

## Overview

AutoLink is designed to be almost entirely drawing driven. This means that nearly all of the needed to determine how a drawing will be converted to `G' codes is included in the drawing. For example, operational information such as drilling, sawing, or routing is contained in layer names along with other information. The layer names can be equated to an alias or even a color using the INFORMATION BLOCK if desired. This and the DXF drawing format used by AutoLink makes it possible to use a wide variety of CAD and cabinet design programs. This information applies to version 6.05 forward. Updates are available at autocutresearch.com, under the download section.

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## **CAD Compatibility**

To the best of our knowledge AutoLink will work with any CAD program that will generate DXF files, including 3D. With the information block, layering is even optional since colors can be assigned to represent the different operations. A wide variety of cabinet design programs are supported as well.

## **How to Make a drawing for AutoLink with the layering method.**

### **Operation Labels:**

Make layers using the descriptive names (called Operation Labels) recognized by AutoLink such as:

**BORDER**  
**VBORE**  
**HBORE**  
**GROOVE**  
**ROUTE**

### **Key Letters:**

Key Letters with their values can be appended to the Operation Labels to represent other information such as hole depth, tool number or diameter, etc.

**T=TOOL NUMBER**  
**G=TOOL GROUP**  
**K=GROOVE SAW KERF**  
**Z=DEPTH (or thickness in the case of the BORDER layer)**  
**D=TOOL DIAMETER**  
**P=DECIMAL POINT**  
**R=RIGHT RADIUS CORRECTOR**  
**L=LEFT RADIUS CORRECTOR**  
**S=TOOL ROTATIONAL SPEED (RPM)**  
**F=ROUTER CUTTING VELOCITY,(Feed Speed)**  
**FR=ROUTER CUTTING VELOCITY AROUND OUTSIDE CORNERS,(Feed Speed)**  
**FD=TOOL DESCENT VELOCITY,(Feed Speed)**  
**LD=LEAD SYNTHESIS**  
**RI=ROUTER RAMP IN**  
**RO=ROUTER RAMP OUT**  
**M=ACHIEVE FINAL ROUTE DEPTH WITH MULTIPLE PASSES**  
**\$=OPERATION SEPARATOR**  
**ZO=OSCILLATION IN Z FOR THROUGH CUTS**  
**EX=EXCLUSIONS (ES also works)**  
**OP=DRILL OPTIMIZER ON**

## SQ=MACHINE OPERATION SEQUENCING

For example, a drilling operation could be specified as follows:

**VBORE\_Z8P5T4**

In this example vertical boring with a hole depth of 8.5 mm using tool 4 is specified.

### Using the Information Block

An information block which consists of text is used to instruct AutoLink of various assignments. The block can be on any layer but it must all be on the same layer. The header 'AUTOLINK INSTRUCTIONS' must be at the top of the reassignment list. Each entry must be a separate text entity.

**Instructions**  
**01=Border z12**  
**Saw=Groove z7**

**AutoLink**  
**Layer**  
**Layer Holes=Vbore**  
**Layer**

This allows AutoLink to be used with CAD systems that allow only numbers or very short names for layer names.

Colors can be re-assigned in the information block by using the color number.

**Instructions**

**AutoLink**  
**Color 01=Border z12**  
**Color 03=Vbore z5**  
**Color 07=Groove z7**

If the color number is not present AutoLink will look at the actual color of this line of text to get the color number information. ie.

**Instructions**

**T66** <(This line is the same color as

**AutoLink**  
**Color Route Z5**

the operation in the drawing)

Note:

With AutoCAD as with most CADs, if colors are specified to be Bylayer then the color number does not appear in the ENTITIES Section within the DXF file. This means that AutoLink does not see the color number and so does not recognize that particular entity by color. Be sure to set the properties so that Color is Byentity and not Bylayer.

Re-assignments can be mixed:

**Instructions**

**AutoLink**

**Layer 01=Border z12**

**Color 03=Vbore z5**

**Color 07=Groove z7**

It is simple to assign values to Winner90/Genesis variables in the Information Block. **AutoLink**

**Instructions**

**Var A=25.4**

**Var C=12.6**

**Var D=S/2**

**Var E=C/3**

Note:

Simple arithmetic can be used in the variable assignments but only previously assigned letters can be used. Equations may be used, parametric expressions can be used,( L, H, & S), but there is a limit of 20 characters.

This example will work correctly.

**Instructions**

**AutoLink**

**Var A=5**

**Var C=A+3.5**

For example the following will **not** work correctly:

**Instructions**

**AutoLink**

**Var A=C+5**

**Var C=12.6**

A Comment can be passed to the Winner90/Genesis Comment Line.

**Instructions**

**AutoLink**

**Descr = Part**

**Description** (Comment)

A filename can be substituted for the drawing filename to appear in

**Instructions**

the Winner90/Genesis directory.

