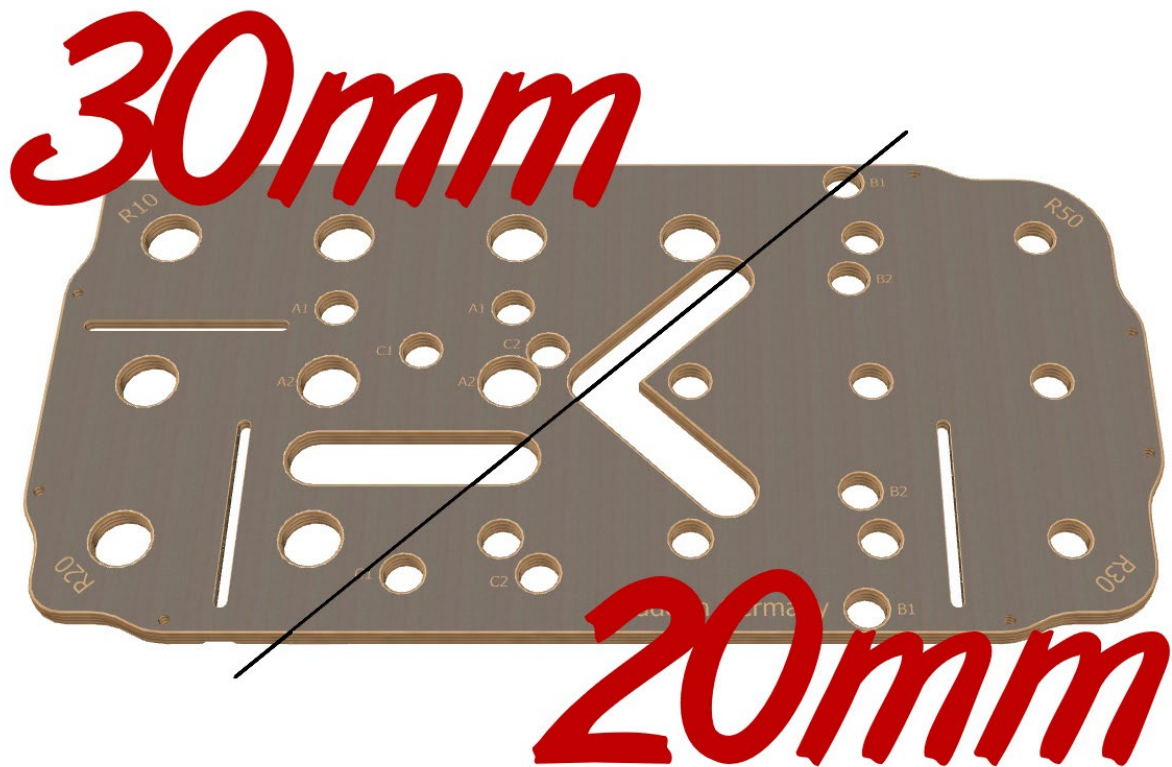




MFT template 3.0

20 mm & 30 mm

Manufacturer information



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Member of the "Fairness in Trade" initiative

Participant in the "Der Grüne Punkt" recycling system

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Safety instructions

Our safety instructions can be found at

https://makoen.com/files/sicherheitshinweise/DE_Sicherheitshinweise_fraeszirkel.pdf

Notes

We are delighted that you have chosen our product. Despite taking every care, mistakes can still occur. If you notice anything, please contact us. We will find a quick and convenient solution.

Apart from a few standard parts, our products are manufactured in-house. Phenolic resin-coated veneer plywood panels serve as the base material for this. These are usually made of birch wood. Wood is a natural material and therefore has irregularities. We endeavour to reduce visual irregularities and, where necessary, to sort them out. We **do not** sort out small visual defects that do not impair functionality in any way **and** originate from the natural material.

This is for the benefit of the environment and in the interests of a good cost-benefit ratio.

Product data & scope of delivery

	mm	inch
GTIN (Ø20mm):	4270003319621	4262426890535
GTIN (Ø30 mm):	4270003319638	4262426890542
Dimensions: Length:	588	
	Width:	300 mm
	Height:	12 mm
Material:	12 mm birch plywood, phenolic resin coating on both sides (screen/film)	
Application:	Template for creating corner radii, slotted holes and hole pattern plates in a 96 mm grid with variable edge spacing	
Dimensions:	3x6	
Scale tolerance:	±1 mm	
Scope of delivery:	1x MFT template 3.0 base body (20mm / 30mm) 3x aluminium cone slide 86 mm x 20 mm (hereinafter referred to as slide carriages) 3x DIN7991 M4x10 countersunk head screw* 3x DIN7979 Ø6x16 cylindrical pin m6 fit & M4 internal thread* 3x DIN7991 M5x20 countersunk head screw 3x DIN9021 washers 5.2 with 3x nominal diameter 3x MaKoen M5 star knob (max. tightening torque 2Nm) 2x MaKoen BenchDog 3x Cylinder pin beech Ø6x30mm	

*The components marked with * are pre-assembled.*

Measuring scales

Three scales are engraved on the MFT template.

These can be used to read the resulting edge distance.

