

# AutoBar 32

W/Gencode

Preliminary

AutoCut Research

## **Introduction**

Methods are constantly being sought to improve production and reduce errors and expense. A popular tool for the manufacturing process is barcode labeling. There are wide differences in the way this tool is used. The information that is included in the label varies. The source of the data and the software that provides the data varies. The form of the data varies. The way the labels are printed varies. What the user wants from the labeling system varies. It is staggering to consider all the combinations of variations. It is AutoBar's job to bring together the data in the way you want with your particular set of variations. To do this AutoBar is designed with as much flexibility and adaptability as possible so the user can easily adapt it to his data system. Since Cabinet Design Systems are constantly changing their data format, AutoBar is easily adaptable by the user to different CSV data formats. This gives the user independence when he makes some change in his data system.

## **Overview**

AutoBar presently supports data of three basic forms. The first and simplest is the data contained in the Genesis/Winner90 program directory. This information contains things like gcode program name, Comment, date etc. Barcode labels can easily be made for this data. The second and most powerful is the CSV data format. The letters "CSV" stand for Comma Separated Values or some simply call it Comma Delimited Data. The third is the CPOut data format. CPOut stands for Cut Planner Output, which is a Pattern Systems product. The CPOut data format was designed by Pattern Systems but has also come to be used by others.

The first step in creating a label is of course designing the label in Label Layout. It is here that the type of data the label is to contain is determined. For example a label designated as a label for CPOut data could never be used for CSV data. The size of the label and the size of the page it is to be printed on are also set. When the data fields that are made available to the label are determined these fields are listed and can be selected for inclusion on the label as desired. There are also numerous accessory fields that can be placed on the label. Some of these are dependant upon external data and some are not. For example the text accessory will allow a string of text that you type in the text box to be placed anywhere on the label you choose. That same text will appear on each label printed. It has no dependence on any other data. On the other hand, the Cups accessory allows you to put panel support placement information on the label. However, since this information is actually extracted from the gcode program it is dependant on external data.

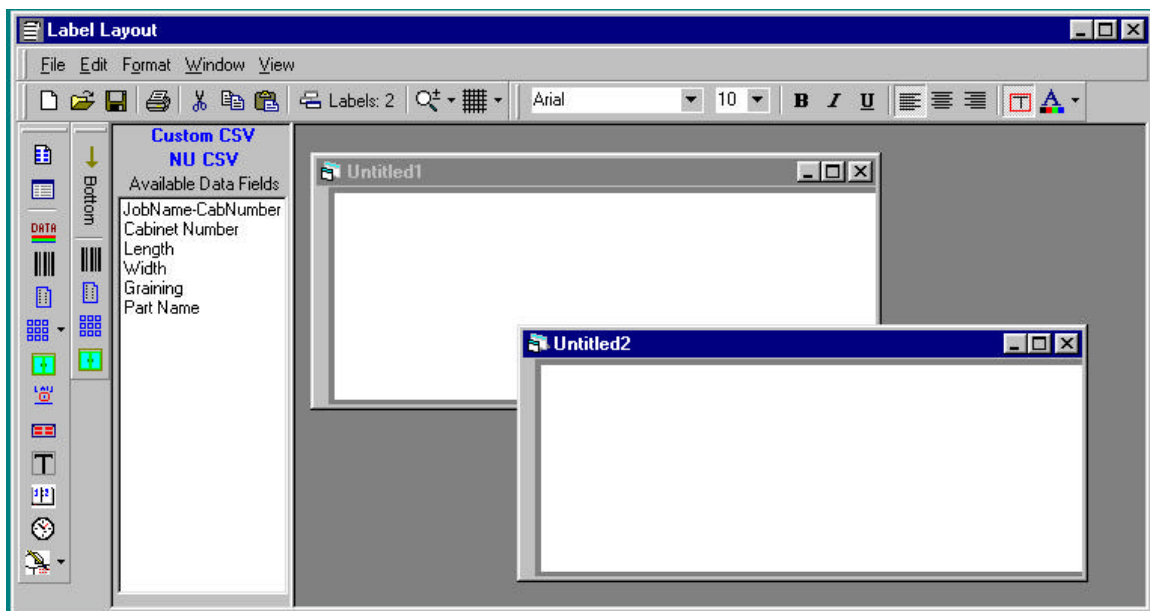
Once the label is designed in Label Layout it is saved to disk as an \*.LBL file. This file contains all information about this label. When the LBL file is loaded into AutoBar the type of data this label needs is set and only that type of data will be available. For example when a label made for data from the Genesis directory is loaded the Select button brings up the Genesis directory of gcode programs. If the label is for CSV data then the Select button brings up a browser for CSV files.

The LBL file browser is equipped with a preview window to allow you to get a glimpse of the labels as you look through the list. Also, the type of label is displayed below the preview window. This will help you to find the exact label layout you are looking for without having to remember all the .LBL file names.

