

# Ceramics fabrication manual



# TRANSSTONE

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*The manual, with its recommendations and useful tips, has been compiled specifically to assist in the Keralini fabrication processes. It contains the basic technical, scientific, and operational knowledge of the manufacturer at the time of publication. To read the latest up-to-date version, which is always freely available, please visit [www.trans-stone.com.ua](http://www.trans-stone.com.ua)*

*Keralini is a ceramic specially designed for worktops. With this in mind, we recommend that you do not limit yourself to the instructions provided in this document. It is better to refer to the extensive scientific, technical, and operational literature and use the services of specialists at each stage of fabrication and installation of ceramic products.*

*TRANSSTONE accepts no liability for any damage that may result from the use of the information and suggestions in this technical manual. They are to be regarded as information for guidance only and should be checked by the user beforehand. TRANSSTONE reserves the right to make any technical changes to this manual without notice or direct communication to any party.*



# Ceramics

specially designed  
for worktops

# 1. Ceramics specially designed for worktops

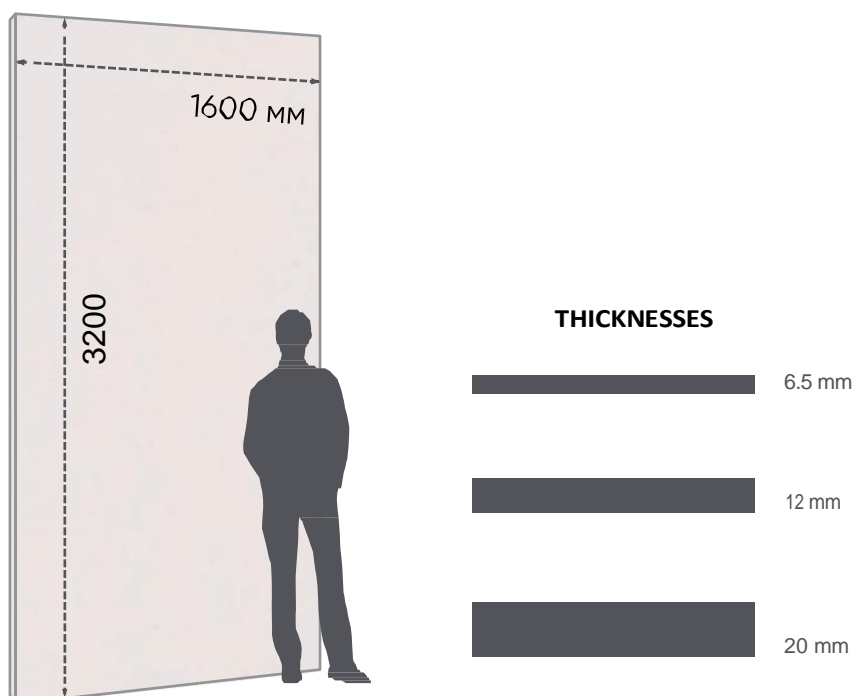
## 1.1. CHARACTERISTICS

Keralini is produced in the form of large-format slabs and is suitable for both indoor and outdoor applications.

This resistant ceramic material withstands atmospheric phenomena such as frost, heat, UV radiation, and absorption. It also maintains resistance to wear and tear.

Versatile surface treatment approaches make it suitable for both flooring and wall applications. The material is compatible with a wide range of adhesives and fasteners, allowing for the installation of various supports. Keralini is suitable for work in diverse environments, including challenging conditions such as high humidity, salty atmospheres, and exposure to aggressive pollutants. These conditions do not impact the material's characteristics.

### Standard dimensions



## 1.2. TECHNICAL SPECIFICATIONS

### Ceramic slabs – Gruppe Bla UGL (UNI EN 14411\_G)

	Established standards	Keralini results	Standards
Length and width	± 0,6%	± 0.9 mm	
Thickness	± 5%	± 3%	
Edge straightness	± 0,5%	± 0,5%	UNI EN ISO 10545-2
Rectangularity	± 2	mm± 2 mm	
Flatness	± 0.5%.	Complies with	
Surface quality	≥ 95%.	Complies with	
Water absorption	≤ 0,5%	≤ 0,1%	UNI EN ISO 10545-3
	–	0.1% average value	ASTM C373
Flexural strength	Flexural strength limit ≥ 35 N/mm <sup>2</sup>	≥ 45 N/mm <sup>2</sup>	UNI EN ISO 10545-4
Frost resistance	Resistant	Frost Resistant	UNI EN ISO 10545-12
Thermal shock resistance	Resistant	Resistant	UNI EN ISO 10545-9
Deep abrasion resistance	≤ 175 mm <sup>3</sup>	≤ 175 mm <sup>3</sup>	UNI EN ISO 10545-6
Colour resistance to light	Resistant	Resistant	DIN 51094
Chemical resistance	Minimum UB	UA; ULA; UHA	UNI EN ISO 10545-13
Resistance to stains	Minimum class 3	Class 3-5	UNI EN ISO 10545-14
Fire resistance	Resistant	Resistant	EN 13501 (rev. 2005)

Keralini is a class A1 fireproof material, demonstrating resistance to flaring up, catching fire, emitting smoke, and spreading flames.

However, prolonged direct exposure to fire may result in material damage.

# Manual fabrication



# 2. Manual fabrication

## 2.1. INTRODUCTION

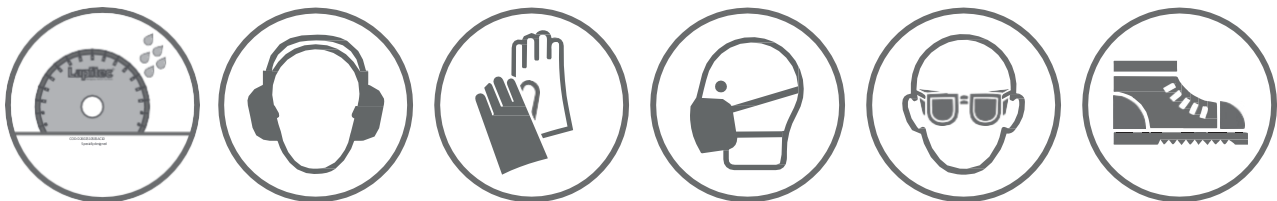
Successful design, accurate calculation and preliminary measurement will allow you to carry out all the necessary processes at the company's premises and avoid inconvenient or critical adjustments on the job site.

If on-site fabrication becomes necessary, we recommend following the instructions in the manual and using the recommended tools.

Should either process be required, it is advisable to conduct preliminary tests for both cutting and drilling. This will help prevent inconveniences and undesirable outcomes.

For this purpose, TRANSSTONE is ready to provide production residues (waste) upon request.

In the case of manual processes, it is recommended to comply with safety precautions and applicable occupational health and safety legislation. Each employee should be provided with PPE (personal protective equipment) suitable for the planned processes. Please consider the tips below.



## 2.2. SLABS STORAGE

Special attention should be given to the transportation of Keralini. The material should be laid on its side, irrespective of the slab format, and it's important to use "spacers" between different parts and between the slabs and the support to prevent potential breakage. Ensure that the slabs are affixed with extreme care to prevent bending or impact.

When storing slabs outdoors, they must be shielded from precipitation to prevent water stagnation. If slabs are found to be wet during packaging, remove the packaging, and place them in an open area until completely dry.

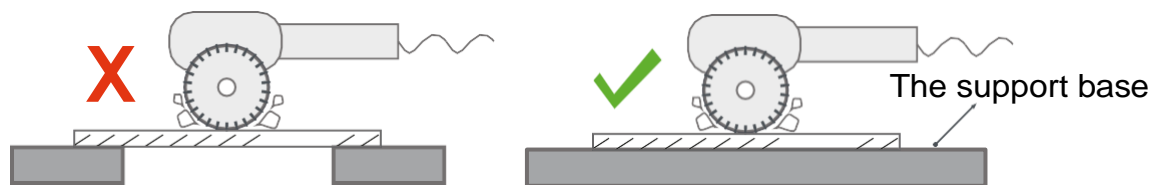
The slabs must also be securely fastened during any manual handling. Be sure to consider the rigidity of the support - it should be perfectly flat and in good condition. To avoid scratches on the Keralini surface, it is advisable to choose a wooden support rather than a metal one.

## 2.3. MANUAL CUTTING

The instructions in this paragraph apply exclusively to manual cutting processes. For benchtop processes (saw, water jet or CNC), please refer to the corresponding sections.

Only use cutting tools recommended by TRANSSTONE. Alternatively, use proven equivalents that are fully compatible with the surface type in question. The cutting process should always be carried out with plenty of running water for cooling and dust reduction. TRANSSTONE does not recommend dry cutting.

Fabrication must always start from the finished surface and proceed toward the unfinished one. After cutting, it is recommended to lightly sand (with 60/120 grit sandpaper) the top and lower edges of the cut side. This will help to avoid chipping and injury (the structure of Keralini makes the edges quite sharp).



### 2.3.1. TOOLS - BLADE FOR CUTTING ON THE JOB SITE

Continuous rim diamond blades for manual tool (angle grinders, grinding machines...)

Ø 115 mm attachment Ø 22 (\*) RPM 11,000 to 13,000

Ø 125 mm attachment Ø 22 (\*) RPM 11,000 to 13,000

Ø 230 mm attachment Ø 22 (\*) RPM 9,000 to 11,000

(\*) adapter also available for Ø 20





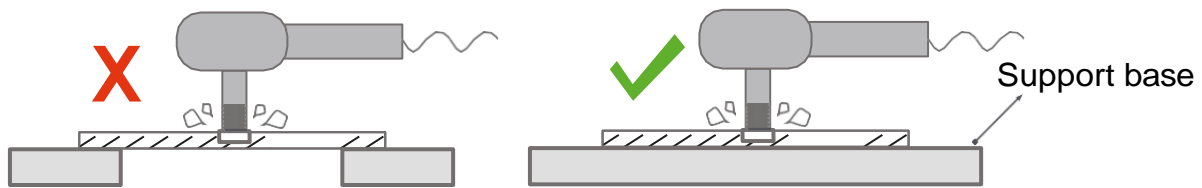
## 2.4. MANUAL DRILLING

For cut-outs for pipework, electrical wiring, ventilation, etc., Keralini can be drilled using the methods and tools listed below.

The workpiece to be drilled must have suitable support, just as when cutting. Any type of impact should be avoided to prevent breakage.

During drilling, use water for cooling and dust reduction. Fabrication must always start from the finished surface and proceed toward the unfinished one.

