

Summa GoProduce

L A S E R E D I T I O N

SDK for preparing files

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Please address all questions, comments or suggestions concerning this and other Summa manuals to:

Rochesterlaan 6

B-8470 Gistel

Belgium

www.summa.eu

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Introduction

The information contained in this package is designed to allow technically competent people to develop software and drivers compatible with the L series laser cutters.

This document focuses on a driver that creates files and not on driving the L series laser cutters direct. These type of drivers create files which can be imported by Summa GoProduce Laser Edition.

Summa GoProduce Laser Edition is a commercial digital finishing application from Summa. This application supports pdf , oxf and SGP file types.

This document goes into detail about the requirements/recommendations for SGP files. If info is needed for other file types, then please contact Summa (contact page on www.summa.eu via direct wim@summa.eu).

Summa GoProduce Laser Edition is a program for driving the L series flatbed cutters. Summa GoProduce Laser Edition supports mark recognition and compensation for contour cutting as well as other advanced workflow features.

1 The SGP format

SGP is the preferred format for importing files into Summa GoProduce Laser Edition. The data format is basically HPGL, but with a few extra's

- File extension: .SGP
- Resolution: 0.01 mm.
- Different layers are separated by HPGL "SP" commands. A layer corresponds to a specific method.

1.1 Header

;GoProduce Laser Edition <CR>

The file must start with the keyword ;GoProduce Laser Edition .

;Version nn <CR>

This explains which version of the SDK that is used. The revision number is the same as the main revision number on the first page of the SDK document

;Creator Programname <CR>

Programname is the name of the program that created the SGP file. For example ;Creator SummaPrint



NOTE: All the information lines in the header need to end with a carriage return.

TMMaterial name;

TM command followed by the material name. The material name is given with this command. This is a global setting and must be placed in the header section. The name of the material should be selectable from a list that can be updated (see section5).



NOTE: If the thickness of the material is included in the material name. (See example section 5).

1.2 Vector data

The data format is standard HPGL. The laser setting is set with layer commands (see subsequent section). Below is a subset of HPGL commands that are supported in GoProduce Laser Edition.

PUX,Y;

Switches of laser and moves to coordinate X,Y.

PDX,Y;

switches on laser and moves to coordinate X,Y.

PA; or PAX,Y;

Switches to absolute mode. If one or more parameter(s) is/are given, then the laser also moves to that direction.

AAX,Y,angle;

Switches on the laser and makes a circular arc with as start point the current position and center X,Y (absolute coordinates) and the length is given in degrees (values accepted between -360 and +360). After that the current position is the end of the arc

BZX1,Y1,X2,Y2,X3,Y3;

Switches on the laser and makes a Bezier curve (cubic) from the current position to position X3,Y3 with X1,Y1 as first control point (direction of tangent) and X2,Y2 as second control point (direction of tangent). Coordinates are absolute. After that the current position is the end of the curve (X3,Y3).

1.3 Layer commands

Different layers are separated by HPGL "SP" commands.

As additional information, the *method name* should be given with special commands.

The methods should be selectable from a fixed list (although in future very sporadic extra methods might become available). Or the method name can be copied from the spot color name (a swatch library is provided for Illustrator and Indesign and a color palette for Corel)

SPn;

SP command followed by a number (see table 1) The SP command starts a new layer (laser setting) the n corresponds to a specific laser action.

The registry layer should have 99 as layer number

LMname;

LM command followed by the layer method.

The methods can be requested from the material database or can be assigned from a static method table (see table 1). Every different cutting path should be linked to a method in order to separate them in the SGP file. In Summa GoProduce Laser Edition methods will be linked to the correct laser action.

SP (Laser action Number)	LM (Method)
99	Regmark
1	Draw
2	Thru-cut
3	Engrave (*)
4	Waste-Cut

(*) FOR LATER USE

TABLE 1
METHODS L SERIES



NOTE: : Table 1 shows the list of available methods at the time this document was written. It is not recommended to use a static list. And this because of two reasons.

1. If Summa comes out with new methods, then the driver needs an update.
2. If the user creates custom methods that are useful for him then these cannot be used in the program that prepares the files for GoProduce Laser Edition.

1.4 End of file

The file should be ended with the HPGL up command

PU;

Each file should end with this command.

1.5 Sample file

```
;GoProduce Laser Edition
;Version 03
;Creator SummaPrint
TMVinyl brandname type 0.1 mm;
PA;
SP3;LMThru-cut;
PU8355.7,11514.8;
PD8355.7,24003.9;
PD22608.0,24003.9;
PD22608.0,11514.8;
PD8355.7,11514.8;
PU8155.7,11214.8;
SP99;LMRegister;
PD;
AA7905.7,11214.8,-90.00;
AA7905.7,11214.8,-90.00;
AA7905.7,11214.8,-90.00;
AA7905.7,11214.8,-90.00;
PU23008.0,11214.8;
PD;
AA22758.0,11214.8,-90.00;
AA22758.0,11214.8,-90.00;
AA22758.0,11214.8,-90.00;
AA22758.0,11214.8,-90.00;
PU8155.7,24303.9;
PD;
AA7905.7,24303.9,-90.00;
AA7905.7,24303.9,-90.00;
AA7905.7,24303.9,-90.00;
AA7905.7,24303.9,-90.00;
PU;
```

This file cuts a rectangle with the cut with the method Thru-cut and has three registration marks.

2 The pdf format

2.1 General info

The material name cannot be set in a pdf file. However, if the pdf has layer information and the layer names the methods names, the material database can be set before the pdf file is opened.

Pdf version should be minimum 1.5.

Different methods should be linked to different layers.

All registration marks should also be on a separate layer, this layer should have as name Regmark or Regmarks.

The names of the other layers should be as in the table below.

Regmark
Draw
Thru-cut
Engrave (*)
Waste-Cut

(*) FOR LATER USE

TABLE 2
LAYER NAMES PDF



NOTE: : Table 1 shows the list of available methods at the time this document was written It is not recommended to use a static list. And this because of two reasons.

1. If Summa comes out with new methods, then the driver needs an update.
2. If the user creates custom methods that are useful for him then these cannot be used in the program that prepare the files for GoProduce Laser Edition.