Insert sliding carriage



Figure1 : Order of insertion of the slide block into the MFT template

1. Insert the countersunk head screw DIN7991 M5x25 into the slide from below
2. Insert the slide block into the MFT template from below using the screw
3. Place the DIN9021 Ø5.3 mm washer on the screw and measuring arrow
4. Screw on the MaKoen star knob M5 (**max. tightening torque 2Nm**)

Set the measurement



2 : Meaning of the set 40 mm dimension



3 : Meaning of the set 100 mm dimension

The set dimension indicates the distance from the centre of the bore to the inner surface of the centring pin. The set dimension therefore corresponds to the edge distance to the centre of the bore.

Determining the dimension to be set

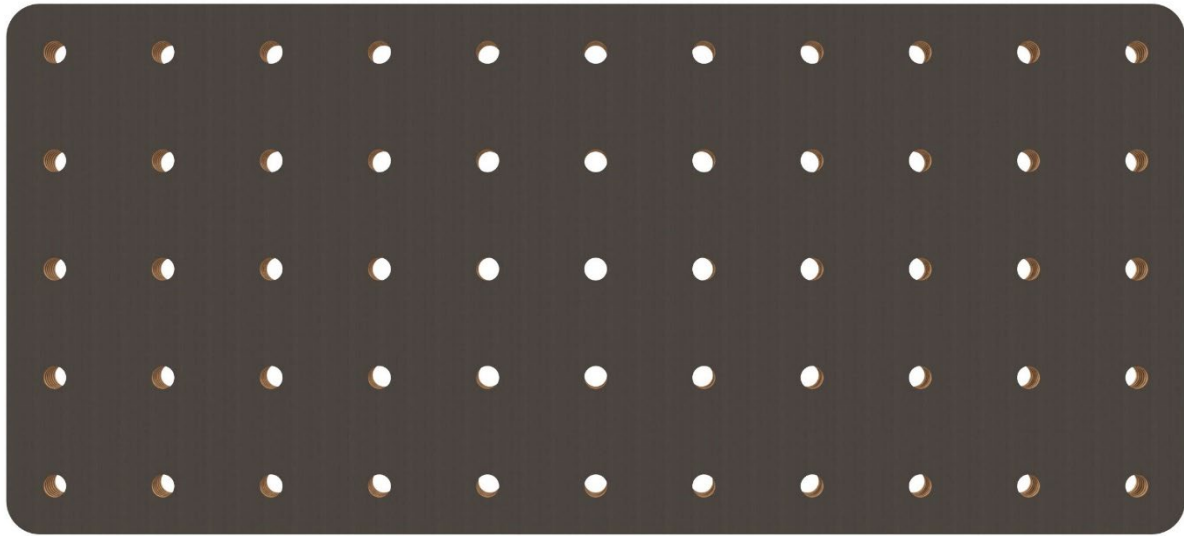


Figure 4 : Example plate

Two values are required for a symmetrical arrangement of the holes.

1. The total length L and total width B
2. The number of holes $n \times m$ (in this case 11 x 5)

The formula for determining x is:

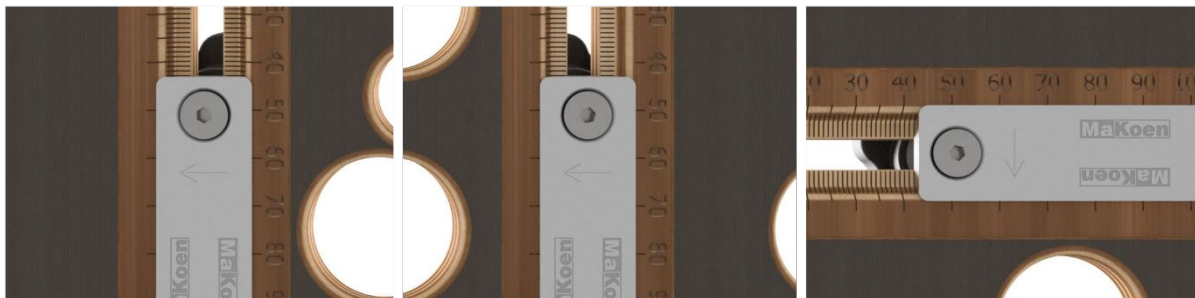
$$x = \frac{l - (n - 1) * 96}{2}; y = \frac{l - (m - 1) * 96}{2}$$

The sample plate shown above has an edge length of 400 mm and has 4 holes horizontally. It follows that:

$$x = \frac{1046 - (11 - 1) * 96}{2} = \frac{1046 - 10 * 96}{2} = \frac{1046 - 960}{2} = \frac{86}{2} = 43mm$$

$$y = \frac{470 - (5 - 1) * 96}{2} = \frac{470 - 4 * 96}{2} = \frac{470 - 384}{2} = \frac{86}{2} = 43mm$$

The dimension to be set in this case is 43 mm for both body edges.