(Program Name)

**AutoLink**

**Name = Filename**

Operation Labels:

Layer	Used to assign an operation with Labels and Key Letters to a particular layer
Color	Used to assign an operation with Labels and Key Letters to a particular color
Var	Assigns a variable a value for use in Winner90/Genesis
Flag	Sets the flags that are normally set from the Winner90/Genesis Graphics Editor
Descr directory	Specifies upto 25 characters to appear in the comment line in the Winner90/Genesis directory
Name	Allows the assignment of a name other than the drawing name as the program name
OP	Used to re-assign a route sequence operation
Scale	For specifying a scale multiplier to the drawing as it is converted
Leads	Controls lead-in and lead-out synthesis
ZRamp	Determines the distance above the part that ramp in and ramp out will start and end
RampIn	Turns on or off ramp in
RampOut	Turns on or off ramp out
RemBorder	Turns on or off border route removal ie. RemBorder ON or RemBorder OFF
CornerComp OFF	Turns on Corner Comp for this drawing ie. CornerComp ON or CornerComp OFF
Offset	Causes the program to be offset in X,Y and/or Z via the G92 Offset instruction.

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## OPERATION LABEL DETAILS

Most Operation Labels can be used as a Layer Name. In fact, this is how AutoLink was first designed. But since these labels can be reassigned to layer names or colors we have decided to call them Operation Labels since they define an operation.

## DESCRIPTION

The first 25 characters of text assigned to an operation label named DESCRIPTION will be used as the comment line of the imported drawing. The prefix Descr: is not needed if this layer is used. This is an alternative to including the drawing description on the BORDER operation. No other text should be assigned to this label. The Description can also be assigned using the Information Block. See USING THE INFORMATION BLOCK.

## NAME

Should you wish to specify a name other than the filename of the drawing to appear in the Winner90/Genesis Directory System, the desired name can be assigned to the NAME operation. Up to 12 characters can be used for the name. Any characters beyond 12 will be ignored. The Name can also be assigned in the Information Block. See USING THE INFORMATION BLOCK.

## OFFSET

The Winner90/Genesis program can include an offset instruction as the first line in the program to cause the part pattern to be offset according to the values used in the offset instruction. This Operation Label works only from the Information Block. The syntax is: Offset X,Y,Z. ie. Offset 25,12,3 or Offset 25,12 or Offset ,12 or Offset 25 etc.

## VBORE

Holes are represented by circles on the VBORE operation. If a tool number is not specified in the operation label, the circle diameter is passed on as a tool diameter to the optimizing compiler for tool selection. The drilling sequence is optimized in AutoLink on a one hole at a time basis. The optimizing compiler will then select the tools by diameter using the tool parameters. Multiple drills will be dropped

as the situation warrants for the most efficient drill operation.

Hole depth is defined for all holes in the operation using the key letter `Z'.

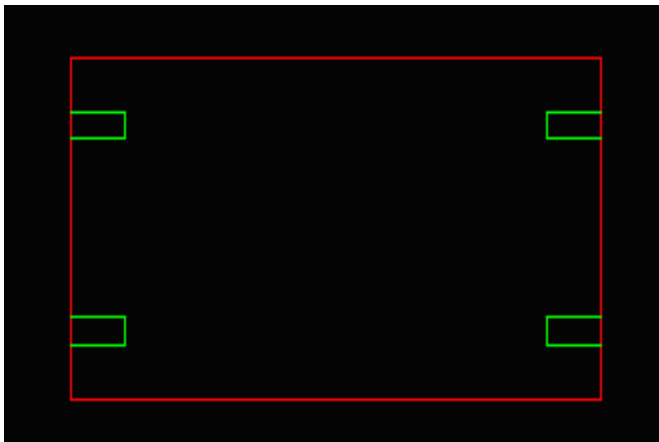
Tools in a VBORE operation can be selected by tool number using the `T' key letter. This will override tool selection by diameter.

Hole diameter can also be represented in the operation label using the `D' key letter. This will override the diameter of the circles in the operation. This could be handy should the need arise to change the size of all the holes in an operation. Modifying each circle to represent the new size will not be necessary. Of course, all the holes in this operation will be imported with the diameter specified in the operation label name.