2.2 Pdf orientation

A pdf document uses the normal cartesian coordinate system with the XY origin at the bottom left. If you look at GoProduce laser edition then you'll see that the origin is at the lower right bottom. This means that the coordinate system is turned 270° in reference to a normal cartesian coordinate system.

An SGP file uses the same coordinate system as GoProduce laser edition. If pdf need to open with the same action set as for the SGP files, then the data needs to be turned 270°.



NOTE: It is not mandatory to match the orientation of the pdf file to the SGP file. It is possible to create or alter action sets in GoProduce laser edition to rotate the files before they are imported.

3 Specifications of the registration marks

Registration marks are circles with a color filling which should contrast as possible to the background (default black). The size of the marks must be adjustable. As default value a diameter of 5mm is recommend. At least 3 registration marks are needed to align and compensate a printed object, more marks are allowed. The position of the marks should result in a triangle which covers the object in the largest possible way.

3.1 Single object on sheet

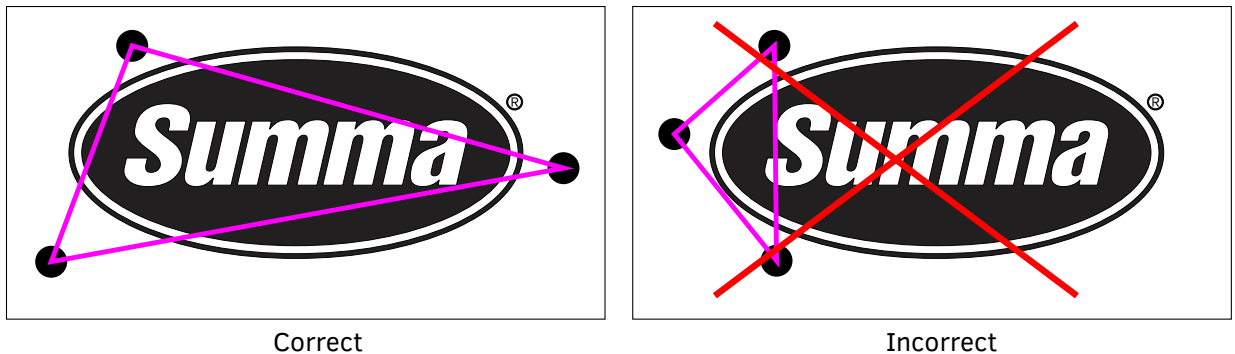


FIGURE 1
PLACEMENT MARKS ONE OBJECT

3.2 Copies

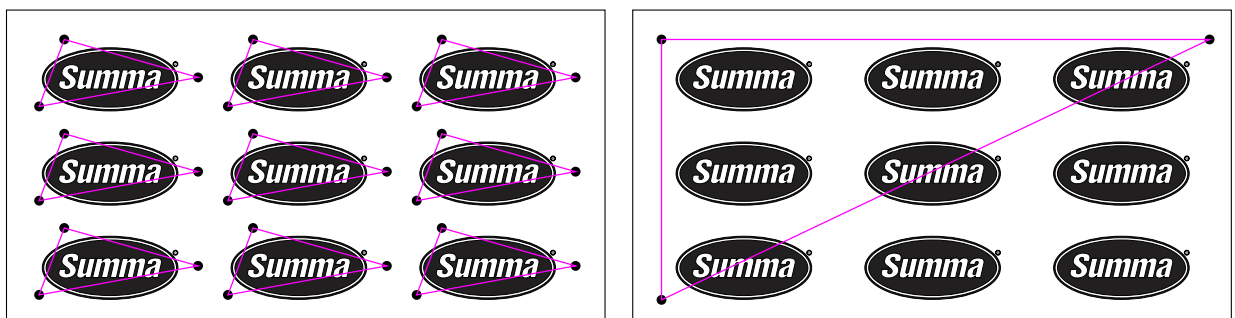


FIGURE 2
PLACEMENT MARKS MULTIPLE COPIES

In the *left* example each logo Summa is enclosed by respectively 3 registration marks. The compensation will thus be done in the relevant area for the respective object. This way, a different scaling of the objects due to printing can be compensated. But the production time will be increased because all marks must be read by the camera.

In the *right* example the printed sheet has only 3 registration marks. In this case all objects are compensated with these 3 marks. Here, different distortions in the individual objects cannot be compensated accurately, but production time will be reduced.

This remark about production time is also valid in case of no copies, but in case of multiple objects in one job.

3.3 Placement of the registration marks for jobs longer then maximum table length

Each segment must at least have 4 registration marks. The distance between the registration marks should be adjustable by the user. The multiple of the default value of the distance between marks may never be equal to the maximum table length. It should be substantially larger or smaller. Current minimum used table lengths is 400 mm. So recommended default distances are 250 or 350. Also use distances larger than 100 mm.

Below is an example of universal distribution of the registration marks.

The distance in X and y direction does not have to be the same, but it may be like this.

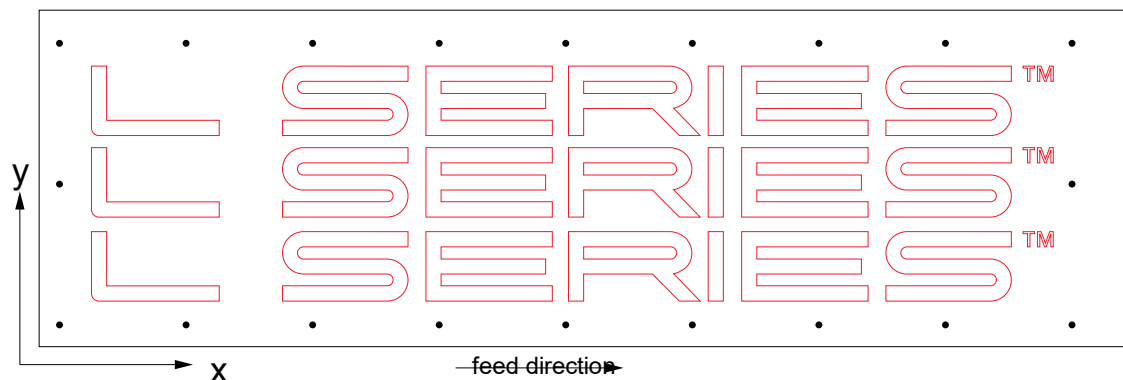


FIGURE 3
PLACEMENT MARKS LONG JOBS

3.4 Types of marks

The more marks, the more precise the contour can be cut. There are basically three methods of mark placement.