5 : Adjustment of all three sliding carriages

Drilling the hole pattern with the MFT template

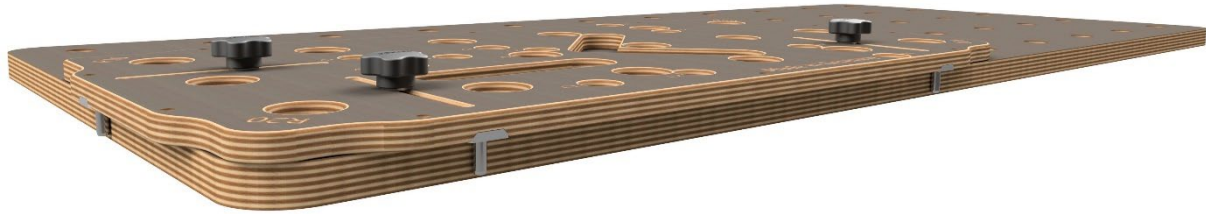


Figure 6 : Template applied to sample panel with slide carriages adjusted

To transfer the hole pattern with the MFT template, the edge distance should be adjusted first. Alternatively, the template can be aligned freehand.

After adjustment:

Place the template with the stop pins on the outer edge of the workpiece to be machined (Figure4).

It is strongly recommended that you secure the template with at least 2 screw clamps.

Drilling with the Ø20 mm version and Forstner drill bit

The Ø20 mm version is designed for use with a Ø20 mm Forstner drill bit. Once fixed in place, the drill holes can be easily transferred using a cordless screwdriver or a drill.

Drilling with the Ø30 mm version and a router

The Ø30 mm version is designed for use with a router and copying sleeve. Due to space constraints, it may be necessary to drill some holes afterwards.

The holes in the sliding carriages may need to be drilled afterwards if the router collides with the star handles.

A copying sleeve with a suitable cutter is required to transfer the hole pattern from the template to the workpiece using the router.

The formulas for the correct copying sleeve/cutter combination are:

$$\varnothing_{Kopierh\ddot{u}lse} = 30 - (\varnothing_{Bohrung} - \varnothing_{Werkzeug})$$

$$\varnothing_{Werkzeug} = \varnothing_{Bohrung} - (30 - \varnothing_{Kopierh\ddot{u}lse})$$

Examples:

The diameter of the template holes is fixed at Ø30 mm.

The diameters of the following are variable:

1. Copying sleeve
2. Tools
3. Holes in the workpiece

Since the bench dogs supplied, like many available accessories, have a diameter of 20 mm, we assume this 20 mm for the Ø hole in this example.

This means that:

$$\varnothing_{Kopierh\ddot{u}lse} = 30 - (20 - \varnothing_{Werkzeug})$$

$$\varnothing_{Werkzeug} = 20 - (30 - \varnothing_{Kopierh\ddot{u}lse})$$

To find out which combination is required, the easiest way is to check your own inventory:

Which copying sleeve do I have, which cutter do I need?

Or

Which cutter do I have, which copy sleeve do I need?

Once you have determined which combination is required, you can transfer the hole pattern.

Moving the template:

Remove the sliding carriage

Loosen the screw clamps and remove the sliding carriages.

Insert the bench dogs

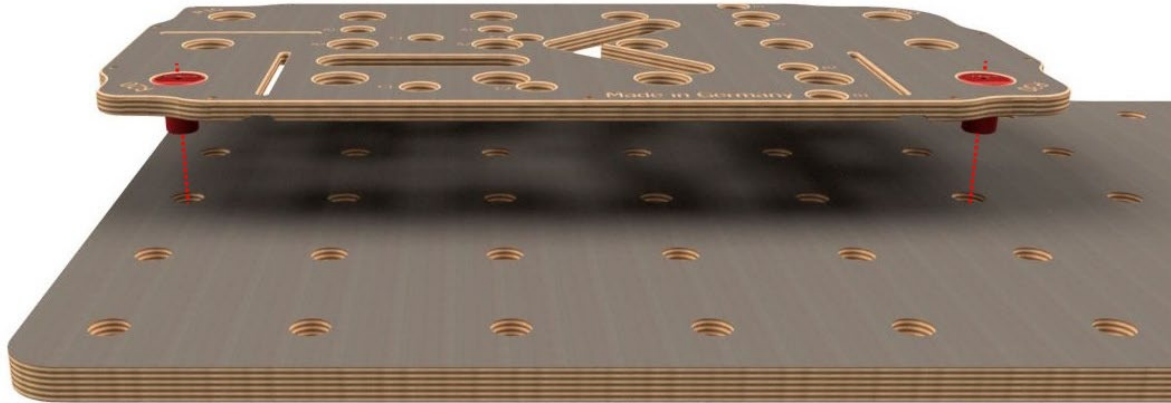


Figure7: Inserting the bench dogs to extend the hole pattern with the Ø30mm version



Figure8 : Bench dogs inserted into the template and workpiece

The two Bench Dogs supplied are required to extend the hole pattern. The Bench Dogs are inserted into the template, which in turn is inserted into the previously drilled holes (Figure9).

This allows the hole pattern to be expanded as desired.

Note: To avoid deviations, always select the largest possible distance. In the example, this is 6 holes.

