

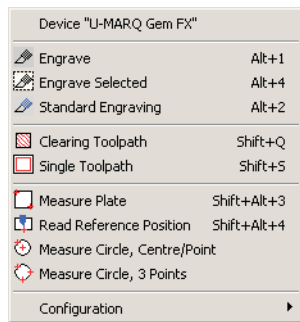
GEM-FX Engraving Software

Chapter 14 Production Functions

Production Functions

Production Menu

The Production Menu takes you to the tools used to setup production parameters, create offset and clearing Toolpaths within your drawing.



Device = xxxx

Clicking on this will allow you to select a machine to output to, you are offered a choice from the List box.

Engrave

Hot Key < Atl > + < 1 >



Engrave icon

Basic Production allows you to send a job to the Production Manager after having Selected a material from your Material Database, this will have been assigned pre-set Depths, Feed Rate etc.

How to

- 1 Click On "Engrave", you will then be taken into the Processes Dialogue Box.
- 2 You will then select a Process, this will depend on the type of engraving you are doing, i.e. Diamond Drag, Engraving Brass etc. Select the one that is appropriate.
- 3 If you wish to alter any of the Process settings, Click On the Padlock. You are now able to alter any setting for this job.
- 4 The Click On "OK".

The job will now be sent to your GEM-FX Engraving Machine..

Reference Manual

Production Functions

Engrave Selected Only

Hot Key < Alt > + < 4 >



Selected Only

By Selecting this icon you can produce only the items that you select. This is useful for re-engraving parts of a job that have not been engraved deep enough.

How to

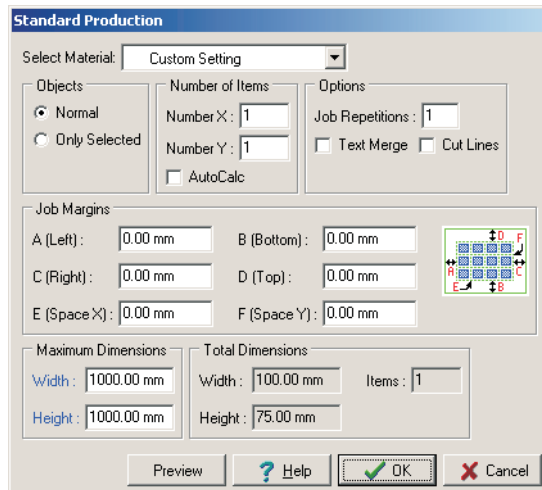
- 1 Select the object or objects you wish to send to your GEM-FX Engraving Machine, using the Pick Tool.
- 2 You now select the settings required, in the Processes Dialogue Box. See Figure 1.
- 3 Click On "OK".

Your GEM-FX Engraving Machine will now engrave only the selected objects.

Standard Production

Hot Key < Alt > + < 2 >

Standard Production is accessed from the Production Menu, this is used when you require more production option than in Basic Production.



- **Options**

- **Select Material**

GEM-FX Engraving Software

Chapter 14 Production Functions

Select the type of material you are engraving from the selection box. This will then assign the Processes that have been given to that material. These can be edited in the Production Menu / Standard Processes Menu if required.

Device

Selected Device : Click On this button to select the device to machine with, you will be given a choice from a Lists box.

Objects

Normal : When this Check box is checked Standard Engraving will only output the Objects on the layers that are checked as enable manufacture in the Layer Setup Menu, these are known as active layers.

Only Selected : When this Check box is Selected Standard Engraving will only output the Objects that have been Selected using the Pick tool, this will also include any Selected Objects on any active layers. The Object Extents information boxes will be updated accordingly.

Number of Items

Number X : This is the number of items to Produce in the “X” direction.

Number Y : This is the number of items to Produce in the “Y” direction.

AutoCalc : Checking this box will automatically calculate the amount of items you can fit on the size of material entered in the Maximum Dimensions Numeric Entry boxes, any margins set will automatically be taken into account. The results will be shown in the Total Dimensions box, you can view the Job as it will be produced using the Preview button.

Options

Job Repetitions : You can set a number of times to repeat the current job.

