How to

How to Create a Basic JobControl® Vision Application

Content

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1 Introduction to JobControl® Vision

JobControl® Vision: Software for precise laser finishing of printed materials. Create Print&Cut acrylics, paper, film or cardboard products.

The Vision module uses registration marks to determine the position and rotation of printed sheet material on the working area of the laser. Additionally, any distortions - linear or non -linear - in the printed graphics are recognized with the intelligent JobControl® Vision camera. By applying sophisticated mathematical algorithms the system compensates for the detected print distortions and adjusts the cutting path dynamically to match the artwork. No matter if flexible or rigid materials. How it works in simple words: The registration marks are printed along the image. The camera - which is attached to the working head - "reads" the registration marks prior to the cutting process and compares the "read" positions on the printed design and the target positions in the original cut file. Any deviations are adjusted automatically. There is no need for manual alignment which speeds up your production and costly miscuts can be avoided. This guarantees a perfectly cut end product.

Create amazing details and meet tightest tolerances - with Trotec JobControl® Vision.

2 Step by step

This guide shows you how to create a basic Print&Cut application in Corel Draw and to cut it out with JobControl® Vision. The JobControl® Vision workflow also applies for Adobe Illustrator and differs in minor steps only.

2.1 Set up artwork

Open Corel Draw and open a new page with A4 sheet size. Create your artwork. In our case we use a part of the Trotec logo.
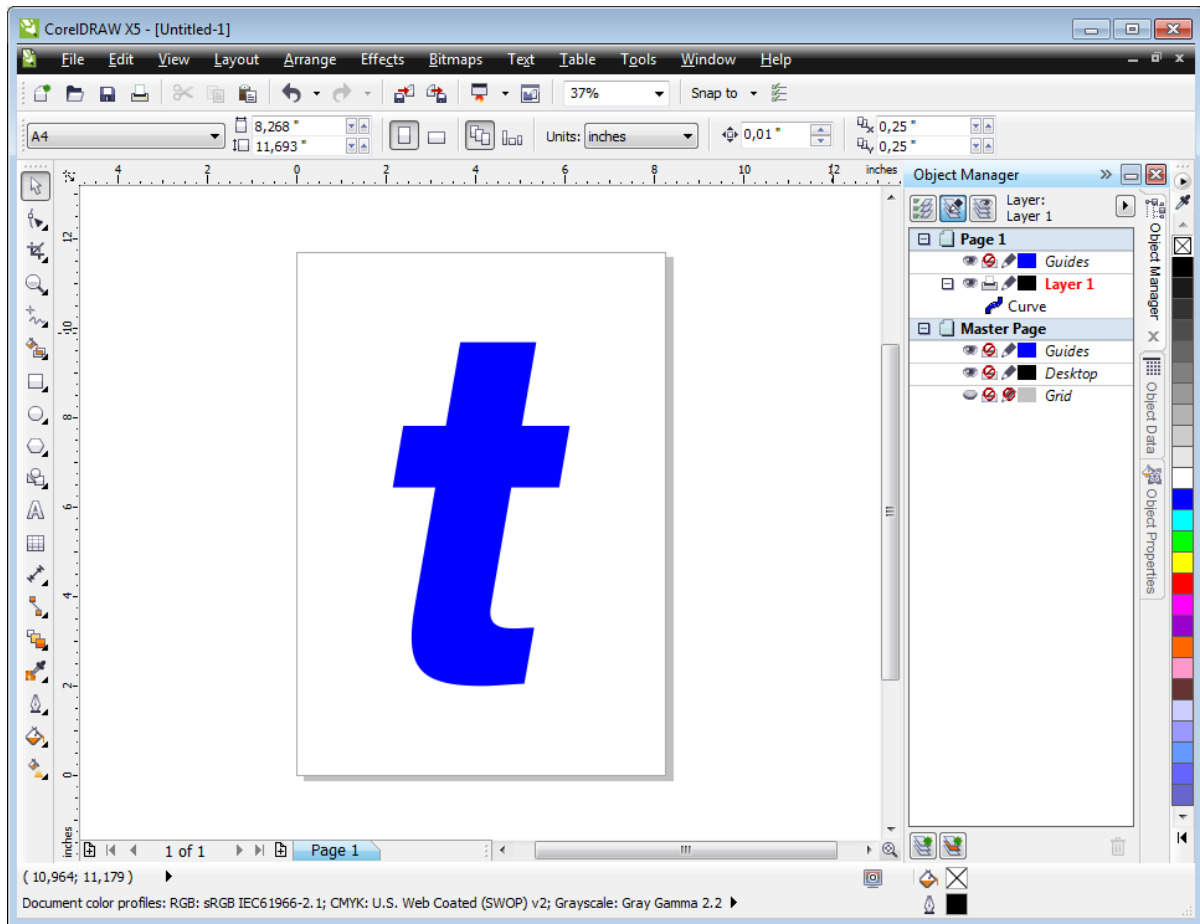
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Fig. 1: Create artwork in Corel

Add a cut line to your artwork. Use one of the 16 RGB colors from the Trotec color palette with line width "Hair-line" for your cut line. In our case we use red.