Milling radii

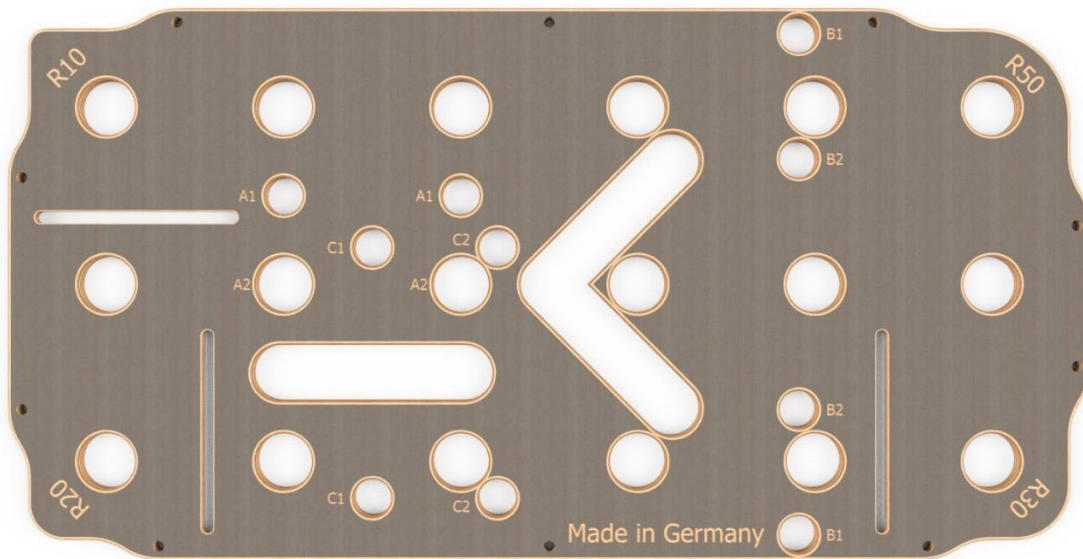
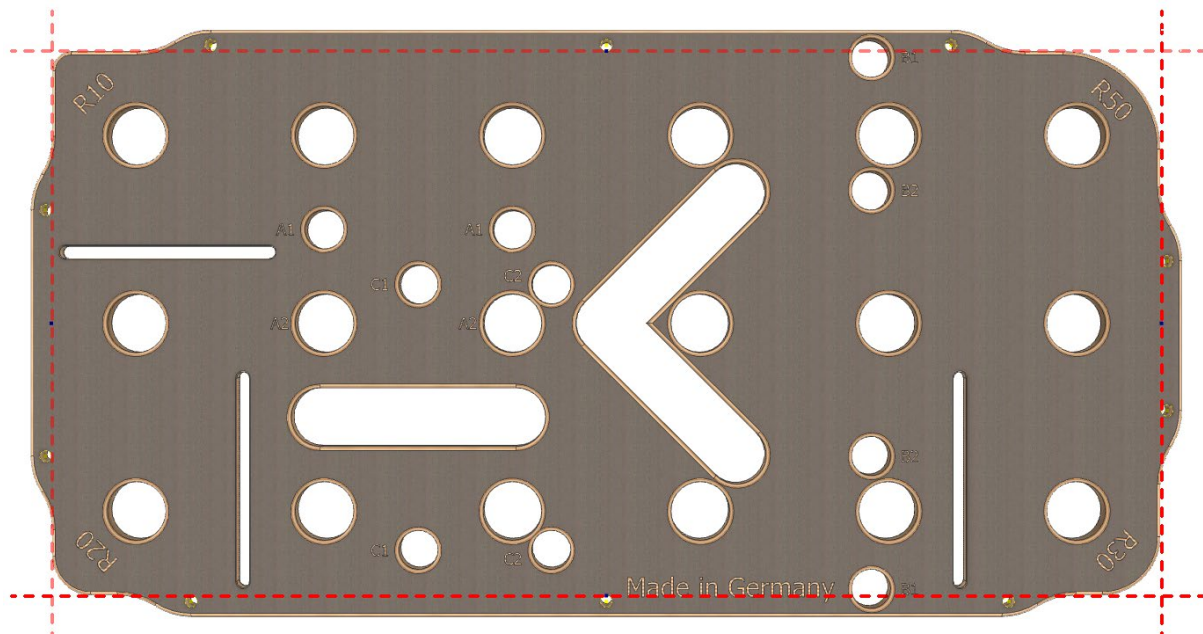


Figure9 : Top view of MFT template 3.0 Ø30mm

The outer edges of the MFT template can be used for milling transition radii.

A total of 10 Ø6mm holes are distributed around the circumference. The 3 Ø6mm pins supplied can be inserted into these. The inserted pins form a stop that is flush with the edges of the radii.



10 : Aligned edges of the holes to the outer radii

Insert the 3 pins into the holes whose radius you want to mill. 3 pins form an aligned edge and a lateral stop (Figure15).



Figure 11 : Stop edge formed by pins

The red dotted line represents the stop edge formed by the pins inserted. Place this against the workpiece to transfer the radius of the template to the workpiece.

Why 10 holes



Figure 12 : Small components

With small components, the problem may arise that the large distance between the holes is too great for the workpiece to be positioned. For this reason, several holes are distributed. Adjust the position of the pins so that a stop edge can be formed (Figure 17).

