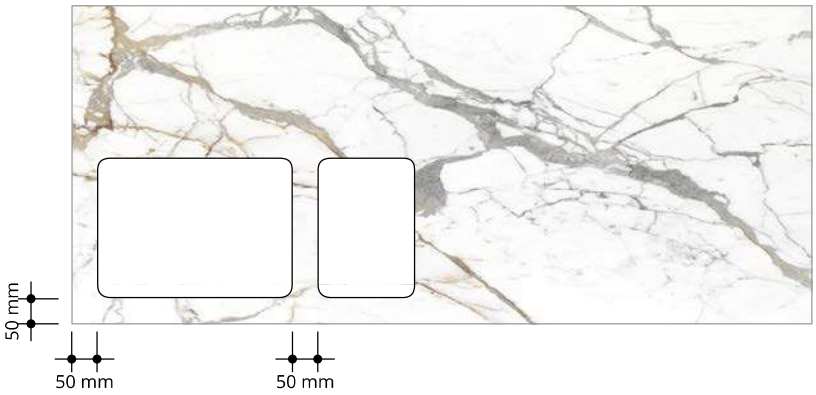
DESIGN

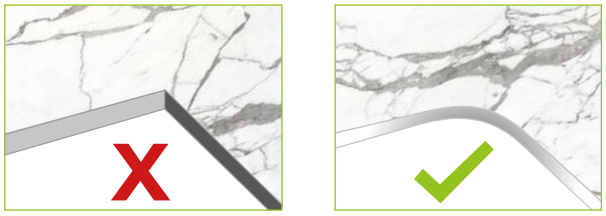
In the design drawing, which may include the cutting of one or more slabs, the following must be taken into consideration:

- The design distances must be confirmed by measurements at the job site.

- The minimum distance permitted between holes or cut-outs and/or from the edge of the slab is 5 cm (we recommend leaving 8 cm of space between cooking surface and backsplash for gas cooking surfaces).



- All the internal corners of holes and cut-outs must have a constant radius, equal to at least 3/16" (5 mm).



- If the project includes the use of multiple slabs, assess the direction of the material's graphic.

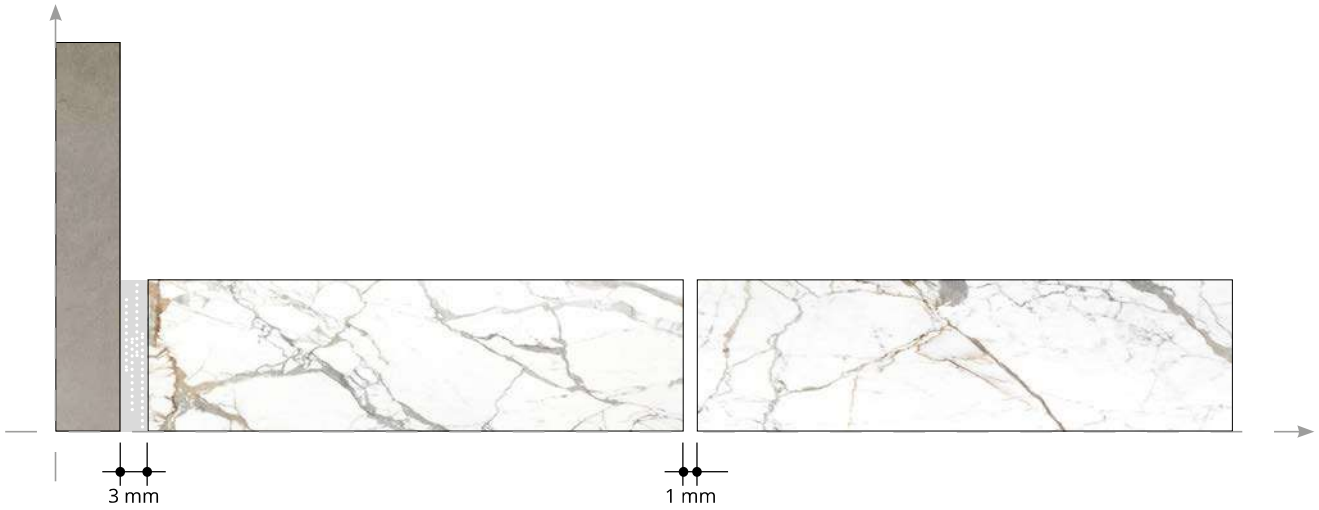
- Creating complex shapes (such as "L" or "C" configurations) from a single slab (monolithic top) results in a covering element that will be more fragile during handling and installation. Additionally, it will be more vulnerable to stress from the underlying structure. Evaluate the option of subdividing the surface into multiple elements.

- "When processing multiple slabs to achieve graphic continuity (e.g. book matching), exercise caution when cutting the portions that need to be paired. As with natural stones, this type of processing, even when executed to the highest trade standards, may result in minor graphic shifts. Florim will not accept claims for this."

- Some product series feature continuous patterns. Check the catalogue or our website page https://www.florim.com/en/florimstone/collections/ for the specific characteristics and unique features of the product series of interest to you.