**Attention: drilling must always start from the finished surface and proceed toward the unfinished one.**



### 2.4.1. TOOLS - CORE DRILL BITS FOR DRILLING ON THE JOB SITE

Diamond core bit for drilling with manual tools (drills...).

For drilling, countersink drills and diamond-coated core bits are recommended.

## 2.5. ASSEMBLY USING ADHESIVES

This section deals with processes for bonding Keralini slabs to each other. For instructions on how to bond Keralini to other substrates, please refer to the respective Fabrication Guide.

### 2.5.1. APPROPRIATE STANDARDS FOR THE USE OF ADHESIVES

Before applying the adhesive, ensure that the surface to be glued is clean, thoroughly dried and free of any treatment. If gluing on a treated surface is necessary, it should be sanded with coarse sandpaper (60-80 grit) to remove any previous treatments and create a rough surface, ensuring a secure and long-lasting adhesion.

For added confidence when gluing with a protrusion (45°), it is recommended to place a square or L-shaped profile measuring approximately 30 x 30 mm on the non-visible rear side of the material, along the entire length of adhesive bond.

If it is not possible to use Keralini to support the finished piece, choose a material with the same coefficient of expansion as Keralini (e.g. granite, quartz surface).

**EXPLANATORY NOTE**

When choosing an adhesive, consider the intended function of the workpiece to determine the most suitable option.

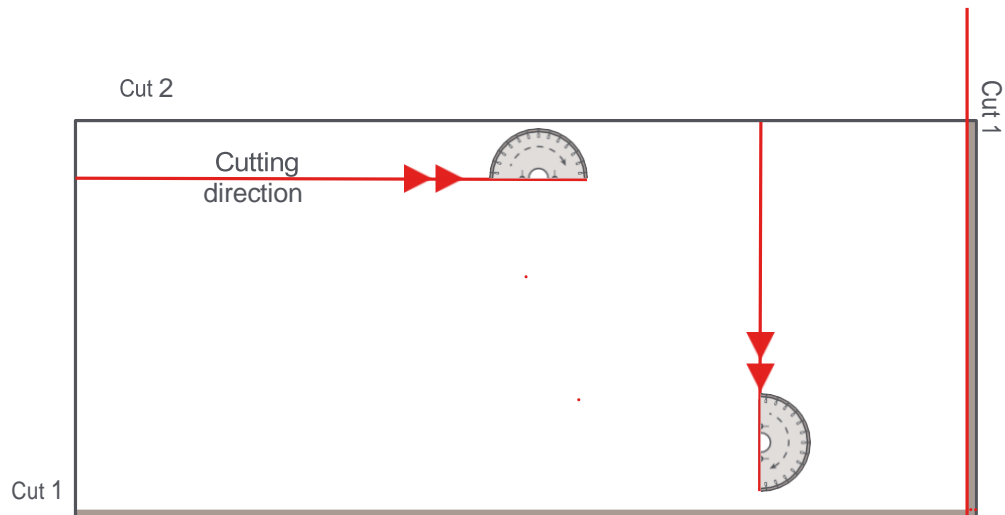


# Mechanical fabrication

# 3. Mechanical fabrication

## 3.1. FUNDAMENTAL PRINCIPLES

Before conducting any operation, the slab must be cut longitudinally and transversely at intervals from the edge along the thickness of the slab (refer to cutting diagrams). Subsequent cuts should be made starting from the rough side towards the side that was cut earlier, as illustrated in the figure below. If all 4 sides are cut, there is no restriction on the direction of the subsequent cuts.



### WARNING

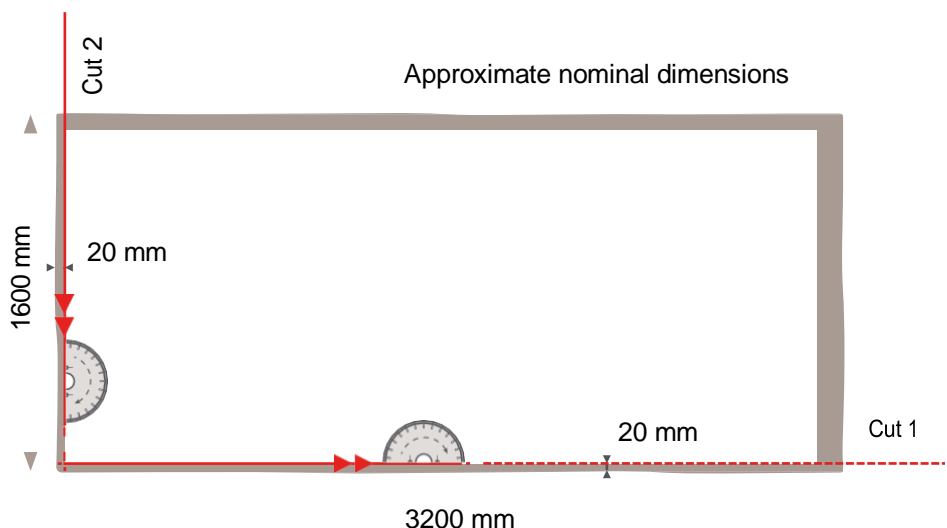
Always follow the safety standards when using special tools.

After each operation, it is advisable to place the surface vertically and rinse it with clean water until it is completely dry.

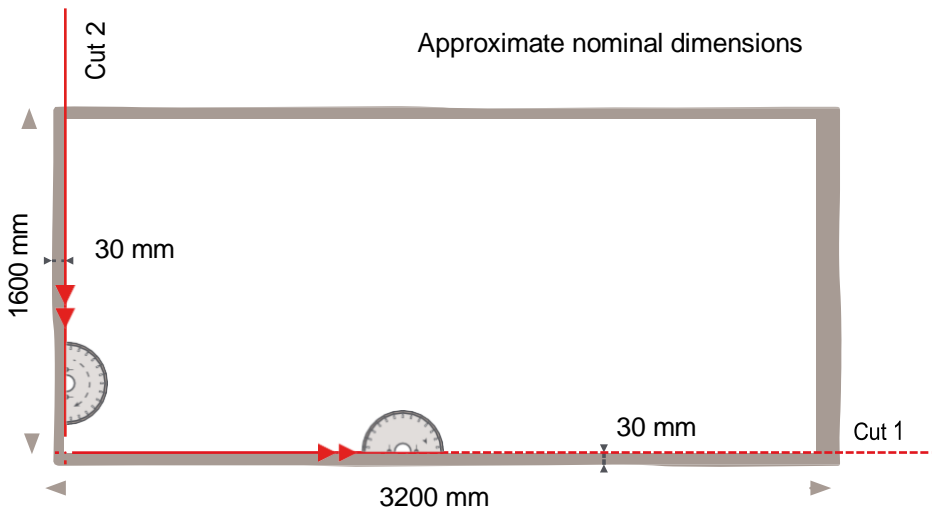
The cutting direction must always be in line with the rotation of the disc.

### 3.1.1. TRIMMING DIAGRAMS

Thickness 12 mm: minimum trimming 20 mm



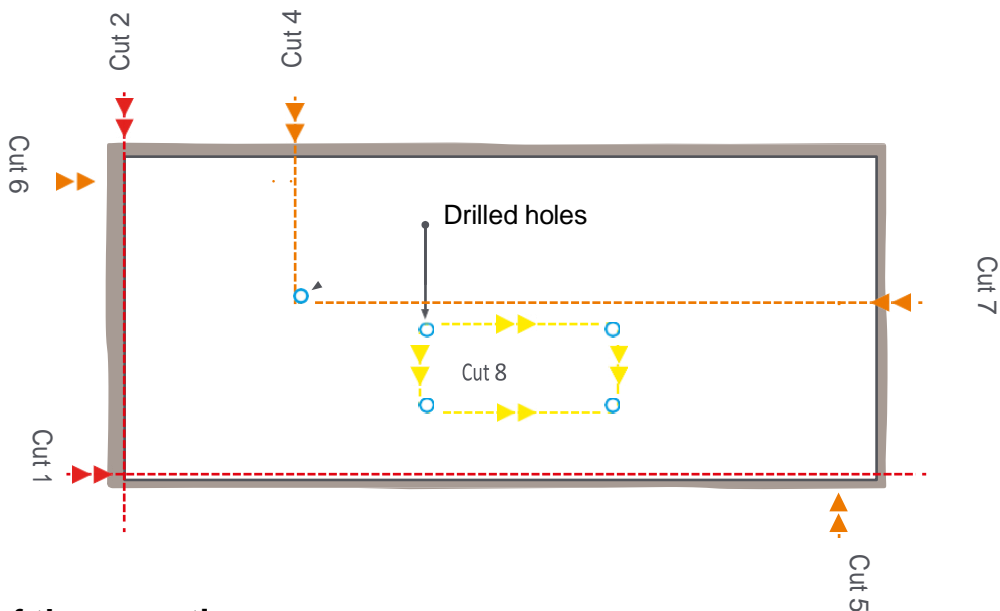
Thickness 20 mm: minimum trimming 30 mm



## 3.2. OPERATIONS WITH BRIDGE SAW

### 3.2.1. Order of operations

Example of cutting diagram for bridge saw



#### The order of the operation:

1. Trimming the slab (red dashed line)
2. Drilling holes (light blue dots)
3. Cuts around the perimeter of the worktop (orange dashed line)
4. Interrupted sections (yellow dashed line)

#### WARNING

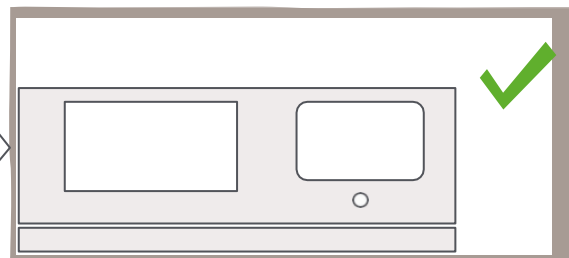
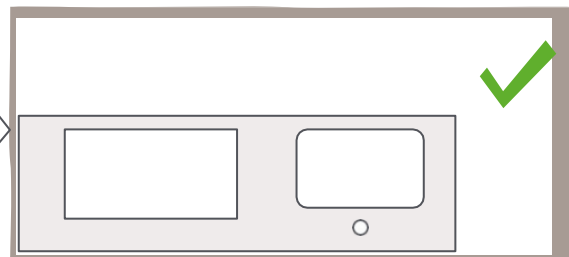
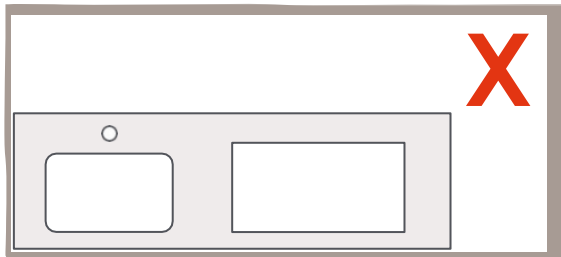
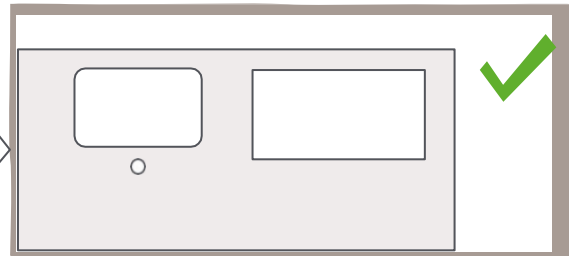
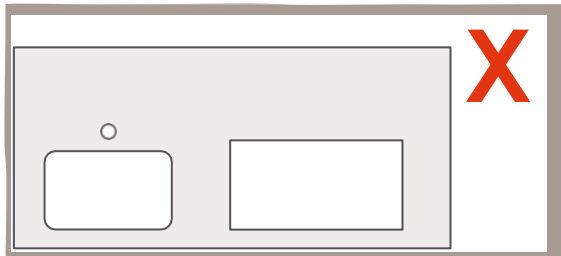
The cutting direction must always be in line with the rotation of the disc.