Once the desired label layout is loaded and the data is selected the data will appear in the Data window. The Data window is very much like a spreadsheet. In the data spread each column is a data field and each row is a data record. Each row consists of data fields that are available for each label that is to be printed. So you could say that each row makes a label. Actually, there is a check box at the beginning of each row so you can select which rows can make a label should you wish to print labels only from certain rows. By default they are all checked. You can double click on the blank button just above the top check box and turn them all off. Double click again and turn them all on.

Once the data is all set for printing the Preview button will bring up a special preview window that will allow you to see all the labels as they will appear on paper when they are printed. This allows you to check your labels before they are actually printed. You can page through all the pages and even zoom in on a particular label for a close inspection. There are buttons for printing all the sheets or just the currently displayed label sheet.

## Label Layout

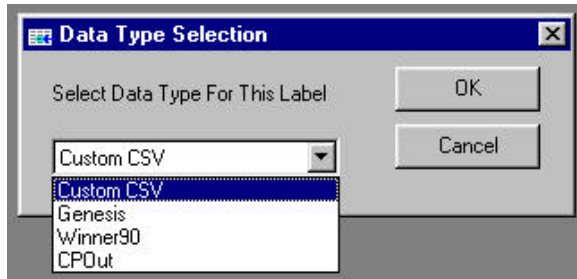


Label layout is designed as a multiple document interface. This means that more than one label can be designed at once. This could be useful particularly if you wish to look at one label while you edit another. The Available Data Fields and data type are shown in a special window on the left side. This information is shown for the currently selected label. Floating tool bars contain buttons for controlling the many various features. There are also pulldown menus most of which duplicate the functions already in buttons. The exception is the Window pulldown.



New

This button is for beginning a new label layout. A Data Type Selection box will first ask you to select the data type for the label you wish to make.



The box will list the available Data Types. Next a blank label will be created and displayed.



Open

In case you wish to open an already existing label layout you click the open folder icon and you will be greeted with a special LBL browser window with previewer from which you can select the desired label layout file.



Save

Brings up the save browser. At this time you can assign a name to your layout.



Print

A print dialog box appears for printing your label design.



Cut

Objects on the label can be deleted and copied to the clipboard.



Copy

Objects on the label can be copied to the clipboard.



Paste

Objects that have been copied to the clipboard can be pasted onto the label. With the present version of AutoBar they can only be pasted back to the same label.



Labels: Number of labels currently open



### Zoom

This is a dropdown with different zooms. This is more useful when the Label Layout window and the label window are maximized. Otherwise, resizing the label window can control zooming.



### Grid

To aid in positioning field objects in the label a grid can be superimposed on the label design window. The dropdown provides a means by which the grid size can be adjusted. The grid specifications are kept with each label so when that label is loaded again the same grid size that was used when the label layout was saved is used when it is loaded.

Snap to Grid is also available on a popup menu when you right click on the label. This will force each label object to snap to a grid corner when it is moved. The grid does not have to be visible for this feature to work.



### Font

These dropdown boxes select the font name and size for the currently selected label object or the object that is to be placed.



### Bold

Selects bold or normal for the font of the currently selected label object or the object that is to be placed.



### Italics

Selects italics or normal for the font of the currently selected label object or the object that is to be placed.



### Underline

Selects bold or normal for the font of the currently selected label object or the object that is to be placed.



### Left Justify

Aligns the text to the leftmost side of the allocated text field.



### Center Justify

Aligns the text to the center of the allocated text field.



### Right Justify

Aligns the text to the rightmost side of the allocated text field.



### Show text bounds

When a text or data object is placed on the label there is a rectangle that defines the amount of room that it will be allowed to occupy on the label. Any text that extends beyond the size of this rectangle will be truncated so only the allowed space is used. The size of this rectangle is adjustable with grippers located around the rectangle. This button makes it possible to see where all the boundaries are for the text and data objects on the label.



### Page Layout

This opens up a Page Layout window from which the size of the page and the size and placement of the labels that are to be printed on that page are defined. See the Page Layout section where this information is covered in detail.



### Field Definition

When working with CSV or CPOut data the data fields must be identified and named to make these data fields available to the label. This icon brings up a window for this purpose. See the section on Field Definition where this information is considered in detail.



### Available Data Fields

Use this icon to hide the Available Data Fields window when you need more room on the screen to work with the label. The Available Data Fields are data fields linking to data in the source data file (CSV, CPOut etc.). When the labels are actually printed the text that will appear on the labels will be from the data file and not the text shown in label layout. To place a data field on the label left click and drag the data item from the list of available data fields onto the label.



### Barcode

This is used to place actual 2D or linear barcode on your label. A dialog box will appear asking for specifics about the barcode you wish to place. See the section on Defining Barcode for more details.



### Place Text

Text that you place on the label at design time can appear on each label when it is printed. A dialog box is provided to allow you to enter the desired text.



### Machining Graphic

The geometry can be extracted from the actual gcode program and made to appear on the label when it is printed. Place this object on the label and then resize it to establish the boundaries of the geometry.



### Data Graphic

Some cabinet design systems provide raster graphics of the parts and place the name of these graphic files in the CSV file. We can read the name and put the graphic on the label at print time. This icon allows you to specify where on the label the graphic will appear.