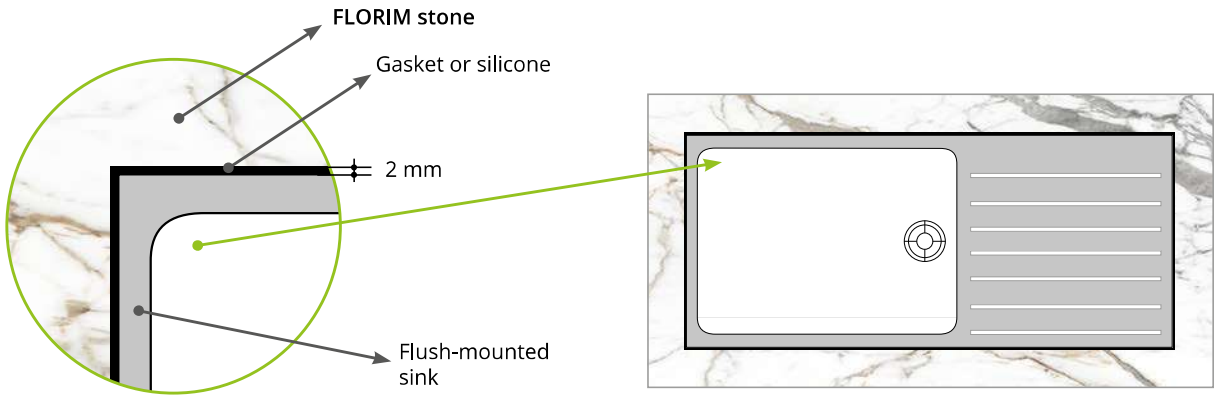
DESIGN

• Ensure there is a minimum 3 mm gap serving as an expansion joint between the product and the wall; for seaming, a 1 mm gap between slabs is recommended.



Sealing side view

• Flush-mount housing and cut-outs for the elements to be flush-mounted (sinks, cook tops, etc.) must provide an additional perimeter space of about 2 mm serving as an expansion joint.

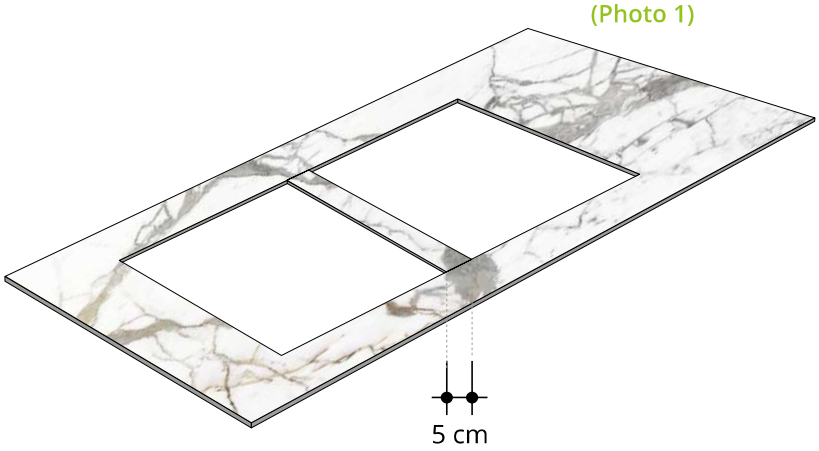


DESIGN

- When dealing with large openings on the surface (exceeding 70 cm), we recommend creating a pre-incised strip about 5 cm wide at the centre of the opening along the shorter side. This strip can be removed after installation and helps facilitate handling and installation, making the process less critical. **(Photo 1)**

- When a large opening requires polishing during the fabrication process, we recommend the use of a "sink hole saver edge bar" for transportation. **(Photo 2)**

(Photo 1)



(Photo 2)

DESIGN

SUBSTRUCTURE

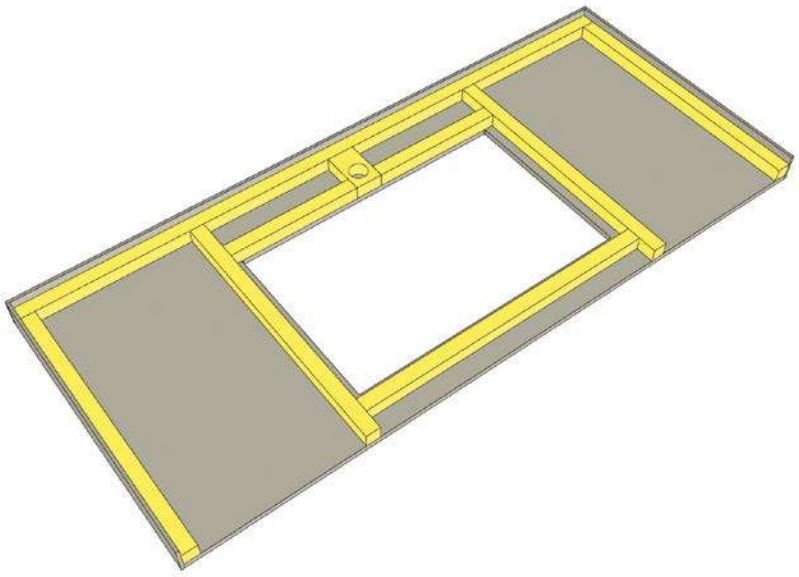
FLORIM stone **slabs** with a 12 mm thickness (with mesh) or a 20 mm thickness do not require gluing to a continuous substrate. Slabs with a thickness of 6 mm, whether with or without mesh, should always be affixed to a continuous and suitable structure.