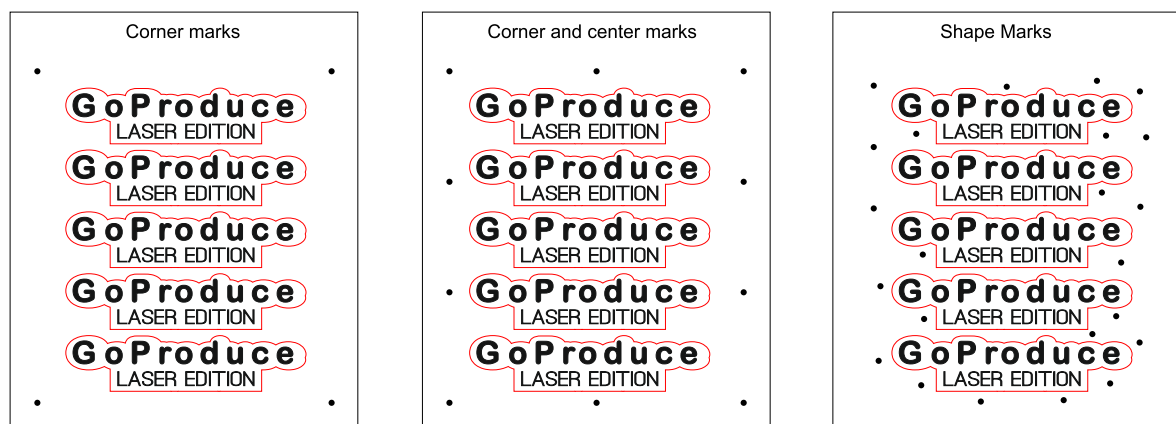


FIGURE 4
MARK PLACEMENT METHODS

The middle method is most commonly used, however if high accuracy is needed, then the method with shape marks is recommended.

4 Specifications for the barcode

4.1 Introduction

4.1.1 General

Summa GoProduce Laser Edition supports the file import by barcode in order to automate the Print&Cut production workflow. The intention of this workflow is to save user time and eliminate errors. In this workflow each job is printed with a unique barcode.

There are two possible ways to read the barcode.

With a separate hand scanner

If a hand scanner is used, then the operator must read each barcode by hand before each job.

With the camera on the cutting table.

If the camera on the table is used for reading the barcodes, then the workflow can be automated.

After finishing one job, the camera can automatically look for the second barcode and thus process a complete roll without user intervention. The camera on the table can also be used for working job per job.

4.1.2 Definition barcode

The barcode itself is a 11 digit number. The 11th digit is the rotation indicator for the orientation. Bottom = 0, Top = 5, Right = 8 and Left = 4. This last digit at the end of each printed barcode defines the orientation of the document before cutting. The required rotation of the file is done by Summa GoProduce Laser Edition during the file import.

4.1.3 Definition filename

The orientation digit is not in the jobname. This means that there are only 10 determining digit needed in the file name. They can be used as filename, or the jobname may be preceded with the jobname used in the rip.

So, if the barcode printed is **12345678900**.

Then the filename can be **1234567890.SGP** or **1234567890_jobname.SGP**

4.2 Barcode for handscanner

At the end of the print process the RIP generates an SGP cut file automatically. The file name must contain the value of the printed barcode without the last digit. This digit indicates the orientation of the printed file placed on the table.

Summa GoProduce Laser Edition uses **Code39** barcode specification, to keep compatibility with most available barcode scanners. The recommended print length of the barcode is between 70 mm and 100 mm.



FIGURE 5
HANDSCANNER

Two barcode placement methods are supported.

2 barcodes, only Bottom (0) and Top (5) (recommended)

At the bottom of the document, the printed barcode is: "12345678900" At the top of the document, the printed barcode is: "12345678905".

4 barcodes, Bottom (0), Top (5), Left (4), Right (8)

At the bottom of the document, the printed barcode is: "12345678900" At the top of the document, the printed barcode is: "12345678905".

At the left of the document, the printed barcode is: "12345678904" At the right of the document, the printed barcode is: "12345678908"

Possible file names

1234567890.SGP or 1234567890_[print file name].SGP



NOTE: The origin of the SGP file should be in the same corner as the barcode which has a rotation character 0.

Or otherwise said the mark next to the barcode with as rotation digit 0 is closest to the origin of the SGP file.

Sample file, print file with 2 barcodes:

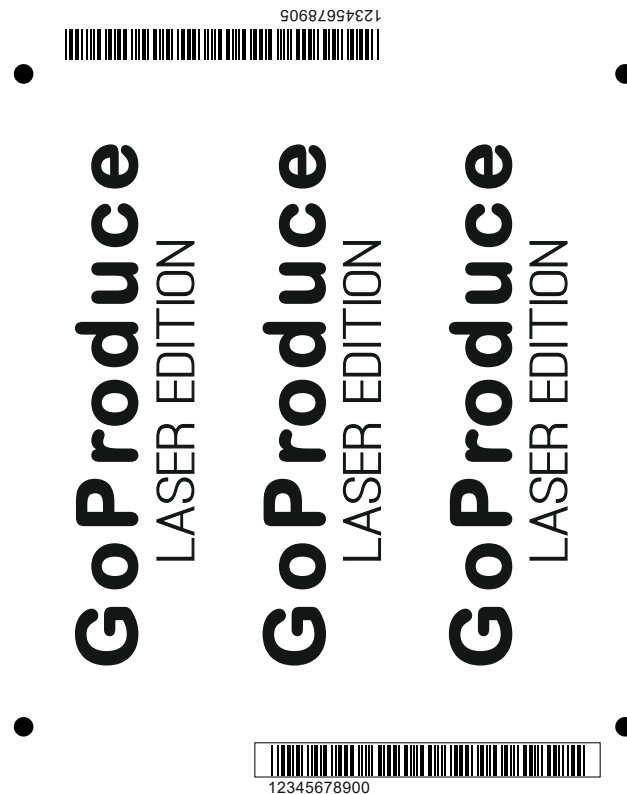


FIGURE 6
SAMPLE PRINTOUT BARCODE HANDSCANNER

At the bottom of the document, the printed barcode is: “12345678900”.
At the top of the document, the printed barcode is: “12345678905”.