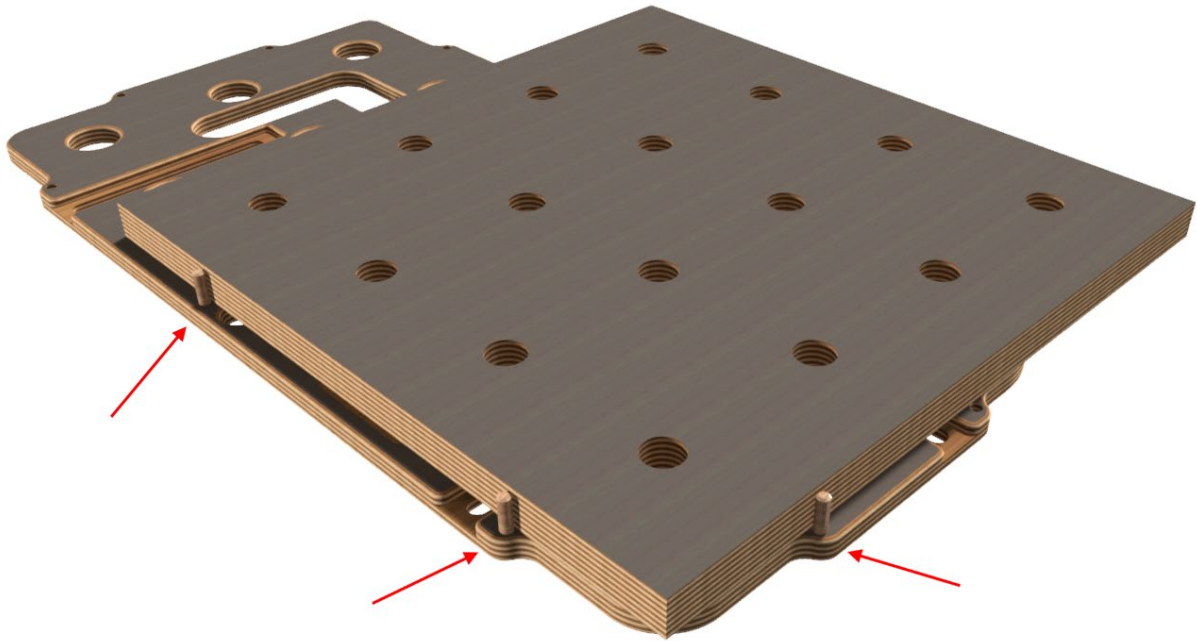


Figure13 : Pin position adjusted

To transfer the radius, place the template on the workpiece as shown and clamp it in place. You can now transfer the radius using a flush cutter with a ball bearing on top (Figure18).

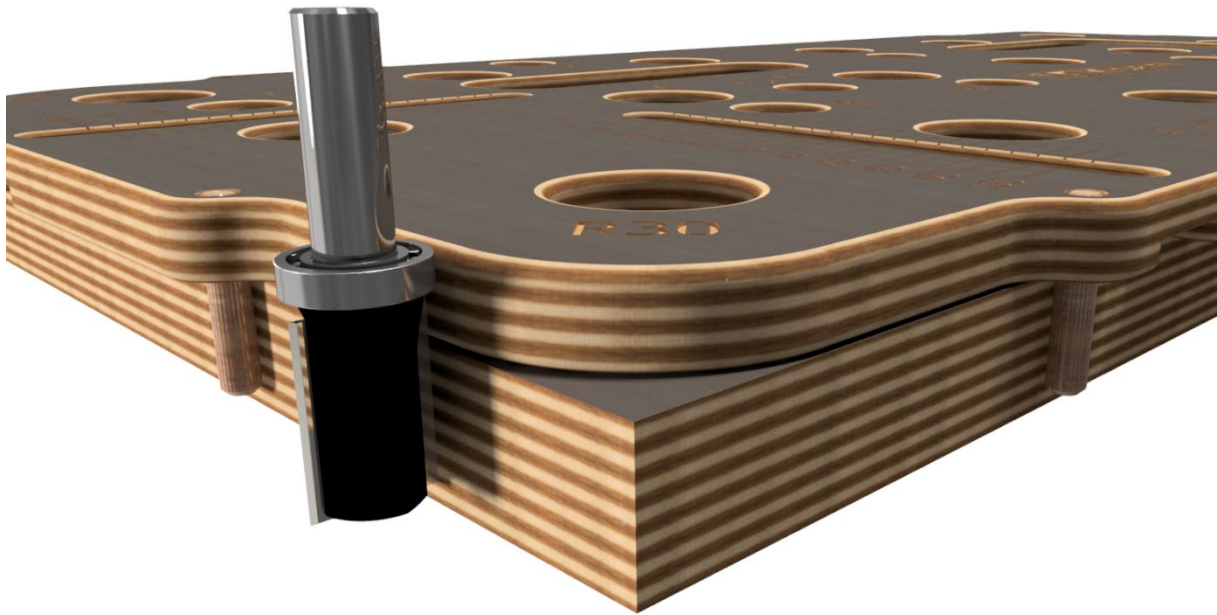


Figure14 : Flush cutter with ball bearing at the top

Slotted holes

There are two slotted holes in the MFT template. One straight and one angled slotted hole.