The substrate material must be rigid, dimensionally stable in the conditions of use and with a thermal expansion coefficient similar to that of FLORIM stone. For both indoor and outdoor applications, do not use supports in wood, composite materials (i.e. engineered stone) or any materials with a significantly different thermal expansion coefficient than that of ceramic material (6/7 M°K-1).

Material with a 12 mm thickness including mesh must be glued to latticed substrate
(perfectly aligned cabinet bases or substrate), 60x60 cm.

Material with a 20 mm thickness must be glued to latticed substrate.
(perfectly aligned cabinet bases or substrate), 90x90 cm
Gluing to the structure must be carried out with a continuous bead of silicone or another elastic adhesive.

ACCESSORY ELEMENTS



For sink cut-outs and cook tops made with 12 mm slabs with mesh, position reinforcements along the internal perimeter. Arrange them to distribute the additional weight onto the cabinet structure.

Large sinks or sinks mounted below the countertop surface must be provided with extra support. Arrange support bars for the bottom of the sink connected to the cabinet structure.

For example, use strips approximately 10 cm wide made of granite, porcelain stoneware or high-density polyurethane on the back of the countertop using silicone, installing them at about every 60 cm of length.

These strips enhance rigidity, which proves beneficial during both transport and installation.

Flush-mount housing cannot be used for 6 mm thick **FLORIM stone** slabs.

DESIGN

OVERHANG INDICATIONS

FLORIM stone slabs with a thickness of 6 mm are not suitable for overhangs, even when supported.
FLORIM stone slabs with thicknesses of 12 mm and 20 mm are suitable for overhang design.

Important: When there are holes or openings on the slab positioned less than 15 cm from the edge of the cabinet, creating an overhang is not recommended. However, if the holes or openings are between 15 and 60 cm from the edge, the depth of the overhang should be reduced by 50% compared to the guidelines provided below.

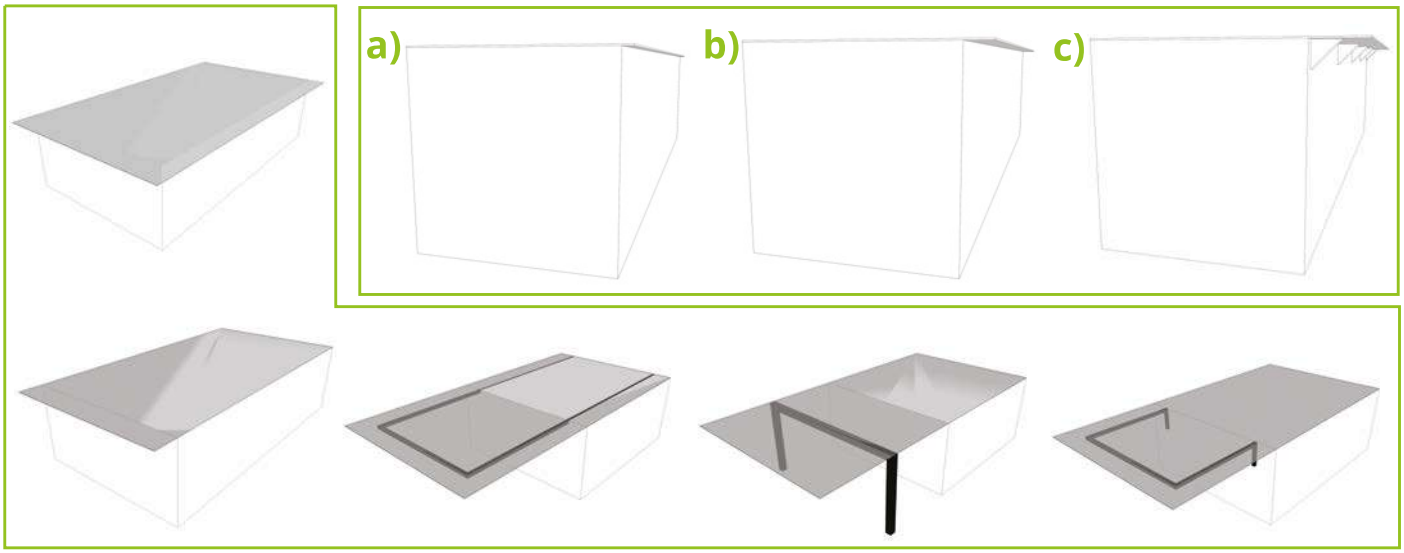
FLORIM recommends:
a. Overhang up to 15 cm without support for slabs with a thickness of 12 mm including mesh and up to 30 cm for slabs with a thickness of 20 mm*.
b. Overhang from 15 cm to 30 cm for slabs with a thickness of 12 mm including mesh and from 30 to 45 cm for slabs with a thickness of 20 mm only with supports connected to the cabinets' load-bearing structure*.
c. To create wider overhangs, rigid support structures must be prepared.