### Label Graphic

If desired you can put a graphic on the label at design time that is to appear on each label. This could perhaps be a company logo. The graphic is not stored in the label so the graphic file must be available to AutoBar when the label is printed.



### Cups

Genesis allows you to define the locations for the panel supports in their graphics editor while you write the gcode program. This panel support position information is then stored in the gcode file. This icon allows you to specify a place on the label where you would like this information to appear. This allows the operator to set up the supports on the machine by the numbers on the label.



### Machine Field

Although Gencode can select the machine field for you when the part is run. There may be some occasion where you want AutoBar or the CDS to select the machine run field. This icon allows you to place the machine field letter on the label for the convenience of the operator.



### Date

This specifies a place on the label where you would want the print date of the label printed. This uses the date in the computer that is printing the label at the time the label is printed.



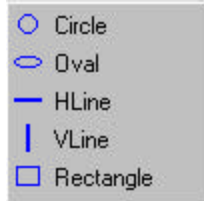
### Time

This specifies a place on the label where you would want the print time of the label printed. This uses the time in the computer that is printing the label at the time the label is printed.



### Draw

There are five shapes that are available to dress up your labels. A dropdown box allows you to select the desired shape. You can then resize the shape as needed.



### Delete

The delete function is on the right click popup menu. This will delete the selected label object.



### Part Bottom (Face 6)

When machining is to be done on the bottom or opposite side of the part barcode objects can be placed on the label for these operations. However, the CSV file must fully support face 6 operations. This means that there will be data fields for the face 6 CNC Program name, Mirror information, and graphic file (if used) in the CSV file. Barcode uses the CNC Program name in that special field of the CSV file.

The part geometry is represented using that gcode file.

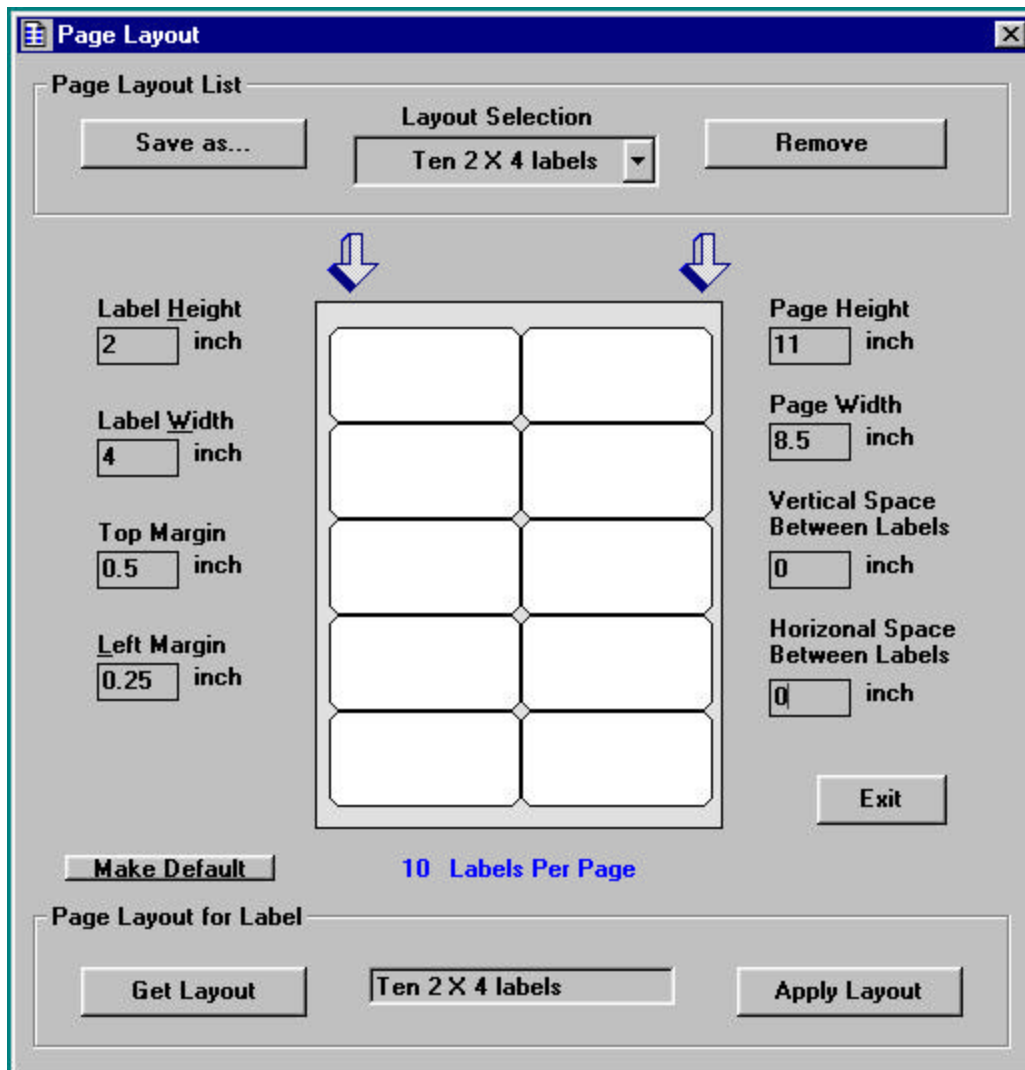
The Cup information is also taken from the face 6 program.