## HBORE

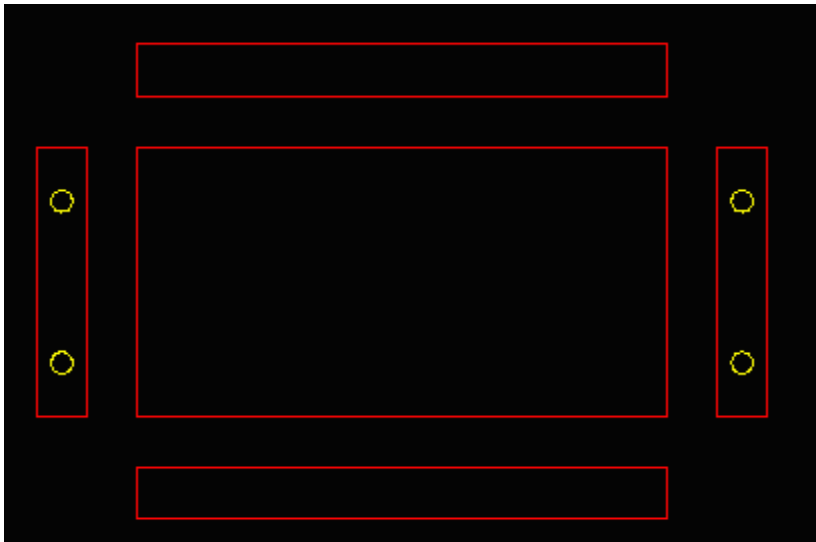
### METHOD 1

A horizontal hole can be represented in the drawing by a three sided box attached to the side of the part where the hole is needed. The length of the box determines the depth of the hole. The width of the box determines the diameter of the hole. The position down on the edge is determined by Z in the operation label.



### METHOD 2

Additional rectangles can be drawn on the border layer about the main part border to contain the horizontal drilling operations. The edge borders should be in correct proportion to the main border and correctly represent the part thickness. The Z value in the BORDER Layer name is not needed but will take priority if used. Only the Edge Borders actually used are needed. Hole depth is set by XP or YP. ie. HBORE YP20



The key letter D can also be used with the HBORE operation.

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## GROOVE

A horizontal or vertical line is used to represent a groove saw cut. The depth of the cut is specified using the `Z' key letter in the operation label. Tool selection is done of course with the `T' key letter. The tool specification can be omitted and AutoLink will use the default tools of 60 for cuts in X and 61 for cuts in Y. If a polyline with a non zero width is used, AutoLink will make multiple passes with the groove saw to achieve the groove width specified by the polyline width. The saw kerf specified in AutoLink Configuration or with the 'K' key letter is used in making these calculations. Normally the machine parameters are set so that the coordinates specified are the edge of the groove closest to the pinstops, not the center of the groove.

## ROUTE

Routing is supported using lines, arcs and circles. AutoLink will automatically establish the tool path based on the information in the drawing. Unless otherwise specified, with most CADs a line will route in the direction drawn, an arc or circle will be clockwise.

### Leadins & Leadouts

Leadins can be used to specify the start and direction of a closed loop route as well as starting the route off of the loop path. Leadins or leadouts are formed using a line segment or arc with one endpoint that is coincident with the endpoint of an arc or line segment. They can, however, be placed at any point on a circle. The route direction on a closed loop will be in the direction of the segment whose angle is the most obtuse with the lead-in segment.

### Start Point & Direction Arrow

The start point and direction of a route can be specified with a Start Point and Direction Arrow. This arrow is made by using a polyline segment with a zero width for one end and a nonzero width for the other end. You should use the object snap to connect the small end of the arrow to the endpoint of the line or arc segment where you wish the route to begin. If you are routing a closed loop, you can use the arrow to specify the direction of the route as well as the starting point by rotating the arrow to the

direction you wish the route to take making it's angle obtuse with the following segment. The arrow can also be used to select the lead-in when you have a lead-in/lead-out pair. [N]ear, [M]id, [E]nd <E>: will appear on the command line of AutoCAD. This will indicate where the start point is to be located based on the first letter in brackets, [?]. This allows much easier selection in drawings with many entities with close to the intended start point.

Until one on the commands of Panel Maker is used, an error indicating unknown command may appear. Just start any Panel Maker command and cancel to avoid this error.

### Layer Name Key Letters

The routing operation label will need to contain the `Z' and `T' key letters for route depth and tool selection. Tool selection can also be done by tool diameter with the `D' key letter if you have the optimizing compiler for Winner90/Genesis.

### Router operation sequencing

There are several ways to sequence Router operations.

The first two must have their text on the same layer as AUTOLINK INSTRUCTIONS.

- 1) Using Endsnap, attach a sequence number (text) to the startpoint of the desired route paths.
- 2) For added flexibility you can use the sequence number as an operation specifier and re-assign it a number with OP.  
ie.

AUTOLINK INSTRUCTIONS

OP 1=2

Additional operation information can be added after the sequence (or operation) number. ie.

1 Z4 T65L

or

AUTOLINK INSTRUCTIONS

OP 2=1 Z4 T65L

- 3) The sequence number can be inserted right after the word Route in the layer name. ie.