➜ **Tip**

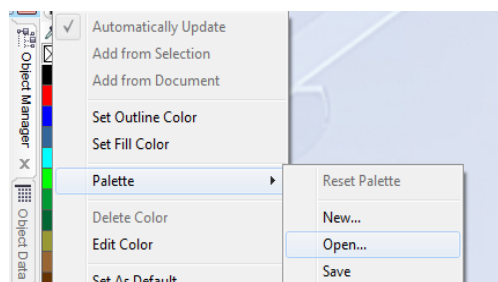To make color mapping easier you can import the Trotec color palette form the JobControl® installation DVD.

Fig. 2: Import Trotec color palette from JobControl® installation CD into Corel Draw

Add three registration marks in the outer corners of the A4 sheet (Please see JobControl® documentation for the minimum number of reg marks required.). We recommend to use 6 mm as reg mark diameter. Apply a black outline with line width "hairline" and a black fill. But you can basically use any of the 16 RGB colors from the Trotec color palette.
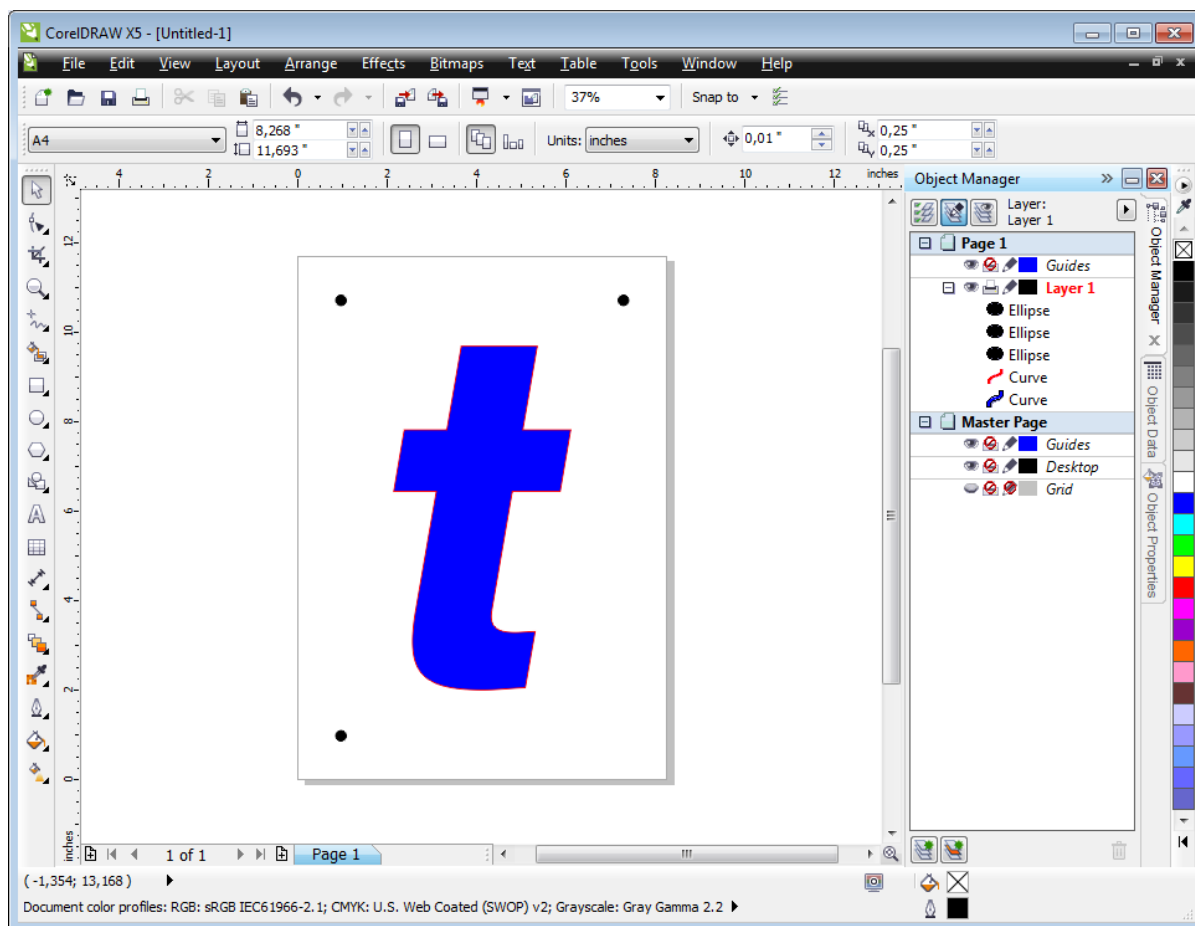

Fig. 3: Artwork, cut line and reg marks on one page

This is our print and laser ready job.

