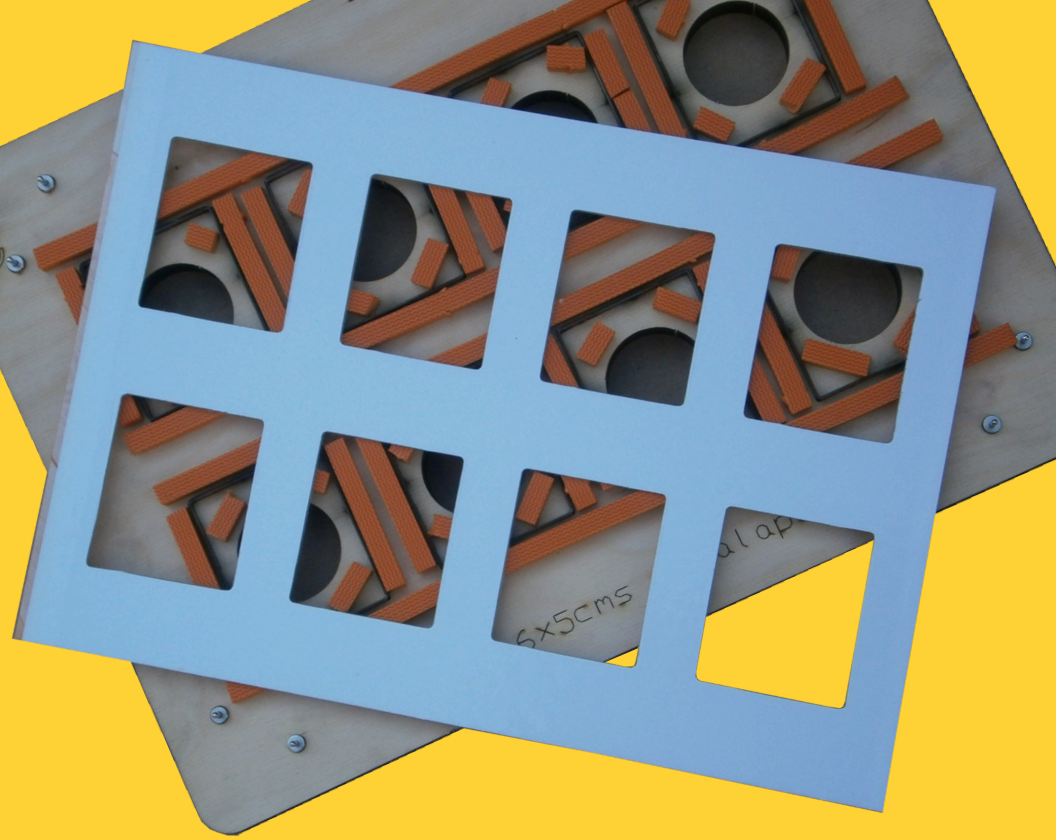

PAPERFOX TIPPS

Positioning methods for die-cutting machines

www.paperfox.eu

Paperfox is a designer and manufacturer and worldwide provider of print finishing devices.

Our clients often ask us questions that wouldn’t be effective to answer one by one, so I will try to answer some of the questions in this publication.

I am not a trained paper industry professional and I don't even speak English very well so excuse me if some of my expressions are inaccurate.

On the other hand, I hope that I can give you useful ideas for your practical work through my experience in the production of print finishing machines.

Fürcht Zoltán

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What is positioning at die cutting?

By positioning, I mean the procedures for securing the position of the cut out on the sheet. Positioning may be required not only during die cutting but also during other operations so the following can be applied to other operations as well (creasing, cutting, perforation...).

Why do we need to position at die cutting?

When die cutting printed sheets it maybe important to adjust the cutout to the printed pattern. Even in the case of unprinted sheets, some positioning maybe required to ensure that the cutout should be on the sheet and not beside.

What can we position to?