*in the described configuration, FLORIM stone withstands loads as per the table:

Overhang / Thickness	12 mm	20 mm
15 cm	500 kg	1400 kg
30 cm	-	700 kg
30 cm with 3 equally-spaced 20 cm-long brackets	500 kg	1000 kg
45 cm with 3 equally-spaced 30 cm-long brackets	-	650 kg

Notes: The data in the table are based on mathematical calculations and should be considered approximate. The load calculated refers to the static load—distributed evenly along the span between the brackets—of a slab overhang with a length of 60 cm and a depth equal to the indicated overhang.

Bear in mind in the design phase:
• possible overloads due to dynamic loads
• impacts (see technical table for impact resistance data)
• safety: when creating an overhang for tables or countertops, it is common to fully or partially remove the mesh from the 12 mm thick material. This reduces the slab's ability to withstand impact.



SURFACE

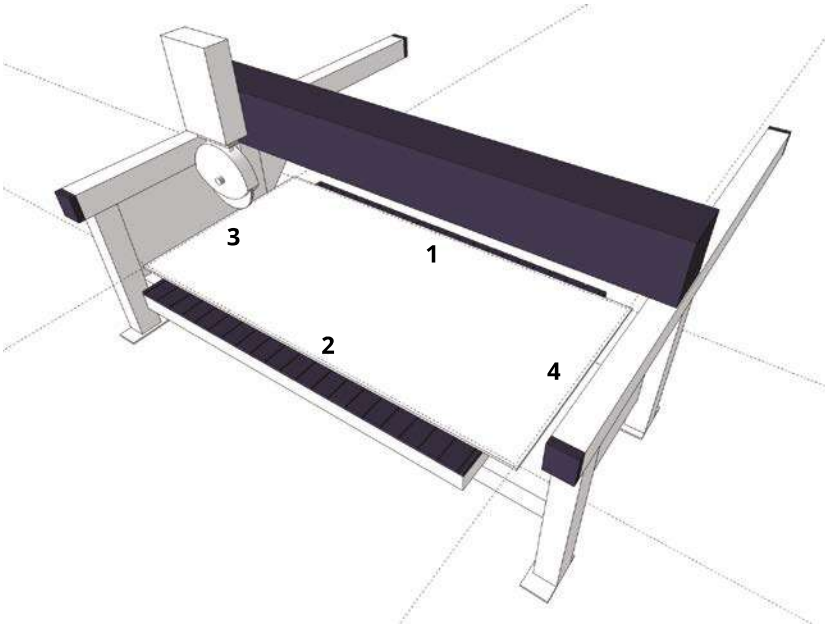
1. Disc cutting: Key specifications and adjustments

The following are the parameters to keep in mind for disc cutting:

- Disc thickness and diameter: during cutting, the disc experiences vibrations that resonate through the ceramic material. It is advisable to use flanges to increase rigidity.
- Vibrations, in their turn, can impact cut elements if they are of smaller dimensions.
- Rotation speed: select it within the recommended working range for the specific tool.
- Feed rate: as the feed rate increases, the finish tends to deteriorate.
- Disc's state of wear.

CUTTING

Before any fabrication begins, the entire perimeter of the slab must be trimmed by at least 1.5 cm.
We recommend using a bridge saw after ensuring that the workbench is clean, free from debris, in a good condition and flat.
The trimming sequence is:
The entire length of both horizontal sides (**1-2**)
The entire height of both vertical sides (**3-4**)



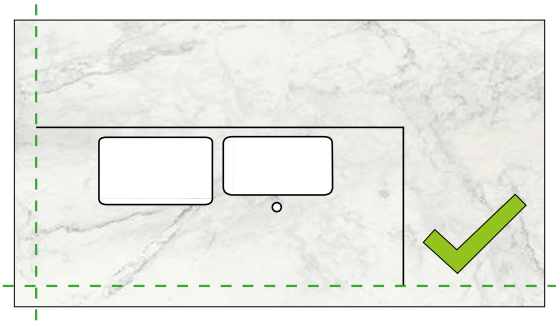
SURFACE

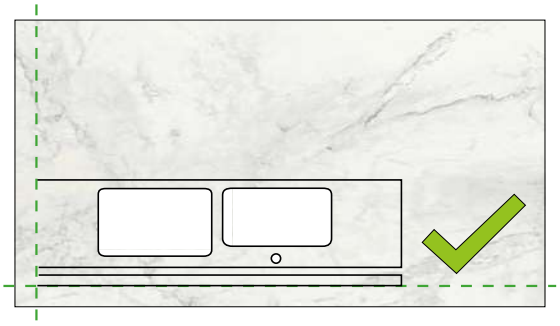
Remember the following:

- Slab handling and positioning: ceramic is inherently fragile; exercise care during handling, avoiding impacts that could lead to breakage later on.
- The disc must be properly cooled; make sure that the nozzles deliver the right water flow and that the jets are pointed in the right direction.
- The disc must pierce through the thickness of the slab by 1 mm;
- Revive the tool on a regular basis (generally when the ammeter reading increases by 2 to 3 points) using abrasive sticker, quartz or other sharpening stone.
- Reduce the input and output cutting speed by approximately 50% for the initial and final 40 cm;
- If the cut is a straight cut, we recommend maintaining a continuous operation, without stopping, until completion.
- When creating complex shapes or cut-outs, first drill at the connection points using core drill tools (minimum diam. 35 mm) or a hollow cutter, making sure to cut through the slab's entire thickness.
- For cut-outs, the holes can be connected with a bridge saw. The disc's lowering speed must not exert mechanical force on the slab.