→ **Tip**

We recommend to put reg marks, artwork and cut lines on separate layers. By doing this you can easily enable and disable layers for printing.
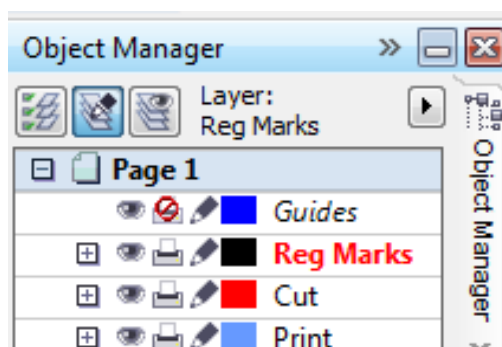
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Fig. 4: Artwork, cut line and reg marks on different layers

2.2   Prepare and print job to printer

You do not want your cut line to be print. You want your artwork and reg marks to be printed. To do this you have to disable the cut line layer when printing. If you did not create a dedicated layer for your cut line just delete the cut line and undo delete after you have printed your job.

Now export a pdf and send it to the printer or directly print from your Corel.
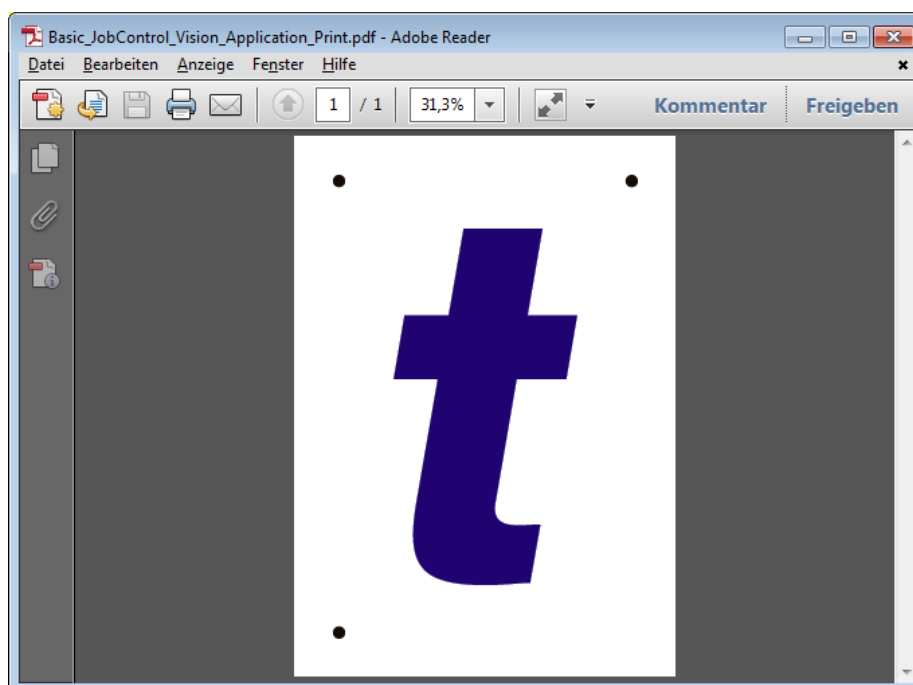

Fig. 5: Exported PDF is ready to print

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2.3   Prepare and print job to laser

Print the reg marks and your cut line to the laser. You do not want to print your artwork to the laser. Do it in the same way as you handled your cut line in the step before.

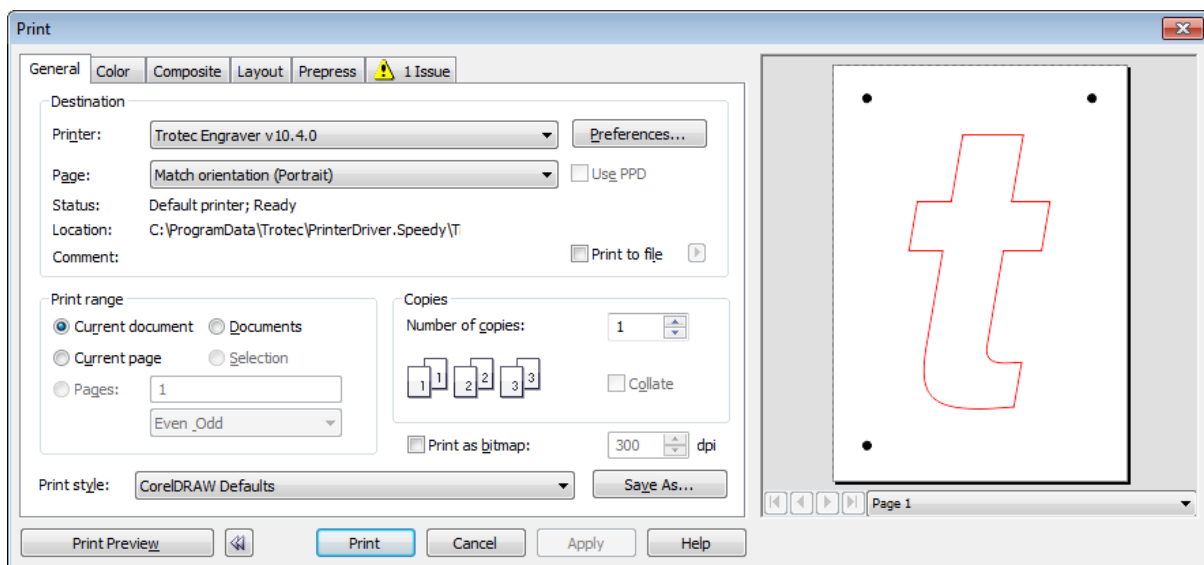Now go print. Select laser as driver and go preferences.