Text Merge : When this box is Checked the Text Merge Menu is made available, (see Full Production, Text Merge).

Counters : When this box is checked Standard Engraving will read in the settings from the Set Counters Menu, (see Full Production : Text Merge).

Cut Lines : *Check* this box if you wish to insert a Cut Line between Items in a matrix, or around individual Items, these will be cut at the maximum depth set in the **Processes** Menu for that layer.

Job Margins

A (Left) : Enter the margin required on the Left side of the Job.

C (Right) : Enter the margin required on the Right side of the Job.

B (Bottom) : Enter the margin required on the Bottom of the Job.

D (Top) : Enter the margin required on the Left side of the Job.

E (Space X) : Enter the margin required on the Vertical sides of the Items.

Reference Manual

Production Functions

F (Space Y) : Enter the margin required on the Horizontal sides of the Items.

Maximum Dimensions

Width : Enter the Width of material in the Numeric Entry box., this will enable Standard Engraving to automatically calculate the amount of Items that can be accommodated in the “X” direction.

Height : Enter the Height of material in the Numeric Entry box., this will enable Standard Engraving to automatically calculate the amount of Items that can be accommodated in the “Y” direction.

Total Dimensions

Width : This box is automatically updated, to reflect the total dimensions in the “X” direction of the current job.

Height : This box is automatically updated, to reflect the total dimensions in the “Y” direction of the current job.

Items : This box is automatically updated, to reflect the total amount of Items that will be produced in the current job.

Preview

Clicking on this button will give you a 5 second Preview of your job exactly as it will be machined.

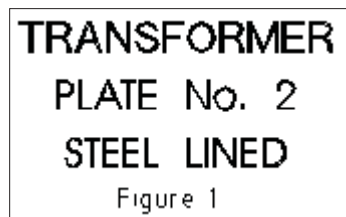
Clicking on OK will download the job to the Standard Engraving Production Manager. The Production Manager will also be launched, this will be for the specific machine that has been Selected previously from the Devices list box in the Device = xxx.

Matrix

Using Full Production you can make items in the form of a matrix i.e., a number of copies in the "X" and "Y" directions, this is very useful for creating Items on a large sheet of material and cutting them up later.

How to

Setup a Auto-Calculated Matrix



- 1 Setup your single Item i.e. Workspace size, Text and Logos etc, you will have something similar to Figure 1.

GEM-FX Engraving Software

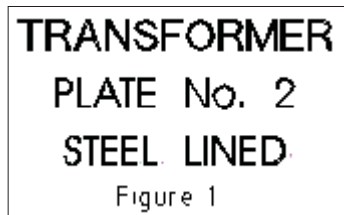
Chapter 14 Production Functions

- 2 In the Advanced Production Menu, Job tab, setup the matrix parameters.
- 3 Enter your material Width and Height in the Maximum Dimensions boxes.
- 4 Setup Job Margins by Checking the Options, Job Margins box, the Job Margin Layout Menu will now become visible, enter any margins you require in the appropriate Entry boxes.
- 5 By Checking the AutoCalc box this will update the Total Dimension boxes, to give you the maximum material required and the maximum number of Item you can produce on the material size. These calculations take account of all margins that have been set.

Standard Engraving is now ready to Produce the Matrix.

How to

Setup a User Defined Matrix



- 1 Setup your single Item .e. Workspace size, Text and Logos etc, you will have something similar to Figure 1.
- 2 In the Advanced Production Menu, Job tab, setup the matrix parameters.
- 3 Enter the number of Item required in the "X" and "Y" directions in the Number of Items box.
- 4 The Total Dimension boxes will be updated, this will show you how much material and how many items in total will be produced. These calculations take account of all margins that have been set.

Standard Engraving is now ready to Produce the Matrix.

Note : The Job Statistics will also be updated in the Production tab, you can also add Cut Lines, these will be produced between the set Margins at the maximum engraving depth.

Clicking on OK will download the job to the Standard Engraving Production Manager. The Production Manager will also be launched, this will be for the specific machine that has been Selected previously from the Devices list box in the Device = xxx.