### 3.2.2. Piece orientation

We recommend making holes for a sink or stove in the central part of the slab and lintels closer to the external sides.

Incorrect manufacturing

Correct manufacturing



### 3.2.3. Disc tool

#### General precautions

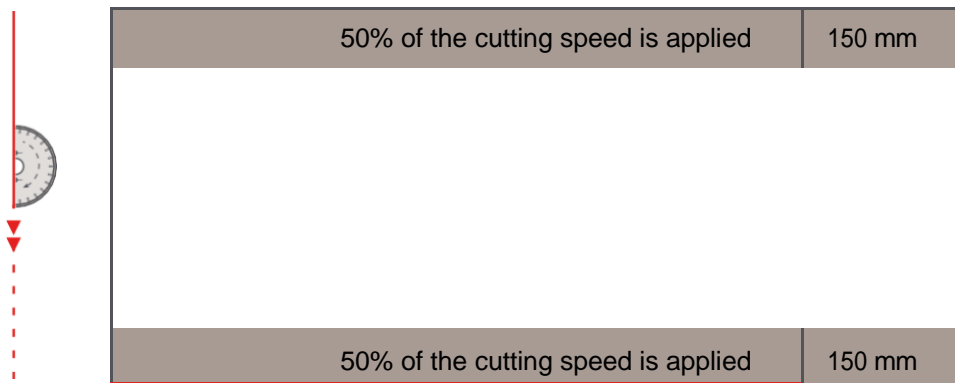
Use plenty of water during cutting. The water jet should be directed forward and sideways relative to the flap disc - as close to the cutting zone as possible (as shown in the image below).

**Caution: Insufficient water can cause the disc to overheat, which can compromise the success of the operation and lead to subsequent tool failure.**



#### IMPORTANT!

Make sure that the surface of the table on which you will be cutting is flat and in good condition. If it is not, we recommend placing a high-density technical rubber mat between the material and the router table. This will reduce vibrations and improve the quality of the operation.



Keep an eye on the speed. Reduce the feed speed to 50% for the first 150 mm and the last 150 mm. When cutting small parts, we recommend using special supports to secure the material to prevent it from moving.

## DISC ROTATION PARAMETERS

Saw blade $\varnothing$	Spindle revolutions, g/min	Circumferential speed m/s
300	2100-2300	34-37
350	1800-2000	34-37
400	1600-1800	34-37
450	1400-1600	34-37
500	1260-1460	34-37

### NOTE

If the number of spindle revolutions is fixed, you must choose the disc that requires the number of revolutions closest to those of the spindle.

## CUTTING PARAMETERS

Type of cut	Feed rate mm/min 12 mm	Feed rate mm/min 20 mm
Cut entering from the top of the slab	100	100
Straight cut	1400-1800	800-1000
Inclined cut	800-1000	450-600

### WARNING

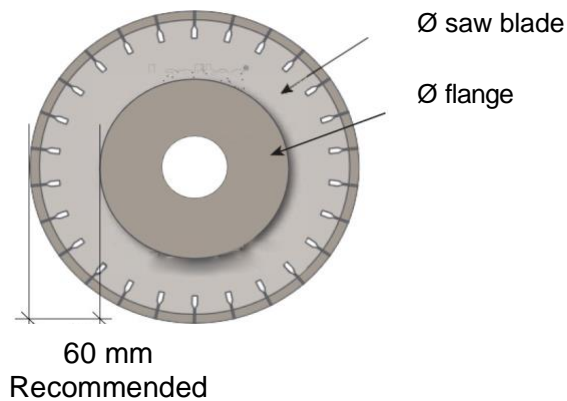
Any increase in spindle absorption indicates the need to sharpen the disc using a stone.

The parameters listed should be understood as applying to machines with a larger flange, well directed intense water flow, horizontal feed, and deceleration. If the above conditions do not exist, reduce the feed rate to the minimum of the above parameters (e.g. 12 mm 1400 m/min).

When choosing a disc, be sure to consider the machine characteristics, thickness of the material to be cut, and the angle of inclination. The exposed part of the disc should be reduced as much as possible, keeping in mind that 1 mm of material protrusion is mandatory.

To reduce the centre hole diameter, we recommend using the rings supplied by the manufacturer with the disc.

## Flange size





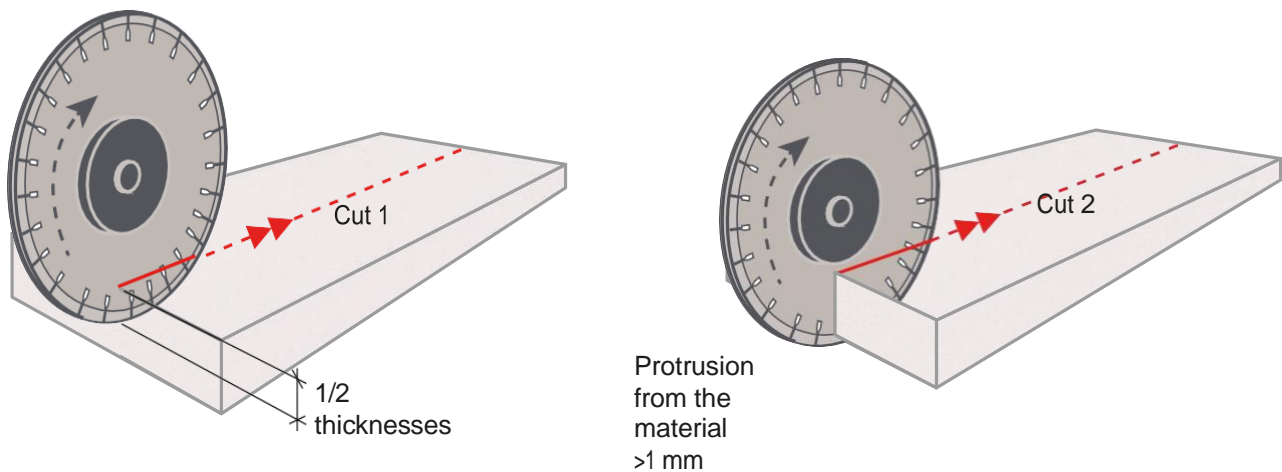
### 3.2.4. Step-cutting

If one or more of these specific conditions are present, step-cutting is recommended:

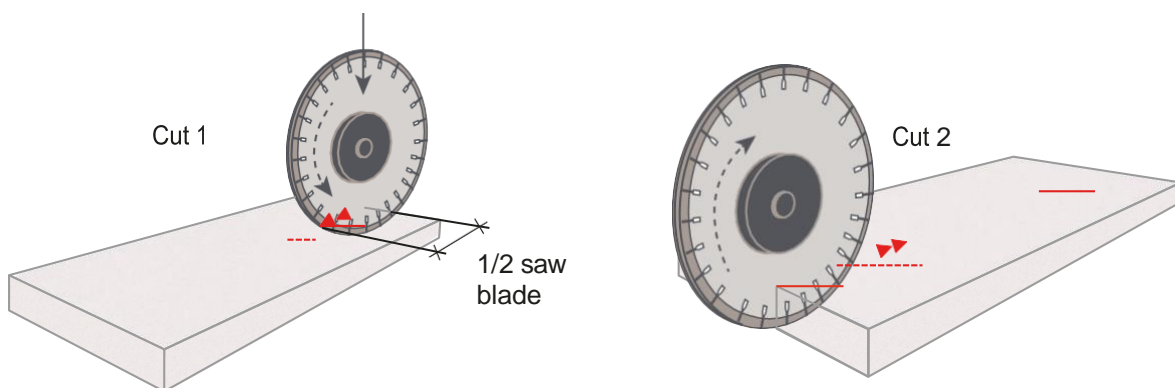
- you do not have a larger flange available;
- there is no intensive water supply;
- the disc is in poor condition;
- the support surface is not flat.