If the CDS supplies a graphic for face 6 it can also be used.

If face 6 machining is not used this tool bar can be hidden by right clicking somewhere off the toolbars and deselecting Part Bottom in the check box. It can be restored in a like manner.



## Page Layout



Already existing page layouts can come from two sources. They can be selected from the list of page layouts at the top of the Page Layout window or they can be obtained from the label (.LBL) file itself. Actually when the Page Layout window first comes up the page layout it displays is from the currently loaded label in Label Layout. When you select a page layout from the List two arrows at the top of the window point downward to provide an indicator of this. If the page layout is from the label then two arrows point up at the bottom of the window as an indicator of this. Apply Layout actually assigns the displayed layout to the currently loaded label.

The Make Default button will save the displayed layout to be used as the default page layout anytime a new label is started.

The Get Layout button is provided to reload the page layout contained in the currently loaded label. When you are happy with the layout and have applied it to the current label click on Exit to exit the Page Layout window.

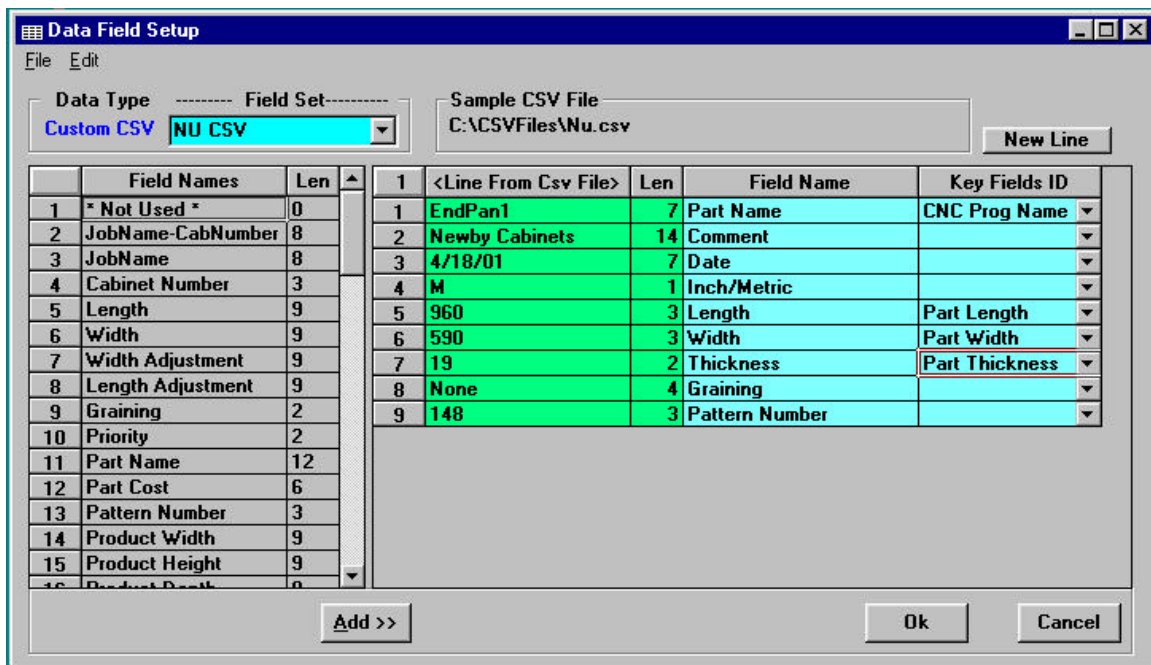
The Save as button allows you to save the currently displayed page layout to the list with either a new name or the same name. If the same name is used a message box will appear to let you know that you have saved the label without changing the name.

The Remove button allows you to remove the currently displayed label from the list.

On the left side of the window you can define the Height and Width of the label that is to be placed on the page. Also, the Top and Left margins can be set. The bottom and right margins will be the results of this plus label size and spacing.

On the right side of the window are boxes for setting the total Page Height and Width. This should always be large enough to contain all the labels you wish to have on the page whether it is one label or thirty plus margins and spacing. If you have multiple labels on the page the spacing distance between labels can also be defined.

## Data Field Setup



The data that goes onto a label has to of course come from somewhere. That source is usually a data file of some type. This data file will have each type of data in a predetermined data field. The trick is to know which data field contains which type of data. This information is usually in the documentation of the cabinet design software you

are using. However, it is possible that this information is not readily available. So let's consider the structure of the most common data format the CSV file.