Route1 Z6T77      or      Route 1Z3T78      or      Route\_2Z4T66

AUTOLINK INSTRUCTIONS

COLOR ROUTE 1 Z4 T65

LAYER TRIM=ROUTE 1 Z4 T65

### Hints about routing...

If you are getting setmills at undesired places along your route path check to see that the endpoints of the lines making the route path are coincidental. You may have to zoom in very close to see that the endpoints do not connect. Use the object snap to endpoints to be sure that they do connect. If you are using polylines, AutoLink considers the beginning of a polyline sequence as a route start point. Be sure that your polyline sequence is not actually two or more polylines or a mix of polylines and lines.



## Leadin & Leadout Synthesis

AutoLink has the ability to analyze the drawing and apply leadins and leadouts to routes that meet certain rules.

- 1) If the endpoint of a route is on the part border it will qualify for the attachment of a leadin and/or leadout.
- 2) If a route is closed so that its startpoint is at the same coordinate as its endpoint and a radius corrector is being used. The Leads will merge tangent (if practical) to the route line on the side of the radius correction. If no radius corrector is used no leads will be generated.

Leads can also Ramp In and Ramp Out if desired

Lead Synthesis can be controlled from 3 places, Configuration, Information Block & Operation Label.

### 1) Configuration:

Lead Synthesis can be turned on or off.

The lead length and ramp height can be set for all routes. (Settings here are Millimeters)

### 2) Information Block:

Any setting that may exist in Configuration can be overridden.

Different Lead settings can be made for each route if desired.

### 3) Operation Label

Any setting that may exist in Configuration or the information block can be overridden for routes defined by the particular Operation Label.

## Syntax for the Information Block

### AutoLink Instructions

ZRAMP n*	Height from which ramp will start or end above part
LEADS ON n	Turns ON Leadin Leadout synthesis if it is OFF in and sets the length of the leads
LEADS ON	Turns ON Leadin Leadout synthesis if it is OFF in config. and uses the length that is in config.
LEADS n	Simply sets the Lead Length
LEADS OFF	Turns OFF Leadin Leadout synthesis if it is ON in config.
RAMPIN ON	Turns ON Leadin Ramping if it is OFF in config.
RAMPIN OFF	Turns OFF Leadin Ramping if it is ON in config.
RAMPOUT ON	Turns ON Leadout Ramping if it is OFF in config.
RAMPOUT OFF	Turns OFF Leadout Ramping if it is ON in config.

## Key letters for the Operation Descriptor

LD	Turns on Leadin and Leadout for this `layer'.
LDn	Turns on Leadin and Leadout and sets a length n
RI	Turns on Leadin Ramp
RIn	Turns on Leadin Ramp and sets a ramp height n
RO	Turns on Leadout Ramp
ROn	Turns on Leadout Ramp and sets a ramp height n

\* n is whatever numerical value that might be desired or appropriate.

For example the Operation Label (layer name) might be:

Route Z5 T65 LD15 RO3 R6

```

  ^  ^  ^  ^  ^ Right Radius Corrector of 6mm
  |  |  |  | Ramp out to a Height of 3mm above the part
  |  |  |  | Turn on Lead Synthesis for this route with leads of 15mm
  |  | Use tool number 65
  | Route 5mm deep

```

There should be no spaces in the layer name. The illustration is done this way for clarity. An underscore can be used instead with no problems, to make the layer name easier to read. See Layer Naming Convention as well.

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### Corner Comp

The most natural way to draw a cutout in CAD is to use the rectangle command and make a box. The problem is that the start point is at a corner of the box and this causes router overshoot when a radius corrector is used and it is also a less desirable place to have leadins and leadouts. Corner Comp automatically moves the start point to the mid point of the first line segment of polygons made with polylines.



### Multiple Pass Routing

At times it is desirable for one line in the drawing to represent multiple passes with the same router or different routers. There are two methods of doing this.

### M Keyletter

If on the route operation description (layer name or Information Block entry) you place the Keyletter M and then a number, the router will make the route cut in that number of passes until the desired depth is achieved.

Example:

Route Z15 T65 M3

In this route the router will make the cut in 3 passes. The first cut will be at 5mm the next at 10mm and finally

the last cut at 15mm.

### **\$ Keyletter**

When different routers are needed along the same cut line we can separate completely different router operation descriptions with \$.

Example:

Route Z18 T65 R12 \$ Z16 T66 R16

Two different routers with different depth and radius offset settings will pass along the same route line.

Route Z14 T65 \$ T66

Two different routers with the same depth will pass along the same route line.

Route Z21 T65 R13 \$ R10

The same router will pass twice at the same depth but with different radius correctors.