Fig. 6: Print window in Corel Draw

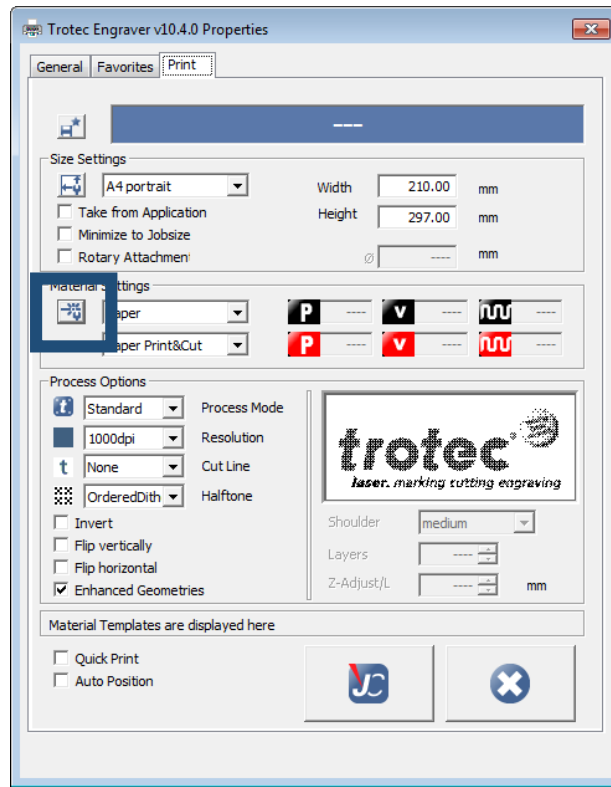Set page size to A4 format. And open material database.

Fig. 7: Trotec printer driver preferences window in Corel Draw

Select material group "Paper" and create a new material "Paper Print&Cut". For color red select process type cut. Add and adjust your laser parameter for your red cutline. In our case we use a Speedy 400 80 watts and a 1.5" lens. We use 60% power, 1% speed, 1000 hz frequency and air assist on.
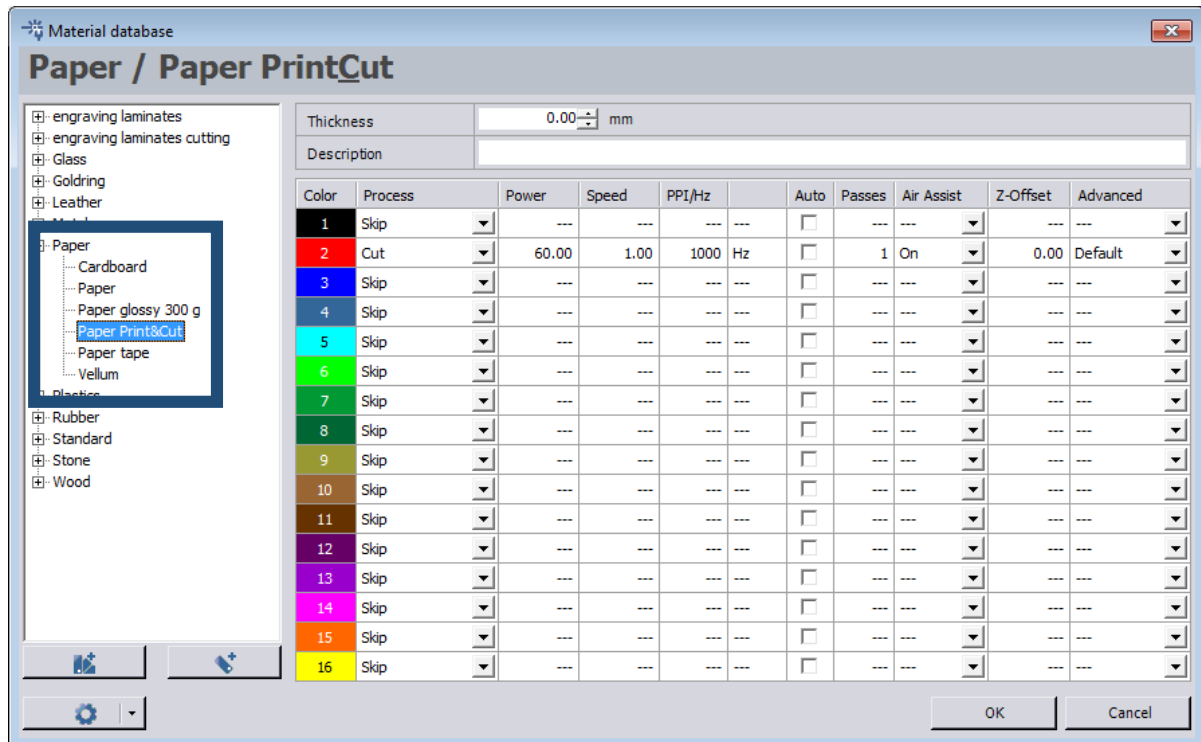
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Fig. 8: Trotec material database

