from the list of selected drawing objects. Selected drawing objects are redrawn in magenta to identify them as being selected. The Select Object button is only available in the layout program mode when a drawing is displayed in the drawing area of the Easicut main window. The functionality of this button is identical to that of the Object option of the Select Menu.

Layout Mode

The Layout Mode toolbar button sets the layout program mode for the file displayed in the drawing area of the Easicut main window. The Layout Mode button is only available in the simulate program mode. If the layout program mode is active (the Layout Mode option in the File Menu is checked), the Layout Mode button is depressed. The functionality of this button is identical to that of the Layout Mode option of the File Menu.

Simulate Mode

The Simulate Mode toolbar button sets the simulate program mode for the file displayed in the drawing area of the Easicut main window. The Simulate Mode button is only available in the layout program mode. If the simulate program mode is active (the Simulate Mode option in the File Menu is checked), the Simulate Mode button is depressed. The functionality of this button is identical to that of the Simulate Mode option of the File Menu.

Show Table Bites

The Show Table Bites toolbar button is used to identify the table bites within the current drawing file. The Show Table Bites option is only available in the simulate and cutting program modes. The Show Table Bites option tags all drawing objects that are in the same table bite with the same color. Moving from left to right in the drawing, the table bite colors alternate between blue and red. If the Show Table Bites option in the View Menu is checked, the Show Table Bites button is depressed. Clicking on the depressed Show Table Bites button shows all drawing objects in their layer-defined colors. The functionality of this button is identical to that of the Show Table Bites option of the View Menu.

Zoom All

The Zoom All toolbar button resizes the view of the current drawing so that it is at the maximum zoom or magnification and still fits within the drawing area window. The Zoom All option ensures a view of the entire contents of the current drawing file. The Zoom All button is available in all program modes.

Zoom Window

The Zoom Window toolbar button allows the user to select a particular area of the current drawing for magnification. The Zoom Window button is available in all program modes. The functionality of this button is identical to that of the Zoom Window option of the View Menu.

Zoom Table

The Zoom Table toolbar button resizes the view of the current drawing so that it is at the maximum zoom or magnification and the drawing's table area still fits within the drawing area. The table area is the white rectangular area within a drawing that represents the dimensions of the cutting table. The Zoom Table button is only available in the simulate and cutting program modes.

Zoom In

The Zoom In toolbar button magnifies the view of the current drawing by a factor of two. The center of the view does not change. Therefore, areas of the drawing originally near the edges of the drawing area may no longer be visible after the Zoom In button is clicked. The Zoom In button is available in all program modes.

Zoom Out

The Zoom Out toolbar button reduces the view of the current drawing by a factor of two. The center of the view does not change. Therefore, areas of the drawing originally outside the edges of the drawing area may become visible after the Zoom Out button is clicked. The Zoom Out button is available in all program modes.

Lists

The toolbar includes 3 combobox lists that are used to quickly access drawing files, material definitions and cutting machines. A description of the available toolbar list controls is provided in this section.

Files List

The toolbar's Files List combobox control contains a list of all drawing files included in the currently opened job file. The files in this list are not necessarily opened in the drawing area of the Easicut main window.

Select a file in the Files List to open it in a drawing file window. If the selected file is not a CMD file, an Import dialog box may be displayed. Refer to the Open option of the File Menu for a description of the Import dialog boxes for the various supported drawing file types.

Materials List

The toolbar's Materials List combobox control contains a list of all available material definitions found in the MATERIAL.INI file. The list always includes the "No Material" option.

The currently selected item in the Materials List identifies the material associated with the currently active drawing file. To change a file's material type, select a new item in the Materials List. The selected material type is associated with the drawing file each time that the drawing file is opened within the current job.

Machines List

The toolbar's Machines List combobox lists the available machines for the installed cutting machine system. The list will include either one or two machine entries depending on whether a single or dual gantry system is installed. The Machines List combobox control permits selection of and control of one of the available machines (gantries) within the installed system.

GLOSSARY

CMD File
A CMD file is a drawing file format proprietary to Eastman Technology Systems, Ltd. All files loaded into the cutting machine are first converted to a CMD file format.

Cutting Mode
The Easicut 2.1 application is in the cutting mode when the currently active drawing window displays the file currently loaded in the machine. The cutting mode window is identified by its yellow border area and the three asterisks appended to the drawing file name in the window's title bar. There may be only one cutting mode window opened at any one time. The cutting mode refers only to the Easicut application and not to the machine itself. The cutting machine can cut a file regardless of the Easicut application mode.

Dialogs Area
The dialogs area of the Easicut main application window refers to an area at the bottom or the left edge of the window that is allocated for display of the Layers, Tools and/or Status dialog boxes. The location of the dialogs area may be set using the Dock Left and Dock Bottom options. The dialogs area may be resized by moving the splitter bar that separates it from the drawing area. The dialogs area can never be deleted.