### **Oscillating in Z (OZ)**

To more evenly distribute bit wear along the length of the router but you will want to turn on Oscillation in Z. This feature is implemented using the Keyletter OZ and a value that represents the additional distance you wish to allow the router bit to go through the part. This works only on through routes and will have no effect when the route depth is less than the thickness of the part. The router bit will first be positioned at the specified depth then as it moves to its next change in direction the bit will move to the new depth which is the original depth plus the value specified with OZ. When the bit moves to the next position it then moves back up to its original depth specified.

Example:

Route Z21 T66 OZ5

This will move the router bit between a depth of 21mm and 26mm.

---

### **Tool Substitution**

The Tool Sub button in the AutoLink window, (toward the lower left), can be used to substitute different tools if needed.

Examples would be if the tool configuration of the machine has changed, or if the information is for a different machine than originally programmed.

This allows different tooling to be called in the program without changing the source file.

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### **Excavation (Pocket Routing)**

Excavation is supported for Circle, Rectangle and Rectangles with one or all corners rounded. The desired shape is placed in the drawing on an Excav layer. Normal route attributes can then be applied such as tool number route depth etc. Excavation is started in the center of the area to be excavated and the route path circles outward until the outside edge is completed. This prevents the small center piece from being thrown when excavating from the outside inward. The "K" keyletter is used in the layername

to pass the value of the Pitch. The Pitch, or distance between passes, is usually set to be slightly less than the diameter of the router bit. If K is not used the value in the radius corrector will be used to derive the pitch. If a value is not given for K and no radius corrector is used then no excavation will be done, however, the perimeter will be routed.

## Circle

When excavating a Circle the following rules apply:

Left radius corrector - The circle will be excavated counter-clockwise

Right radius corrector - The circle will be excavated clockwise

No radius corrector - The circle will be excavated clockwise

## Rectangle

When excavating a Rectangle the following rules apply:

Polyline rectangles are not presently supported.

Polyline rectangles must be exploded into lines or lines and arcs.

The setting of a Left or Right radius corrector has no effect.

A Left or Right radius corrector will be automatically applied depending on the route direction.

Route direction is either arbitrary or set with the Start Point Direction Arrow (SPDA).

## Example

Excav\_Z6\_T66\_K12

## Note

If the SPDA is placed between a line and an arc it is best to set the direction to go into the arc.

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## LAYER NAMING CONVENTION

Some CAD programs will not allow certain characters such as spaces and decimal points in the layer names. This made it necessary to devise a method to circumvent this restriction. The underscore character (\_) is used wherever you may have wished to use a space to make reading easier. The decimal point is represented by the letter `P'. These restrictions apply only when using an operation label as the actual layer name. Numeric data is identified to AutoLink by key letters such as T, Z, D etc. The order in which these letters with their data appear in the operation label is not significant.

## A Variable for Z

In addition to putting a literal value for the depth of the cut with Z, a letter from a to i (not including h) may also be used. This letter is called a variable because it can be assigned various values as needed. The variable can be assigned a value in the information block or in the Winner90/Genesis Graphics Editor. See USING THE INFORMATION BLOCK.

Example: VBORE\_Zc (letter case does not matter)

The variable is not used for the Border layer. The part thickness appears in the variable S in Winner90/Genesis anyway.

## **Border**

The border operation is used to represent the outline of the raw part. The part thickness is included with the operation label. For example a part with a thickness of 17mm would be represented as BORDER\_Z17. The border should be a rectangle drawn using lines or a polyline. The lower left corner is the origin from which all points are measured on the drawing. It will be helpful in making the drawing if the coordinates of the origin are 0,0 but the import will work just as well if they are not. The drawing units should represent whatever unit you wish the link to be done in. For example, if you are doing a metric part wi

Up to 25 characters of the text following the letters "Descr:" will become the comment which will appear with the imported file. (See also DESCRIPTION and USING THE INFORMATION BLOCK)

## **Converting a Portion of a Drawing**

Some companies prefer to have all the parts of a particular cabinet or whatever in one drawing file. However, since only one part can be converted at a time the following method will allow selecting and sending only one part to AutoLink.

Use the NAME operation to assign a unique name for each part. If the part needs to be rotated, select and rotate the part using 0,0 as the base point. Next, use DXFOUT and choose entities. Select all entities of the part including the name and export as a DXF file. Be sure to include all needed entities such as the Information Block if used etc. Now, simply convert the DXF file with AutoLink and the name used in the NAME operation will appear in the Winner90/Genesis Directory System along with any comments which were included from the DESCRIPTION operation, BORDER operation or assigned in the INFORMATION BLOCK.

AutoLISP routines are included for AutoCAD users which make this process a nearly one step operation.