Cut design and sequence

We suggest obtaining the backsplashes, strips and other straight portions from the outermost parts of the slab.
As much as it is viable, cut-outs should be positioned towards the centre of the slab.
Always allow a minimum of 5 cm between the hole and the edge of the slab.
Ensure that cut-outs are not at a straight angle but rather curvilinear, with a minimum radius of 5 mm.





SURFACE

Bridge saw specifications (approximate)

The following two tables contain approximate data for conventional discs (which have reduced rpm and lower cutting speed) and high-performance discs (with higher rotation and cutting speeds).

MATERIAL THICKNESS	BLADE DIAMETER	RPM	FEED RATE STRAIGHT CUT M/MIN	FEED RATE MITRE CUT 45° M/MIN	DISC LOWERING SPEED FOR CUT-OUTS MM/MIN
6 - 12 MM	350	1800 - 2000	1.0 - 1.4	-50%	15-25
	400	1600 - 1800	1.0 - 1.4		
20 MM	350	1800 - 2000	0.8 - 1.0	-50%	15-25
	400	1600 - 1800	0.8 - 1.0		

MATERIAL THICKNESS	BLADE DIAMETER	RPM	FEED RATE STRAIGHT CUT M/MIN	FEED RATE MITRE CUT 45° M/MIN	DISC LOWERING SPEED FOR CUT-OUTS MM/MIN
6 - 12 MM	300	3100 - 3300	1.8 - 2.2	-50%	15-25
	350	2800 - 3000	1.8 - 2.2		
	400	2500 - 2700	1.8 - 2.2		
20 MM	300	3000 - 3600	1.2 - 1.6	-50%	15-25
	350	2600 - 3200	1.2 - 1.6		
	400	2250 - 2800	1.2 - 1.6		

N.B.: These specifications are approximate; refer to the technical data sheets for your specific tools

Slab handling

2. WATERJET CUTTING

Before any fabrication begins, check the machine's condition as follows:

- The table must be level and the fins must be in a good condition.
- Verify the water level and abrasive flow.

To prevent any movement that could affect the cut, we recommend securing the slab on two sides. While machine manufacturers typically provide standard fabrication specifications, these serve as approximate information; it is essential for the operator to verify and adapt these specifications to each specific material.

FLORIM stone slabs are not rectified. Before proceeding with any fabrication work, we recommend trimming the entire perimeter by at least 1.5 cm.

Remember the following:

- Slab handling and positioning: ceramic is inherently fragile; exercise care during handling, avoiding impacts that could lead to breakage later on.
- Whenever possible, start cutting from the outer edge of the slab.
- If the cut is a straight cut, it is recommended to maintain a continuous operation without stopping until completion.
- When doing 45° cuts, reduce the feed rate by 50%.
- When creating smaller elements, make sure these can be secured mechanically to prevent vibration or movement that could lead to chipping—both in the elements themselves and adjacent pieces.
- If possible, maintain a gap of approximately 3 cm between strips.

Cut design and sequence

We suggest obtaining the backsplashes, strips and other straight portions from the outermost parts of the slab.

As much as it is viable, cut-outs should be positioned towards the centre of the slab.

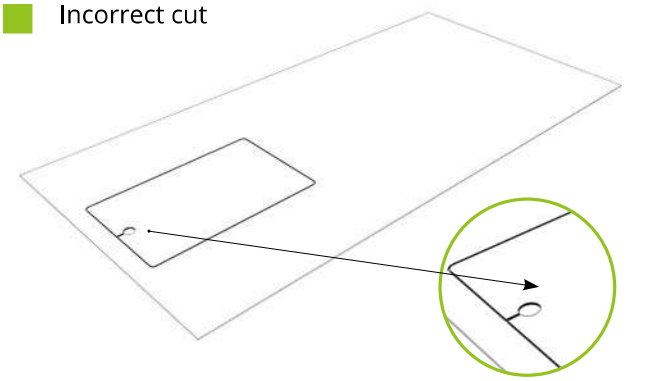
Always allow a minimum of 5 cm between the hole and the edge of the slab.

Ensure that cut-outs are not at a straight angle but rather curvilinear, with a minimum radius of 5 mm.

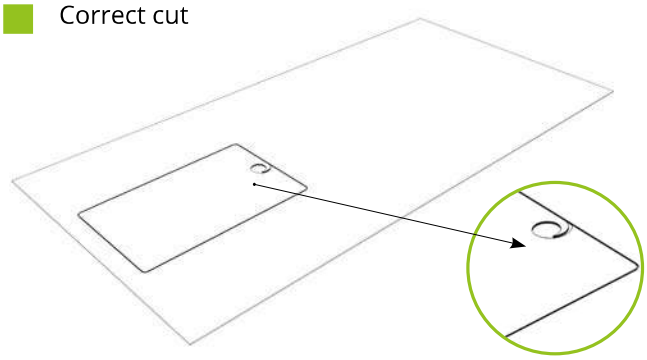
To achieve better cut-out results, consider drilling holes near the four corners of the shape before making the cut.