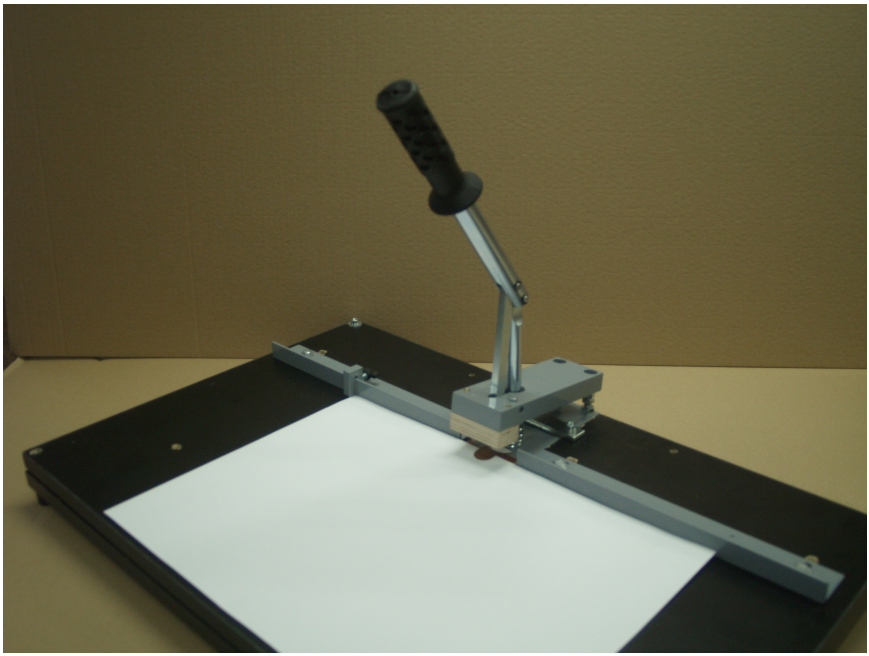
- to the edges of the sheet
- to the printed pattern
- to holes or cutouts
- to registration marks
- to special holes for positioning
- to special guides that fits the outline of the product

Positioning to the edges of the sheet

Most regularly shaped sheets (rectangles, squares, triangles...) can be positioned to the edges of the sheet. A rectangular sheet can be positioned with three fitting points. The sheet can be positioned with more than three points or with two straight bars, etc. Although this causes “over-determination”, in practice it often gives better results than a three-point positioning.

If the size of the printed sheets is not exactly the same, it is highly recommended to position them to the pages to which the sheets were aligned when printed. Unfortunately, many printers positioning to the “centerline” of the sheet, which cannot be followed if you position to the edge of the sheets.

Positioning with MP-1 press and MPA-1 table



The die is mounted on the top press plate of the MP-1 press, so the cutting position is fixed relative to the table top. This allows the rectangular sheet to be aligned to one side and corner.

Related links:

- *https://youtu.be/sF6l9N1_7aE*
- *https://www.paperfox.eu/paperfox-mp-1-paper-punch-with-euro-slot-tool.html*
- *https://www.paperfox.eu/paperfox-mpa-1-table-for-mp1.html*

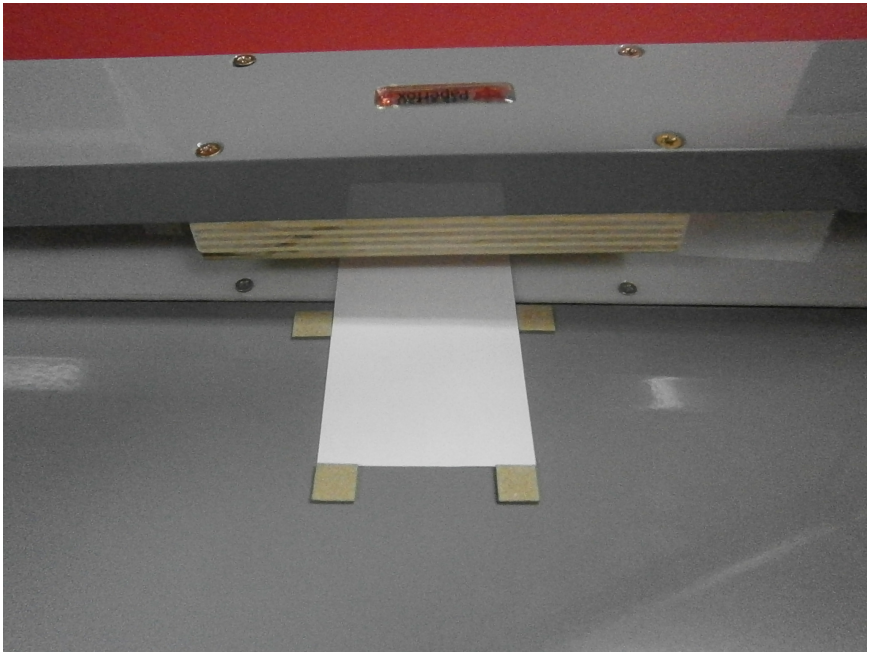
Positioning with KB-32 press for die cutting

The KB-32 creasing guide bar can also be made suitable for positioning at die cutting with a simple trick using a paper clip.