For color black select process type reg mark. By doing this JobControl® now knows that the black objects are reg marks and the laser job is a vision job. In our case we used black reg marks, but you can assign the reg mark process to anyone of the 16 RGB colors from the Trotec color palette.
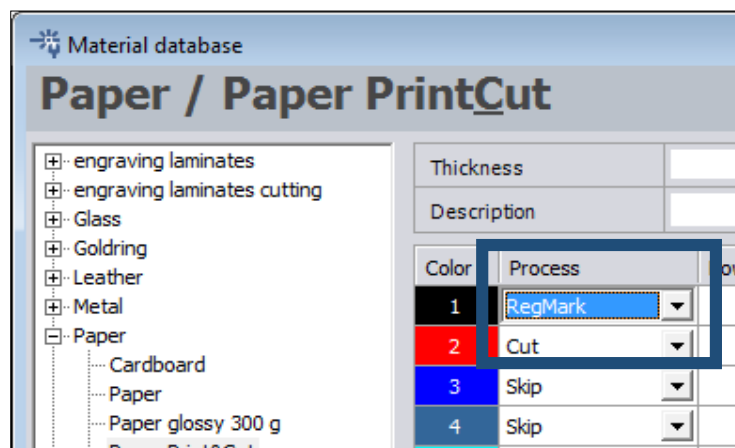

Fig. 9: Select process type "RegMark"

Click OK then the JC button and you will exit the preferences window.

Click print and the job will be print to the JobControl® job queue.

2.4	**Prepare laser and JobControl®**

Take your printed A4 sheet out of your printer and put it on the working area of your Trotec laser. Use a black aluminum cutting grid table or a vacuum table with honeycomb. Check lens if clean and focus.

Open JobControl®.

Put your laser job from the queue on the working area. Position it on the working area either at 0/0 or to the position where your printed A4 sheet is in the machine.
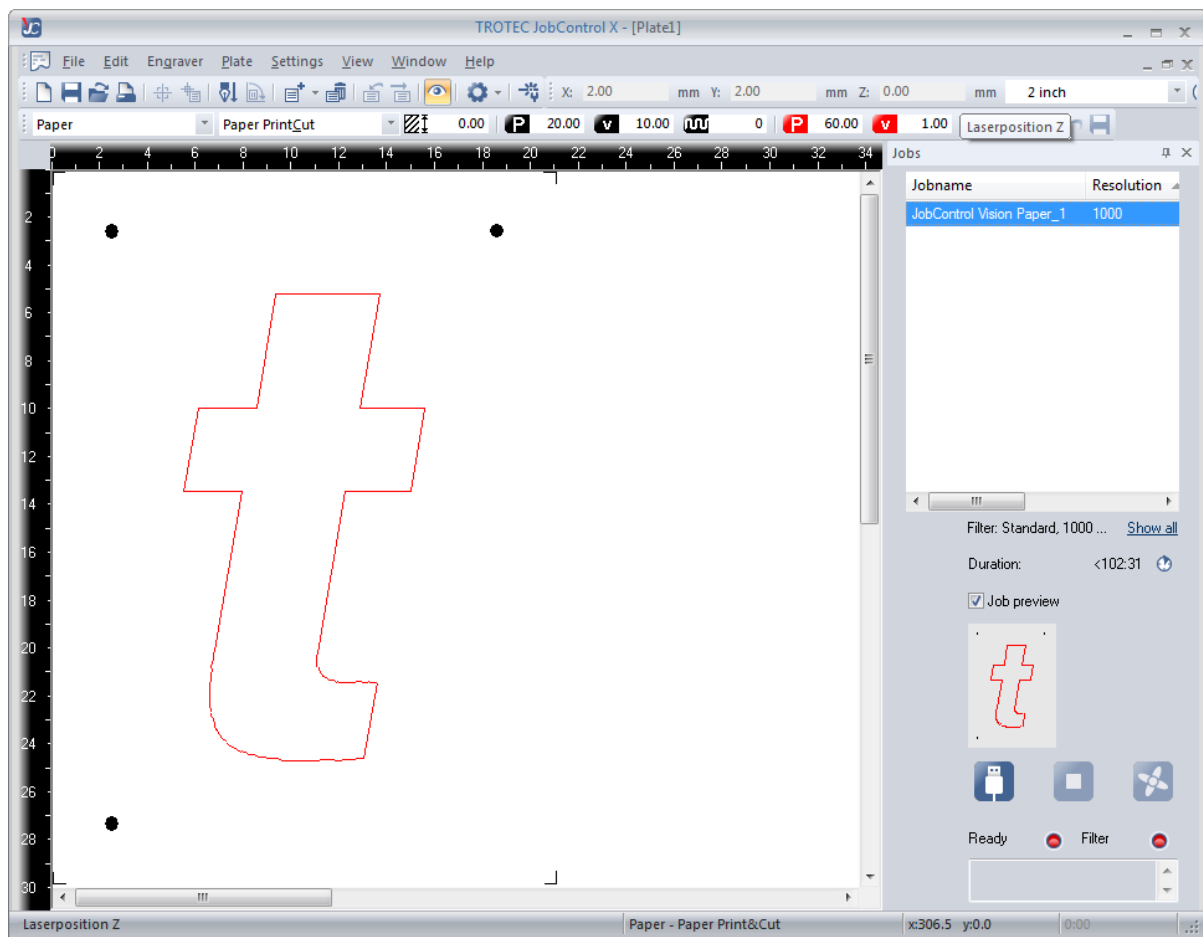

Fig. 10: Laser job on working area of JobControl®

Connect to the laser.

