CARAVELLI™

TECHNICAL GUIDE

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Caravelli 12mm Slab Processing

Caravelli 12mm slabs are processed using water-based machines suitable for materials such as natural stones, marbles, and agglomerates. For straight cuts, a dry-cutting table, similar to those used for flat glass, can be utilized.

Before beginning the cutting process, check the maintenance status of the operating machine, particularly:

- The work surface must be solid, sturdy, clean, and intact.
- The work surface must be perfectly level and aligned.
- There should be no surface irregularities or debris from previous processes on the work surface.
- The tool must be suitable for processing porcelain stoneware and in good condition.

The operating parameters, within the ranges indicated in this guide, are those recommended by machinery and tool manufacturers and by industry operators, following trials and processing tests. However, they are purely indicative and should be verified by the user based on the equipment available, their own experience, and the type of finish desired.

It is therefore recommended that each operator performs preliminary practical tests on samples before proceeding with cutting and processing, in order to properly test and set up the machine and tool at their disposal.

If the cut finish is unsatisfactory or if the operation results in the slab breaking, potential causes may include incorrect feed speeds, execution pressure, or rotation speed of the tool, imperfect flatness of the support surface, movements or vibrations experienced by the slab during processing, or incorrect choice of the disc or tool used.

IMPORTANT: It is recommended to work in compliance with local laws and regulations regarding workplace safety. Please consult the product's Safety Data Sheet.

Process Nuovocorso 12mm slabs using water-based machinery suitable for natural stones, marbles, and bonded materials.

Dry cutting benches can be used for straight cuts, as with flat glass.
Before cutting, check the maintenance status of the operating machine, in particular:

- The work top must be solid, resistant, clean and intact.
- The work top must be perfectly flat and level.
- The work top must be free of any previous processing waste and must have no irregularities in the surface.
- The utensil must be suited to working porcelain stoneware and must be in good condition.

The operating parameters, in the ranges indicated in this guide, are those recommended by the manufacturers of the machinery and utensils and by specialist technicians, following processing tests, but are in any case purely indicative and must be checked by the user according to the available equipment, his experience and the type of finish to be obtained.

It is therefore recommended that all operators perform preliminary practical tests on a sample before cutting and processing, to test and suitably programme the machine and utensils used.
If the cutting finish is unsatisfactory or the operation leads to breakage of the slab, the reasons for this must be sought in the incorrect feed speed, operating pressure or utensil rotational speed, the incorrect planarity of the support surface, movements or vibrations caused to the slab during the operations, the incorrect choice of disk or utensil.

IMPORTANT: It is recommended to work in compliance with local laws and provisions concerning safety at work. Consult the product safety data sheet.

END PROCESSING / IMPORTANT NOTE:

After finishing the processing with any type of machine, pay particular attention to the handling of the slab, in particular if openings or inner holes are present. Use suckers only if equipped with a sufficient number of outlets, to avoid any bending of the processed countertop.
Alternatively, manually move the vertical piece, taking care to avoid twisting.

POLISHED SLAB:

Clean the slab with compressed air to remove any dust residues.
Given the characteristics of this type of surface, avoid contact or dragging of metal objects for example, do not use belts or chains for handling.

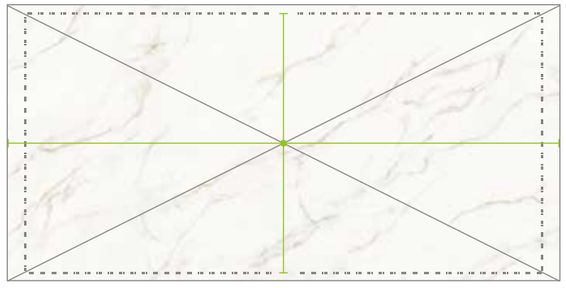
Disc cutting operations

For cutting, use good condition diamond discs suited for machining porcelain stoneware, on wateroperated machinery.
Both segmented and continuous rim discs can be used.
The slab must be fed in the same direction as the disc rotation.
The cut is obtained by erosion of a width proportional to the width of the disc.

Before machining, check that the work top is flat, level, in good condition and free of any processing waste.