Related links:

- *https://youtu.be/sQVVjp_eWb0*
- *https://youtu.be/s-pRq7TME70*
- *https://www.paperfox.eu/paperfox-kb-32-punching,-creasing-machine.html*

Positioning with cardboard strips on the machine table



Stick double-sided adhesive tape to a thick cardboard sheet. Cut out the positioning elements and stick them to the appropriate positions on the workbench of the die-cutting machine.

Related links:

- *https://youtu.be/1it6uqBA-UU*
- *https://www.paperfox.eu/paperfox-kb-32-punching,-creasing-machine.html*
- *https://www.paperfox.eu/paperfox-ma-500-table-for-kb-32.html*

Positioning with cardboard strips on the die

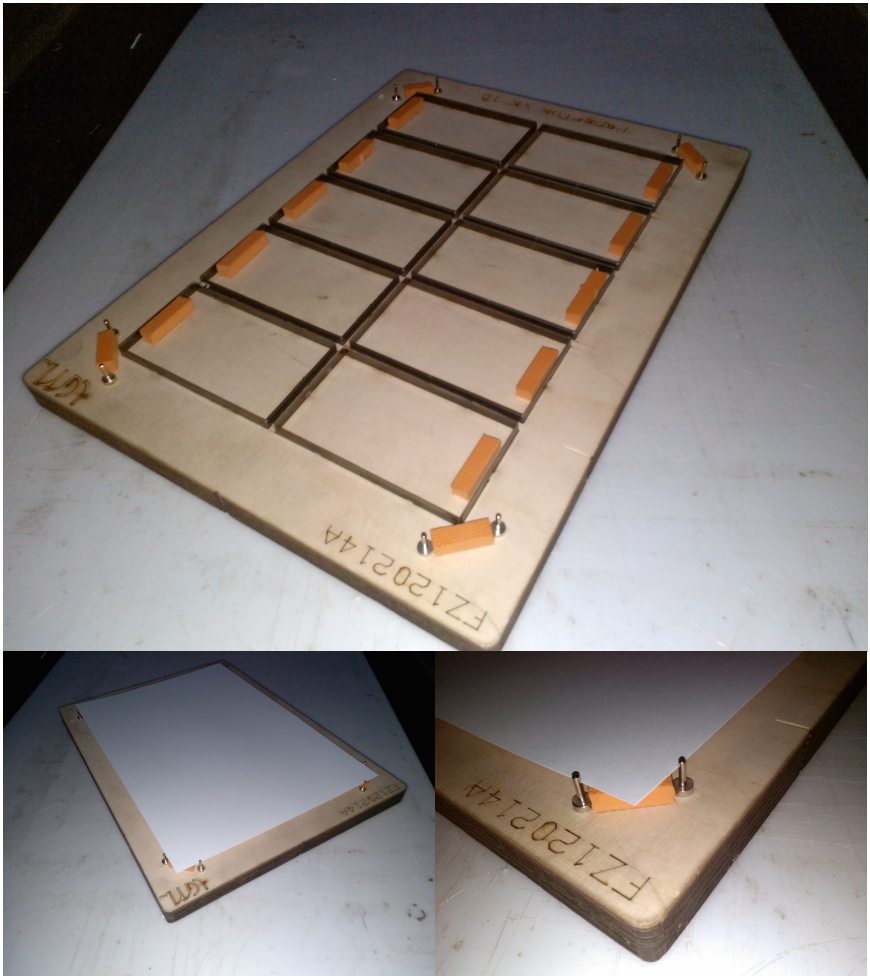
On cylinder die cutting machines, the positioning to the machine table is not applicable, so the positioning elements should be fixed on the die cutting tool. This procedure can also be used for flat die cutters. The easiest way is to make the positioning elements of thick cardboard and double-sided self-adhesive tape and stick it on the ejecting rubber of the die. At least three positioning elements are required, but even more can be used for a more secure registration.

This simple solution is not very accurate, because the ejecting rubber can also move sideways when punching.

