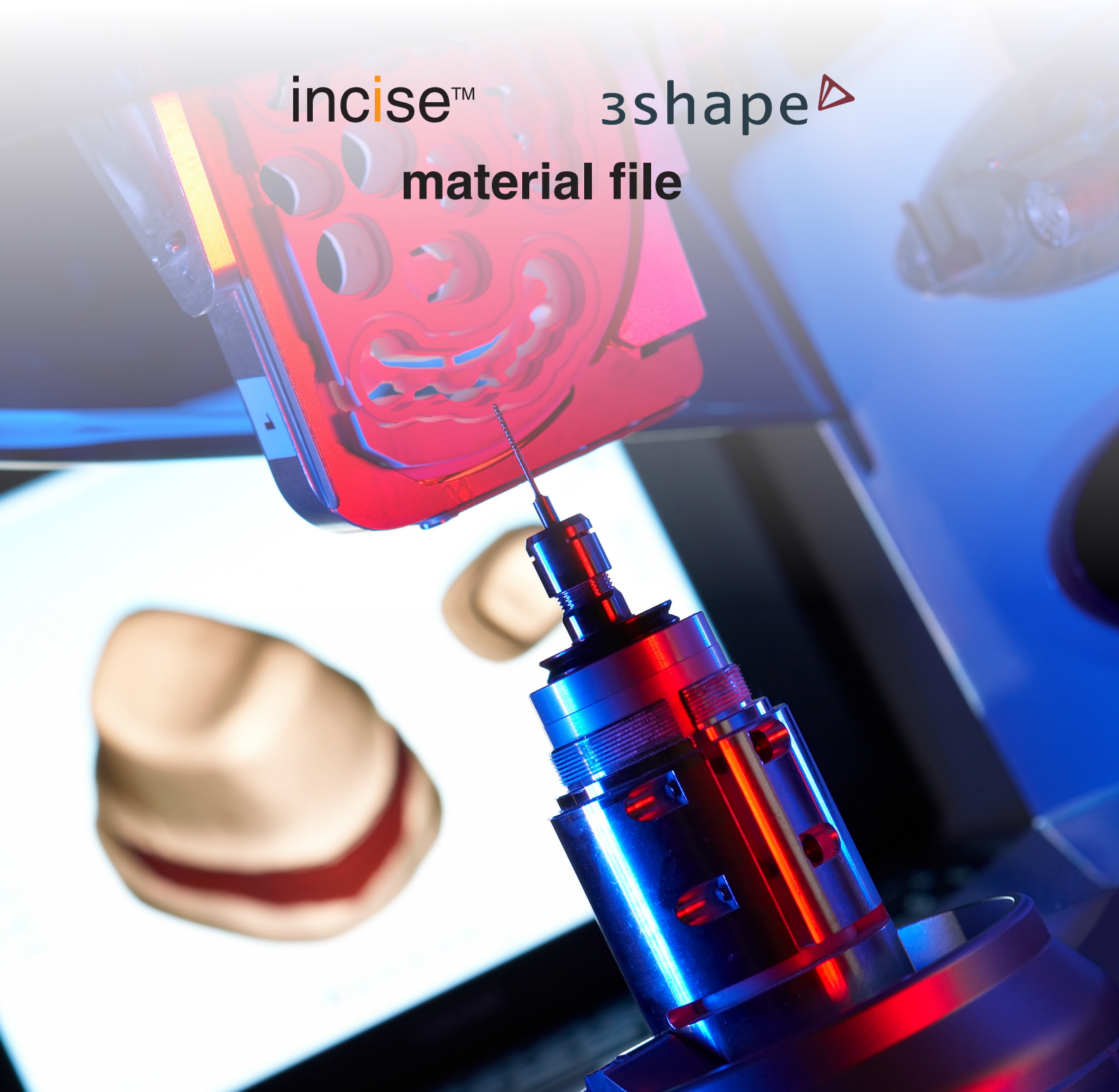
Training manual
H-5711-8000-05-A

RENISHAW
apply innovation™

incise 3shape material file training manual



Renishaw part no: H-5711-8000-05-A

First issued: March 2011

Revised: January 2013

Revised: December 2015

Before you begin

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Introduction

incise products

Hardware	
Renishaw incise™ DS10	Dental scanning machine for precise form analysis of a variety of dental models. Also referred to as the scanner or scanning machine.
Renishaw incise™ DM10	Dental milling machine for precise machining of frameworks from a selection of incise billets. Also referred to as the mill or milling machine.
Software	
Renishaw inciseCAD™	Used alongside the incise DS10 to design frameworks and submit them for manufacture. Also referred to as CAD.
Renishaw inciseCAM™	Used alongside the incise DM10 to manage and position the CAD design data prior to milling. Also referred to as CAM.
Frameworks / materials	
Renishaw incise™ LaserPFM™	Non-precious, cobalt chrome frameworks manufactured centrally using a laser melting manufacturing process. Also referred to as CoCr or cobalt chrome.
Renishaw incise™ Zr100	Zirconium dioxide frameworks manufactured locally or centrally using the incise DM10. Also referred to as ZrO_2, zirconia, Zirconia 0-5 (various shades) or Y-TZP.
Renishaw incise™ Realistic™	Zirconium dioxide fabricated in such a way to give extra translucency for full-form restorations that can be manufactured locally in-lab or centrally by Renishaw. New improved second generation now available. Also known as full contour zirconia.
Renishaw incise™ PM100	Polymethylmethacrylate frameworks manufactured centrally for temporary crowns or bridges. Also referred to as temporary PMMA, temporary PMMA 1-4 (various shades) or PMMA.
