

Laboratory guidelines – bridge work

Smile...
first impressions
matter



Overview

incise™ bridges are produced as part of a precision process for restorative dentistry. The system design is supported by accurate measurement technology and dental industry research.

These guidelines will help you to use the incise™ system to create world class products offering:

- Accurate fit and marginal adaptation preserves gingival health and minimises micro leakage
- A restoration that exceeds clinical strength requirements
- Excellent aesthetics achieved by using zirconia
- Greater longevity of restoration as a result of material stability and good marginal fit.

Fitting a poorly designed or manufactured bridge can lead to gingival disease, secondary caries and loss of tooth vitality, fractured bridges and/or fractured porcelain, de-bonding of cement or an unsightly restoration.



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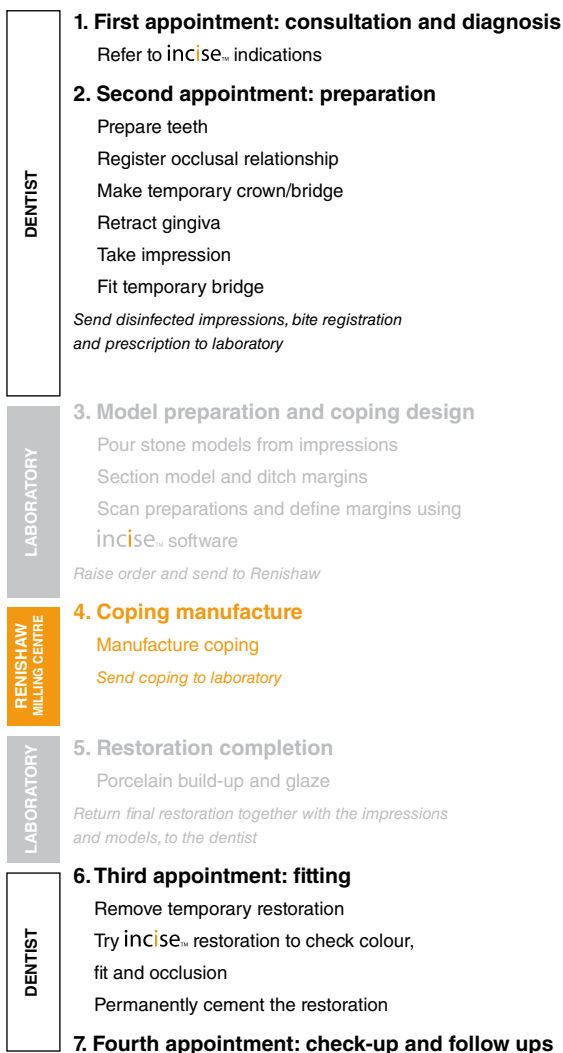
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Laboratory process overview

The incise[™] frameworks are manufactured in the UK using high precision CAD/CAM equipment designed by Renishaw. It is important that strict procedures are followed to ensure best results. You can be confident that these procedures and recommended materials are backed up by stringent scientific evaluation. Following these guidelines will ensure that you receive the best possible bridge.



Accurate master model production

incise™ recommended materials:-

DIE STONE	Renishaw dental stone
WATER	De-ionised water



ALWAYS FOLLOW THE MATERIAL MANUFACTURER'S INSTRUCTIONS

The recommended values below ensure the final model is hard and durable and meets the necessary accuracy requirements.

Guidelines for a controlled process

1 Preparing the stone

A ratio of 100 g powder to each 20 ml of de-ionised water should be used. Stone should be measured to the nearest 1 g, water to the nearest 0.5 ml. These ratios minimise the geometric deformation whilst ensuring excellent stacking and a durable master model. Larger quantities can be mixed as long as the ratios are scaled accordingly.

2 Mixing the stone

Mix thoroughly with a plastic spatula then vacuum mix for 30 seconds.

3 Pouring the stone

It has been demonstrated that excellent dies are produced when no surface modifiers or surfactants are used, and generous vibration is employed. Other techniques may produce accurate results but will not have been validated for the recommended materials.

4 Trimming the model

After the model has been dry trimmed, air blast the surface to remove any loose debris.

This process is critical to successful scanning.

Preparing the master model for scanning

incise™ recommended materials:-

MARGIN LINE MARKER

Graphite pencil

PROFESSIONAL DIE HARDENER

Kerr die hardener to protect the die from moist porcelain.

Super glue and other products are not recommended as die hardeners.



ALWAYS FOLLOW THE MATERIAL MANUFACTURER'S INSTRUCTIONS

Section model as appropriate.



1. Ensure that the ridge is trimmed as close to the dies as possible.



2. Carefully under-cut below the margin line to form a defining edge. A minimal under-cut is recommended to avoid chipping the margin.



3. To maintain the integrity of the margin, it is recommended that a graphite lead pencil is used to mark around the margin line.

Graphite is insoluble in die hardener and will not smear, unlike some margin marker.

In order to protect the die from moist porcelain, a die hardener should then be applied using a brush.



4. Re-assemble the trimmed and sectioned model.

It is recommended that a Pindex™ model system is used with the incise™ process. Movement in the location mechanism will result in a framework that is smaller than desired. Moving dies should be supported with wax.