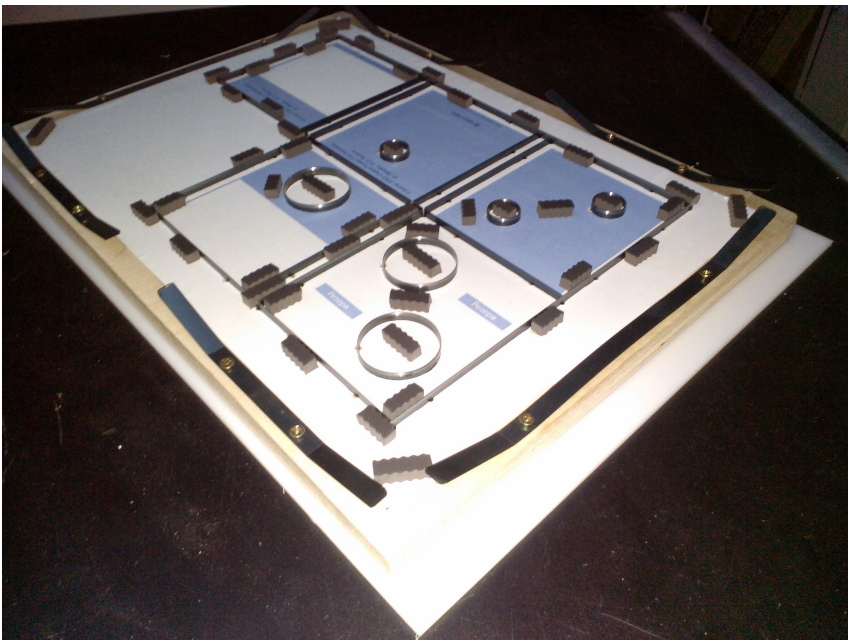
Related links:

- *https://youtu.be/zR-gSDOhi-k?t=60*

Positioning with positioning pins on the die cutting tool



With special spring positioning pins, the inaccuracy caused by sticking guides on the ejector rubber can be reduced. Typically, eight pins placed near the corners can position the sheet stably. The spring pins can be pushed down during the die cutting process.

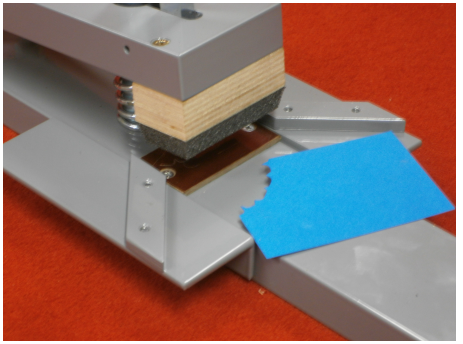


If you can't get special positioning pins, you can also solve the problem with folded spring steel strips.

Related links:

- *https://youtu.be/RgeLYquvEDc*
- *https://youtu.be/zR-gSDOhi-k*
- *https://youtu.be/YJWUcrQM9v0*
- *https://www.paperfox.eu/paperfox-vk-10-r5-visit-card-cutting-tool.html*

Corner guides



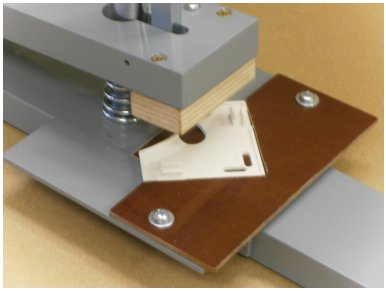
It is the most common positioning method used for corner rounding, but it can also be used for other punching, and die cutting tasks.

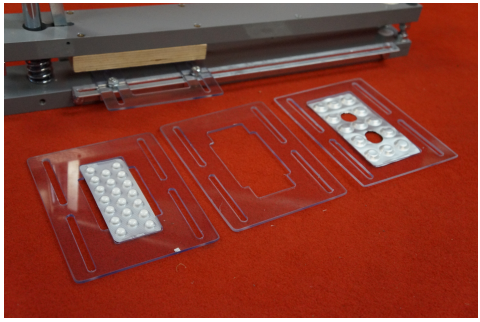
It is important that the sheet should be exactly rectangular, because the different corner angle can cause significant inaccuracy. If the corner angle of the sheet is inaccurate, it is better to set the angle of the corner guides to a bit larger angle, because if the angle of the dudes is smaller than the angle of the corner of the sheet, it will cause more inaccuracy than if the angle of the corner guides is larger.

Related links:

- *https://youtu.be/d9Bp5BXz92c*
- *https://youtu.be/XZqBOMOz7MU*

Shaped guides, counterforms





Complex shaped objects may not always be positioned to some points. When die cutting blisters or shaped objects, the function of the positioning elements is also to fix the object and secure it against movement. In this case, the exact location of the die cutting can be ensured by means of a counter-shaped guides.