Now you are ready to cut the job.

2.5 Cut the job

Click play.

The JobControl® Vision run screen opens.

If the position and alignment of the laser job in JobControl® matches the position of your printed A4 sheet on the working area JobControl® will automatically read all reg marks and cut the job automatically.

If the position does not match you have to interact with the system and teach the system the first reg mark position. In this case JobControl® Vision will indicate the position of the first reg mark. You have to navigate the camera over the first reg mark by using the keypad on the laser, the software arrow keys or the arrow keys on the computer keyboard.
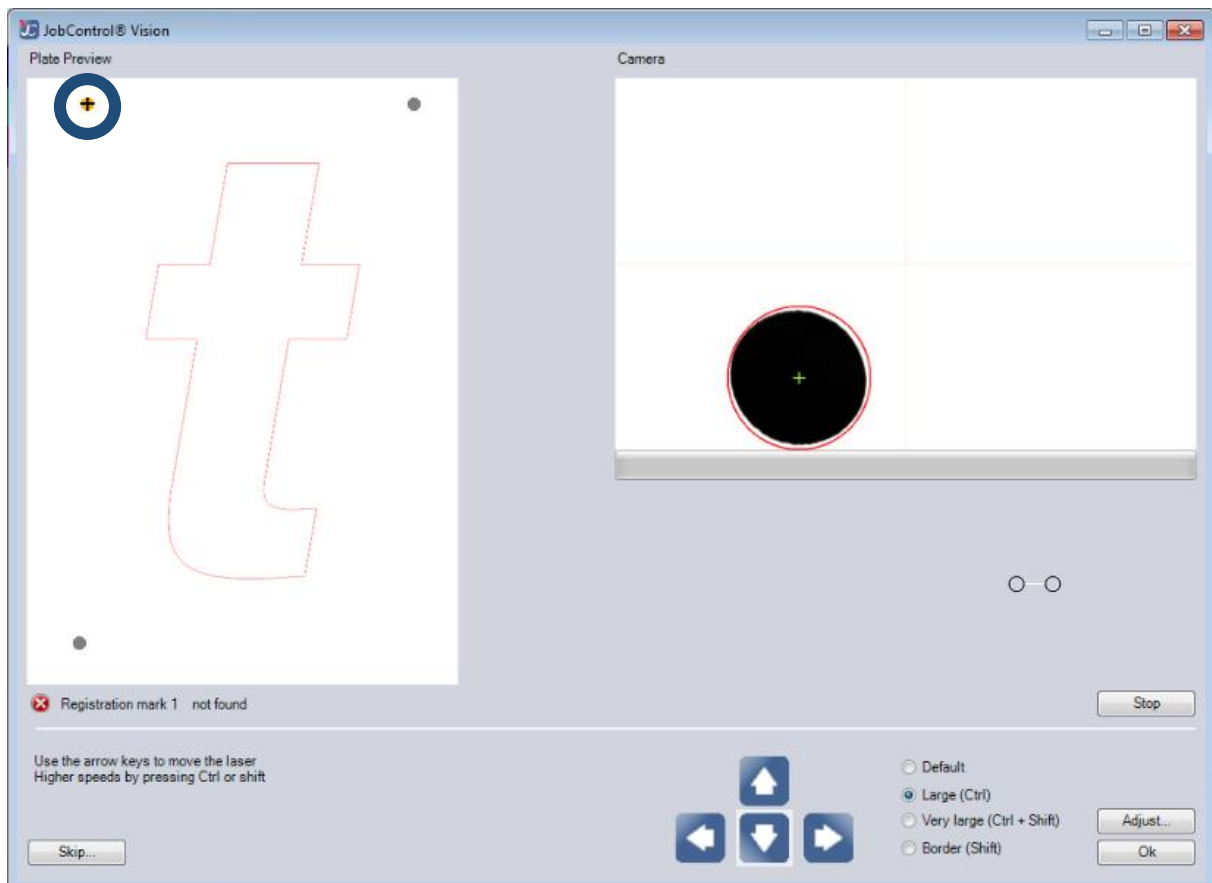

Fig. 11: Navigate camera to the first reg mark. First reg mark is indicated in orange.