Type of cut	Feed rate mm/min 12 mm	Feed rate mm/min 20 mm
Straight cut	1400-1800	800-1000
inclined cut	800-1000	450-600

#### STEP-CUTTING DIAGRAM

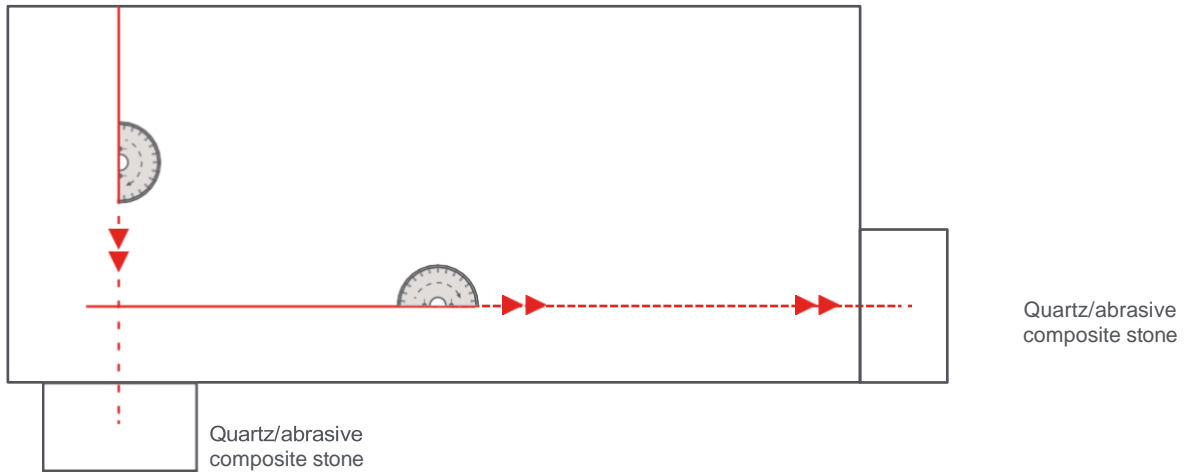


#### STEP-CUTTING DIAGRAM

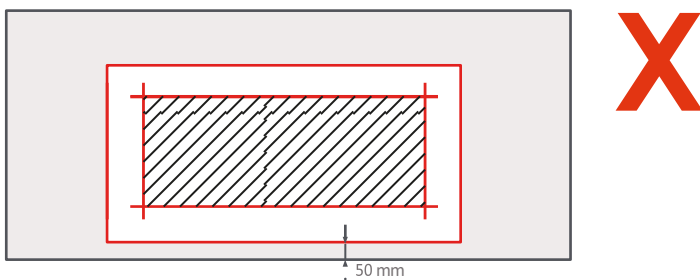
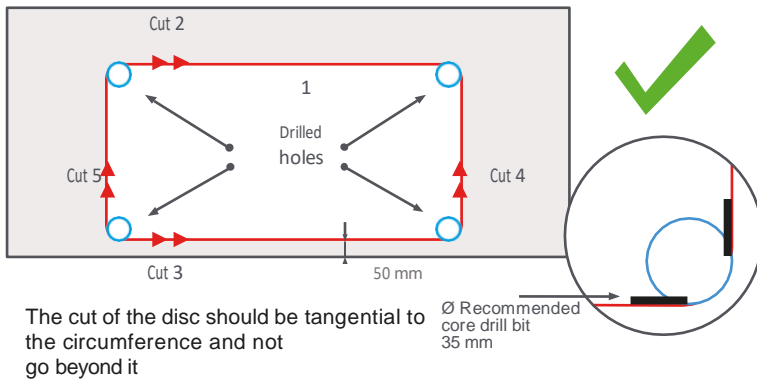


### 3.2.5. Quartz agglomerate/abrasive stone

We recommend placing a piece of quartz agglomerate/sharpening stone at the outlet of the Keralini cutting line. This will limit the deflection of the blade as it exits the material, avoiding chipping, and will also allow the blade to be sharpened.



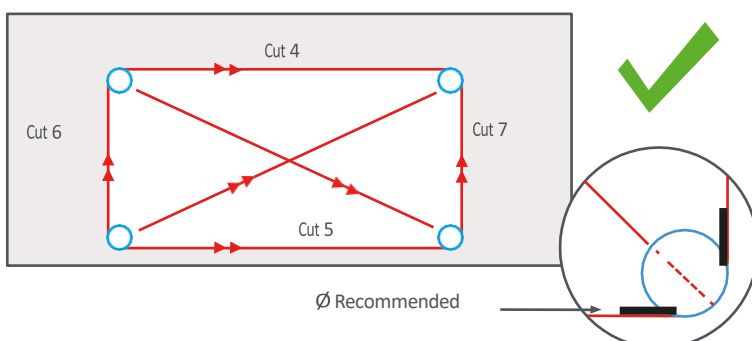
### 3.2.6. Sink cut diagram with disc



#### SPECIFIC MEASURES

If one or more of the following conditions are present:

- the support base is not flat
  - island measurements exceed 2600x600 mm
  - sink measurements exceed 560x480 mm,
- we recommend following the guidelines below:



## 3.3. OPERATIONS WITH WATER JET

### 3.3.1. Parameters of operation with water jet

#### LOW PRESSURE INLET HOLE PARAMETERS (PIERCING)

Thickness	Minimum pressure Bar	Minimum pressure psi	Abrasive 80 Mesh kg/min
12 - 20	600	8700	0,35-0,45

#### TIPS

If possible, drill the inlet hole on the outside of the slab. Alternatively, the inlet hole can be a few tenths of an inch from the cutting perimeter, but in any case, the distance from the inlet should not be less than 5 mm.

#### HIGH PRESSURE CUTTING PARAMETERS

Thickness	Minimum pressure Bar	Minimum pressure psi	Feed rate mm/min	Abrasive 80 Mesh kg/min
12	3600-3800	52200-55100	500-900	0,35-0,45
20	3600-3800	52200-55100	400-500	0,35-0,45

#### TIPS

The above data refers to the maximum recommended values. To achieve a better finish, reduce the feed rate.

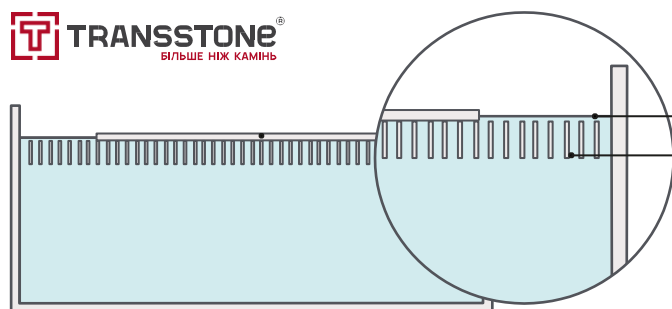
For water jet fabrication, it is also recommended to follow the trimming procedure described in "Trimming diagrams" in section 3.1 FUNDAMENTAL PRINCIPLES.

Make sure the worktable is in good condition and level. In addition, the material must lie perfectly flat. Make sure that any machining trimmings or other elements do not interfere with the process.

For angles equal to or less than 90°, it is recommended to join the angle with a bending radius of  $\geq 5$  mm.

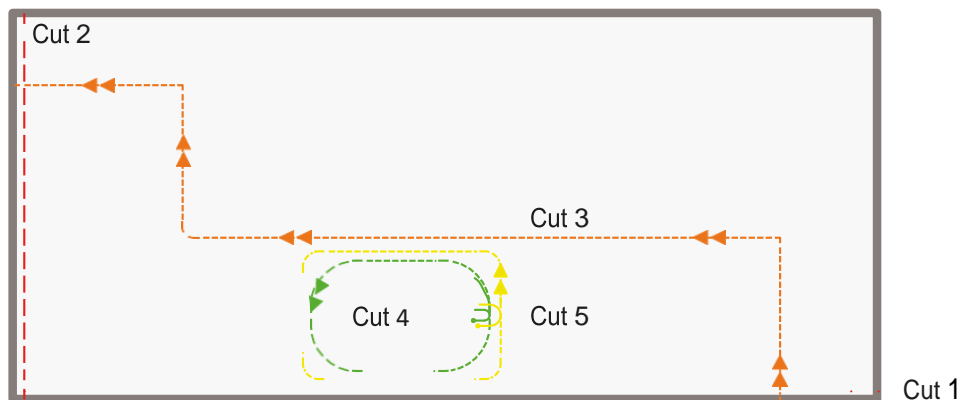
#### WATER LEVEL IN THE WATER JET TANK

To improve the finish of the underside of the product, we recommend keeping the water level higher or at the same level as the table surface Ø.



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### 3.3.2. Cutting sequence



#### STAGES OF THE OPERATION

1. Trimming the slab (red dashed line)
2. Trimming the slab (red dashed line)
3. Cut according to the shape of the workpiece (orange dashed line)
4. Sink pre-cut if necessary (Green dashed line)
5. Sink cut (yellow dashed line)

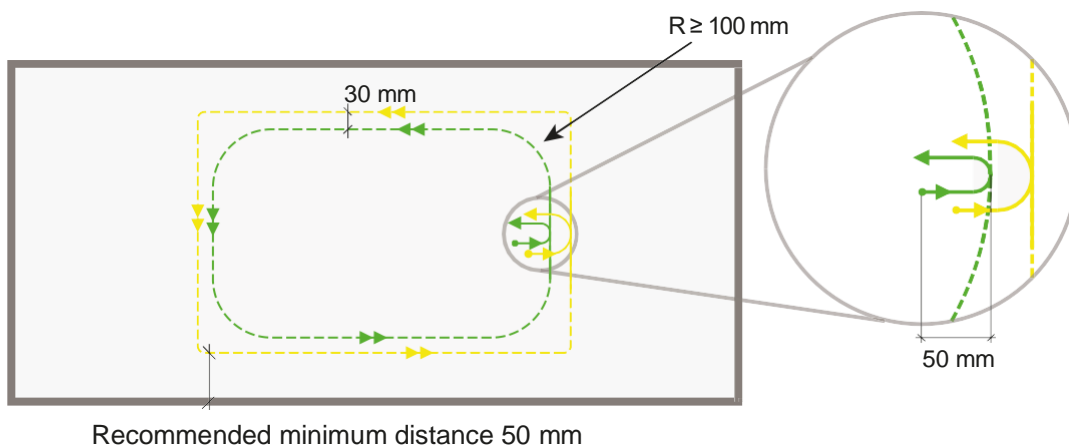
### 3.3.3. Sink cut diagram

If one or more of the following conditions are present:

- the support base is not flat
- island measurements exceed 2600x600 mm
- sink measurements exceed 560x480 mm

We recommend following the cutting diagram shown below:

**NOTE:** The cutting of the sink hole should start inside the pre-cut, as shown on the picture below.

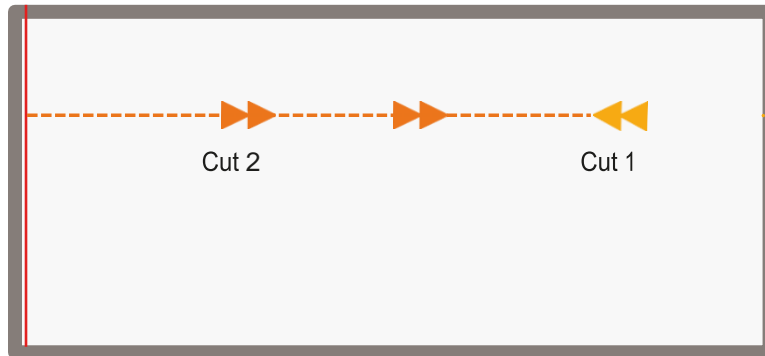


### 3.3.4. Pre-cutting diagram

#### SPECIFIC MEASURES

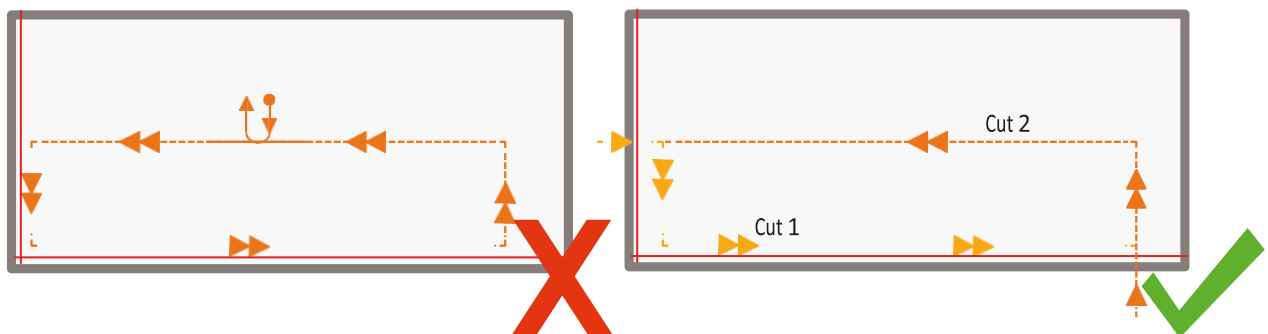
If one or more of these specific conditions are present, step-cutting is recommended:

- you do not have a larger flange;
- there is no abundant water supply;
- the disc is in poor condition;
- the support surface is not flat.