Drawing Area
The drawing area refers to that part of the Easicut main application window not occupied by the dialogs area, toolbar, status bar or menu bar. All drawing files are opened in windows that appear within the drawing area. If drawing windows are maximized, the entire drawing area is filled with a single drawing file. Otherwise, one or more drawing file windows may be visible within the drawing area.

Drawing File
A drawing file is a file containing a description of a geometric pattern that corresponds to the cutting, punching, drawing, etc. functions to be performed by the cutting machine. Drawing files are generally created by a separate CAD application. Easicut 2.1 supports the cutting of CMD, DXF, HPGL, GCODE, NST, and NTV drawing files.

Hardware Key
A hardware key is a programmable device containing a code that must be read by the Easicut 2.1 application before it will initiate normal operations. A software key may be used in place of a hardware key. Without a hardware key or software key, the Easicut 2.1 application will not load files into the cutting machine nor will it save modified or

converted drawing files to disk. The hardware key attaches to the LPT1 printer port of the system computer.

Job File
A job file consists of a list of drawing files, their associated material types and a set of file processing and system configuration parameters that are shared by all the drawing files. Job files are used to group drawing files that share a common processing environment. Job files are identified by a JOB filename extension. The default job file is EASICUT.JOB. Other job files may be created and accessed using the Job Menu. The contents of a job file are modified using the Job Options dialog box.

Layer
A layer is used in a drawing file to define a set of features or characteristics that may be shared by more than one drawing entity. When an entity is added to a drawing file and placed on a specific layer, the entity inherits the characteristics defined for that layer. The layers are initially defined in the CAD application used to create the drawing file. Within the CAD application a layer specifies graphics characteristics such as line style and line color. In Easicut 2.1 the drawing layers also can specify what tool will be used to cut the entities on that layer and what tool settings to use.

Layout Mode
In the layout mode, the currently active drawing file window is opened for viewing and editing the drawing. When a drawing file is opened, it is always opened in layout mode window. A layout mode window may be transformed into a simulate mode window by selecting the Simulate Mode option. A layout mode drawing file may be copied to the cutting mode window by selecting the Cut option. Any number of drawing files may be opened in layout mode windows. The layout mode refers only to the Easicut application and not to the machine itself. The cutting machine can cut a file regardless of the Easicut application mode.

MACHINE.INI File
The MACHINE.INI file is a text file that contains system configuration and calibration settings as well as definitions for all available tools. The Machine Options dialog box and the Calibration Options dialog box are used to view and modify the contents of the MACHINE.INI file. The MACHINE.INI file should never be edited directly using a text editor.

Mapping
A mapping refers to the association of a drawing layer with a particular cutting machine tool. When a layer is mapped to a tool it means that all drawing entities on that layer will be cut by that tool. The tool settings associated with the mapped layer will override the default settings included in the tool definition. A layer may be mapped to a tool graphically using mouse drag-and-drop actions in the Layers and Tools dialog box. A layer may also be mapped to a tool in the Layers tab of the Job Options dialog box. All layer mappings are specified for the current job only.

MATERIAL.INI File
The MATERIAL.INI file is a text file that contains definitions for all available material types and the layer mappings associated with each material. The Material Options dialog box is used to view and modify the contents of the MATERIAL.INI file. The MATERIAL.INI file should never be edited directly using a text editor.

Motion Control Software
Easicut 2.1 communicate with the cutting machine through separate motion control software which resides in a program named PLOTTERW. Easicut 2.1 controls the cutting machine by sending messages to the PLOTTERW program which in turn executes the control commands. Similarly, Easicut 2.1 is informed of the current machine status through messages received from PLOTTERW. The process of loading a file into the cutting machine actually consists of several steps. Easicut 2.1 converts the drawing file to a CMD file and sends the name of the CMD file to the PLOTTERW program. The PLOTTERW program reads the CMD file, converts the contents of the file to cutting machine control commands and then executes those commands.

Mount
See Tool Mount.

Order
An order is a database record created by Eastman's EasiOrder order entry application and transferred to Easicut using the Refresh option of the Orders Menu. An order contains information describing the shape, size and quantity of panels to be cut for a customer. The information in an order is converted to a drawing file by the Open Cut Jobs option of the Orders Menu.

Plotterw
See Motion Control Software.

Simulate Mode
The simulate mode is active any time the currently active drawing file window is opened for cutting simulation. A drawing file must first be opened in the layout mode before it can be changed to the simulate mode. A simulate mode drawing window may be transformed back into a layout mode drawing window by selecting the Layout Mode option. A simulate mode drawing file may not be placed in the cutting mode window. Any number of drawing files may be opened in the simulate mode windows. The simulate mode refers only to the Easicut application and not to the machine itself. The cutting machine can cut a file regardless of the Easicut application mode.

Software Key

A software key is an encrypted file containing a code that must be read by the Easicut 2.1 application before it will initiate normal operations. A hardware key may be used in place of a software key. Without a software key or a hardware key, the Easicut 2.1 application will not load files into the cutting machine nor will it save modified or converted drawing files to disk. The software key is created by Easicut 2.1 when a valid coded text string (obtained from Eastman) is entered at the appropriate prompt the first time Easicut is executed.