Standard comma delimited ASCII (or CSV for Comma Separated Value) data files can be used as a data source for labels. In these files each line in the file is called a record and within each record are data fields separated by commas. In a word processor a CSV file may look like this:

```
Busellato, 75 , 20 , 24.00, 36.00, 1,side bg ,BGA - 1 ,BTEMP-000008 , 1 ,BGA001
Busellato, 75 , 20 , 24.00, 36.00, 1,side bg ,BGA - 1 ,BTEMP-000006 , 1 ,BGA001
Busellato, 75 , 20 , 22.50, 24.00, 1,surface ,BGA - 1 ,BTEMP-000012 , 1 ,BGA001
```

Notice that each data field can contain different data but the corresponding data fields in each record are of the same type. For example the 5<sup>th</sup> data field in the second record contains 36.00 and the 5<sup>th</sup> data field in the third record contains 24.00. This is different data but the type of data is the same. Both are lengths. A record can contain many data fields of all different types with types in whatever order that the designer of the CSV file decides. When a label is designed for this CSV data we need to know what each data type in the records is or at least the ones we wish to use on the label. The **Data Field Setup** window makes this task easy.



The data type is determined when a new label is started in Label Layout. The data types that can take advantage of the Data Field Setup are presently CPOut and Custom CSV data types. Since any one data type, particularly CSV files, can have files that have data arranged in any number of different ways we can have any number of definition tables to define these different arrangements of data. These definition tables are called Field Sets because they contain a set of field definitions with field names, usage etc. The purpose of Data Field Setup is to provide a way for you to define the Field Set or definition table for the data files you will be using. If a Field Set is lost or deleted accidentally these data field definitions can also be imported from labels you have already done. Select "Import Data Fields From Label" from the File pulldown menu. Since the complete field set is stored in the label file the complete field set can be imported back into Data Field Setup.

	Field Names	Len	▲
1	* Not Used *	0	
2	JobName-CabNumber	8	
3	JobName	8	
4	Cabinet Number	3	
5	Length	9	
6	Width	9	
7	Width Adjustment	9	
8	Length Adjustment	9	
9	Graining	2	
10	Priority	2	
11	Part Name	12	
12	Part Cost	6	
13	Pattern Number	3	
14	Product Width	9	
15	Product Height	9	
16	Product Depth	9	

Since you will be making up names for your different data fields in your data file a list of commonly used names are provided for your convenience. You can change this list to your liking by adding, deleting, and editing the names in the list. The Edit pulldown menu provides some useful tools to help you in this regard. You can double click on the desired name or use the Add button to place the data field name into your definition table. The maximum number of characters to be expected in each field is also listed for your reference. The use of this data field name list is completely optional, as you may prefer to simply type in the name of each field as you build the field definition table. This list can be saved and loaded from the File Pulldown menu.

Sample CSV File  
C:\CSVFiles\Nu.csv

1	<Line From Csv File>	Len	
1	EndPan1	7	Pa
2	Newby Cabinets	14	Ca
3	4/18/01	7	Da
4	M	1	In
5	960	3	Le
6	590	3	W
7	19	2	Th
8	None	4	Gr
9	148	3	Pa

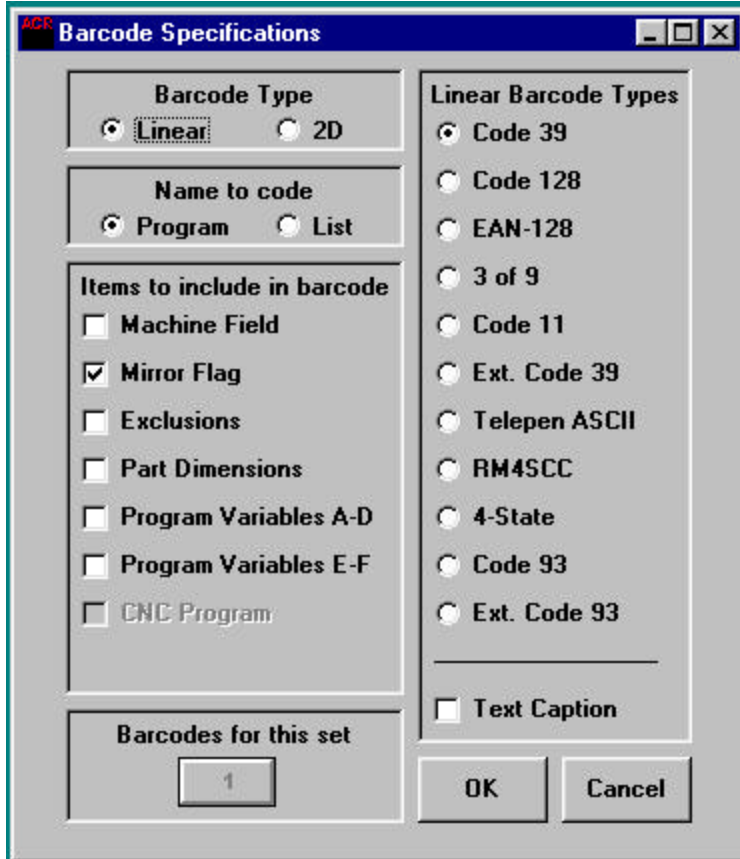
To help you determine what the field names should be for a particular CSV file you can load the CSV file into a special viewer. Select "Load Sample CSV File" from the pulldown menu under File. This viewer allows you to view each line in the CSV file one at a time. You can scroll through the CSV file lines by clicking on the "<Line From Csv File>" bar at the top of the column.