Scanning

Scanning the dies and the ridge

It is recommended that the dies and the ridge are scanned before waxing up the pontic. This will:

- help avoid picking up any left-over wax that may be present after removing the pontic. This will cause errors in the scan data;
- allow you to keep the waxed up bridge to compare with the framework if desired.

The *inScan* scanner software provides on-screen step-by-step instructions for setting up the workpiece for successful scanning. The guidelines below merely highlight areas which should be checked before scanning commences:

You can choose the order in which you scan the preparations and the ridge



1. *The model must be set up to create a workable path of insertion with no undercuts on either die.*



2. *Try to ensure that the preps are scanned as flat as possible (see figure 2) whilst ensuring that the correct path of insertion is maintained.*



3. *To scan, both dies may be left in the model. All other parts should be removed.*



4. *When scanning the ridge, the adjacent preps should not be removed. A 3 mm diameter stylus should be used. If the stylus penetrates between the ridge and the preparation, this gap must be waxed up and the ridge re-scanned.*



5. *Ensure that the gimbal and jaw holder do not move during scanning. When removing and replacing the parts for scanning, ensure that the jaw holder and gimbal are removed together.*

Waxing up the pontic

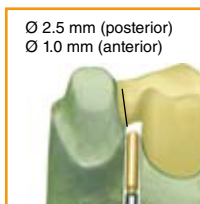
The incise[™] process only requires the laboratory technician to wax-up the pontic and connectors. This should be carried out after the preps and the ridge have been scanned. The incise[™] scanner will do the rest of the work for you and create a CAD model of the finished framework. The guidelines below will help you achieve accurate results when scanning the pontic. Fully seat both dies and the ridge, and wax-up the pontic as follows:



1. Looking down on the model, ensure that the pontic is smaller than the ridge.



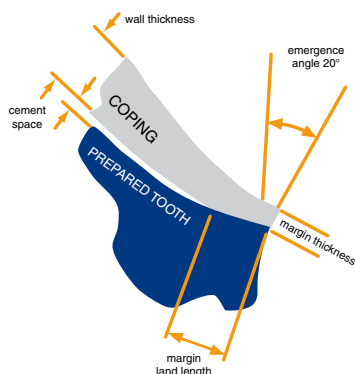
2. There must be room to get a 2 mm cutting tool in between the pontic and the preparation.



3. The connectors must have a cross-sectional area greater than 2.5 mm diameter for posterior restoration or 1 mm diameter for anterior restorations, to meet clinical strength requirements.



4. When finished, the preps and the waxed-up pontic are ready to scan. The bridge can then be scanned and margin lines generated. Place the gimbal assembly back onto the scanner and follow the on-screen step-by-step instructions.



The wall thickness and cement space can be chosen and specified in the incise[™] software. For details on these specifications, please visit www.renishaw.com/dental



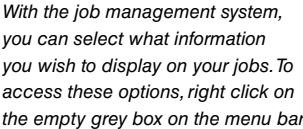
If an anterior unit is selected in the incise[™] software, the framework will be designed to meet the clinical requirements of an anterior restoration. The framework will NOT be suitable for a posterior restoration.

Anterior copings are thinner to meet the lower loads and more challenging aesthetic requirements of this zone. Posterior copings must be thicker so that they can withstand the higher loads encountered nearer the TMJ. The diagram below shows typical loads.



After scanning, the data files appear in the job management system. They can then be sent electronically to Renishaw's milling centre by following the on-screen instructions.

The 'properties' option allows you to add individual notes to a job. To access the properties section, highlight a job line and either right click and choose properties, or simply select the properties icon from the main screen.



Porcelain work

incise[™] recommended materials:-

To prevent cracking, it is necessary to select a porcelain with a coefficient of thermal expansion (CTE or TEK) matched to the zirconia core.

The porcelain used must have a CTE of $(9.8 \pm 0.5) \times 10^{-6} \text{K}^{-1}$

The following systems have been tested by Renishaw show adequate bond strength to incise[™] zirconia:

- NobelRondo[™]
- 3M ESPE Lava[™]
- GC initial

incise[™] recommended tools:-

- Edenta CeraGloss HP (*Part no. 301HP*)
diameter 25 mm x 2 mm thick
- Edenta SuperMax (*Part no. 9007220HP*)
22 mm x 2.5 mm thick
- Edenta 'Keramik Tool Set'
(*Part no. 900.410SO*)
- Grit blasting – 50 µm alumina at 5 bar air pressure



ALWAYS FOLLOW THE MATERIAL MANUFACTURER'S INSTRUCTIONS

Bridge framework preparation

The supplied copings have already been grit blasted in a controlled environment. If modification of a framework is necessary, the above tools should be used at high speed using light pressure and water if desired. Modified frameworks should be grit blasted again using the information above.

Do NOT sterilise the restoration using steam.

This may have long-term implications on the strength of the material.

Additional information



Product returns

In the unlikely event that it is necessary for a prosthesis to be returned to Renishaw, it must be appropriately sterilised, and this must be clearly indicated on the primary (external) packaging.

Please refer to BS EN 980:2003, Graphical symbols for use in the labelling of medical devices, for recommended labelling symbols.



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