The orientation digit is not in the jobname. The jobname may be preceded with the jobname used in the rip : 1234567890.SGP or 1234567890_jobname.SGP

4.3 Barcode for detection system on table

Again, at the end of the print process the RIP generates an SGP cut file automatically. The file name has to contain the value of the printed barcode without the last digit. This digit indicates the orientation of the printed file placed on the table.

The detection system on the table can then read the barcode to identify the job and get the correct cut file. It can also look automatically for the next job. This way multiple jobs can be processed after each other without operator intervention.

The barcode is based upon 'POSTNET' used by the US post (<http://en.wikipedia.org/wiki/POSTNET>).

Summarized definition:

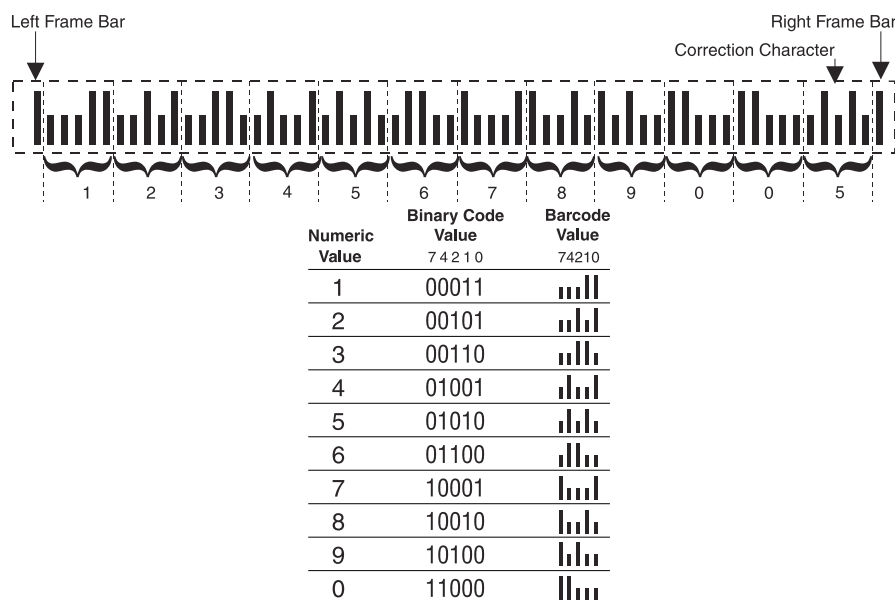


FIGURE 7
SAMPLE BARCODE AND BARCODE VALUES FOR POSTNET

- The left and right full bars in a barcode — the frame bars — do not count.
- Each digit (numeric value) is represented by five bars.
- The last five bars in the barcode make up the correction character. The sum of the 11 digits and the correction character must equal to a multiple of 10.
- The barcode should be three times the official size.

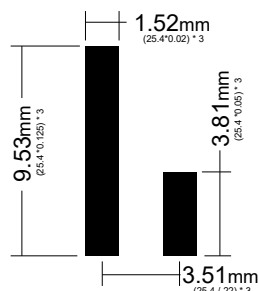


FIGURE 8
SIZE OF BARCODE DIGIT (POSTNET)



NOTE: The registration marks at the top and at the bottom are not all on the same line. The first mark at the beginning of the barcode is positioned so that the bottom of the mark is aligned to the bottom of the line of the barcode. The rest of the marks are positioned 8mm higher. With the barcode at the top it is the other way around.

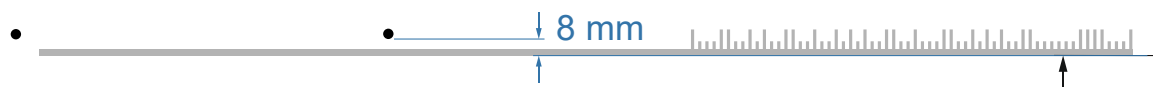


FIGURE 12
DETAIL BOTTOM LINE MARKS

- Recommended used values are: maximum 350mm distance between marks and set the marks at 10mm from the design.
- Two barcode placement methods are supported.

1 barcode

The barcode can be printed at the bottom or at the top of the print job. The place of the barcode then automatically is the bottom of the cut job.

2 barcodes, bottom and top (recommended)

If it is not certain yet how the job will be loaded on the table, then a barcode can be printed at the top and at the bottom of each job.

Orientation must be so that when the media is loaded on the table, the line is in front of the barcode.

At the bottom of the document, the printed barcode is: "12345678900".

At the top of the document, the printed barcode is: "12345678905".

Sample file name

The orientation digit is not in the jobname. The jobname may be preceded with the jobname used in the rip :1234567890.SGP or 1234567890_jobname.SGP