The number in the upper left corner will show the currently displayed line number. The character lengths of the fields are shown in the Len column for your reference. Now, with your knowledge of the data in the file you should be able to examine the information as it is presented from the CSV file and determine what the data is in each of the data fields that you will wish to include on your label. It is not necessary to provide names for data fields that you do not intend to use on your labels. They can be ignored.

n	Field Name	Key Fields ID
7	Part Name	CNC Prog Name
4	Comment	
7	Date	
1	Inch/Metric	
3	Length	Part Length
3	Width	Part Width
2	Thickness	Part Thickness
4	Graining	
3	Pattern Number	

The field names assigned here are used to make a data field selection list in Label Layout. The names are also used as headers in the Data window on the main AutoBar screen. Another very important assignment to make is the identification of Key Fields. These are data fields that AutoBar needs to know about in order to do some of the

special functions it performs. For example it is important for the data field that contains the CNC program name be identified. AutoBar needs the CNC program name so it can load the gcode file to get the geometry to make the part icon on the label. Also for the Cup Placement information as well as to know what name to actually put in the barcode so the machine will load the correct CNC program when the barcode is scanned. Each row contains a dropdown list containing the key fields that AutoBar would like to know about if they are available. Go down the list and assign all the key fields you can. Remember that not all of them will be needed but be sure to include the ones you do need.



The barcode button in Label Layout will bring up this Barcode Specification dialog box. In this box you can define the type of barcode you wish to include on your label and the type of information it is to contain.

#### Barcode Type

The two supported barcode types are Linear and 2D. Linear is the common barcode type as is typically found in stores etc. Due to the limitation of the amount of data it can contain these barcodes usually contain only the CNC program name and perhaps a few other small details about the part.

The 2D barcode is a much more powerful barcode that is capable of containing not just the CNC program name but also the complete CNC program itself. Depending on the program it may hold as much as 150 lines of program code. Technically 2D barcode is not really a barcode because it does not consist of a pattern of bars. It actually is made up of a pattern of very small blocks. This means that it contains not just one row of data but many rows of data. The very clever arrangement of these blocks is capable of holding a large amount of data and includes redundant error checking. This means that even if part of the barcode is damaged or obscured it can still be correctly read. If the barcode is too badly damaged you will still not get bad data. You will simply not be able to read the barcode.

#### Name to Code

You have the choice of making a barcode for the CNC program name or the name of a program list that you have already made. In the List Manager you can make up a list of programs to be run on the machine including all the settings you normally would make in the List Manager for each part. Then save this list of programs to disk and use the barcode to load the complete list into the List Manager at the machine. Since you can make a whole library of lists in the office for the machine, this makes a quick and convenient way to run jobs or portions of jobs that can be defined in a program list.

## Items to Include in Barcode

### Machine Field

AutoBar can assign the machine field for the part as the labels are printed (see Machine Fields Setup). This is useful for those that are not using Gencode to automatically make the field selection as the parts are run at the machine. This field assignment is then included in the barcode and set in the List Manager when the barcode is scanned.

### Mirror Flag

When Gencode is used at the machine, the fields can be automatically selected as the barcode is scanned for each part. Since half of the machine fields must mirror the CNC program when used we must know if this part should be mirrored or not so Gencode will know to use mirrored fields or not. One of the data fields in the data file (CSV or whatever) will need to designate the part as being mirrored or not. This “mirror flag” is an AutoBar key field so AutoBar will know to look for this data field and put the mirror flag in the barcode.

### Exclusions

If your CSV file contains a data field designated for an exclusion number AutoBar can include this exclusion number in the barcode. This data field will, of course, need to be tagged as a key field for exclusion in Data Field Setup.

### Part Dimensions

The data fields containing the part length, width and thickness should be tagged as key fields in Data Field Setup. You can then select this option to include the part dimensions in the barcode. If you are using linear barcoding, you will notice that the button near the bottom of the dialog box under Barcodes For This Set will indicate 2 (or more depending on what else is selected). This is because of the limitation of the amount of data a linear barcode can contain. More than one barcode will be made for the label. Simply place them on the label so each can easily be scanned. It will not matter which one is scanned first. After all the barcodes are scanned Gencode will proceed and place the information into the List Manager. The specifying of part dimensions in the barcode is especially useful if your gcode program is written parametrically so that the same program can be used with different dimensions to obtain very different results with the same CNC program.

### Program Variables

There are two check boxes to indicate the inclusion of program variables in the barcode. As with Part Dimensions, additional barcodes will be needed to contain this additional information. If your CSV file has data fields with values assignment to variables this will add further enhancement to the use of parametric CNC programs. Of course, remember that the data fields containing variable information will need to be tagged as key fields in Data Field Setup.

### CNC Program

When using 2D barcode you have the option of including the actual CNC program itself in the barcode. This is not possible with linear barcode but the extra data handling capability of 2D barcode makes this a nice feature addition. Generally one 2D barcode will be enough to contain most gcode programs used in most cabinet construction. Should it be necessary to support larger gcode programs that have sizes in excess of what can be

handled in a single 2D barcode additional 2D barcodes can be placed on the label. The number on the button near the bottom under Barcodes For This Set can be set for up to 9 barcodes to be placed on a single label. When the barcodes are scanned they can be scanned in any order and the barcode scanner will respond when all barcodes have been read. Should you scan any barcode twice the scanner will indicate this as an error and you simply continue to scan until all barcodes are scanned.