### 3.3.5. Cutting diagram

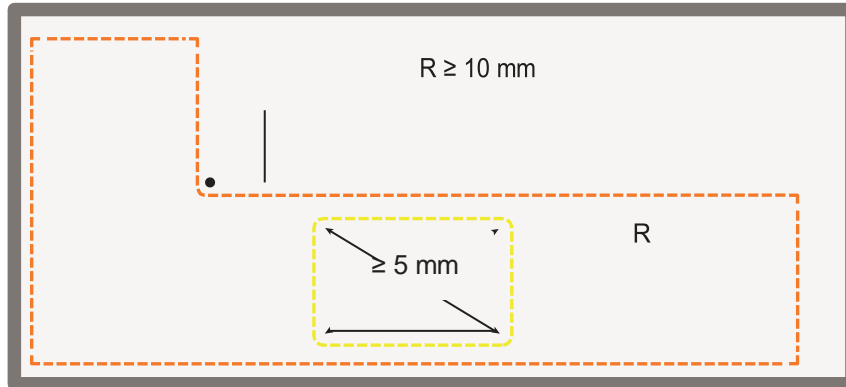
If you wish to cut a worktop shape, it is recommended that you divide the geometry into two parts, always starting with the cuts on the outside of the slab. Cutting the shape will always be done after trimming.



### 3.3.6. Radii

All internal corners relative to the hole must have a minimum radius of 5 mm, internal corners relative to the overall geometry of the piece (e.g. L-shaped countertop) must have a minimum radius of 10 mm.

A larger radius gives the finished product greater structural strength. Otherwise, any corner that is not rounded creates a stress point on the countertop.



## 3.4. OPERATIONS WITH CONTOURING MACHINE

### 3.4.1. Finger bit tool

#### PARAMETERS

The data is based on a tool diameter of 22 mm for through cuts.

Thickness	Spindle revolutions g/min	Feed rate mm/min
12	3800-4200	350-400
20	3800-4200	300

**Attention!** A vibrating tool is not suitable for cutting. Reducing the cutting speed too much can lead to diamond closure in the cutting tool, creating excessive resistance against the material and may result in further fracture of the workpiece.

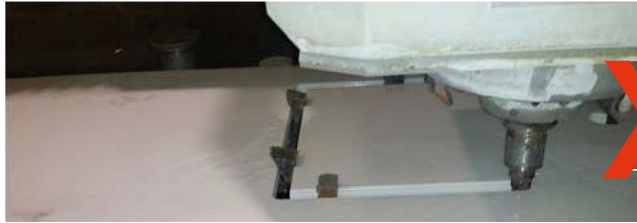
When fabrication, use plenty of water, gently directing it outwards and inwards (as shown in the illustration below).



### 3.4.2. Sink cut with contouring machine

When working with a contouring machine, first of all, make sure that the surface is properly set up.

All processes must be carried out in accordance with the instructions in the Technical Manual, without using supports other than suction cups and Teflon positioning supports. Do not use devices that can mechanically impact the workpiece. This may damage the workpiece and make it unusable for further use.



WEDGES



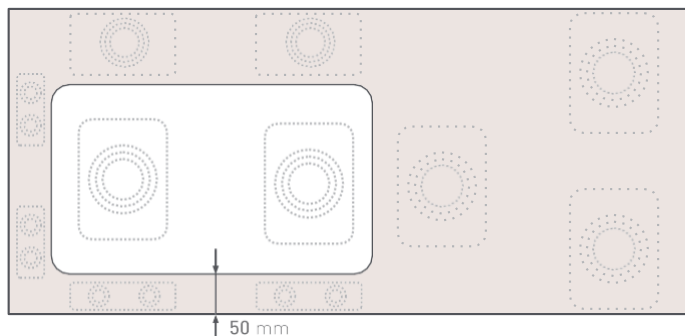
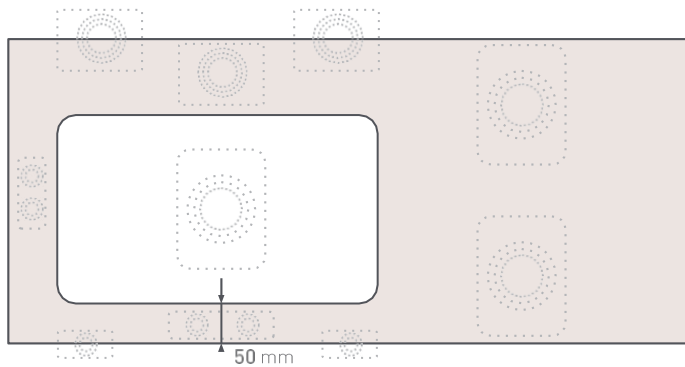
GRIPPERS



PISTONS

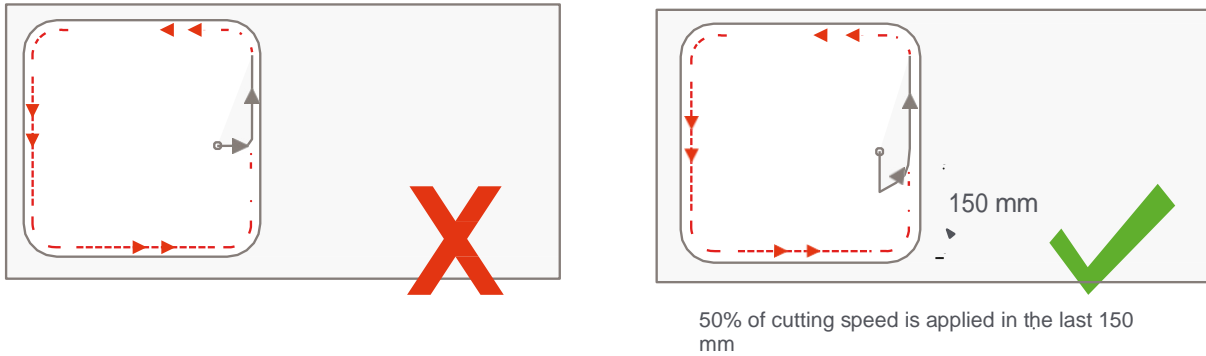
To support the most stressed areas of the product, we recommend the correct positioning of the suction cups. Use them to support the narrowest areas (as shown on the side photo).

The suction cups must be clean and free of signs of use. Make sure they are clean before placing the workpiece. Otherwise, rinse them thoroughly with clean water beforehand.

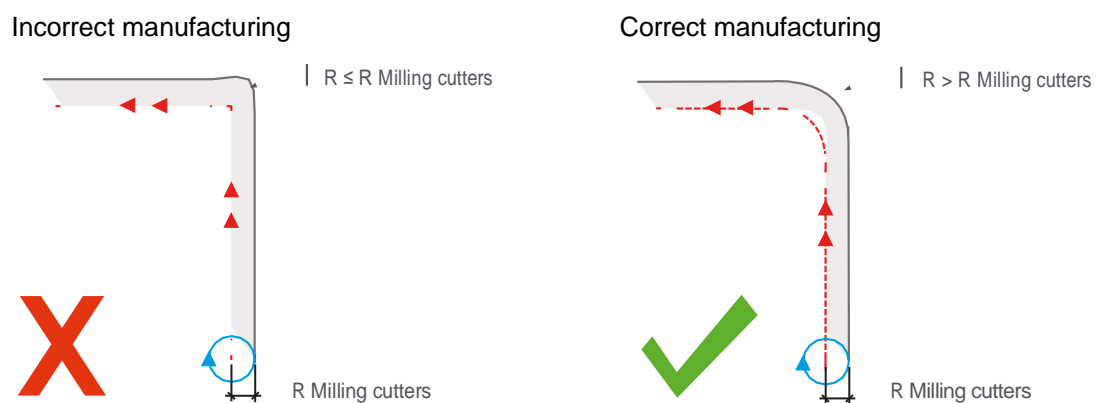




To prevent chipping, ensure that the cutter has a wide radius. This will facilitate an easy exit for the tool at the end of the process.



It is advisable to make internal connections with a larger radius than the cutter. This way, the machine will move more smoothly and is safer for the material.



When using the milling cutter in 12 mm and 20 mm thicknesses, it is recommended to centre the tool in respect to the thickness of the board. This will help to reduce vibrations and avoid unnecessary pressure on the workpiece and the tool. Attention! The tool must not oscillate during cutting.



### FABRICATION TIPS

Reasons for tool breakage:

- The feed rate is too high;
- the number of revolutions is lower than the nominal revolutions of the tool;
- Insufficient cooling water.

Any breakage of a piece is caused by the fact that the material being cut is subjected to a high load at one point.

Solutions for implementation:

If possible, use suction cups to secure the workpiece. Alternatively, cut in a manner that avoids exerting pressure on the corner by dividing the side into two segments.

### WARNING

After each operation, rinse the surface with clean water. Do not wait for the piece to dry.