SURFACE

Incorrect cut



Correct cut

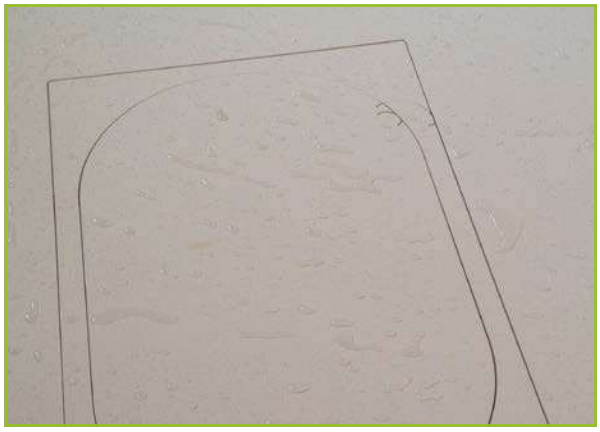


Start cutting at the part farthest from the edge of the surface.
Exit at the point of entry.

To make openings or holes, perform the “piercing” inside the intended opening, connecting to the side with a slight curvature.

Start the cut from the innermost side of the cut-out relative to the slab. When creating corners, ensure a minimum curve radius of 5 mm to avoid sharp edges.

SURFACE

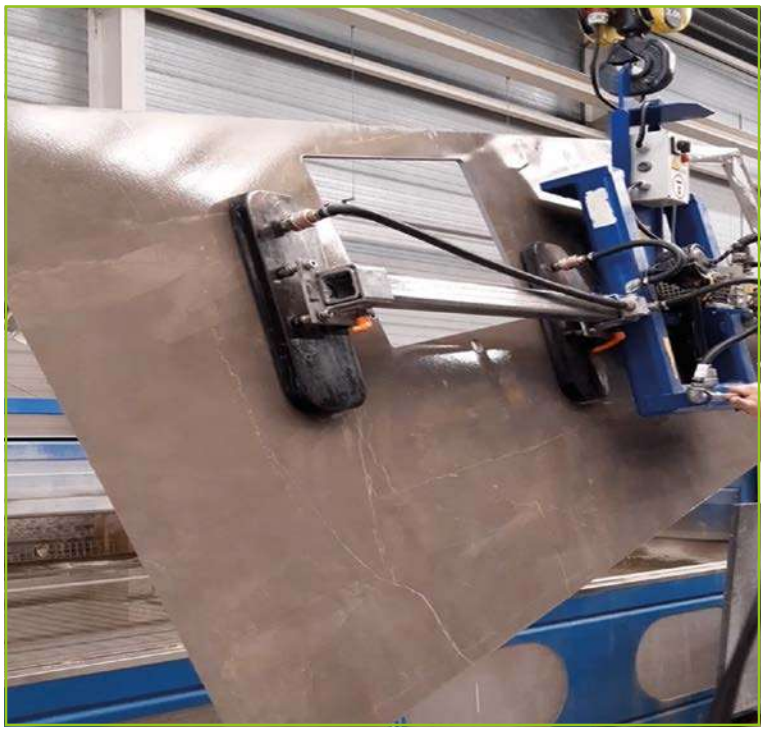


The opening must be at a minimum distance of 5 cm from the edge of the slab.

For large cut-outs (exceeding 500x600 mm), consider first creating a smaller cut-out that is geometrically inscribed within the intended shape, allowing for wide-radius corners.

Waterjet cutting specifications (approximate)

MATERIAL THICKNESS	FEED RATE M/MIN	PRESSURE (BAR)	ABRASIVE RATE KG/MIN	INPUT CUTTING PRESSURE (BAR)
6 MM	1.0 - 1.2	3500-3700	MESH 80: 0.35 - 0.45	1200 - 1300
12 MM	1.0 - 1.2	3500-3700	MESH 80: 0.35 - 0.45	1200 - 1300
20 MM	0.6 - 0.8	3500-3700	MESH 80: 0.35 - 0.45	1200 - 1300



Handling the cut piece

For large pieces, use suction cups for secure handling.

Arrange the suction cups to prevent twisting or bending of the piece.

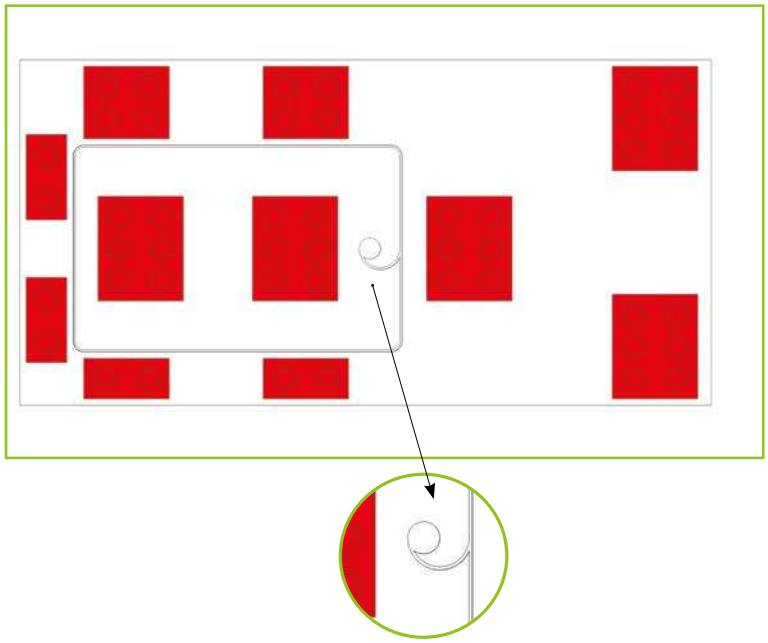
Handle the pieces vertically.