When the camera center is centered over the first reg mark and the system has recognized the reg mark successfully the reg mark is highlighted with a green circle in the camera window. Then press enter.
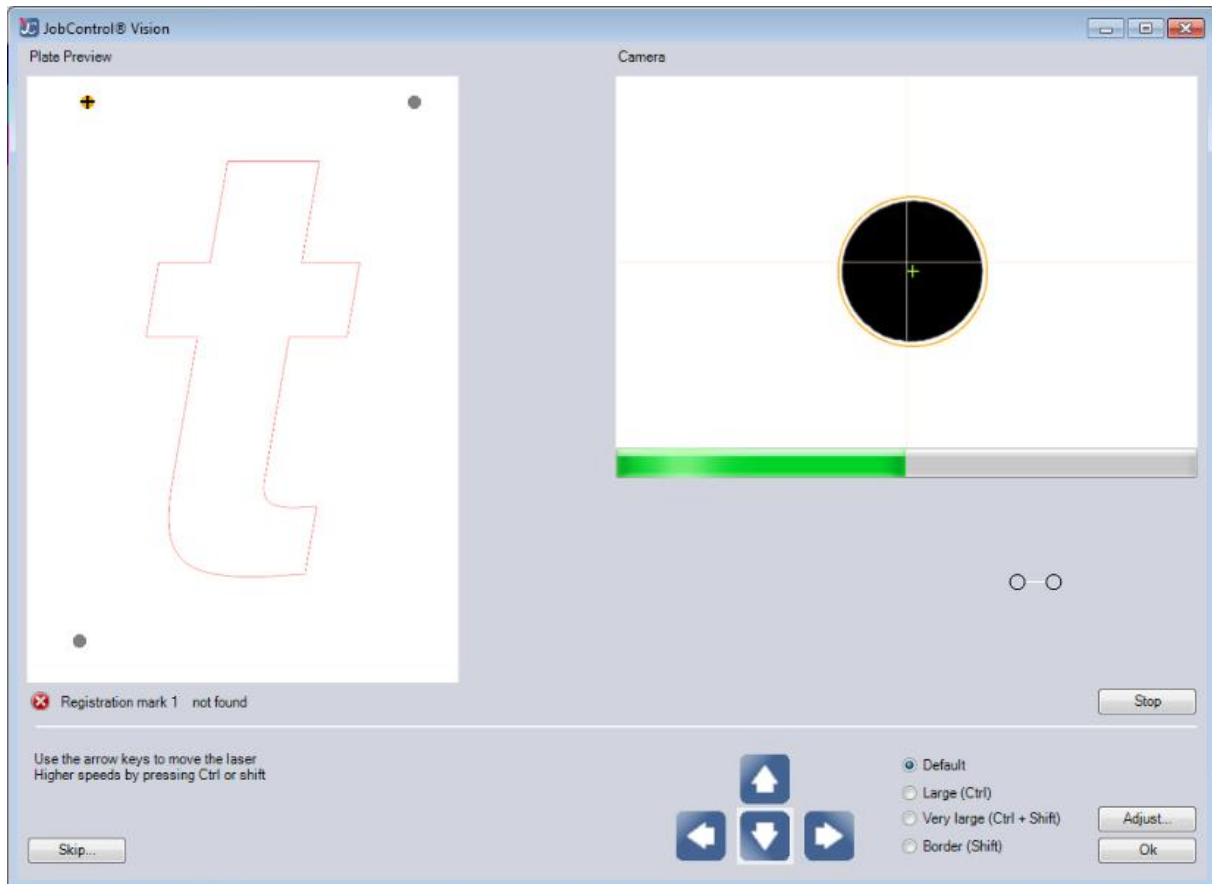

Fig. 12: Camera detects reg mark and is ready to proceed

Now the system travels to the second reg mark.

If only position was incorrect and alignment was ok and there were no print distortions in your job the system will read the second and the third reg mark automatically and cut the job.

If it the alignment was not ok or there were print distortions in your job the position of the second reg mark will be off. You have to teach the system the position of the second reg mark. Do the same procedure as at the first reg mark.
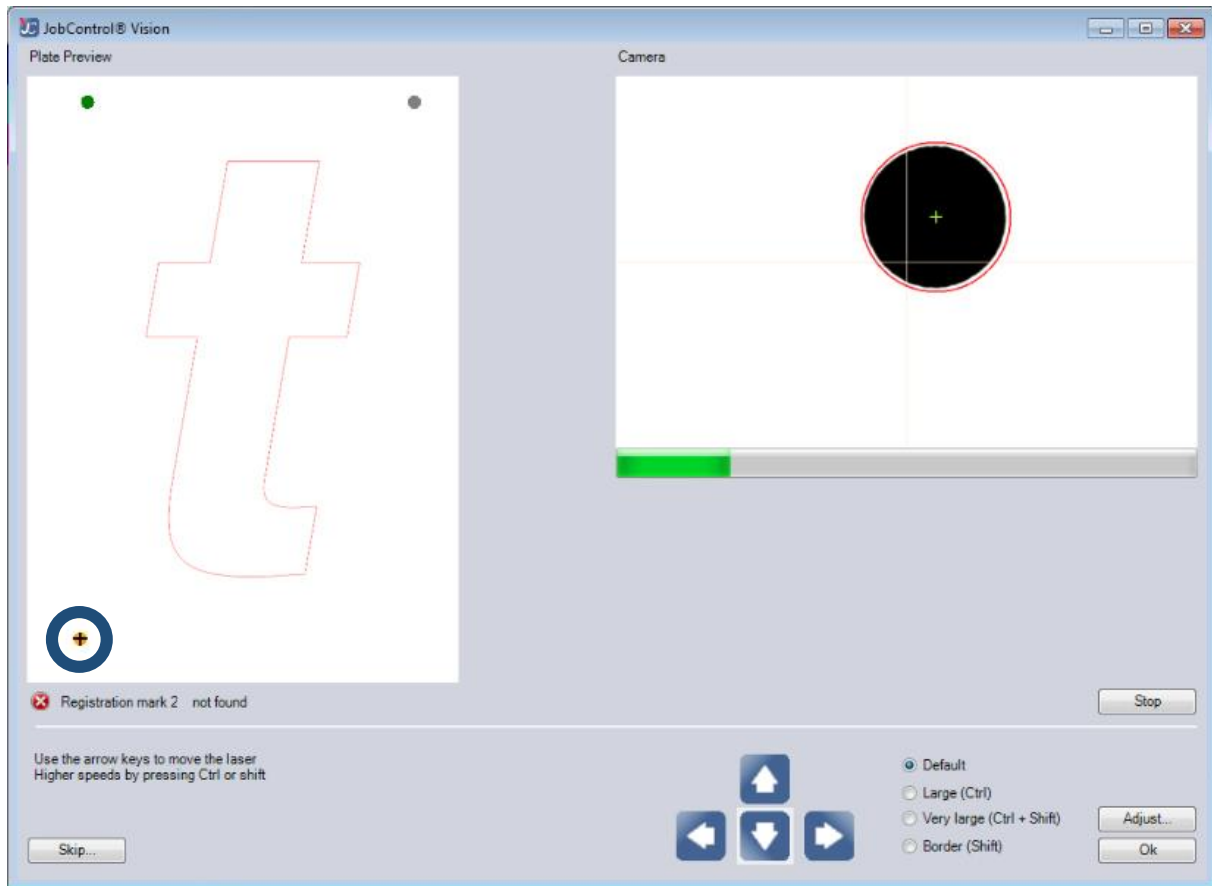
Fig. 13: Second reg mark is indicated because alignment was not correct