## **A Word About Origins**

The origin used by the converted file is determined by keyletters in the Border Name. The keyletters are LL for Lower Left corner, UL for Upper Left corner, UR for Upper Right corner, LR for Lower Right corner. If no keyletter is specified the default is LL. ie. Border Z19 UR makes the origin the upper right corner of the part. The origin point in CAD in positive quadrants makes no difference. It has been determined that drawings are best done in positive quadrants.

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## **Drill Optimization and Sequencing**

You will have to set up the tool table for your drills using the "Drill Tools" utility optTP.exe, which should be in your Genesis\Bin sub directory if you do not have a Drill Tools icon. You will need to provide the XY offset values as are in your Genesis Tool Offsets and the Z value can just be your bit length. This is used so drills of different lengths will not be used together. Of course, you will also need

to put in all the diameters. You can also specify if the drill is a through drill or not. This way the drills designed for through boring can be used only for hole depths equal or greater than the panel thickness. In the Border layer name you will need to add the key letters OP to turn on the optimizer then specify the sequencing in the Border layer name with the key letters SQ followed by the letters of the operations RHVG. R=routing, H=horizontal drilling, V=vertical drilling, G=groove saw For example: Border\_Z19\_OP\_SQRVHG (underscores optional). If a letter is omitted then that operation will not be done. For example Border\_Z19\_OP\_SQRVG will leave out the horizontal drilling. This could be useful if you are doing horizontal drilling somewhere else. Drilling will come out as fitting so there should not be a mirror problem. This does not mean that the optimization is actually optimal for both sides. There would have to be two programs to make that always possible. However, It should be just fine. You can just use the AutoLink optimizer for those parts where it is needed and then leave out the OP\_SQ. Key letters from the drawings where you want to use the Genesis optimizer. This will then be transparent to the operator. This is pretty neat actually. Remember, However, to specify your horizontals by tool number because diameter selection for them is not supported in AutoLink at this time. This should not be much of a problem though.

There are controls on the AutoLink control panel to turn on the optimizer and specify default sequencing. This was necessary for those cabinet design systems that are not capable of allowing users to specify information on the layer names. This would be the preferred method and would make the conversion process that much more automatic. Sequence instructions found in the drawing will take precedence over the default settings. If the default settings are blank then the internal default of VGHR will be used. If the optimizer is turned off then the OP instruction in the border layer name can turn it on for that drawing. However, if the optimizer is on there is no instruction for the drawing to turn it off.

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## GENERATING A CSV DATA FILE FROM CAD

AutoLink has the ability to construct a CSV file from data placed in the CAD drawing. This CSV file can be used by AutoBar for printing labels or by a CDS such as Pattern Systems in their Cut Planner as a Cut Planner Parts file.

The data is included in the drawing using the Information Block as in this example:

### AutoLink Instructions

PTS = OFF                      Prevents making an entry into the .PTS file.

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PTS Filename = WallCabs        The filename for the .PTS file can be specified here in the drawing. This will override the setting in AutoLink A path can also be specified with the filename.

PTS Quantity = 5

PTS Material Code = 0097

PTS Description 1 = Wall End A

PTS 33 = Yellow Trim      A field entry can be made by field number without using or having a field name. Must be less than or equal to the highest field number specified in the PTSDData section.

The filename of the .PTS file is set in AutoLink Setup under the PTS File tab. The units can also be set there for inch or metric and if used with Cut Planner must match the setting in Cut Planner.

The field table is found in the acr.ini file in the PTSDData section and is setup in accord with Cut Planner version 4. These field names can be changed, added or deleted but take care not to duplicate names. The maximum number of entries is 50.

Field0=FileName      Field0 is not a part of the CSV file but serves to set the Filename keyword.

Field1=Part Demand

Field2=Post Lamination flag

Field3=~Material 1

Field4=~Material 2

Field5=~Material 3

Field6=~Material Code

Field7=Width

Field8=Length

Field9=Finished Width

Field10=Finished Length

Field11=Priority

Field12=Grain

Field13=~Description 1

Field14=~Description 2

Field15=~Part number

Field16=Minimum Demand

Field17=Maximum Demand

Certain field names will automatically find data if none is specified in the drawing. They are Post Lamination Flag (default=12), Width or Length and Height (default=drawing dimension) and Description or Description 1 (default=drawing Description). The tilde (~) denotes fields that are to be treated as string fields as opposed to numeric fields. The highest number field in the CSV record is determined by the highest number field specified in this section.

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For Pattern Systems users:

The Version of Drill-Mate, 2.1x should support the automatic batching to AutoLink; the changes in the setup are:

- 1) On Line #57 of PSCONFIG.DAT do the following:

c:\dxfl\Batch.Lst

- 2) On line #83 do the following:

```
c:\dxf\@@@@@
```

- 3) Modify the DXF file path on line #79 as follows:

```
c:\dxf\@@@@@.DXF
```

Line #57 causes a "batch" file to be named and created when jobs come over from Product Planner.  
Line #83 causes each DXF file name to be placed in the batch file according to the template on line #83.  
Line #79 puts the DXF files in the directory where AutoLink is looking for them.