It is recommended to add the slotted holes **after** drilling or milling the hole pattern.

Slotted holes in a workbench are ideal for standard screw clamps. This saves you having to buy expensive workbench clamps.

Arrangement of the slotted holes

The template can be aligned in the drilled hole pattern using the bench dogs supplied. The hole pattern must be created **beforehand**.

Note: With the Ø20mm version, it may be necessary to remove the bench dogs after alignment, as the milling path is partially blocked by the bench dogs.

The holes marked with 1 cover the hole pattern. The slotted holes are included in the hole pattern.

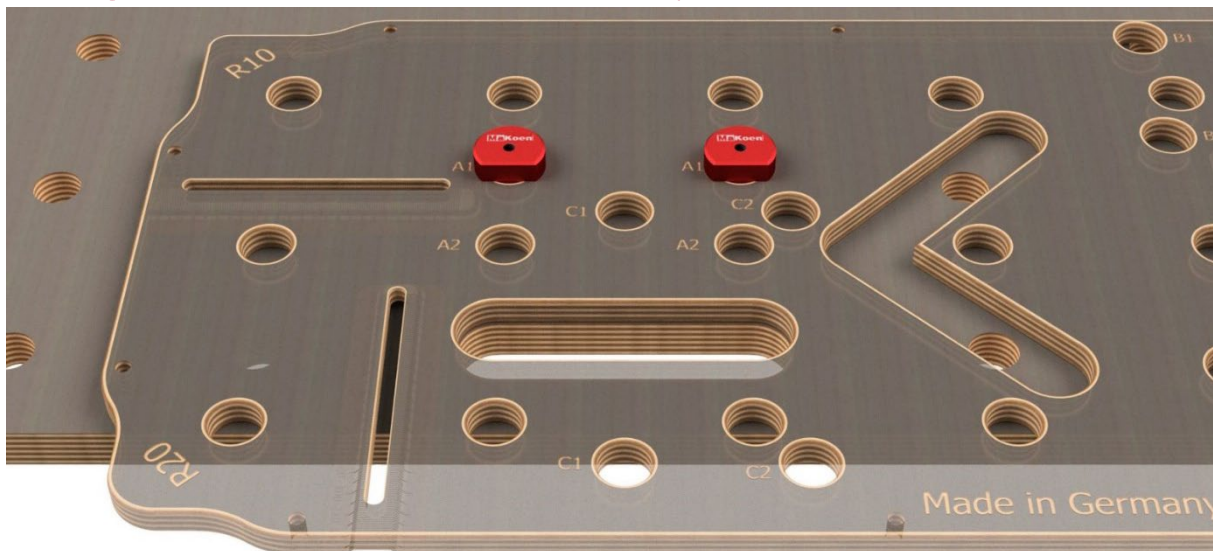
The holes marked with 2 offset the slotted holes so that existing holes are retained. The slotted holes are located between the holes.

The holes marked C2 rotate the slotted hole by 45°.

The holes marked C1 **extend** the slotted hole rotated by 45°.

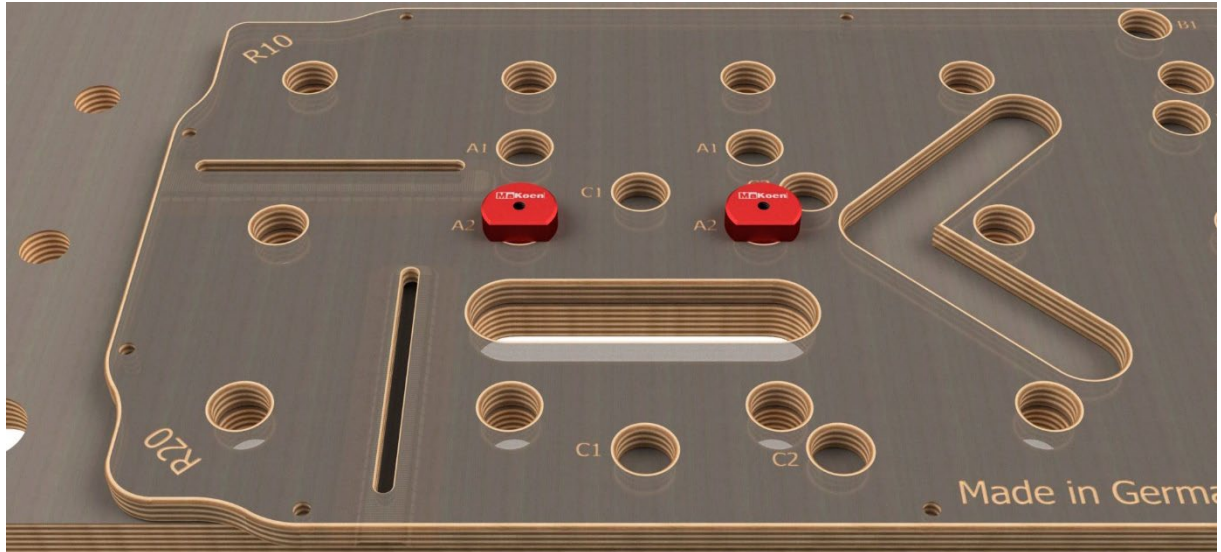
Note: All slotted holes are dimensioned so that an existing hole pattern is covered. This means that the hole pattern can also be adjusted retrospectively.