Reference Manual

Production Functions

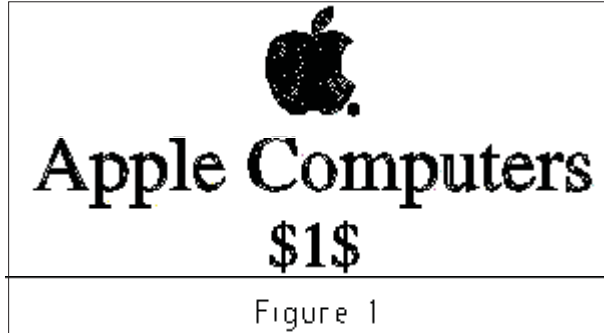
Text Merge

Text Merge is used to insert variable text into a sign, you can use as many variables as you wish so long as they are placed between \$'s, i.e. \$1\$ \$2\$ \$3\$ etc.

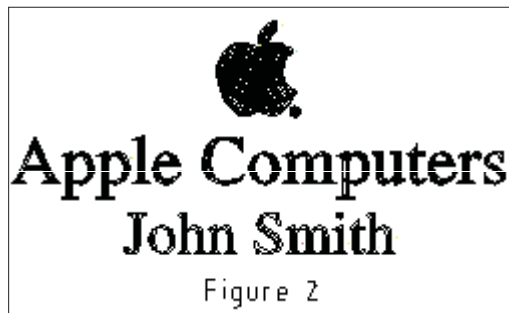
How to

Setup Text Merge

- 1 Set the Job setting including the Workspace size, Fonts etc., something like Figure 1.
The convention for Text Merge is \$1\$, anytime Standard Engraving sees a number with a \$ sign at each side, it knows it has to read in the Text Merge file from that reference, the other thing the \$1\$ signifies is the font that will be used for the Text Merged items.



- 2 Click On the Production Menu, Advanced Production, Production tab, Check the Text Merge box, you will be taken into the Text Merge entry Menu, enter the required data in the format above.
- 3 As you enter the required names, the number of entries are automatically up-dated.



GEM-FX Engraving Software

Chapter 14 Production Functions

- 4 When you have finished entering your data, Click On OK, this will return you to the Full Production Menu.
- 5 You now set the number of items in the Job Repetition Numeric Entry box, this should coincide with the calculated number in the Merge Text Entry Menu.
- 6 The number of required items will be sent to your machine. An automatic stop will be sent to your machine to enable you to change the material after each item. The results should be similar to those in Figure 2.

If you wish to produce a Matrix on a single sheet of material enter the number required in the "X" and "Y" direction and leave the Job Repetition Entry box set at 1. To use more than one variable within a job, use a comma to separate each variable in the Text Merge entry box.

If you use AutoLayout to design the job, all specialist AutoLayout function apply including Left and Right Margins with Auto Condensing between margins.

Import

By Clicking on the Import button, you can import files for text merging in the CSV format, this is supported by most Databases and Spread Sheets.

Quick Preview

Clicking on this will give you a 5 second Preview of your job exactly as it will be machined on the material.

Measure Plate

Hot Key < Shift > + < Alt > + < 3 >

You can use your machine to measure the size and position of your plate.



Measure Plate icon

How to

- 1 Place your Plate on the machine.
- 2 Select Measure Plate from the Production Toolbar or the Production Menu.
- 3 You are asked to select the first position. Move the "X" and "Y" axes using your GEM-FX Engraving Machine Keypad, to the Top Left corner of your plate.
- 4 You are then asked to select the opposite corner of your plate. Move the "X", "Y" axes to the Bottom Right corner of your plate.

The Workspace will be moved to the correct position and sized on your computer screen. You can now design your drawing, if you have not already done so and send to your GEM-FX Engraving Machine as normal.

Note : You can Jog the "Z" axis down to near the surface. This will make it easier to select the exact corner of your plate.

Reference Manual

Production Functions

Read Reference Position

Hot Key < Shift > + < Alt > + < 4 >



Read Reference icon

This function allows you to set a position on your Workspace with reference to the “X”, “Y” position of your machine, this is transferred to your screen.