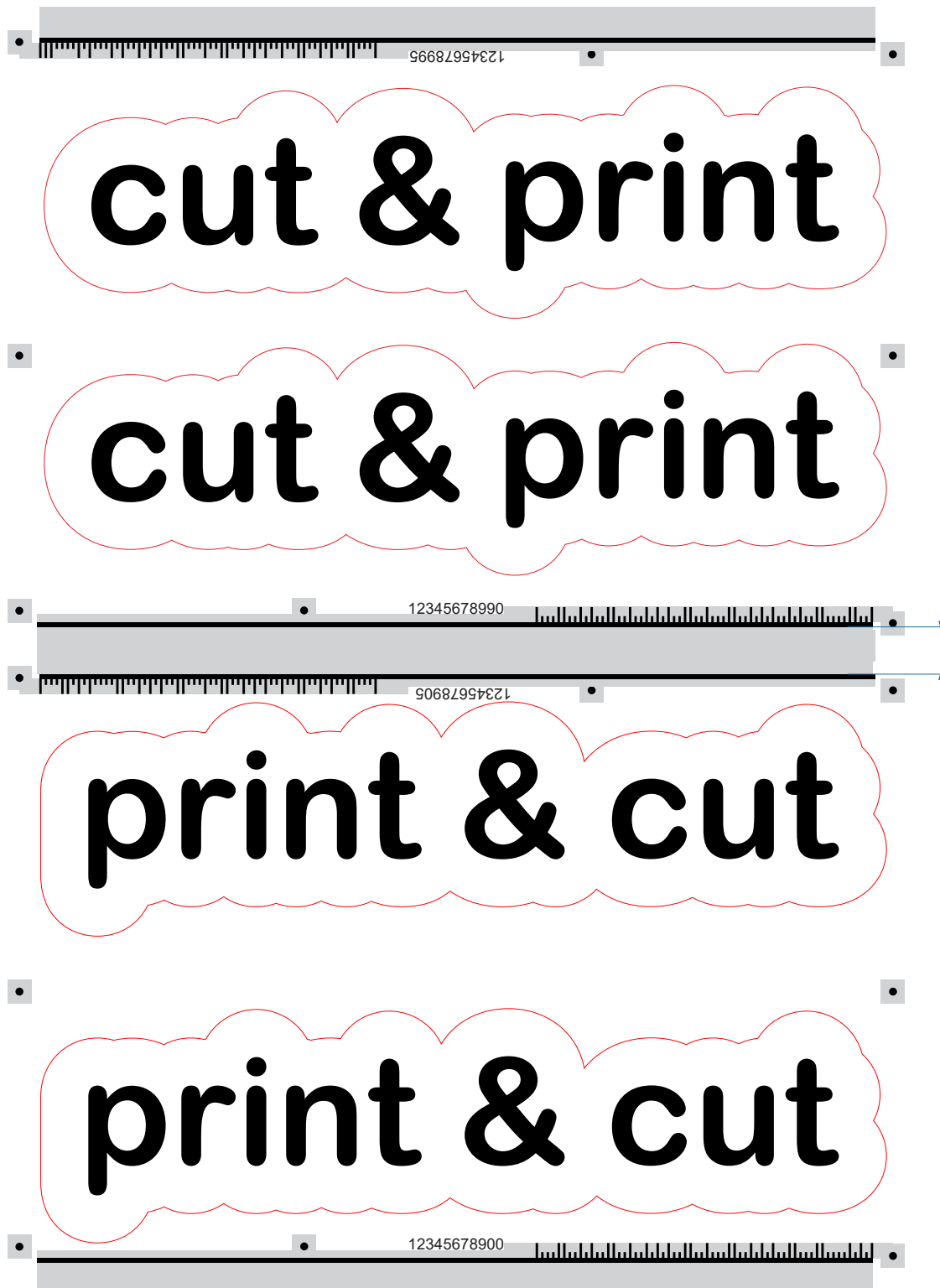


FIGURE 13

BARCODE ON ROLL WITH AUTOMATIC ORIENTATION MINIMUM 30MM BETWEEN TWO BARCODE JOBS



NOTE: For continues workflow (roll to roll) nothing may be printed between the lines of the barcodes of consecutive jobs.

4.4 The use of both barcodes at the same time.

Both barcodes can also be printed at the same time. Like this the operator has the choice to either use the camera as barcode reader or the hand scanner as barcode reader. The picture below shows the recommended usage.

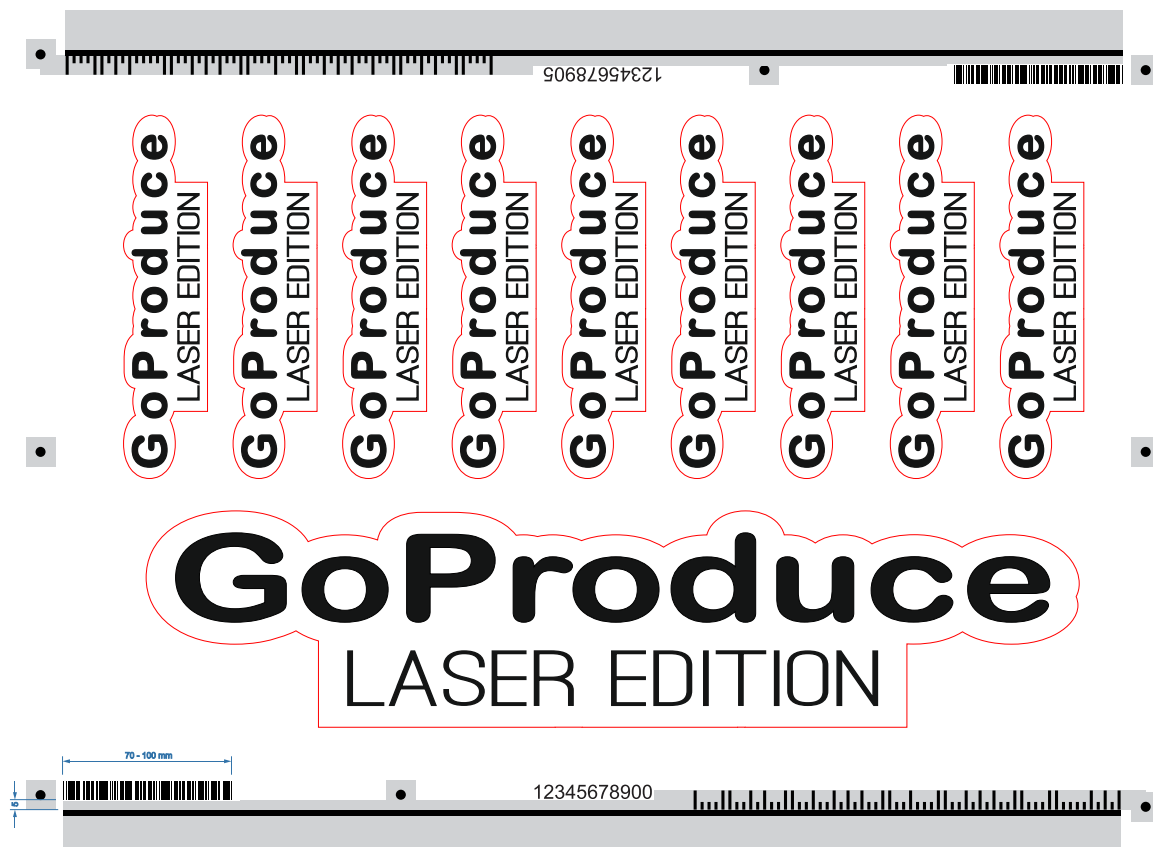


FIGURE 14
THE USE OF BOTH BARCODES AT THE SAME TIME (PLACEMENT)