3. COMPUTER NUMERICAL CONTROL (CNC) MACHINES

CNC is often used on pre-shaped portions of the slab to create cut-outs, edge finishing, flush mount housing and holes.

Before any fabrication begins, check the machine's condition as follows:

- Place a sufficient number of suction cups to create a stable resting surface for the countertop. Arrange the supports strategically to prevent the cut pieces from falling.
- Ensure that the tools are appropriate for machining porcelain stoneware and are in good condition.



While machine and tool manufacturers typically provide standard fabrication specifications, these serve as approximate information; it is essential for the operator to verify and adapt these specifications to each specific material.

Remember the following:

- Slab handling and positioning: ceramic is inherently fragile; exercise care during handling, avoiding impacts that could lead to breakage later on.
- For optimal results, use ample water, directing the jet precisely to the point where the tool is in contact with the material.
- To carry out openings on the slab, drill a first hole in the area inside to be cut using a core bit and perform the cut using the appropriate finger bit, connecting to the side with a slight curvature.
- Start the cut from the innermost side of the cut-out relative to the slab.
- The tool must exceed the thickness of the slab by at least 1 mm.

SURFACE

FLUSH-MOUNT MACHINING (only for 12 mm- and 20 mm-thick slabs)

It is advisable to create the cut-out before machining for a flush installation.
The material thickness can be reduced by a maximum of 30%.
This reduction is not possible on slabs with a thickness of 6 mm.

Approximate specifications for CNC machining with thicknesses of 6 mm, 12 mm and 20 mm:

THICKNESS		FEED RATE MM/MIN	SPINDLE REVS RPM	MAXIMUM REMOVAL
6, 12 and **20** MM	35 mm core drill tool	20 MM/MIN	2000 - 3000	-
	Cutting tool (finger bit) inclined single cut Ø19-23 mm	150 - 200 MM/MIN	4800 - 6500	Plunge cut
	Flush countertop tool Ø15 mm	150 - 200 MM/MIN	5000 - 7000	Up to 2 MM (recommended 0.5 MM)

N.B.: These specifications are approximate; refer to the technical data sheets for your specific tools

Handling the cut piece

For large pieces, use suction cups for secure handling.
Arrange the suction cups to prevent twisting or bending of the piece.
Handle the pieces vertically.

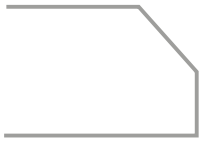
SURFACE

Finishing of the edges and exposed chamfers

The exposed edges should be rounded in order to obtain a chamfer with an approximate width of 3 mm, whether monolithic execution (12 mm and 20 mm) or a surface with mitred edge. Exposed edges (12 mm and 20 mm) can be polished using decreasing-grit diamond tools.
Remember to treat the exposed surface of the edge with oil- and water-repellent products after execution.
Products suitable for this use are sold, for example, by Tenax, Faber Chimica or Fila.

Worked edges

Bevelling 1/2" deep



Half bullnose

Rounded 1/4"

Groove 1

Groove 1 Bullnose 2

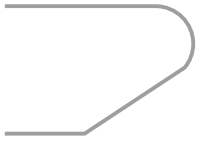
Slight 1/4" bevelling

Surface bullnose

1/4" rounded right angle

Groove 2

Platner



Slight 1/4" bevelling double

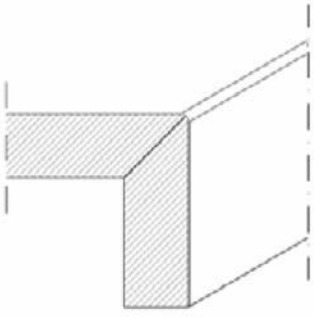
Bullnose

Slightly rounded

Groove Bullnose 1

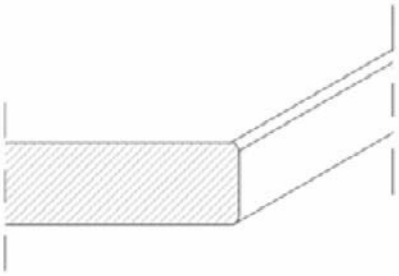
Waterfall

45-DEGREE MITRED EDGE



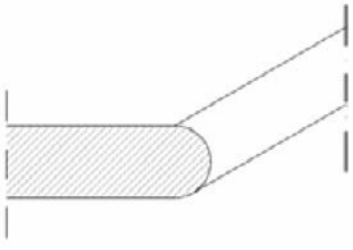
1. Cut the edges of both pieces at an angle
2. Clean all the edges
3. Use epoxy resin to glue the two pieces together
4. The resin must be the same colour as the slab
5. Remove any excess resin

BEVELLED EDGE



A bevelled edge enhances the resistance of the slab edge against strong impacts
1. Use sandpaper appropriate for porcelain stoneware
2.Use abrasives in the correct order to obtain the desired finish

BULLNOSE EDGE



A bullnose edge, too, enhances the edge's resistance against strong impacts
1. Use sandpaper appropriate for porcelain stoneware
2.Use abrasives in the correct order to obtain the desired finish

SURFACE

Use abrasives in the correct order to obtain the desired finish.