How to

- 1 Move the “X” and “Y” axes using your GEM-FX Engraving Machine Keypad, to the required position. This can be a position in the Workspace, or an object in the drawing etc.
- 2 Click On Read Reference Position from the Production Menu.
- 3 Select the position on the screen, that reflects the position you have jogged the machine too.

The Workspace will now be moved within the Machine Bed on your drawing to reflect the chosen position.

Note : You can Jog the "Z" axis down to near the surface. This will make it easier to select the exact corner of your plate.

Measure Circle Centre/Point

You can use your GEM-FX Engraving Machine to measure circular objects, or areas to be engraved.

How to

- 1 Place the circular object to be engraved in the Self Centring Vice, you do not need to be very accurate when doing this.
- 2 Move the "X" and "Y" axes using the GEM-FX Engraving Machine Keypad, to the centre point on the circular item, or the centre of the circular engraving area, Click On "OK".
- 3 Move the "X" and "Y" axes using the GEM-FX Engraving Machine Keypad, to the outer point on the circular item, or the outer extent of the circular engraving area, Click On "OK".
- 4 You will notice that the Workspace has been positioned on the Machine Bed to reflect the exact position of the circular item or circular engraving area. Now compose your engraving, if you have not already done so.

You can now send your job to the GEM-FX Engraving Machine in the normal way, setting your Processes etc.

GEM-FX Engraving Software

Chapter 14 Production Functions

Measure Circle 3 Points

You can also use your GEM-FX Engraving Machine to measure circular object or engraving areas, where the centre is difficult to find.

- 1 Place the circular object to be engraved in the Self Centring Vice, you do not need to be very accurate when doing this.
- 2 Move the "X" and "Y" axes using the GEM-FX Engraving Machine Keypad, to an outside point on the circular item, or the outside of the circular engraving area, Click On "OK".
- 3 Move the "X" and "Y" axes using the GEM-FX Engraving Machine Keypad, to another outside point on the circular item, approximately 1/3rd of the way round from the first selected point, or the outer extent of the circular engraving area, Click On "OK".
- 4 Move the "X" and "Y" axes using the GEM-FX Engraving Machine Keypad, to another outside point on the circular item, approximately 1/3rd of the way round from the second selected point, or the outer extent of the circular engraving area, Click On "OK".
- 5 You will notice that the Workspace has been positioned on the Machine Bed to reflect the exact position of the circular item or circular engraving area. Now compose your engraving, if you have not already done so.

You can now send your job to the GEM-FX Engraving Machine in the normal way, setting your Processes etc.

Single Toolpath

Hot Key < Shift > + < S >

A Toolpath Path is normally created when Profile Milling or Engraving, this is usually 50% of the tool diameter, calculated from the objects original line and can be inside or outside depending on the effect required. The offset is used to ensure that the finished object is the same size as the original.

Click On the Standard / Advanced button to activate the Advanced Dialogue box.

• Standard Options

Offset

Process : You are offered the choice of assigning a Process to a Toolpath, this is only used if you have assigned a Tool from the Tool Database to the Process and you wish to use it for creating the tool offset. If the Process is used, the Manual Setting Distance is greyed out, this is because the definition of the tool that is set in the Process, is used to create the Toolpath offset.

Manual Setting

Tool Diameter : Enter in the Numeric Entry box the distance of the offset toolpath that is required, this is normally created when Profile Milling or Engraving and is usually the tool diameter and can be placed inside or outside depending on the effect required. The offset is used to ensure that the finished object is the same size as the original. If you

Reference Manual

Production Functions

have linked a specific Tool from the Tool Data Base to a Process, the offset will automatically be calculated for you and applied and this box will be greyed out.

Side of Curve

Inside : This designates the offset to be on the inside of the objects path. If the objects are Faces i.e. are closed paths within closed paths that have been combined to form a Face. When Vistool creates the offset, this will be on the inside of the outside path and the outside of the inside path.

Outside : This designates the offset to be on the outside of the objects path. If the objects are Faces .e. are closed paths within closed paths that have been combined to form a Face. When Vistool creates the offset, this will be on the outside of the outside path and the inside of the inside path.