Arrangement A1 – Slotted hole in hole pattern



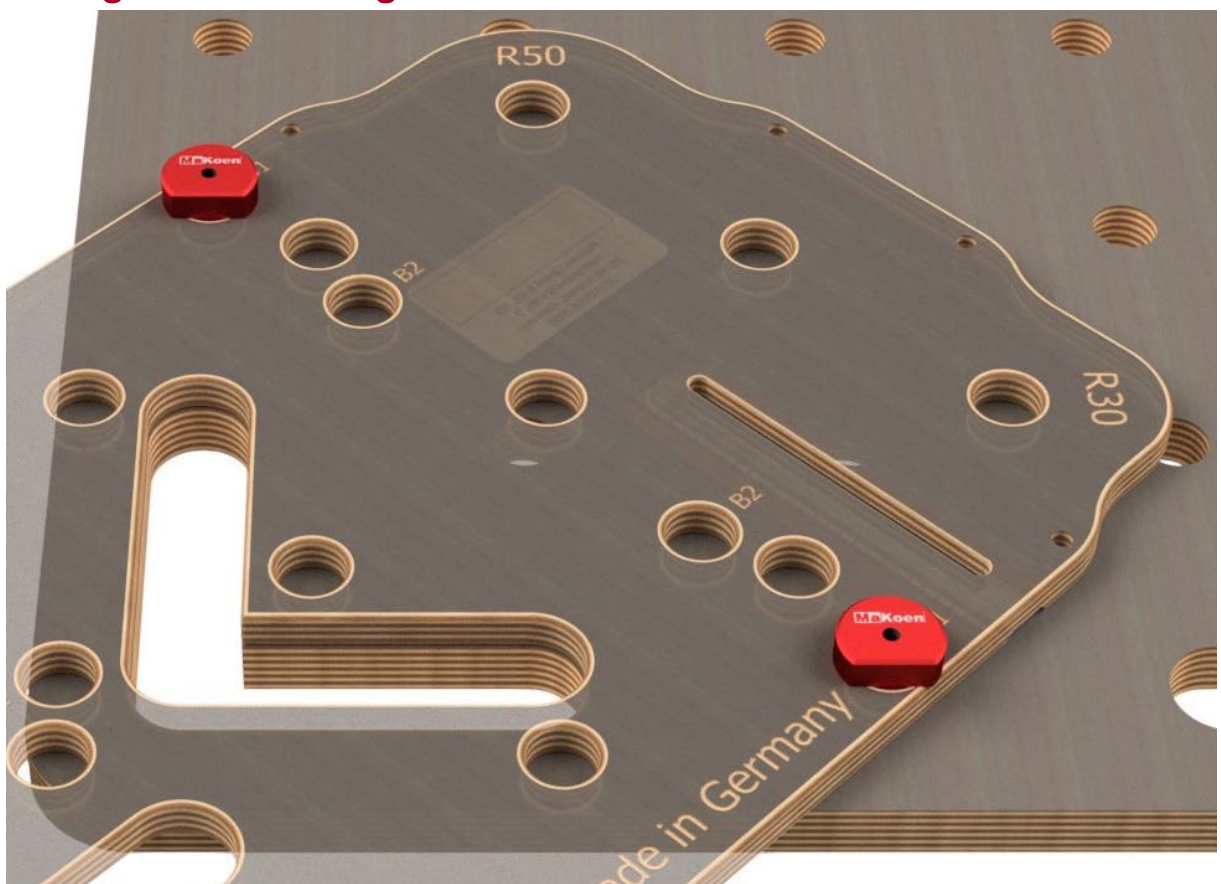
15 : Slotted hole using arrangement A1

Arrangement A2 – Offset slotted hole



16 : Angled slotted hole using arrangement A1

Arrangement B1 – Angled slotted hole



17 : Slotted hole using arrangement B1

Arrangement B2 – Angled slotted hole offset

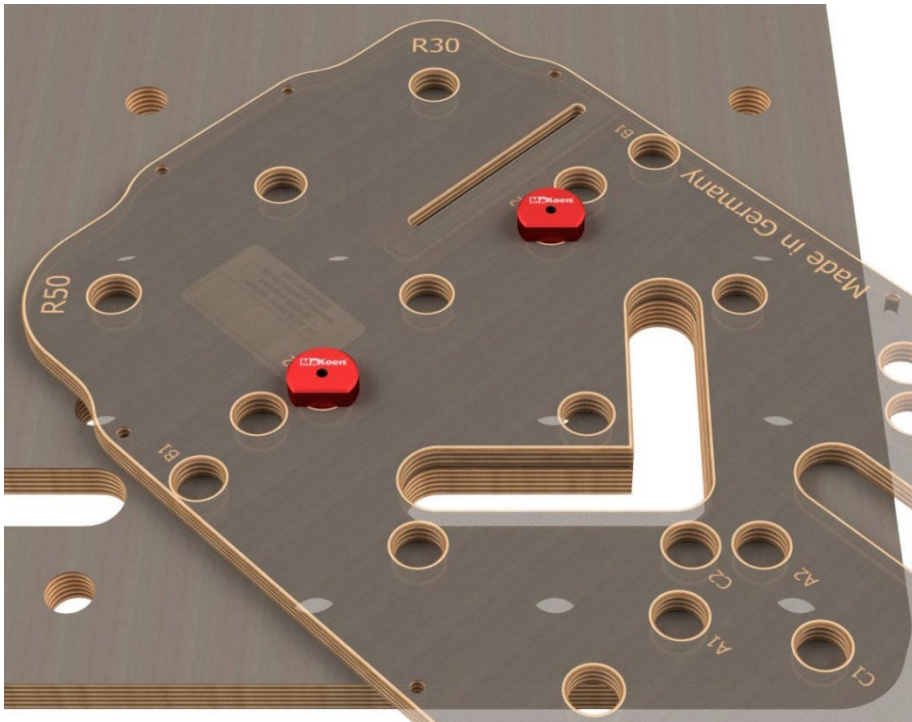


Figure18 : Angled slotted hole using arrangement B2

Arrangement C2 – 45° offset

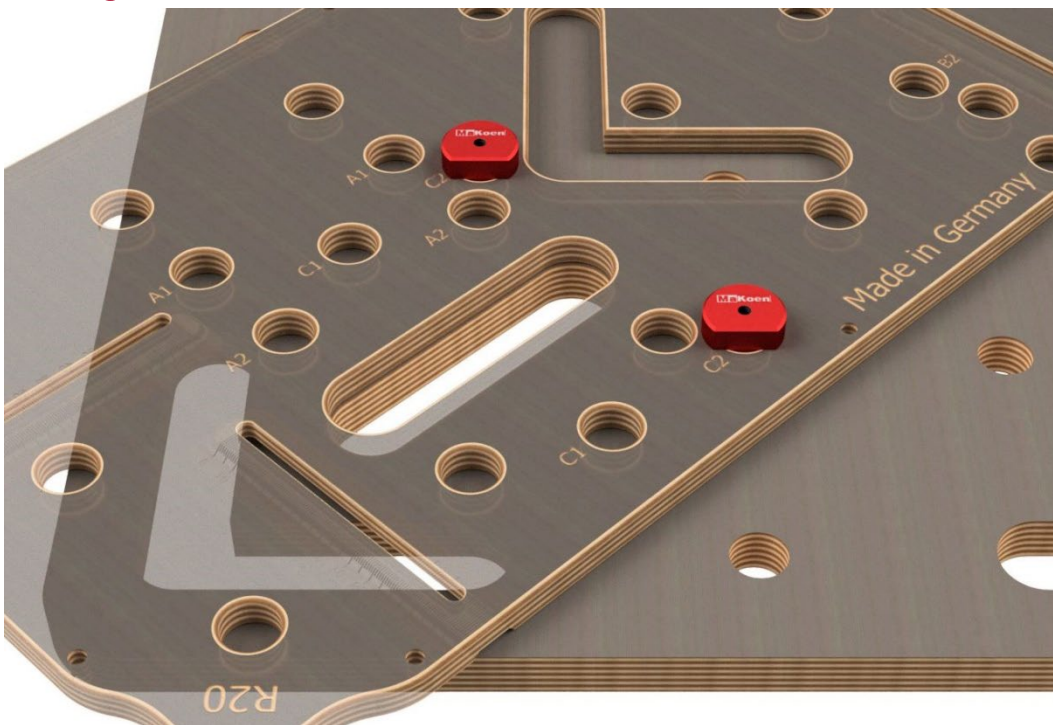


Figure19 : Slotted hole created using arrangement C2

Arrangement C1 – 45° offset extension

With the C1 drill holes, the 45° offset slotted hole can be extended as desired.

FAQ

1. Which models fit your milling compasses?

A: We offer suitable milling compasses for the following models:

Makita: RT0700 – DRT50Z

Bosch: POF1400

Bosch Professional: GKF600 – Router module – Edge milling module – Angle milling module – GKF12V-8 – GKF18V-8 – GOF1250

Festool: OF1010REB – OF1010REBQ – OF1400 – OF2200

DeWalt: D26204 – Router module – Edge router module – DW615 – DW625

2. The template is curved, why?

A: The base material is birch plywood with a phenolic resin coating. During the manufacture of the base material, tension builds up in the material, which is already present before processing and causes the board material to warp. Unfortunately, this cannot be prevented.

Router compass: The centring pin is long enough to hold securely in the centre even with slight curvature.

MFT template: It is recommended to clamp the template in place, regardless of any possible curvature. Clamping will compensate for this.

6-fold template: Due to the compact shape of the template, warping is usually not noticeable. However, if this does occur, the template is discarded.

3. The holes in the MFT are too small; my copying sleeve does not fit.

Copying sleeves are stamped sheet metal parts. They are not manufactured to fit. With our measurement protocol, we want to ensure for everyone that our part of the work has been done properly and to avoid "outliers".

Not satisfied?

Do you have any questions or suggestions?

Please contact us using one of the following options:

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