CUTTING DIAGRAM:

Nuovocorso slab in size "Full Size" has non-squared external edges.
Start the machining by squaring off the two sides at least (suggested on all four sides, removing about 2,5 cm)
To obtain size 1620x3240mm, set the disc path to obtain the size from the centre of the "Full Size" slab.



PARAMETERS:

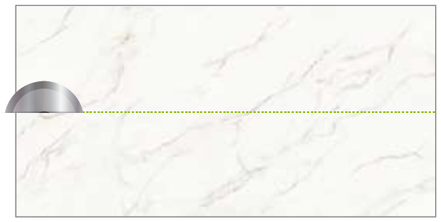
- The smaller the disc diameter, the higher the spindle rotation speed to be applied.
- The lower the feed rate, the higher the cutting quality.
- A lower feed rate allows for an edge finish with a reduced bevel.
- The entry and exit speeds should always be reduced by 50% compared to the operating speed.
- Correct alignment and adequate water supply are essential.
- The exposed part of the disc should be as minimal as possible, extending about 1 mm beyond the slab thickness.
- Processing is successful if vibrations caused by the cutting operations are minimized. To limit these vibrations, it is recommended to place a sacrificial wooden or rubber-based panel (such as vulcanized rubber) underneath the slab.

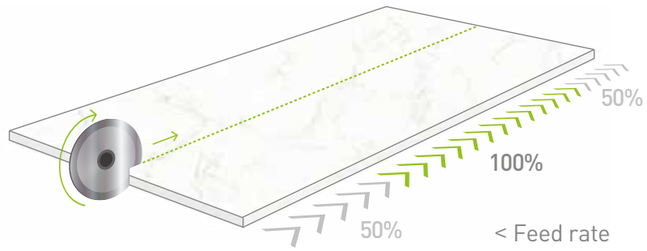
Disc cutting operations

PARAMETERS:

- The smaller the disc diameter, the greater the spindle rotation speed.
- The lower the feed speed, the greater the cutting quality.
- A lower feed speed ensures finishing with reduced chamfer on the edge.
- The infeed and outfeed speed must always be 50% less than nominal working speed.
- Correct positioning and amount of water.
- As little of the disc as possible must be exposed, considering at least 1 mm passing beyond the thickness of the slab.
- Successful machining will be ensured if the vibrations emitted by the cutting operations are reduced to a minimum.

To limit the vibrations, place a disposable wooden or rubber-based (e.g. vulcanised) panel beneath the slab.





Below are the recommended parameters for processing.

	MM / DISCDIAMETER	**RPM**	FEED RATE MM/MIN	INFEED / OUTFEED SPEED
Straight cut	300 400 500	2˙800 1˙800-2˙200 1˙400-1˙900	1˙500-2˙000 1˙000-1˙200 1˙000-1˙200	50%
45° cut	300 400 500	2˙800 1˙800-2˙200 1˙400-1˙900	800-1˙000 500-600 500 600	50%

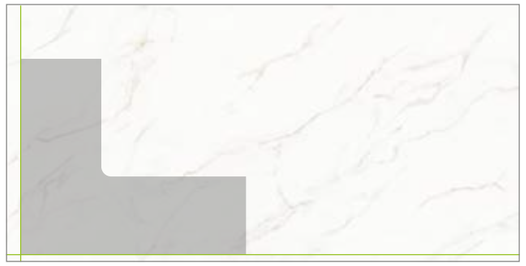
* the parameters indicated are indicative. Always follow the manufacturers' recommendations, since in some exceptional cases these parameters may differ a little from what is indicated.

By appropriately setting the machinery, it is possible to achieve inclined cuts on the slab. When performing a 45° cut to join two slabs, it will then be necessary to bevel the new edge.
For 45° cuts, thicker discs can be used to limit vibrations and reduce the risk of slab breakage during processing.
When making "L" cuts, it is first necessary to create a hole at the corner, then proceed with straight cuts. The final section near the hole can be cut manually using a grinder.

Disc cutting operations

By appropriately setting the machine it is possible to cut the slab on the bias. When cutting at 45° to join two slabs, the new edge must be chamfered. In 45° cuts it is possible to use extra-thick disks to limit the vibrations and reduce the possibility of breaking the slab during machining. For "L" cuts, first of all make a hole at the angle, and then make the straight cuts. The last part near the hole must be cut by hand using a grinder.