Renishaw incise™ WX100	Investment wax frameworks manufactured locally or centrally for lost-wax casting of semi-precious or precious metals. Also referred to as burnout wax or wax.
Renishaw incise™ LaserAbutments™	Custom-made device intended for aiding prosthetic functional and aesthetic rehabilitation. Available as screw-retained or cement-retained. Also referred to as custom abutment, single piece / multiple abutment or screw-retained crown.

Material file overview

Using 3shape Dental Designer with the incise 3shape material file installed, you will be able to design and submit 3shape Dental Designer generated frameworks for central manufacture. It also allows you to manufacture the frameworks in-lab with the Renishaw incise DM10.

Note: Frameworks that have been designed using a 3shape scanner and 3shape CAD software, that are submitted to Renishaw for central manufacture, are manufactured by Renishaw to customer-supplied designs. Such manufacture is in accordance with the applicable essential requirements of the Medical Devices Directive (93/42/EEC) and under a quality management system that complies with BS EN ISO 13485:2003. However, Renishaw cannot certify the standard of the design and it is the responsibility of the customer to ensure that its laboratory technicians are sufficiently trained and the designs being submitted are clinically acceptable and conform to the guidelines stated in this document.

incise 3shape material file installation

Notes:

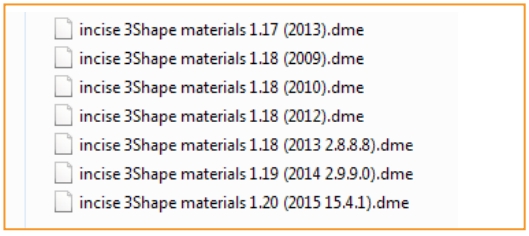
The incise 3shape material file is confirmed as being compatible with 3shape dental system 2009 and onwards.

There are now four versions of the material file. The version number needs to match the version number of the 3shape software.

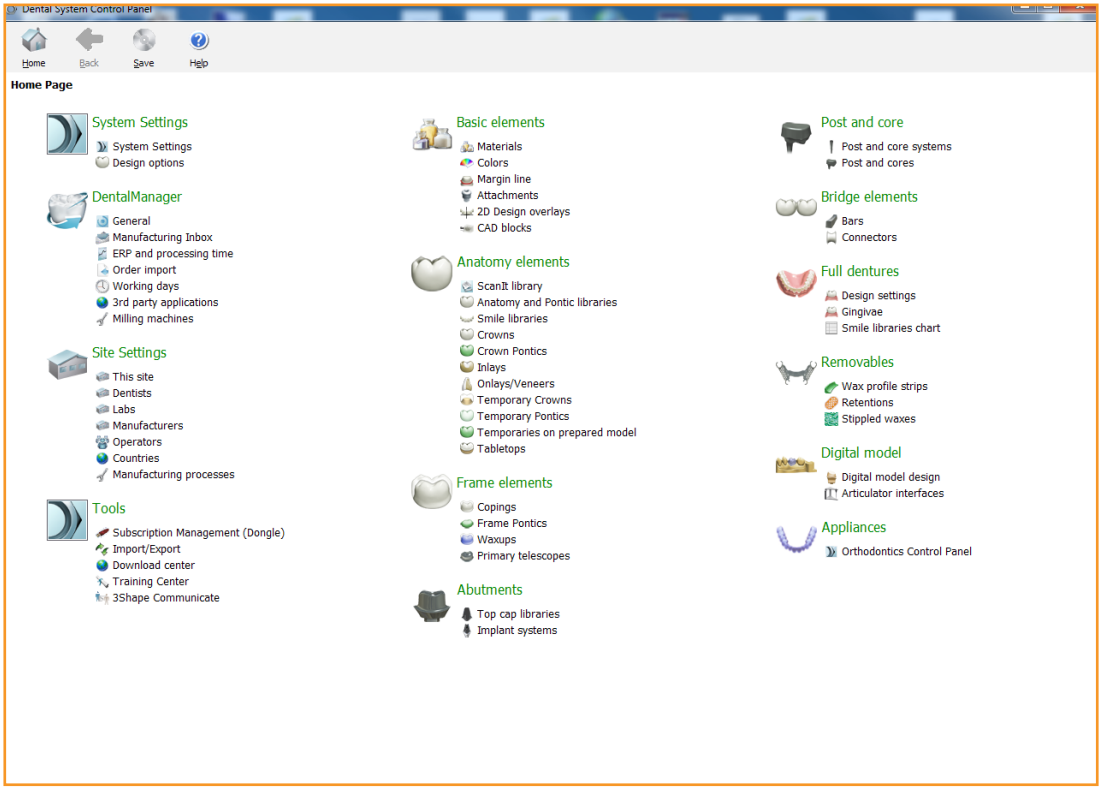
Before you begin, ensure you have the following:

- A working 3shape Dental System.
- The latest version of incise 3shape material file (CD-ROM).