STATION.INI File

The STATION.INI file is a text file that contains information about each table zone and each station specified for each table zone. This file is only used when zone cutting is enabled, i.e., a static table is divided into two cutting areas or zones. The Station Options dialog box is used to view and modify the contents of the STATION.INI file. The STATION.INI file should never be edited directly using a text editor.

Supervisor

The supervisor user is the Easicut 2.1 security system manager or system administrator. This user has the highest available privilege level and is the only user authorized to access the Calibration and the User Management options. There is one and only one supervisor user in the authorized user list. If the security system is disabled, the supervisor user is not recognized.

Table Bite

If the pattern in a drawing file is longer than the available length of the cutting table, the drawing is divided into two or more table bites. Each such bite is processed as an individual pattern and table bites are processed sequentially from the beginning of the drawing file to the end.

Tool

A tool refers to a physical cutting, punching or marking implement which may be attached to a tool mount of the cutting machine. Easicut 2.1 supports the creation of tool definitions that refer to a specific tool, that tool's mounting location on the cutting machine, and the tool's operating parameter settings.

Tool Mount

Each tool installed on the cutting machine is attached to a tool mount. Each tool mount includes controls that lower the tool to the table, lift the tool from the table and rotate the tool. The number and type of tool mounts available on a cutting machine depends on the type of tool head installed.

User Interface Terminal

The User Interface Terminal (UIT) is the operator control console for the cutting machine. It is located on the tool head carriage or gantry at the front of the machine. The UIT includes a keypad, four line display and a joystick.

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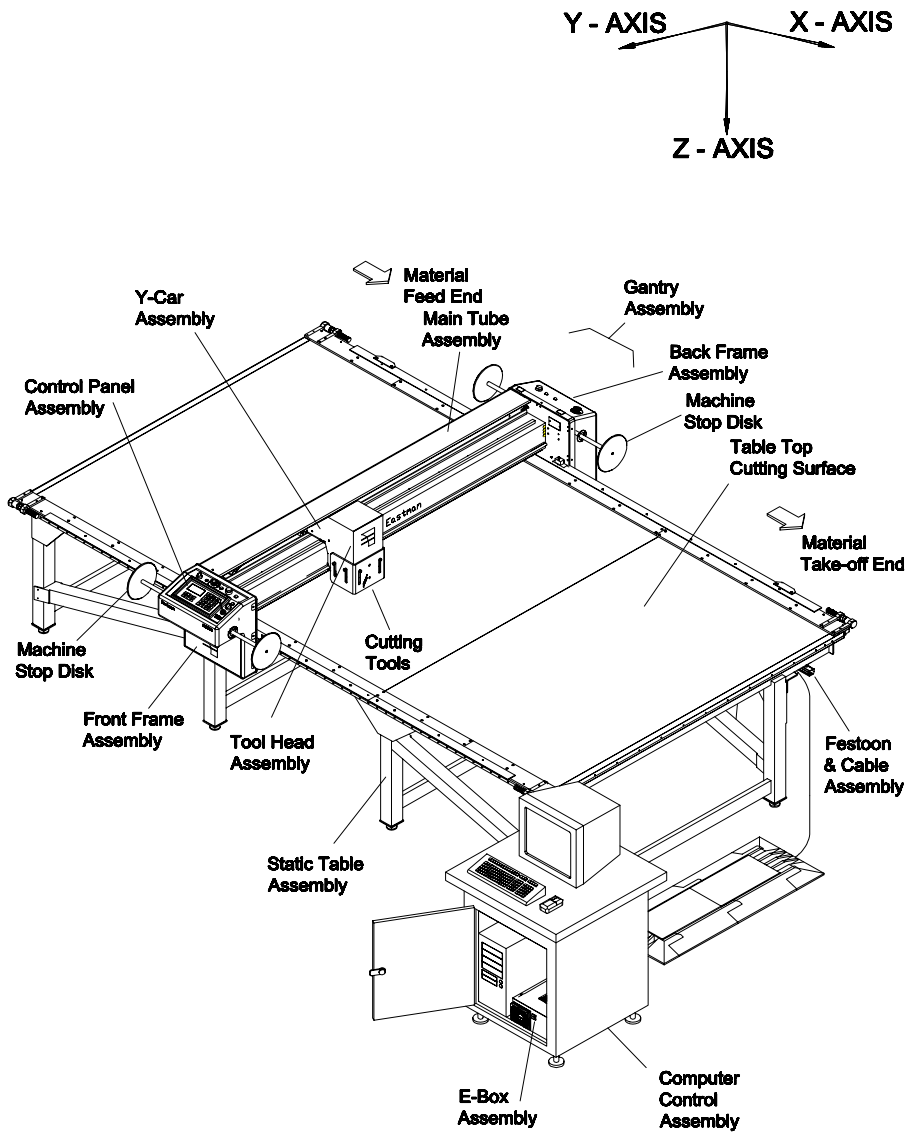
ETS-M9000 Familiarization



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