< "L" cut: processing sequence



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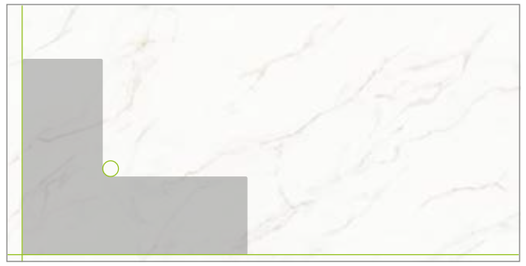

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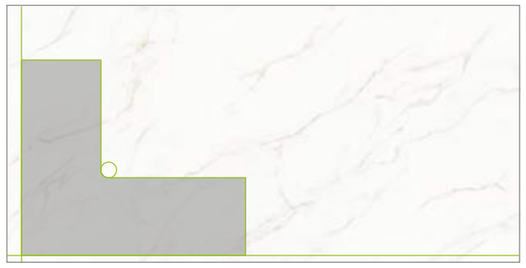

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At the end of each processing phase and before the piece has dried, clean the surface with clean water. To restore the disc after a number of cuts, use an alumina or quartz block.

Cutting bench machining

Straight cuts on NC 12 mm slabs can also be done on cutting benches used for solid glass slabs, on a solid top with a diamond wheel. The cut is then opened using glass grippers.
The special type of machining requires that a strip of at least 40mm be cut to guarantee the opening of the cut. This type of straight cut cannot be used to obtain internal openings.
The obtained cut is straight, but not smooth or with a uniform thickness, and must therefore be finished. The operation can be done on a CNC work station with diamond utensils, to remove the burrs and for the following smoothing and polishing of the irregularities caused by the dry cut.
It is advisable to consider any subsequent abrasion of the material in the cutting sizes.

NC 12 MMTIPOLOGIA NC 12 MM TYPE	**PRESSIONE** FEED SPEED	**AVANZAMENTO MM/MIN** FEED SPEED MM / MIN	**ANGOLO ROTELLINA** WHEEL ANGLE
Pale colour	4 bar	15.000	135-140°
Dark colour	5 bar	10.000	135-140°

Numeric control machining

Nc 12mm slab can be machined with numeric control machinery (CNC).
The most complex CNC stations offer the possibility to angle the head to create many different types of shapes and outlines. This machine is used mainly to obtain recesses for hobs and sinks, edge finishing for flush-mounted tops, holes, edges and curved cuts.

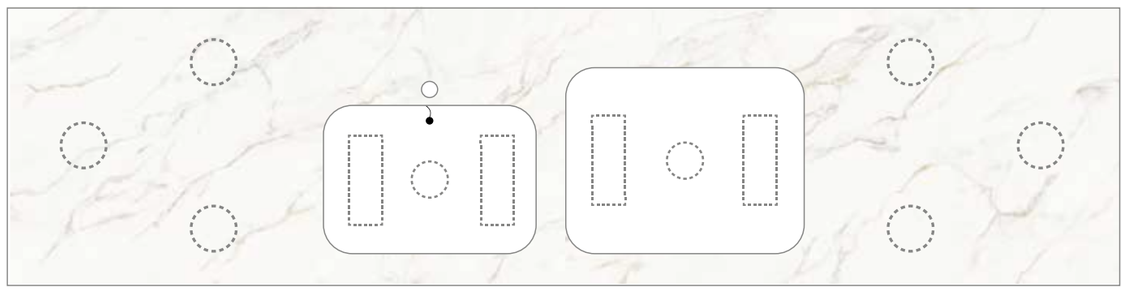
Numeric control machining

TOOLS:

The tool must be diamond finished and suitable for processing porcelain stoneware. The choice of utensil is linked to the specific processing in question.
Do not make any cuts or holes with utensil oscillation.
During machining, use plenty of well-aimed water, both inside and outside the utensil.

POSITIONING THE SUCTION CUPS:

Before starting machining, check the correct grip of the suction cups on the back of the slab. If unsatisfactory, use softer seals of a more suitable thickness. If the slab is not perfectly fixed it may move, consequently making the piece unusable.
The correct positioning of the suction cups supporting the slab is a fundamental aspect for successful cutting. For this reason, distribute the suction cups evenly to support the slab particularly near the cut and below the part to be removed after cutting. With the cutting feed, it is important to avoid any bending between the part to be removed and the part machined as this may cause cracks and/or breakages.
As an alternative to the suction cups, special clamps can be used: in this case, bear in mind that the part the clamp is positioned on cannot be machined.