After teaching the system the second reg mark it will find the third reg mark automatically and cut the job.

2.6 **Finish**

You have finished your first Print&Cut application!

3 FAQ

→ **What if my job does not print reg marks?**

Before you can print to the laser you have to enable "Send beziers and paths to driver". This is a standard setting and can be used as default for all laser jobs. To do this you have to go to "Tools" and "Options" in Corel Draw.
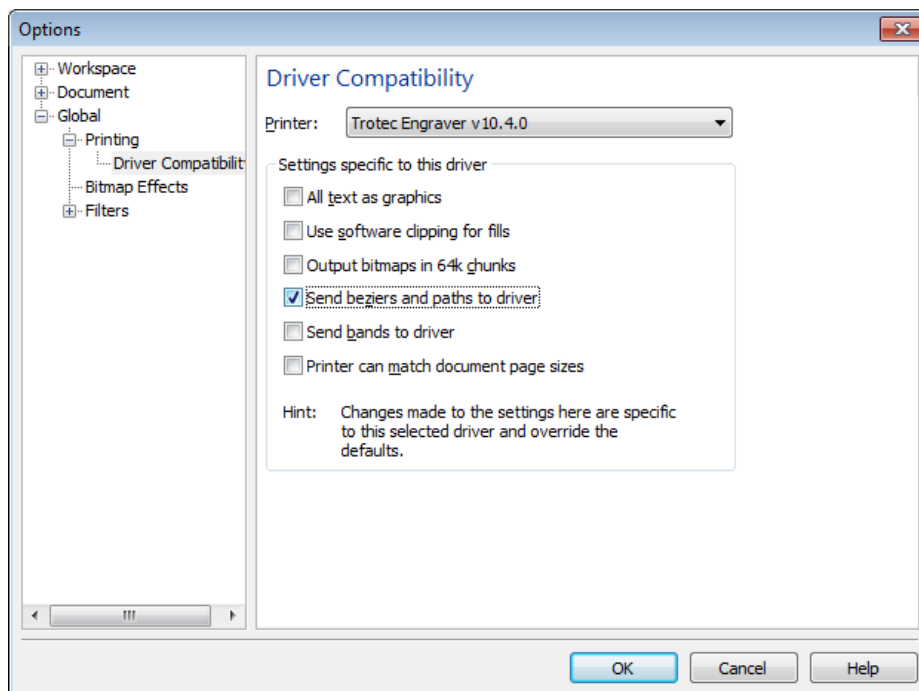
Fig. 14: Options settings in Corel Draw

Additionally your reg marks have to be a perfect (symmetrical) circle with a fill and an outline. The line width has to be "hairline" or a minimum possible (depending on used graphic program).

➜ What if my cut does not match my print?

Clean camera window and calibrate camera offset. Please see JobControl® documentation for camera offset calibration.

➜ What if my reg marks cannot be recognized?

Clean camera window and adjust camera image with default parameters. Please see JobControl® documentation for camera image adjustment.

➜ What if a reg mark is damaged and therefore cannot be recognized?

You can manually skip reg marks. This is only possible if you respect the minimum number of reg marks (E. g. if you have 3 reg marks you can skip 2 reg marks - with compensation type position).

➜ Can I process multiple jobs on the working area?

Yes you can. Just duplicate the reg mark job or put multiple reg mark jobs on the working area. JobControl® Vision will process them like one by one. First it will read all reg marks of all jobs and then cut them sequentially.

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