Do not use the "Run Post Processor" features of Drill-Mate. Instead, make sure that AutoLink is already running in Windows.

---

For Autocad users:

Beginning with Autocad 14, ellipses were for the first time represented in cad mathematically correct. In previous versions ellipses were approximated with arcs. This was really better for us because CNC understands arcs. So, now for Autocad versions after 13 ellipses have to be made as arcs or converted to arcs. Ellipses can be made as arcs by setting the Autocad system variable PELLIPSE=1. This is done by typing SETVAR at the Autocad command line. A public domain utility called Ellcon is included in the support subdirectory for converting existing ellipses to arcs.

With Autocad 14 the new Light Weight Pollyline was introduced. We still, however, use the standard pollyline since this is the pollyline used by most other cads and cds. The system variable PLINETYPE should be set equal to 0 using SETVAR. This will tell Autocad to use the standard pollyline.

Panel Maker automatically handles these two system variables when making a drawing using Panel Maker.

Splines are also a geometry that has to be converted into a usable form. There is included in the support sub directory a utility (FIT\_SPLN.LSP) that will convert splines into line segments. This is also public domain and if it is useful to you then great.

---

## Panel Maker

Panel Maker is an add-on utility for Autocad. It presently supports Autocad versions 12-2000. Upon installation of Panel Maker CAD support, files are loaded into the SUPPORT subdirectory of your Autocad installation.

### **In Autocad versions 12-13 the following files are loaded**

```
PNLMKR.LSP  
PNLMKR.DCL  
PNLMKR.INI  
AcadPM.MNU
```



**AcFullPM.MNU**

The following line is added to the AcadR12.LSP or AcadR13.LSP file:

```
(autoload "PnlMkr" ("send" "sendwin" "border" "vbore" "hbore" "groove" "route" "spda" "layset" "match"))
```

The menus are added by typing Menu at the command line and selecting one of the two menu files.

**In Autocad version 14 the following files are loaded**

PNLMKR.LSP  
PNLMKR.DCL  
PNLMKR.INI  
PNLMKR.MNU  
PNLMKR.MNC  
PNLMKR.MNR  
Icon1538.bmp  
Icon1726.bmp  
Icon1869.bmp  
Icon4771.bmp  
Icon5447.bmp  
Icon5667.bmp  
Icon6299.bmp  
Icon7035.bmp  
Icon9895.bmp  
Icon9912.bmp

The following line is added to the AcadR14.LSP file:

```
(autoload "PnlMkr" ("send" "sendwin" "border" "vbore" "hbore" "groove" "route" "spda" "layset" "match" "menupm"))
```

The menus are added by typing MenuPM at the command line.

**In Autocad 2000 the following files are loaded**

PNLMKR.VLX  
PNLMKR.DCL  
PNLMKR.INI  
PNLMKR.MNU  
PNLMKR.MNC  
PNLMKR.MNR  
Icon1538.bmp  
Icon1726.bmp  
Icon1869.bmp  
Icon4771.bmp  
Icon5447.bmp  
Icon5667.bmp  
Icon6299.bmp  
Icon7035.bmp  
Icon9895.bmp  
Icon9912.bmp

The following line is added to the Acad2000.LSP file:  
 (princ(load "pnlmkr" "\nPnlmkr.VLX file not loaded."))

The menus are added by typing MenuPM at the command line.

---

For Autocad 14 & 2000 a lisp routine, MenuPM, is used to add the Panel Maker menu items and tool buttons to the existing Autocad menus. This is done without disturbing the existing menu files you are using.

If you should get an "Unknown Command" error message when you try to execute a Panel Maker command ("send" "sendwin" "border" "vbore" "hbore" "groove" "route" "spda" "layset" "match" "menupm") it means that the Panel Maker lisp routines are not loaded. The two most likely reasons for this are: 1) The Panel Maker files are not in the SUPPORT subdirectory (or folder) of the Autocad installation you are using. 2) The startup line in the Acadxxx.lsp file is not properly installed. A text editor such as Notepad can be used to view this file.

For Autocad 14 the AcadR14.LSP file should look like this in part:

```
=====
;;;===== AutoLoad LISP Applications =====
; Set help for those apps with a command line interface
(autoload "PnlMkr" ("send" "sendwin" "border" "vbore" "hbore" "groove" "route" "spda" "layset"
"match" "menupm"))
(autoload "appload" ("appload" "appload"))
```

This section is usually found about halfway down the AcadR14.LSP file.