Top- lush machining

It is recommended to proceed by machining the top-flush before making the hole.
Make the cut to the size and depth required, following the instructions in the technical data sheet provided with the sink or appliance to be installed.
Consider the appropriate size of the appliance or sink in order to assess the width of the top-flush recess.

1

< Drilling

2

< Incremental cutting

3

< Cutting

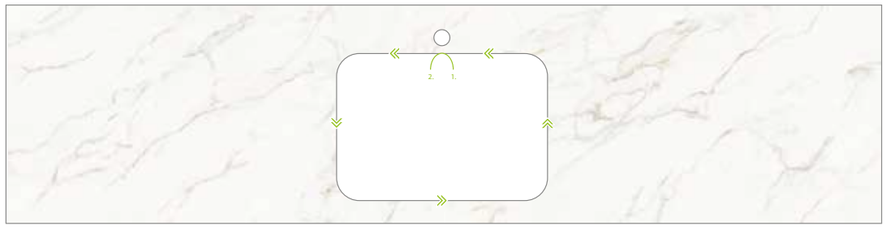
Top- lush machining

	RPM	FEED SPEED MM / MIN	NOTES
Hole	1.800-2.200	20-30 mm/min	Slow the feed to 10 mm/min at 1-2mm from the bottom, without water
Cutter	3.000-4.000	100-200	135-140°
Top-flush	5.000-7.000	150-250	135-140°
Chamfering	5.000-5.500	1.000-2.000	135-140°
Edge polishing (Matt finishing with metal grinder sequence)	3.000-5.500	1.000-3.000	135-140°
Edge polishing (Polished finishing with resin grinder sequence, after metal grinder sequence)	3.000-5.500	1.500-3.000	135-140°

At the end of each processing phase and before the piece has dried, rinse the surface with clean water. To restore the utensil after a number of cuts, use an alumina or quartz block.

water jet machining

C 12mm slabs can easily be cut with water-jet machines: this method is used for all cutting, shaping and drilling operations with a high degree of precision.
Check that the metal support grid is in a good condition and flat, and that the piece is appropriately fixed to prevent it from moving, which could compromise the quality of the cut.
If the machine allows, it is also possible to cut at 45°. By adjusting the machining parameters, it is possible to obtain a sharper or rounder edge.
For openings in the slab, start cutting inside the hole and then proceed towards the perimeter of the cut.
Keep a minimum radius of 5mm for internal angles.



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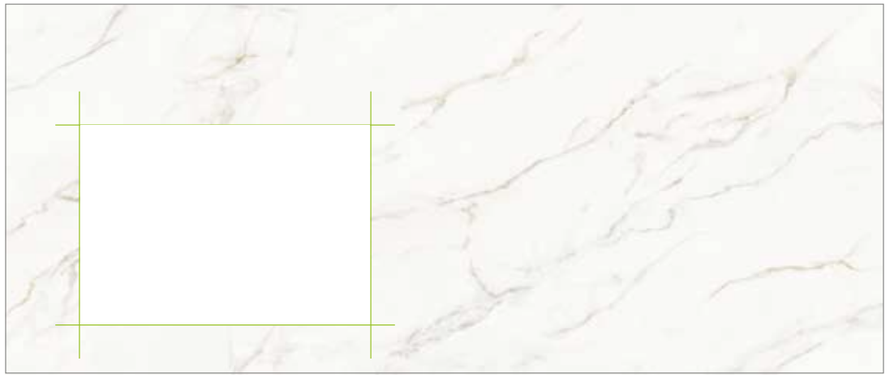

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NC 12MM TYPE	FEED SPEED (BAR)	FEED SPEED MM / MIN	CUTTING ABRASIVE	INITIAL DRILLING PRESSURE 4S	DRILLING ABRASIVE
Pale colour	3500-3800	500-600	80 mesh; 350 g/min	800 bar	80 mesh; 150 g/min
Dark colour	3500-3800	400-500	80 mesh; 350 g/min	50%	80 mesh; 150 g/min

At the end of each processing phase and before the piece has dried, rinse the surface with clean water.

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