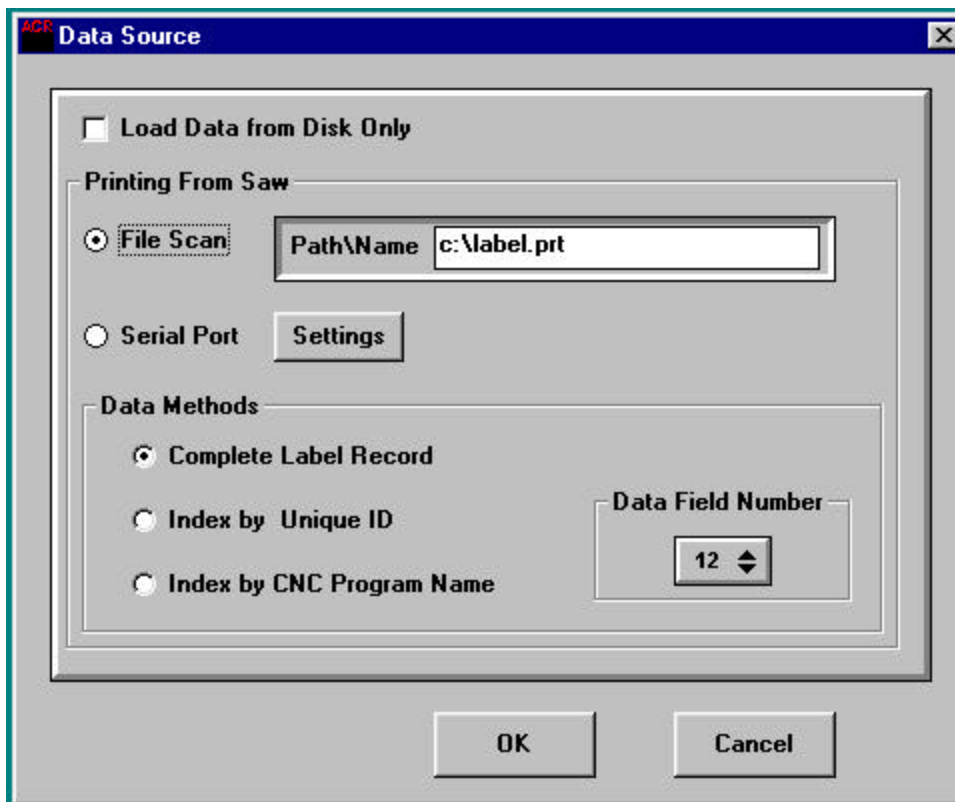
#### Linear Barcode Types

Several barcode styles are available for linear barcoding. Choose these according to your preference. The Text Caption check box will cause the text contained within the barcode to be printed under the barcode when the labels are previewed or printed.



## Printing From The Saw Control

Often times it is desirable to print labels at the saw so that labels can be applied to the parts as they are cut. Saw controls on even new saws are unable to print labels containing data field types that are in popular demand today. This is mainly true where graphics are concerned. Especially graphics taken from the CNC gcode of the machining center. AutoBar is a Windows application designed to overcome the limitations and adapt to the variations of the many saw controls in use today. If the saw control does not have a PC compatible computer running Windows 9x, NT or 2000 then a PC will need to be provided at the saw for AutoBar. A label printer connected preferably by a parallel cable will then be connected to that computer.