The code 39 barcode can be printed at the other end of the line of the POSTNET barcode. Print it aligned to the end of the line. The recommended barcode size is between 70mm and 100 mm long and 10mm high. There should be a white space of 5mm between the barcode line and the barcode (same as the white space between the marks and the barcodeline).

5 Use of Material names and methods names.

5.1 Setup of the use of materials names and methods

To facilitate the workflow the methods and material names are used.

The use of methods: The designer chooses the method while making the design. For that he has the use of a swatch library with spot colors. The RIP does not print those vectors with the spot colours but uses them to make the cut data. The designer has a list with spot colors that have the same names as shown in table 1.

The use of materials: The finishing program Summa GoProduce Laser Edition uses a laser action to do the job the choice of laser setting that this program makes depends on the choice of method and the choice of material. The parameters that will be needed to do the job are then also automatically set correct by Summa GoProduce Laser Edition.

The set up of the workflow is so that the designer chooses the methods, the print operator chooses the media and the table operator just has to put the material on the table, select the correct file with the cut data (by hand or automatic if barcode is used) and the program Summa GoProduce Laser Edition will choose the correct laser action correct settings and start the job.

5.2 Methods

The designer chooses the methods, it is up to the rip to pass that message through in the cut data. Therefore a link must be made between the spot colour and the method command. The designer has uses normally as spot colour name the method name, however there should be a user interface in the rip that can link other spot colour names to the methods names. The list of methods may be fixed because it does not change a lot. A possibility to add extra methods can be considered useful in the future. Other options are: get the methods from the material datafile from Summa GoProduce Laser Edition. Or another option is to use just the spot color name from the design file. This can be the case if the design program has a swatch library with as named spot colours the methods.

5.3 Materials

With materials is a bit more complicated. The program Summa GoProduce Laser Edition works with a list of materials. For each material there is a predefined setting for the laser setting that can be used for that material taken in account the thickness of the material and the chosen method. Therefore the name of the material has to be selectable in the RIP itself. Normally the RIP itself has already a list of media that is used for color calibration. The names used in this list of media from the RIP will probably differ from the names in the list of materials from Summa GoProduce Laser Edition. There are two possibilities to solve this.

1. The RIP can either link the media name used in the list of the color calibration of the RIP to the name used in the list of materials from Summa GoProduce Laser Edition. Like this the printer operator must choose only once which media he will use. However, because the same material can have different thickness, it is then probably necessary to copy media calibrations and give them different names that also include a thickness value.
2. Or a setting in the user interface when making the SGP files will have the possibility to choose a material from the list obtained from Summa GoProduce Laser Edition. If this option is used, then the printer operator must choose twice, a media from the list for the colour calibration and a material from the list for preparing the cut data.

6 Trace method.

Laser cutters with the Vision system do not need a file with cut information. GoProduce LASER EDITION can automatically create the cut file needed for the job. Just print a thick continuous black line around each shape to be cut.

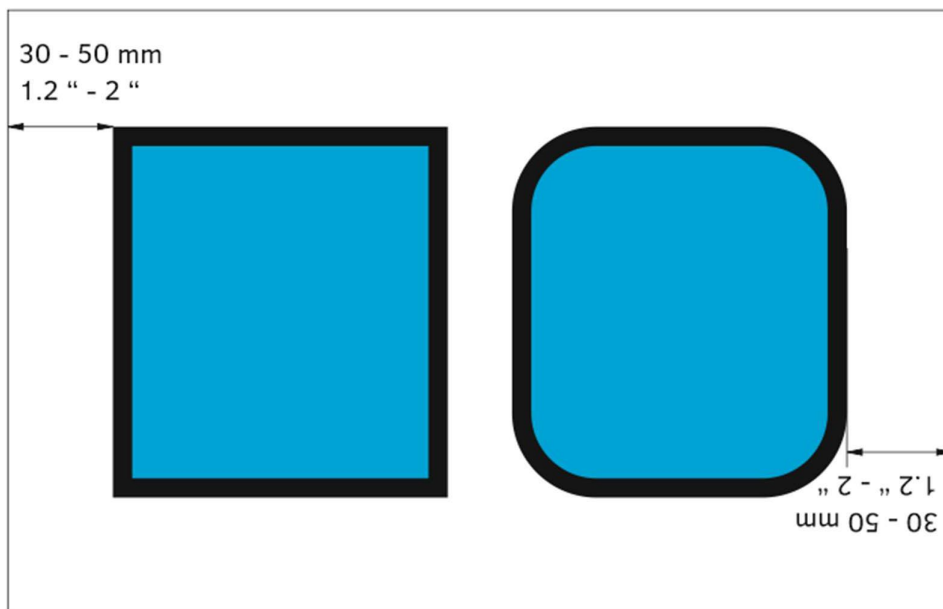
These thick outlines can either be created in the design software or can be added by the rip. The rip then just has to print the cut lines as a thick black outline, no cutfile needs to be generated.



NOTE: At the moment this document was written, the specifications of the Vision system are not defined a 100%. However if the values described below are used then the workflow should work. If the specifications will change, then it would be more possible that the ranges of the values are made bigger.

Since the vision system in combination with GoProduce Laser Edition will basically generate cut file for the operator, no cut file is needed. Just an outline of around 6 to 8 pts – 2 to 3 mm – 0,08" to 0,12". And center the images on the material, making sure there is around 3 to 5 cm, 1.2" to 2" from the material edge.