### 3.4.3. Drilling tools

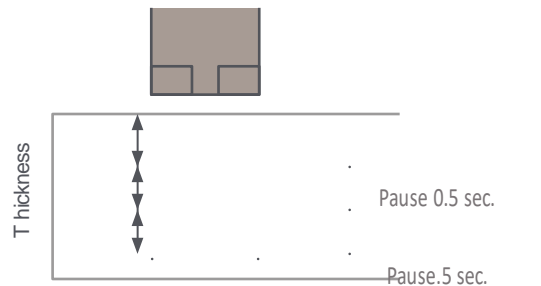
#### PARAMETERS

Data refers to a proprietary instrument

Available diameters	Spindle revolutions g/min	Feed rate mm/min
Ø 30	2000	20-30
Ø 35	1800	20-30
Ø 55/60	1200	20-30
Ø 70	900	20-30
Ø 100	650	20-30

#### TIPS

During the operation, use a large and directed water jet from the outside and inside of the tool. Do not drill with oscillation to avoid the formation of burrs.



Stop 2 mm from the bottom of the workpiece to avoid holes in the back of the workpiece. It is recommended to finish drilling by striking the side opposite to the hole.

#### WARNING

After each operation, it is advisable to rinse the surface well with clean water without waiting for the piece to dry.

For the faucet holes, we recommend positioning the suction cup near the holes to ensure proper support for the workpiece and to guarantee the success of the result.

### 3.4.4. Milling cutter for incremental cutting (finishing)

#### PARAMETERS

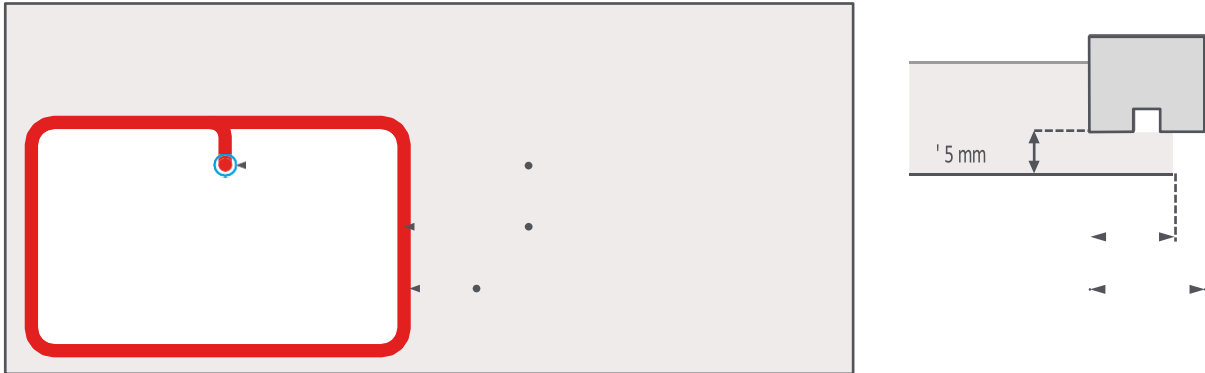
Data refers to a proprietary instrument

Available diameters	Spindle revolutions g/min	Feed rate mm/min
Ø 6	7500	100-200
Ø 8	7500	200-300
Ø 10	7000	300-400
Ø 12	6500	600-800
Ø 16	6000	800-1500

\*Use tools with Ø 12 and 16 for recesses, Ø 6, 8 and 12 for corners.

**TIPS**

During fabrication, use plenty of water, carefully directing it to the outside and inside of the tool.



It is recommended to start the milling operation after cutting the sink hole. It is also advisable to ensure that at least 5 mm of material thickness remains afterwards.

During fabrication, use plenty of water, carefully directing it to the outside and inside of the tool.

**WARNING**

After each operation, it is advisable to rinse the surface well with clean water without waiting for the piece to dry.

### 3.4.5. Bushing tools

Available diameters	Spindle revolutions g/min	Feed rate mm/min
Ø 6	6000	15-20
Ø 7	6000	15-20
Ø 8	6000	15-20
Ø 10	6000	15-20
Ø 11	6000	15-20

**TIPS**

During fabrication, use plenty of water, carefully directing it to the outside and inside of the tool.

**WARNING**

After each operation, it is advisable to rinse the surface well with clean water without waiting for the piece to dry.

### 3.4.6. Drilling kit

Tool for drilling at an acute angle for mechanical couplings.

To avoid excessive wear of the tool when making blind holes, we recommend making a preliminary hole with a hole saw (described above). After all, Keralini is a hard material.

Available diameters	Spindle revolutions g/min	Feed rate mm/min
Ø 7	6000	25-30
Ø 10	6000	25-30

### 3.4.7. Milling cutter for incremental cutting (roughing)

Tool for continuous cutting under the sink without suction cups.

#### PARAMETERS

The data is based on a tool diameter of 16 mm.

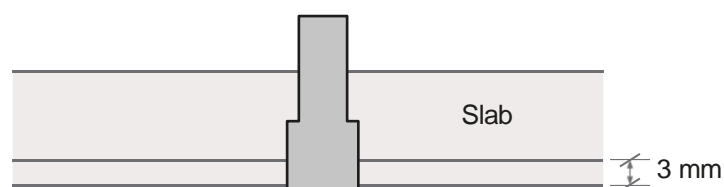
Thickness	Spindle revolutions g/min	Feed rate mm/min	Maximum removal mm
12 - 20	6500	400-600	2

To prevent chipping in the lower part of the workpiece, it is recommended to finish cutting in passes, leaving 3 mm of material. Then, remove the residual material in a single pass, plunging at least 1 mm of the tool and at a speed 50% lower than previously used.

Remember that the increment/sinking between passes should be performed in an area free of material (in the hole).

#### TIPS

During fabrication, use plenty of water, carefully directing it to the outside and inside of the tool.



#### WARNING

After each operation, it is advisable to rinse the surface well with clean water without waiting for the piece to dry.

### 3.4.8. Cutting tool

Thickness	Spindle revolutions g/min	Feed rate mm/min	Maximum removal mm
Ø 50	4500-5000	300	2
Ø 88	4000-4500	500	2

#### TIPS

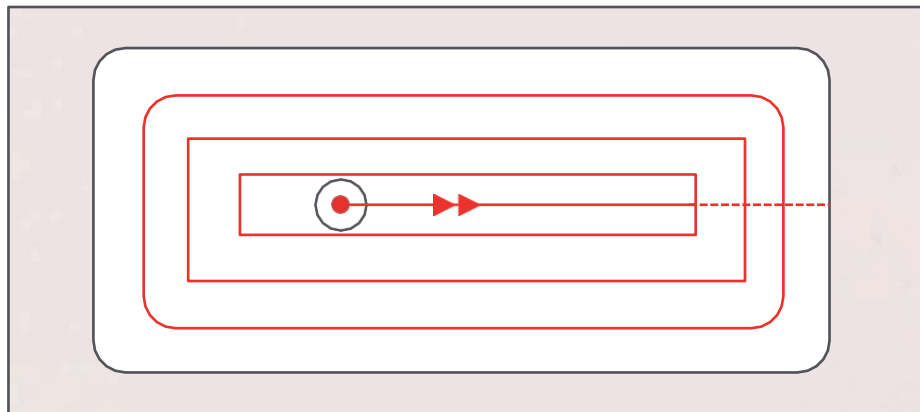
Remove a maximum of 2 mm at a time and no more.

During fabrication, use plenty of water, carefully directing it to the outside and inside of the tool.

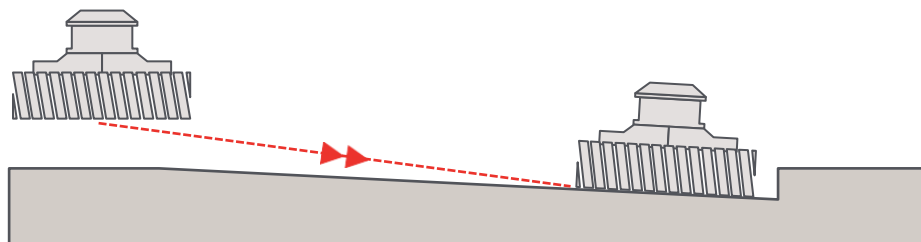
#### WARNING

After each operation, it is advisable to rinse the surface well with clean water without waiting for the piece to dry

#### DIAGRAM OF MILLING POCKETS



#### APPROACH DIAGRAM



### 3.4.9. Spherical milling cutter for drip drainers\*

We recommend to use granite / ceramic spherical grinders with the channel milling cutter.

#### PARAMETERS

The data is based on a tool diameter of  $\varnothing$  8 mm.

Abrasive disc	Spindle revolutions g/min	Feed rate mm/min
1	6000	250
2	6000	400
3	6000	400
4	6000	200

#### TIPS

During fabrication, use plenty of water, carefully directing it to the outside and inside of the tool.

#### WARNING

After each operation, it is advisable to rinse the surface well with clean water without waiting for the piece to dry.

### 3.4.10. Engraving tool\*

For surface cuts, we recommend using a granite tool made of polycrystalline diamond.

Thickness	Spindle revolutions g/min	Feed rate mm/min	Maximum removal mm
12 - 20	8000-10000	80-120	1,5

#### TIPS

During fabrication, use plenty of water, carefully directing it to the outside and inside of the tool.

#### WARNING

After each operation, it is advisable to rinse the surface well with clean water without waiting for the piece to dry.

Refer to the tool manufacturer's technical data sheet to determine the appropriate machining parameters. The operating parameters of the tool may vary depending on the manufacturer.

### 3.4.11. Shaping tool

We recommend using granite / ceramic grinding machines for profiling Keralini.

#### PARAMETERS

The data is based on a tool diameter of  $\varnothing$  80 mm.

Abrasive disc	Type	Spindle revolutions g/min	Feed rate mm/min
1	Metallic	5000-5500	1000
2	Metallic	5000-5500	2500
3	Metallic	5000-5500	2500
4	Metallic	4500-5000	1000
5	Polishing	2500-3000	900
6	Polishing	2500-3000	900
7	Polishing	2500-3000	900

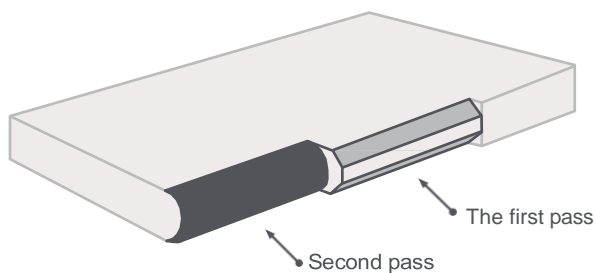
#### OFFERS

During fabrication, use plenty of water, carefully directing it to the outside and inside of the tool.