For Autocad 2000 the Acad2000.LSP file should look like this in part:

```
=====
;; Silent load.
(princ(load "pnlmkr" "\nPnlmkr.VLX file not loaded."))

(princ)
```

This section should be found at the end of the Acad2000.LSP file

Panel Maker can be loaded manually by typing APPLOAD at the command line and selecting pnlmkr.lsp or pnlmkr.vlx.

The special lisp file (Acadr14.lsp or Acad2000.lsp) is read by Autocad as it starts up and executes commands contained therein. Load or autoload for Panel Maker should be one of them.

The pnlmkr.ini file is a configuration file for Panel Maker. The default contents are as follows:

```
=====  
c:\dxf\  
  
red  
cyan  
green  
blue  
yellow  
  
=====
```

The first line is the path where the Temp.DXF file and the Batch.lst file will be placed for AutoLink to find.

The second line is the path where the DXF file will be placed using the drawing name as the DXF filename. When blank (default) no DXF file is output by its name.

The following are the default colors of the operation layers Border, Vbore, Hbore, Groove Saw & Routing respectively.

The next 3 lines (blank by default) are lines to set default diameters for Vbore, Hbore & Router tool number respectively.

This file can be edited with any text editor such as Notepad.

---

## Installation

With the distribution diskette in drive a:, from RUN in the File or Start menu in Windows type A:SETUP and click OK.

The appropriate files will be installed in the Windows System subdirectory. The AutoLink executable and configuration files should be installed in the same subdirectory with Winner90/Genesis that comes with the machine. This is usually C:\Winner90 or C:\Genesis\bin. The optional support for Autocad 12, 13, 14 and Autocad LT is then installed. Be sure that the indicated paths are correct for your CAD installation. AutoLink can be added to your Winner90/Genesis program group. Since TPA uses version numbers in the Winner90/Genesis group name you will want to check that the installation program is set for that program group. You will be prompted near the end of the installation for this information. Just browse and click.

Run AutoLink and check the SETUP. The Source Path is where DXF files are expected. Destination Path is where the resulting program files will be placed. This is usually C:\Winner90\MOD1\SORG\ or C:\Genesis\Product\ Use AutoStart on BATCH.LST for Autocad and AutoStart on TEMP.DXF for other CADs. Read the Cursor Helps for further information.

## Registration

AutoLink will run unregistered for the first 30 days. During that time AutoLink should be registered by clicking on the Register AutoLink button, providing the needed information, printing and faxing the registration form to the number on the form. Additional instructions are provided by pressing the Instructions button in the registration dialog box.

## Operation

DXF files can be processed by selecting the desired files from the list box on the main screen and pressing START.

Automatic start of processing can be initiated by any software that places a file named BATCH.LST in the Source directory that contains the names of the files to be processed. Autostart on BATCH.LST should be selected in Auto Action under Setup. AutoLink will process all the listed files and delete the BATCH.LST file.

Automatic start of processing can be initiated by any software that places a DXF file named TEMP.DXF in the Source directory. Autostart on TEMP.DXF should be selected in Auto Action under Setup. AutoLink will process the TEMP.DXF file and then delete TEMP.DXF. Since you probably do not want TEMP as the program name you should put the desired program name on the NAME layer in the drawing or specify it in the INFORMATION BLOCK.

## Batch.Lst

This file is simply an ASCII text file that contains the names of DXF files to Autoprocess. Batch.Lst can contain only the DXF file name, the DXF filename with path to the DXF file, DXF filename with Program name and also Program name with path.

Example:

BATCH.LST

end002

DXF file in source directory AutoLink is pointed to.

00153 front253

Reads DXF file of one name and makes program another name.

c:\temp\back

Looks for DXF file (back.dxf) in TEMP dir.

c:\temp\corner05 c:\pgm\ Looks for DXF (corner05.dxf) in TEMP and deposits program in specified directory.

## Command Line Switches

/S to force AutoLink to Auto Start on TEMP.DXF or BATCH.LST when it first comes up.

/K to shut down AutoLink after it has Auto Processed.

/V to bring up the Winner90/Genesis graphic editor to view the part after each file is processed

## Technical Support

There are personnel available at DMG who can answer questions about AutoLink. There is also a FAX line direct to AutoCut Research. If you are having trouble with a drawing, e-mail the drawing file and the DXF file to ACR along with a description of the problem. The problem will be investigated and a response will be issued as soon as possible. As always when having a problem, it is a good idea to check the manual carefully. Updates are available from our web site. Please select the Download hyperlink to

access the download section.

FAX 336 474 0452

Email Address: [support@autocutresearch.com](mailto:support@autocutresearch.com)

Web Site: <http://www.autocutresearch.com>

If you use computers, it is a very good idea to have a high-speed modem and Internet access. Nearly all major software companies are providing support via the Internet.