Layers

Design : Vistool will put the selected objects i.e., the objects that the Toolpaths are created from, onto a Design Layer. The Design Layer is normally a non-machining layer and is used to separate the Toolpaths, from the visual of the finished design.

Toolpath : Select the layer you wish to place the Toolpaths on, this is normally a machining layer.

Click On the Advanced / Standard button to activate the Advanced Dialogue box.

- **Advanced Options**

Side of Curve

Left : This allow you to create an offset to the left of an open path. The side of the offset path is decided by the direction of cut, this can be viewed by Checking on Directions on in the Tool menu, Preferences menu, the offset path is always made closed.

Right : This allow you to create an offset to the right of an open path. The side of the offset path is decided by the direction of cut, this can be viewed by Checking on Directions on in the Tool menu, Preferences menu, the offset path is always made closed.

Corner Type

When the corner of an object is sharp, the outline can extend beyond the corner itself. Vistool give you the option to truncate the corners, or let them reach their natural conclusion.

Round : If you wish the truncated corners to be round, Check this box. The radius of the corner will be the radius of the outline, the limit can be entered in the Corner Limit Numeric Entry box, this unit is in degrees, i.e. a setting of 20 will round any corner less or equal to 20°.

Mitre : If you wish the truncated corners to be mitred, *Check* this box. The radius of the corner can be entered in the Corner Limit Numeric Entry box, this unit is in degrees, i.e. a setting of 20 will clip any corner less or equal to 20°.

Corner Limit : This is the clipping angle in degrees.

GEM-FX Engraving Software

Chapter 14 Production Functions

How to

Create a Single Toolpath on an object.

- 1 Enter RACK using the a Text Entry Dialogue box.
- 2 Select a Cap Height, 20 mm, Font, Helvetica Bold then enter RACK, the results should be similar to Figure 1.



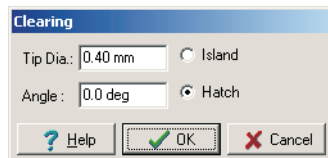
Figure 1

- 3 Select the text so that it goes dotted.
- 4 Select Single Toolpaths from the Toolpath menu.
- 5 Enter the following settings Processes, None, Tool Diameter, 1mm, Side, Outside, Design Layer, Standard, Toolpath Layer, Milling.
- 6 Click On OK.

The results should be similar to figure 2.

Clearing Toolpath

Hot Key < Shift > + < P >



The Clearing Toolpaths are accessed from the Toolpaths menu, these are normally associated with the Engraving of material.

Island Fill Toolpaths

Island Fill Toolpaths are a very efficient type of toolpath and particularly suitable for the clearing of small text and logos.

• Options

Island : This produces a Island Fill pattern Toolpath, this is normally use to clear smaller objects i.e. text and small logos, the overlap is normally set around 40-50% of the tool diameter.

Reference Manual

Production Functions

Tip Diameter : Enter the diameter of the tool to create an offset, this is required to ensure that the finished object is the same size as the original.

How to

Create a Island Fill Toolpath

- 1 Create a drawing something like Figure 1.

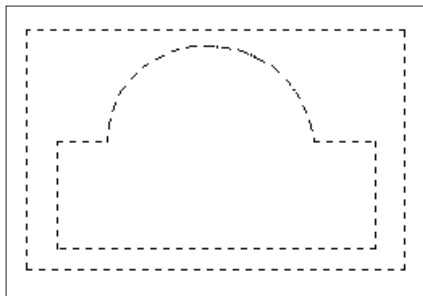


Figure 1

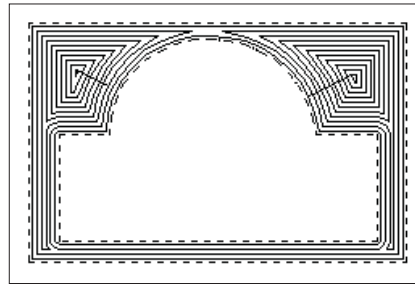


Figure 2

- 2 Select the inner and outer objects using the Pick tool from the Drawing toolbar, (you may select more than one object, using any of the multi-select options), all the selected object will go dotted, see Figure 1.
- 3 Select "Combine to Faces" from the Arrange menu, this will ensure that the inside object is recognised as a hole inside the outer object.
- 4 Select Clearing Toolpaths from the Production Menu, the Clearing Toolpath Dialogue box will be available, Click On the Island Fill box.
- 5 Now set the Tip Diameter to suit the cutter and the clearing required, Click "OK".