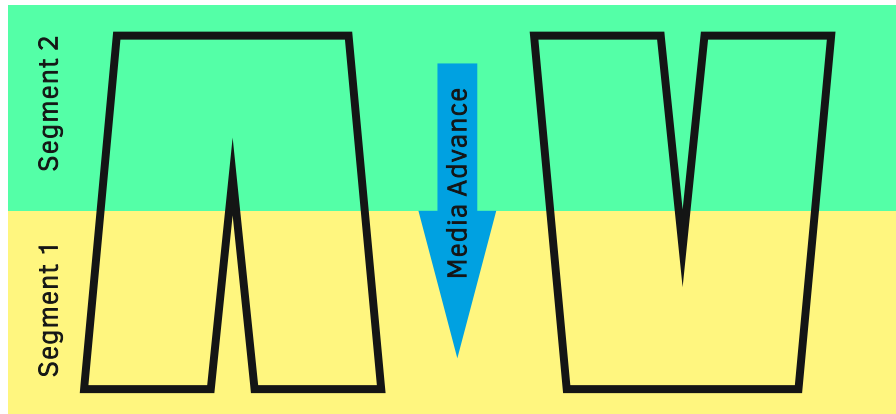
Between every shape a minimum of 10 mm or 0,4" can be used.



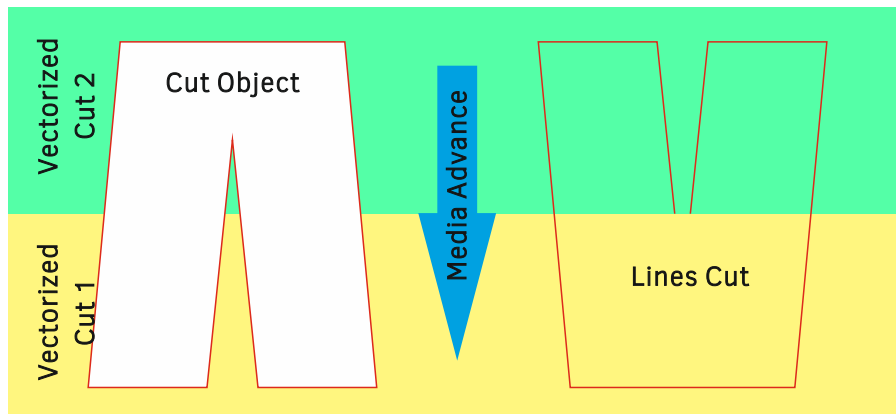
Object orientation is also very important here. Please make sure that all notches and v shapes are orientated towards the bottom/front of the print.

The reason for this is: First the job is divided into segments, then the trace functionality generates a vectorized outline of the image. However it will exclude any interior shapes (white) not linked to the exterior. If the notched is situated at the rear and is only present in the first segment, the trace vectorization will not treat this shape as being a cuttable object and will skip this.

Job segmentation



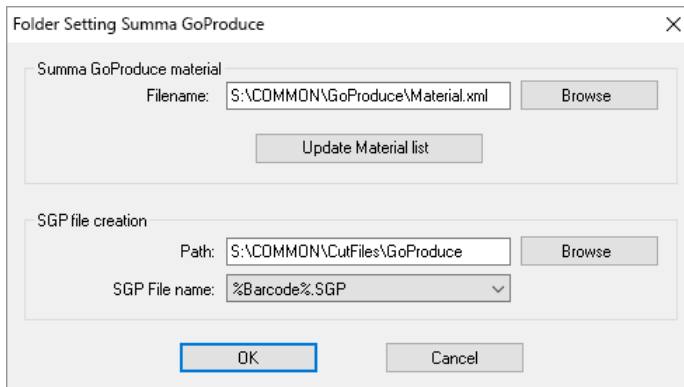
Cut objects:



Appendix 1 – example of recommended settings in RIP UI for setup

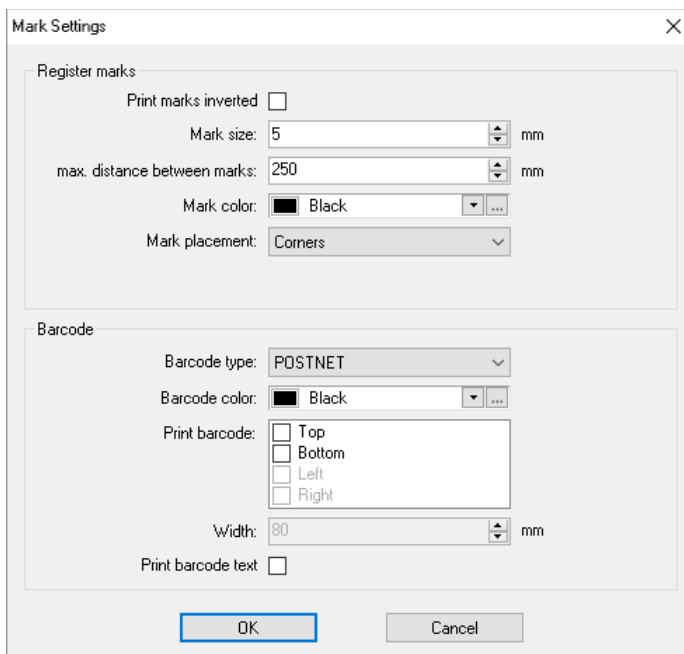
The operator should be able to adjust the SGP workflow to meet his requirements. Therefore, it is recommended to add some basic settings to RIP's UI. There are three main settings groups. Pictures below are just an impression what it could be, settings may be divided in other group, the layout may be completely different.

- Folder and filename for importing data material database Summa GoProduce Laser Edition
- SGP output folder and file name



The 'Folder Setting Summa GoProduce' dialog box contains two main sections. The first section, 'Summa GoProduce material', has a 'Filename' field with the text 'S:\COMMON\GoProduce\Material.xml' and a 'Browse' button. Below this is an 'Update Material list' button. The second section, 'SGP file creation', has a 'Path' field with the text 'S:\COMMON\CutFiles\GoProduce' and a 'Browse' button. Below this is an 'SGP File name' field with a dropdown menu showing '%Barcode%.SGP'. At the bottom are 'OK' and 'Cancel' buttons.