### Saws That Can Print To Disk

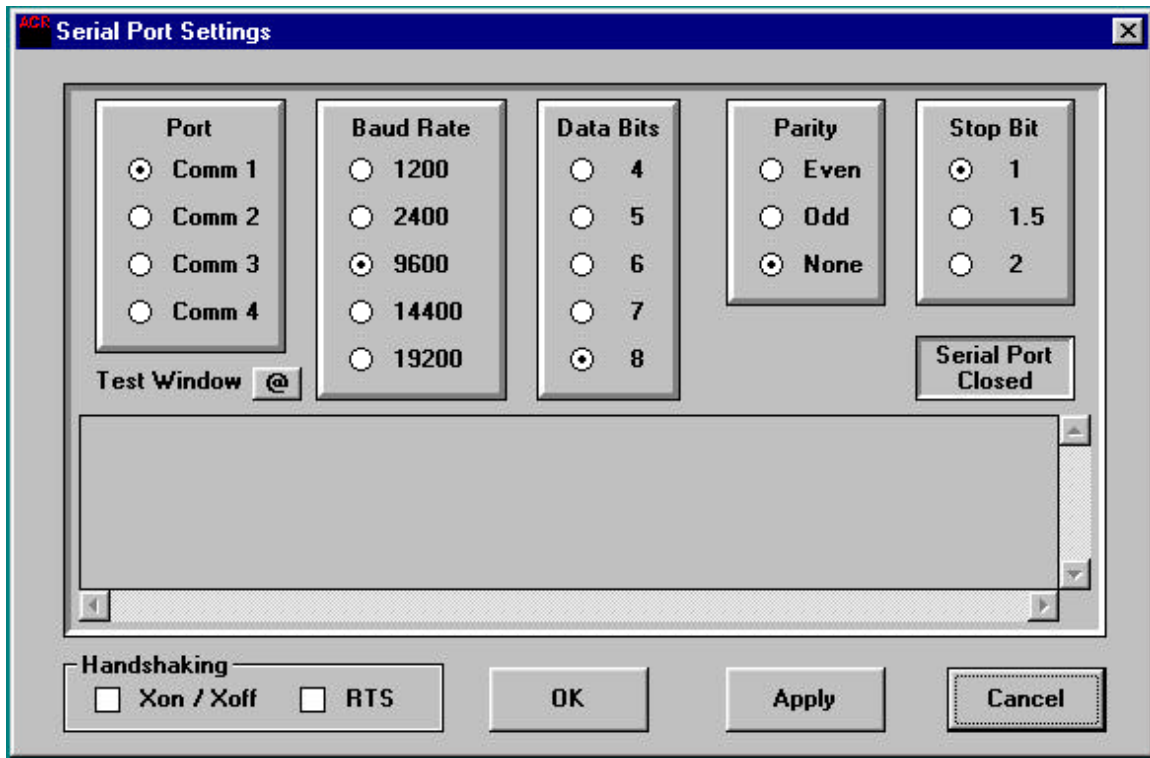
Some of the newer high-end saws are capable of diverting their print output from the printer and simply writing the data to a file on disk. AutoBar can watch for this file to appear and when it does, read the file, print the label and delete the file so it is ready for the next label or labels. Of course for this to work the saw control must “close” the file it has deposited so it can be accessed by another application. There are saw controls that do not close the file once it is printed to disk thus making the capability of printing to disk worthless. It is also necessary for AutoBar to be able to gain access to the hard drive containing the file. This can be accomplished via a network connection or better yet if AutoBar is installed and running on the saw control itself. The File Scan in Data Source should be selected. Also, the path and filename the saw control is using when the file is



printed should be specified. AutoBar will now watch for this file containing one or more label entries to appear.

#### Saws Than Cannot Print To Disk

If the data cannot be obtained from the saw's hard drive then we can connect the computer running AutoBar to the serial port of the saw control where the printer normally connects. This only requires a null modem cable to connect the saw control serial port to one of the serial ports on the Windows computer.



When using the serial port connection it will be necessary to set AutoBar according to the baud rate etc. of the saw control's serial port. The Serial Port Settings dialog box provides a way to select the serial port you are using on the Windows computer and other serial port parameters. Clicking OK or Apply will put the changes into effect. OK also closes the dialog box but Apply allows the box to stay open so the effect of the changes can be viewed in the Test Window. This window will show the data stream as it comes in from the saw control. If the serial settings are incorrect the data will be either nothing or garbled looking. Once you have applied the correct settings the data should look readable and consistent.

## Data Methods

Now that we have the label data coming into AutoBar we must set AutoBar to respond according to the type of data we are getting. Most saw controls can provide the data in a CSV or comma delimited format. For the more limited controls that cannot output CSV data they can usually provide the data in Zebra format for the Zebra printer. AutoBar is equipped with an automatic Zebra filter that removes the unneeded printer codes etc. from the data. Thus the meaningful data is obtained for the labels.

## Complete Label Record

If your saw can output the complete data record containing all the information you want on your labels then you will likely wish to use this option. AutoBar will take each item in the data record and apply it to your label in the manner and location you specify when you create your label layout. When making your label layout for use with printing at the saw be sure that your Data Field Setup agrees with the data that is coming from the saw control.

## Index by Unique ID

Some cabinet design systems provide a unique ID field in their CSV output. The saw control can output this ID and AutoBar will search the loaded data file for this id in the Unique ID keyfield. The data found in the record containing the unique id will then be used for the label. It is important to remember to assign the data field containing the Unique ID as the keyfield for Unique ID when you make your label layout.

## Index by CNC Program Name

Some have found that the CNC program name is sufficiently unique to be used to index into the loaded data file. The saw control has only to output the CNC program name and the data file that is presently loaded in AutoBar will be searched for that name. If the CNC program name is found in the CNC Program Name Keyfield then that record will be used to print the label. Of course, as always be sure the data field in the data field for the CNC program name is assigned as the CNC Program Name Keyfield.

## Data Field Number

Sometimes this ID Index is only one data field in the data stream coming from the saw control. When this is the case it is necessary to tell AutoBar which of these fields contains the ID Index we want. If this value is set to "0" then AutoBar sees the complete data record in the data stream from the control. If it is set to "1" it then sees the first data field in the data record from the control etc. If the Data Field Number is set to a number larger than the number of data fields in the data record then the last data field in the record is used.

## Load Data from Disk Only

If you are printing in the office and not printing from the saw, check this box to turn off the automatic data collection systems of AutoBar.