Specifications (approximate):
Abrasive: Satin finish 120-220-500
Abrasive: Glossy finish 100-200-500-1000-2000
Brush Sequence: 36-46-80-120-(220-400)
Speed: 90/120 cm/min
Remember to make the edge with at least a 2 mm bevel—round or diagonal—to prevent the chipping of the edge.

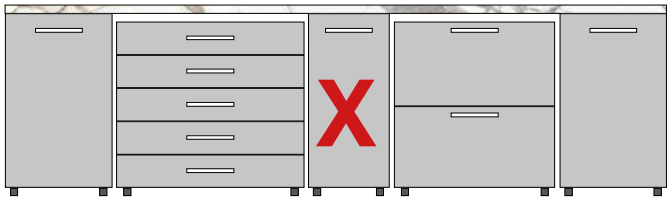
EDGE POLISHING

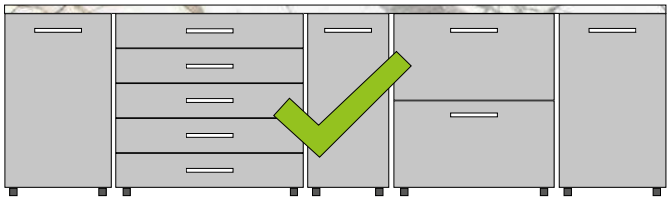
Recommended abrasive sequence for edge finishing
(Both for machining with edge polisher – feed rate 60-80 cm/min, and for manual machining)

	grit
Glossy surface	1. GR 50
	2. GR 100
	3. GR 200
	4. GR 500
	5. GR 1000
	6. GR 2000
Matte surface	1. GR 120
	2. GR 220
	3. GR 500

INSTALLATION

Arrange the structure of the cabinets being covered so that it is level, stable, clean and suitable to receive the weight of the countertop.





For the 12 mm material, transverse stiffening joists should be provided at a maximum spacing of 60 cm, while for the 20 mm material, the maximum spacing should be 90 cm.
The countertop must rest, without bending, on each joist and on lateral structures.
When transporting the countertop, make sure to use appropriate packaging (crate) and arrange the countertop vertically.
On the job site, the slabs must be handled vertically in order to avoid bending.
Secure the countertop to the structure using a continuous bead of silicone.

Note: Periodically check the furniture structure and levelness, compensating for any misalignments.

TOOLS / MATERIALS

Products for structural gluing

To join ceramic elements (e.g. straight edge) use two-component epoxy or polyurethane resins that match the material's colour. Be careful to prevent any gaps from forming. After the pairing and before the resin sets, eliminate any trace of excess resin. Grind the edge to obtain a chamfer at least 2 mm wide.

To glue the countertop to the structure and/or to seam 2 pieces (countertop consisting of two slab sections or more), we recommend using an elastic and transparent adhesive (e.g. silicone).

To fill the coupling joints between the flush-mount element and slab (when applicable), use an elastic and transparent adhesive
(e.g. silicone) or plastic gaskets supplied by the manufacturer of the appliance/sink.

CARE AND MAINTENANCE

Care and maintenance information are available at the following link:
https://florim-cdn.thron.com/static/ARW0PF_FLORIM_stone_Cleaning_and_maintenance_ZZQJSH.pdf?xseo=&response-content-disposition=inline%3Bfilename%3D%22FLORIM+stone+Cleaning+and+maintenance.pdf%22

GOOD WORKING PRACTICES

Currently, there is increasing awareness of health considerations and the need to minimise potential risks associated with work activities.
In both the construction field and the natural and synthetic stone processing industry, there is a specific focus on reducing lung diseases. The presence of breathable free crystalline silica is recognised as potentially hazardous to personnel in the work environment.

Silica serves as the primary ingredient in ceramic bodies. Additionally, it constitutes approximately half the weight of the earth's crust, as it is present in sand, granite and many other minerals.

The fraction that poses potential health risks to humans is only free crystalline silica in its breathable form, characterised by a precise grain size.

For the most up-to-date information, we recommend referring to dedicated websites on occupational safety typically managed by government agencies (https://www.nepsi.eu/), as well as to our page https://www.florim.com/en/basic-information-on-crystalline-silica/

DISCLAIMER

This technical manual contains practical knowledge and recommendations for the fabrication of Florim slabs. Its sole purpose is to offer suggestions, which should be complemented by the specialised expertise of the professionals and experts involved in the various stages of the process. As a result, we disclaim any liability if damage occurs during the stages covered by this manual. Florim reserves the right to make technical and formal adjustments to the data in this manual. Please note that all legal provisions must be followed during each machining stage. Any applicable legal requirement takes precedence over the instructions provided in this manual.


NC

TECHNICAL FEATURES

Explore the technical data sheets on our website for the product that interests you
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