Related links:

- *https://youtu.be/kf8fHsg4yA0*
- *https://youtu.be/vC__ajko4E*
- *https://youtu.be/kjLMSRi721M*
- *https://youtu.be/K4IKAq9qTCs*
- *https://youtu.be/3FKWht4mHU4*
- *https://youtu.be/tTKz6S0VDcI*

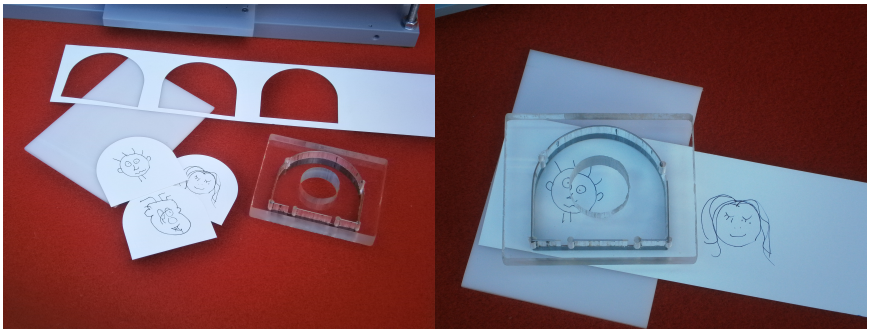
Positioning to the printed pattern

You can't position against the side edges of material to be die-cut if:

- The position of the printed pattern varies on the sheet
- The shape of the sheet (or object) don't allows the positioning. (for example circular objects)
- The sheet is too big and the workbench of the die-cutting machine is limited
- The material of the object to be punched is not rigid enough. (for example curtains, thin foil)

In such cases, the sheet or object to be die cut may be positioned to the printed pattern or other characteristic parts.

Transparent die cutting tools



Die cutting tools made of transparent material (for example polycarbonate) can be placed on the sheets to be punched while the printed pattern is visible. These tools usually have no ejector rubber because it would cover the pattern. In this case, the workpiece can be pushed out of the tool through a hole in the die. This positioning mode is primarily recommended for flat punch machines.

Related links:

- *https://youtu.be/3w4aN3UDwzs*
- *https://youtu.be/RTmhK_Zc5SE*
- *https://www.paperfox.eu/paperfox-mp-5-die-cutter.html*

Positioning with transparent folding plate

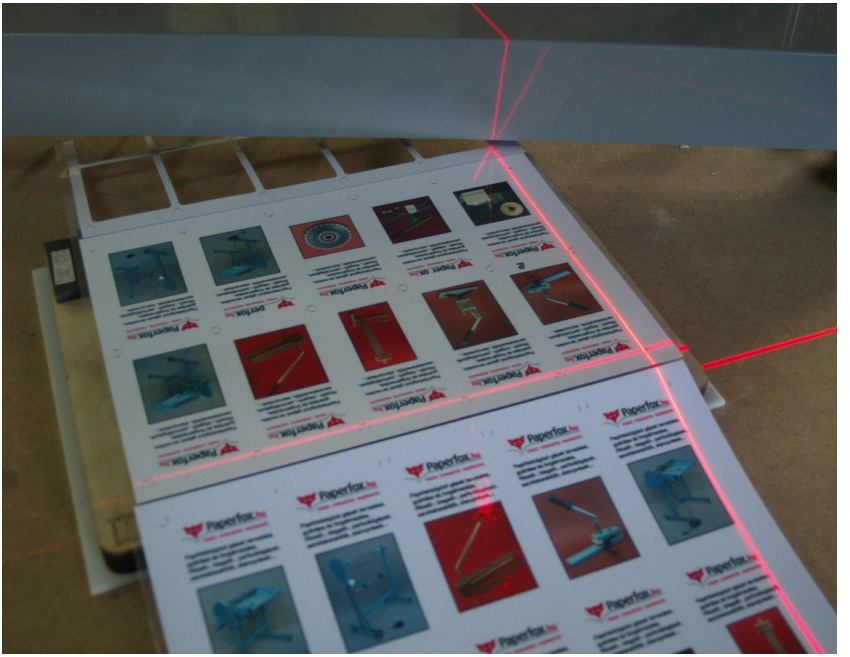
In this case, the positioning is done to the marks on the transparent folding plate connected to the die by a hinge. The die cutting can be done on the fold-out plate or you can use an other cutting plate after folding out the transparent positioning plate.

This positioning mode can also be used with flat and punch machines.

Related links:

- *https://youtu.be/zR-gSDOhi-k?t=68*
- *https://youtu.be/174-aiY8FQE*

Positioning with laser



The alignment marks on the printed sheet or the characteristic points of the print can be aligned with the laser “+” mark. The method is not very accurate and a bit cumbersome.

Related links:

- *https://youtu.be/zR-gSDOhi-k?t=88*