#### WARNING

After each operation, it is advisable to rinse the surface well with clean water before the piece dries.

For profiling shapes, where a lot of excess removal is required, we recommend dividing the operation into 2 passes with 1 metal tool or using a finishing tool.



Second pass

## 3.4.12. Polishing the worktop

For polishing Keralini, it is recommended to use polishing discs for granite.

### PARAMETERS

The data is based on a tool size of  $\varnothing$  100 mm

POLISHED finish

Abrasive disc	Grain	Spindle revolution s g/min	Feed speed mm/min	Compression*.	Aisles
1	GR 50	1200	6000	0,5	1
2	GR 100	1200	6000	0,5	1
3	GR 200	1200	6000	0,6	1
4	GR 500	1200	6000	0,8	2
5	GR 1000	1200	4500	1	1
6	GR 2000	1200	4500	0,5	2
7	GR 3000	1200	4500	1	2

SATIN finish

Abrasive disc	Grain	Spindle revolution s g/min	Feed speed mm/min	Compression*.	Aisles
1	GR 50	1200	6000	0,5	1
2	GR 100	1200	6000	0,5	1
3	GR 200	1200	6000	0,6	1
4	BRUSH 180 G	1500	3500	1	1

\*These data is specific to Breton® machines equipped with a polishing system with spindle power absorption control.

### WARNING

After each operation, it is advisable to rinse the surface well with clean water before the piece dries.



### 3.4.13. Tools



**Finger bit**  
Diameter 22 mm

---



**Drilling tools**  
Diameters 30-35-60-70-100 mm

---



**Milling cutter for incremental cutting (finishing)**  
Diameters 6-8-10-12-16 mm

---



**Milling cutter for incremental cutting (roughing)**  
Diameter 16 mm

---



**Cutting tools**  
Wheel diameters 55 and 88 mm

---



**Bushing tools**  
Crown diameter 6-7-8-10-11-12 mm

---



**Drilling kit**



# Design principles

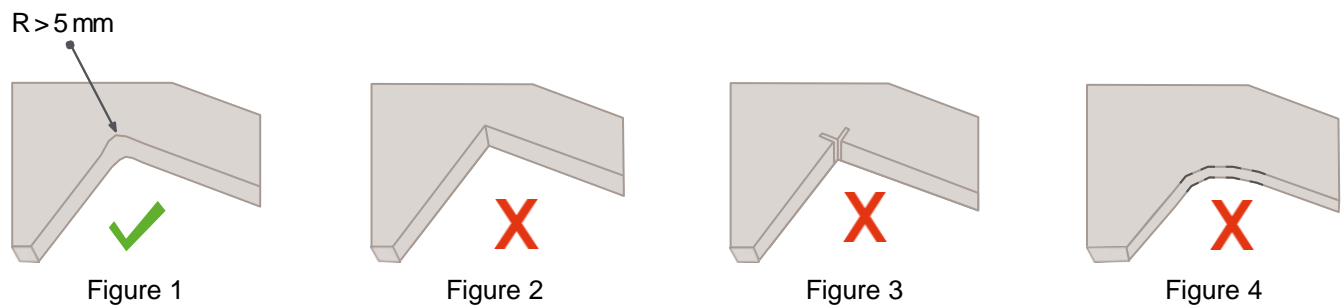
# 4. Design principles

## 4.1. INTERNAL CORNERS AND HOLES

All internal corners relative to a hole must have a minimum radius of 5 mm. Internal corners relative to the overall geometry of the workpiece (e.g. L-shaped countertop) must have a minimum radius of 10 mm.

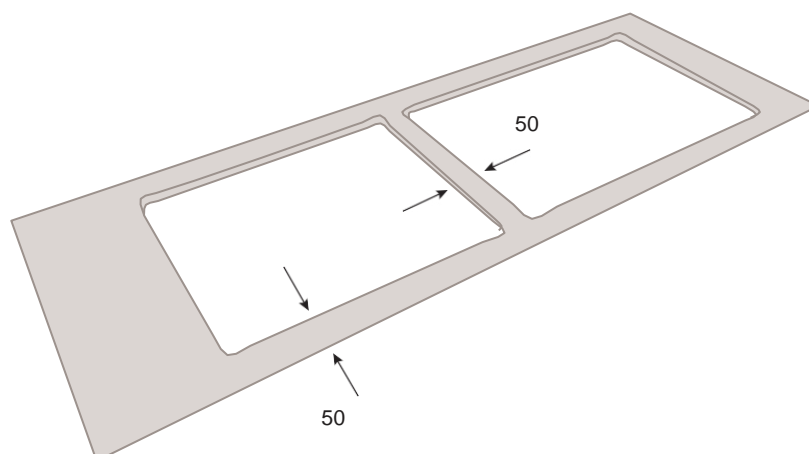
A larger radius gives the finished product greater structural resistance (see Fig. 1), and vice versa - any unrounded corner creates a stress point on the countertop (Figs. 2, 3 and 4).

If there are columns or other elements that require countertop cutting, we recommend creating a minimum radius of 5 mm.



## 4.2. MINIMUM DISTANCE BETWEEN EDGES AND CUT-OUTS

The minimum recommended distance between the Keralini countertop and the cut-out is 50 mm.



### WARNING

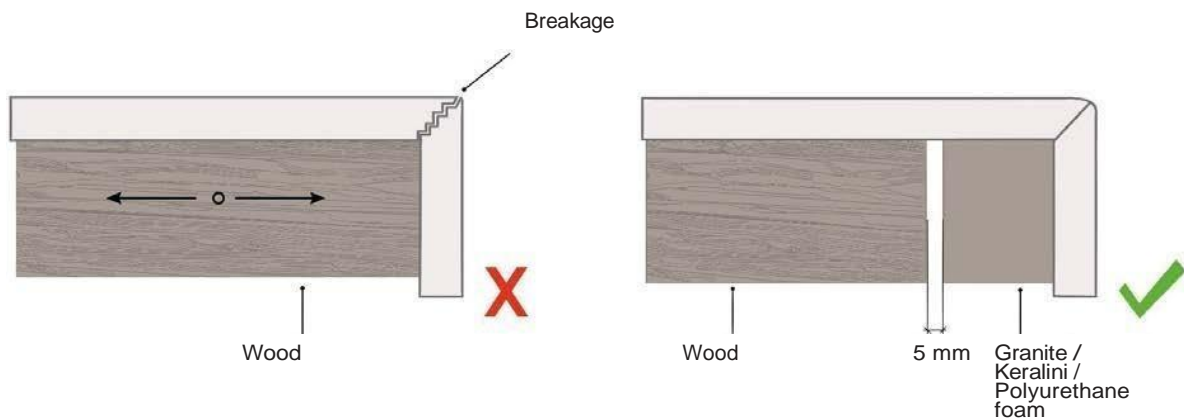
It is worth remembering about sealants, such as silicone. We recommend applying it between the Keralini countertop and the elements inserted into it. This material compensates for the different thermal expansion during daily use.

### 4.3. OUTDOOR APPLICATIONS

When Keralini is used externally and when laminating or bonding at a 45° angle, it is recommended to support the lintel with a material that has the same coefficient of thermal expansion. This can be granite, Keralini, quartz agglomerate, rigid polyurethane foams, etc.

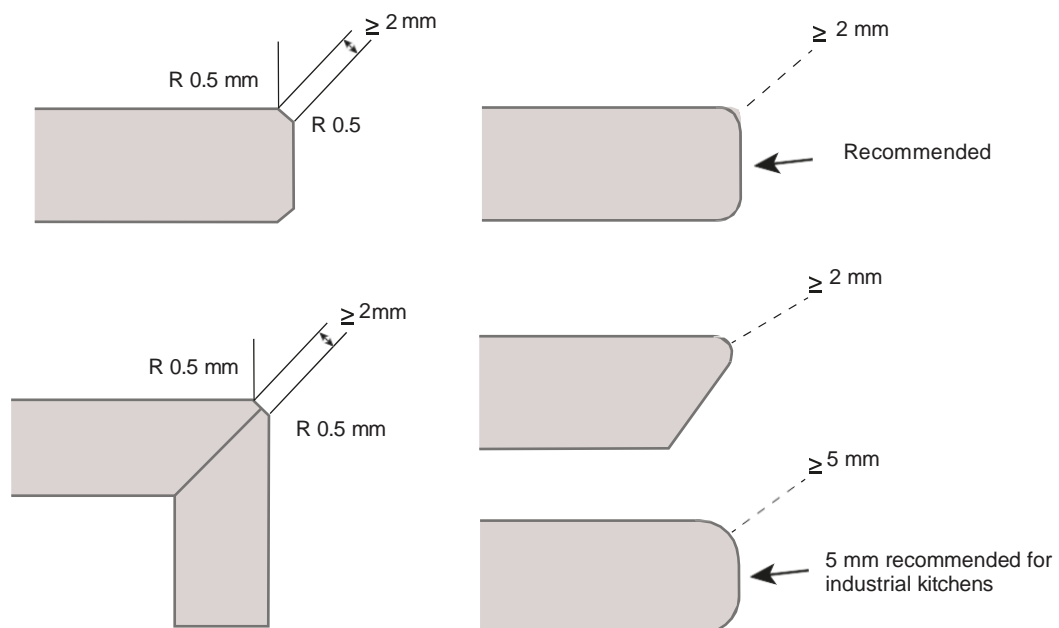
The adhesive joint between the two parts must not be supported by wood. It can expand or swell under the influence of weather conditions and the sun, which will put excessive pressure on the parts being bonded and may cause them to come off altogether.

It is also recommended to leave a gap of at least 5 mm between the wood and the worktop. This will help to compensate for any thermal expansion.



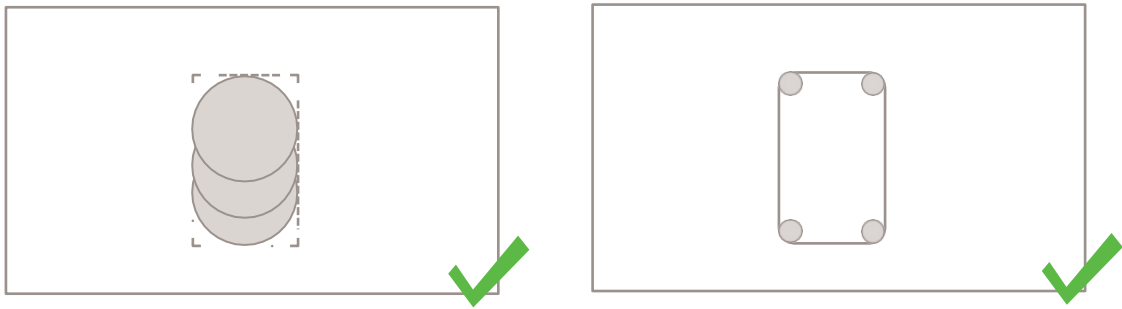
### 4.4. EDGES OF THE COUNTERTOP

It is recommended that the edges of the workpiece be processed according to the instructions in the drawings. These tips strike a good balance between aesthetics and functionality and also guarantee trouble-free use of the product.