The FX Engraving Software will now create the Island Fill path as in Figure 2.

Hatch Toolpaths

The Hatch Toolpaths are a very efficient type of toolpath and is particularly suitable for the clearing of large text and logos.

- **Options**

Tip Diameter : Enter the diameter of the tool to create an offset, this is required to ensure that the finished object is the same size as the original.

Angle : This is the angle of the Hatch Toolpath for large areas 45° is usually OK.

How to

Create a Hatched Toolpath

GEM-FX Engraving Software

Chapter 14 Production Functions

- 1 Create a drawing something like Figure 1.
- 2 Select the inner and outer objects using the Pick tool on the Drawing toolbar, (you may select more than one object, using any of the multi-select options), all the selected object will go dotted as in Figure 1.
- 3 Select "Combine to Faces" from the Arrange menu, this will ensure that the inside object is recognised as a hole inside the outer object.
- 4 Select Toolpaths from the Production Menu, the Clearing Toolpath Dialogue box will be available, Click On the Hatch box.
- 5 Now set the Tip Diameter and Hatch Angle to suit the cutter and the clearing required, Click "OK".

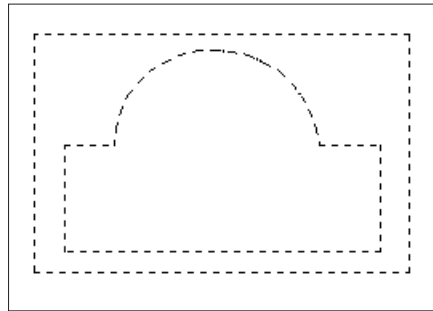


Figure 1

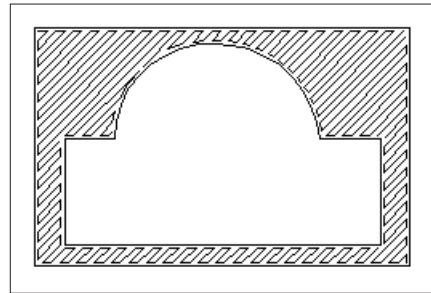


Figure 2

The FX Engraving Software will create the Hatch Machining Path as in Figure 2.

Configuration Menu

The Configuration Menu is accessed from the Production Menu, this takes you to GEM-FX Engraving Software's Machine setup and Parameters.

Machine Setup

This is where you set the Start and Finish points on the Workspace, offsets etc.

• Options

Stop At First Cut : Checking this box will cause the cutter to stop at first cut, material surface.

X Y Setup Point : You can set an "X" "Y" start position by selecting one of the Standard Nine Positions, this is where you would reference the start on your Workspace. You may also set an "X" "Y" offset from the chosen position. (if no selection is made the "X" "Y" and "Z" axes will go straight to surface first cut).

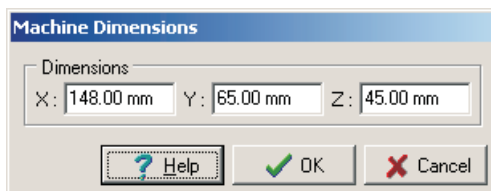
Finish Point : You can set an "X" "Y" finish position by selecting one of the Standard Nine Positions, this is where you would want your "X" "Y" axes to finish on your

Reference Manual

Production Functions

Workspace. You may also set an “X” “Y” offset from the chosen position. (if no selection is made the “X “Y” and “Z” axes will go back to its home position).

Machine Parameters



This is where the general parameters are set for the GEM-FX Engraving Machine.

- **Options**

Dimensions

X : This is the maximum travel in the “X” direction of machine.

Y : This is the maximum travel in the “Y” direction of machine.

Z Axis

Max Travel : This is the maximum travel of the “Z” axis on the machine.

Note : The Machine Parameters are normally pre-set in the machine driver and will not need to be altered.