- Size, color and placement of registration marks
- Barcode type, Code39 or POSTNET
- Color and placement of barcode (size for Code 39)



The 'Mark Settings' dialog box is divided into two sections. The 'Register marks' section includes a 'Print marks inverted' checkbox, a 'Mark size' spinner set to 5 mm, a 'max. distance between marks' spinner set to 250 mm, a 'Mark color' dropdown set to 'Black', and a 'Mark placement' dropdown set to 'Corners'. The 'Barcode' section includes a 'Barcode type' dropdown set to 'POSTNET', a 'Barcode color' dropdown set to 'Black', a 'Print barcode' section with four checkboxes (Top, Bottom, Left, Right) all of which are unchecked, a 'Width' spinner set to 80 mm, and a 'Print barcode text' checkbox. At the bottom are 'OK' and 'Cancel' buttons.

- Color – Method mapping table
- Media – Material mapping table

Methods & Material settings [X]

Color/Methods mapping

Color	Methode
Default	Draw
Regmark	Regmark
Draw	Draw
▶ Thru-cut	Thru-cut
Engrave	Engrave

New
Edit
Delete
Update GoProduce L E Methods List

Media/Material mapping

Print Media	Summa GoProduce LASER EDITION
Media1	Material 1
Media2	Material 2
Media3	Material 3
▶ Media4	Material 4
Media5	Material 5
Media6 3 mm	Material 6 0.3 mm
Media6 4 mm	Material 6 0.8 mm

Edit Update GoProduce LASER EDITION Material

OK Cancel



NOTE: The thickness of each material in the list of materials that is exported from Summa GoProduce Laser Edition has also the thickness of the material in it (if applicable).

Appendix 2 – example of an XML file exported from Summa GoProduce Laser Edition

Normally an xml file is delivered together with this SDK document. This xml file shows how the data in the file looks that is exported from Summa GoProduce Laser Edition. This xml file is basically a list of the used methods and the used materials. The file looks like this:



NOTE: At the moment this document was written, there was not yet a list available with materials for the laser cutters. SO the sample shows materials used on the F series tables

```
<?xml version="1.0" encoding="utf-8"?>
<SuMaterialManagerRIPXml xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <BaseMethodColl>
    <SuBaseMethodRIPXml>
      <Id>99</Id>
      <Name>Regmark</Name>
    </SuBaseMethodRIPXml>
    <SuBaseMethodRIPXml>
      <Id>1</Id>
      <Name>Draw</Name>
    </SuBaseMethodRIPXml>
    <SuBaseMethodRIPXml>
      <Id>2</Id>
      <Name>Thru-cut</Name>
    </SuBaseMethodRIPXml>
    <SuBaseMethodRIPXml>
      <Id>3</Id>
      <Name>Engrave</Name>
    </SuBaseMethodRIPXml>
    ...
  <MaterialMmColl>
    <SuMaterialMmRIPXml>
      <Category>Self-adhesive</Category>
      <Description>Cast Vinyl</Description>
      <Name>Vinyl 0.1 mm</Name>
    </SuMaterialMmRIPXml>
    <SuMaterialMmRIPXml>
      <Category>Self-adhesive</Category>
      <Description />
      <Name>3M Controltac 0.1 mm</Name>
    </SuMaterialMmRIPXml>
    <SuMaterialMmRIPXml>
      <Category>Honeycomb Board</Category>
      <Description />
      <Name>Honeycomb Board 4 mm</Name>
    </SuMaterialMmRIPXml>
    <SuMaterialMmRIPXml>
      <Category>Honeycomb Board</Category>
```

```

    <Description />
    <Name>Honeycomb Board 5 mm</Name>
  </SuMaterialMmRIPXml>
  <SuMaterialMmRIPXml>
    <Category>Honeycomb Board</Category>
    <Description />
    <Name>Honeycomb Board 6 mm</Name>
  </SuMaterialMmRIPXml>
  <SuMaterialMmRIPXml>
    <Category>Honeycomb Board</Category>
    <Description />
    <Name>Honeycomb Board 10 mm</Name>
  </SuMaterialMmRIPXml>
  <SuMaterialMmRIPXml>
    <Category>Honeycomb Board</Category>
    <Description />
    <Name>Honeycomb Board 12 mm</Name>
  </SuMaterialMmRIPXml>
  <SuMaterialMmRIPXml>
    <Category>Honeycomb Board</Category>
    <Description />
    <Name>Honeycomb Board 16 mm</Name>
  </SuMaterialMmRIPXml>
  <SuMaterialMmRIPXml>
    <Category>Honeycomb Board</Category>
    <Description />
    <Name>Honeycomb Board 18 mm</Name>
  </SuMaterialMmRIPXml>
  <SuMaterialMmRIPXml>
    <Category>Honeycomb Board</Category>
    <Description />
    <Name>Honeycomb Board 20 mm</Name>
  </SuMaterialMmRIPXml>
  ...
</MaterialMmColl>
<MaterialInchColl>
  <SuMaterialInchRIPXml>
    <Category>Self-adhesive</Category>
    <Description>Cast Vinyl</Description>
    <Name>Vinyl 0.004 inch</Name>
  </SuMaterialInchRIPXml>
  ...
</MaterialInchColl>
</SuMaterialManagerRIPXml>

```

There are 3 lists in that xml file.

1. The list with the methods (Name) and its corresponding laser action (Id) for the SP command.
2. The list with the materials (Name) sometimes with their thickness in mm.
3. The list same with the materials (Name) sometimes but with their thickness in inches.

The file described as above should create two tables. There should be the choice to use the material list with mm or with inches, if necessary there could be the choice to include both lists in the list that is created in the RIP.

Methodes:

99	Regmark
1	Draw
2	Thru-cut
3	Engrave
...	

Materials:

Vinyl 0.1
3M Controltac
Honeycomb Board 4 mm
Honeycomb Board 5 mm
Honeycomb Board 6 mm
Honeycomb Board 10 mm
Honeycomb Board 12 mm
Honeycomb Board 14 mm
Honeycomb Board 16 mm
Honeycomb Board 20 mm
Honeycomb Board 25 mm
...