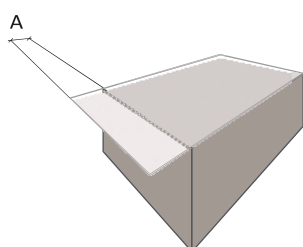
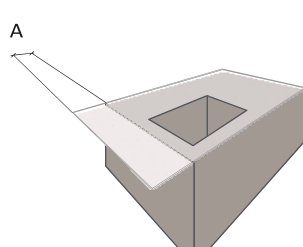
## 4.5. ACCESSORY HOLES

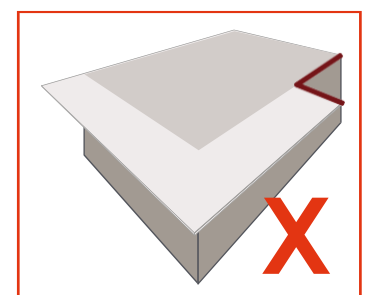
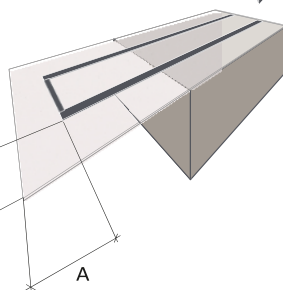
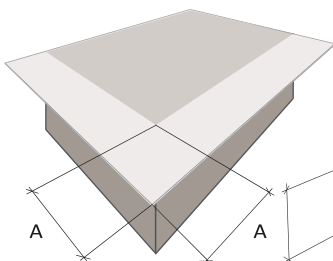
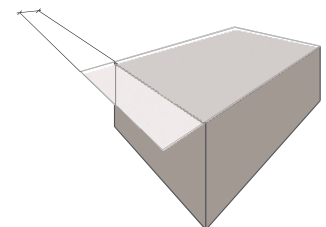
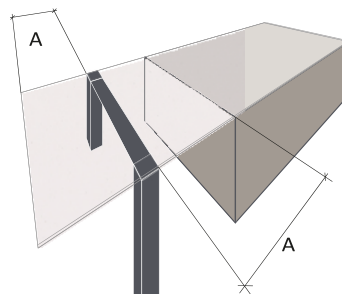
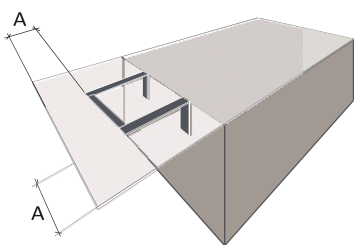
It is recommended that the cut-outs for accessories / switches be round, as shown below.



## 4.6. OVERHANGS

When planning your countertop design, we suggest referencing the dimensions for overhangs provided in the following table. This will prevent the countertop from breaking under heavy daily use.

	Thickness		Figure
	12 mm	20 mm	
Countertop with supported overhang	A' 150 mm	A' 350 mm	
Countertop with cut-out with unsupported overhang	A' 90 mm	A' 210 mm	

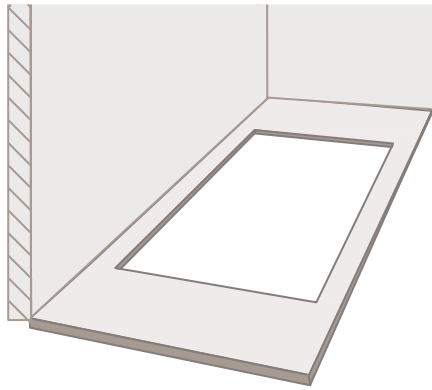


## 4.7. LARGE HOLES

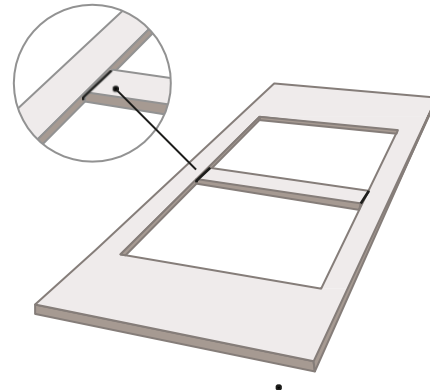
In the case of one or more large cut-outs or interrupted/open cut-outs, it is recommended to leave a strip of material to stiffen the worktop. The strip, which has already been cut to half its thickness, will be cut after installation.

This eliminates the possibility of breakage during transport and installation.

### Case 1: large cut-out

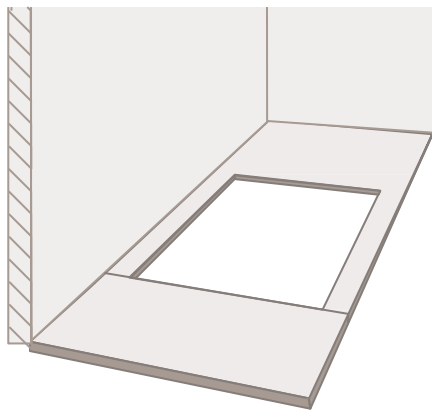


Installed worktop

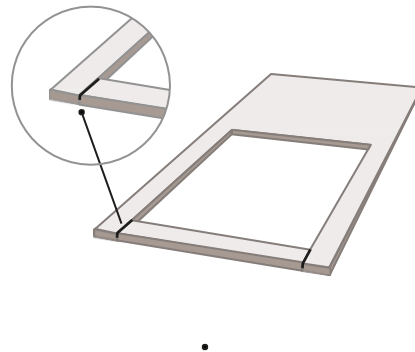


Keralini pre-cut strip to be cut completely after laying the worktop

### Case 2: interrupted sink cut-out



Installed worktop



Keralini pre-cut strip to be cut completely after laying the worktop

# Cleaning, maintenance and care



# 5. CLEANING, MAINTENANCE AND CARE

## 5.1. ROUTINE CLEANING

The Keralini surface is easy to care for. To remove dust, just use a microfibre cloth. For a more thorough cleaning, it is recommended to wash the surface with warm water using a neutral detergent in the doses recommended by the manufacturer. Afterwards, rinse with clean water and wipe with a damp microfibre cloth or a soft, non-abrasive sponge. To prevent noticeable staining, it is advisable to promptly clean any stains without allowing them to dry.

### WHAT NOT TO DO

Using dishwashing detergents, oily soaps, impregnating agents, etc. is not recommended. Some detergents available on the market contain waxes or polishing additives that can leave an oily film on the surface after several uses. This has a negative impact on the appearance of the Keralini surface.

## 5.2. EMERGENCY CLEANING

When routine cleaning is not sufficient, more aggressive special detergents can be used. Their use will not affect the appearance of the surface. It is recommended to clean as soon as possible after detecting the contamination.

Test the effect of the detergent on a small area before applying it across the entire surface. Do not use under any circumstances hydrochloric acid or caustic soda concentrates and products containing hydrofluoric acid and its derivatives.

The table below shows the types of stains that may appear on the surface and the products recommended for removing them. Choose cleaning products based on this table. Or use products with identical characteristics. But make sure to test them first.

TRANSSTONE recommends contacting the supplier of the cleaning product to obtain the most up-to-date documentation and instructions for use, which will provide information on the composition and active ingredients contained in the product. After cleaning, rinse the surface with plenty of warm water and wipe it with a dry cloth.



Type of dirt	Type of detergent	Smooth surfaces	Structured surfaces
Limescale	Descaling detergent	Damp, non-abrasive scotch brite	Fine sorghum or plastic bristle brush
Aluminium marks	Descaling detergent	Damp, non-abrasive scotch brite	Fine sorghum or plastic bristle brush
Pencil	Descaling detergent	Damp, non-abrasive scotch brite	Fine sorghum or plastic bristle brush
Grease	Degreasing detergent	Damp cloth	Non-abrasive sponge
Coffee	Degreasing detergent	Damp cloth	Non-abrasive sponge
Ice cream	Degreasing detergent	Damp cloth	Non-abrasive sponge
Fruit juice	Degreasing detergent	Damp cloth	Non-abrasive sponge
Blood	Degreasing detergent	Damp cloth	Non-abrasive sponge
Wine	Degreasing detergent	Damp cloth	Non-abrasive sponge
Beer	Degreasing detergent	Damp cloth	Non-abrasive sponge
Ink	Degreasing detergent	Damp cloth	Non-abrasive sponge
Nicotine	Degreasing detergent	Damp cloth	Non-abrasive sponge
Urine and vomit	Degreasing detergent	Damp cloth	Non-abrasive sponge
Marker pen	Degreasing detergent	Damp cloth	Non-abrasive sponge
Coca Cola	Degreasing detergent	Damp cloth	Non-abrasive sponge
Hair dye	Degreasing detergent	Damp cloth	Non-abrasive sponge
Rubber	Degreasing detergent	Damp, non-abrasive scotch brite	Fine sorghum or plastic bristle brush
Chewing gum	Degreasing detergent	Damp, non-abrasive scotch brite	Fine sorghum or plastic bristle brush
Rust	Descaling detergent	Damp, non-abrasive scotch brite	Fine sorghum or plastic bristle brush
Silicone	Special cleaning detergent for limescale removal	Damp, non-abrasive scotch brite	Fine sorghum or plastic bristle brush
Candle wax	Solvent.	Damp, non-abrasive scotch brite	Fine sorghum or plastic bristle brush

**NOTES**

Remove ink stains, paint, wax, oil / grease with solvents such as nitro thinner or turpentine. Before applying the product to the entire surface, it is recommended to test its effectiveness on a small area first.

Do not use hydrochloric acid or caustic soda concentrates and products containing hydrofluoric acid and its derivatives.

**WARNING**

TRANSSTONE declines all responsibility for the effectiveness of cleaning and maintenance of surfaces if the surface has not been cleaned (poorly cleaned) after installation.

 **Keralini**<sup>®</sup>  
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[keralini.com](http://keralini.com)  
[info@keralini.com](mailto:info@keralini.com)