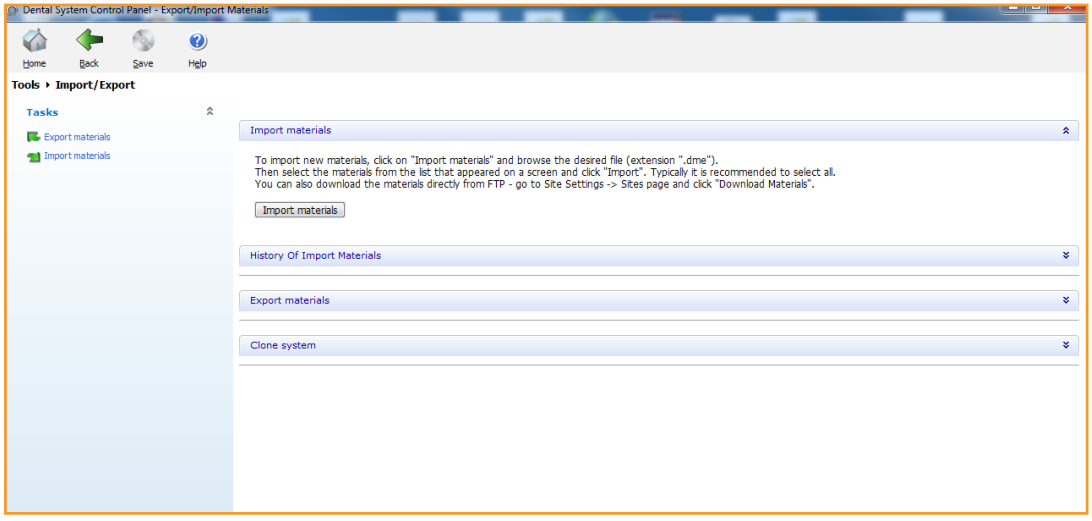
1. Insert your CD-ROM and locate the “incise 3Shape materials vx.x.dme” file that corresponds with the version of 3shape software installed. Save it to a convenient location; the desktop for example.



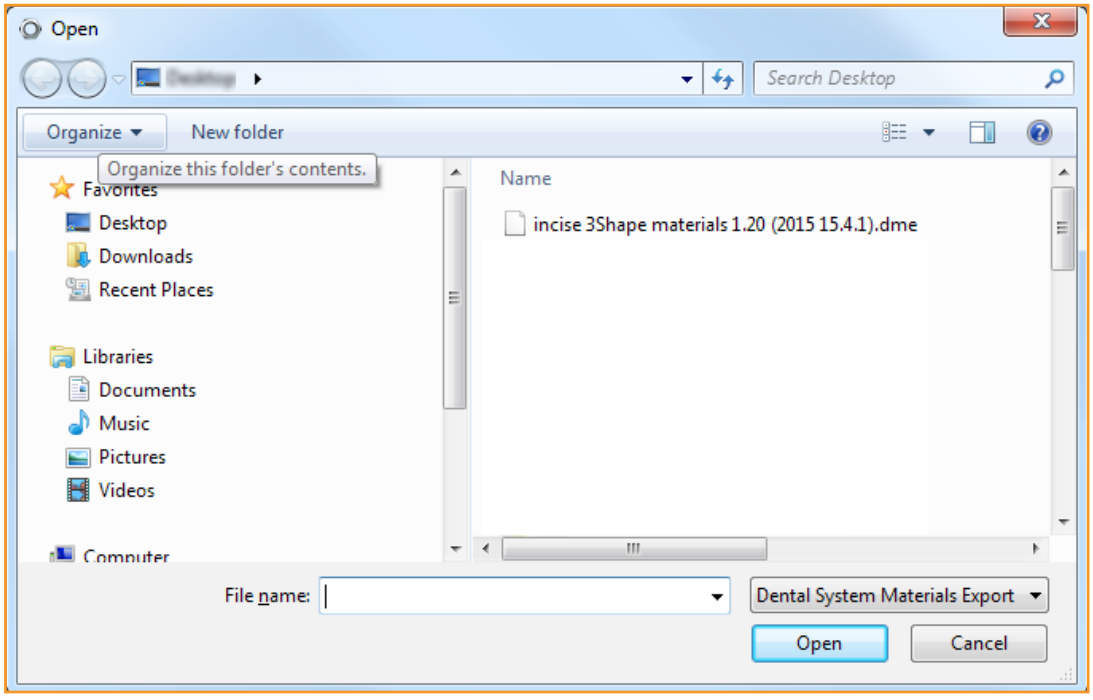
2. Start the 3shape “Dental System Control Panel” and select “Import/Export” from “Tools”.



3. Select “Import materials”. A new browser will open.



4. Locate and select the “incise 3shape materials 1.20 (2015 15.4.1) .dme” file.

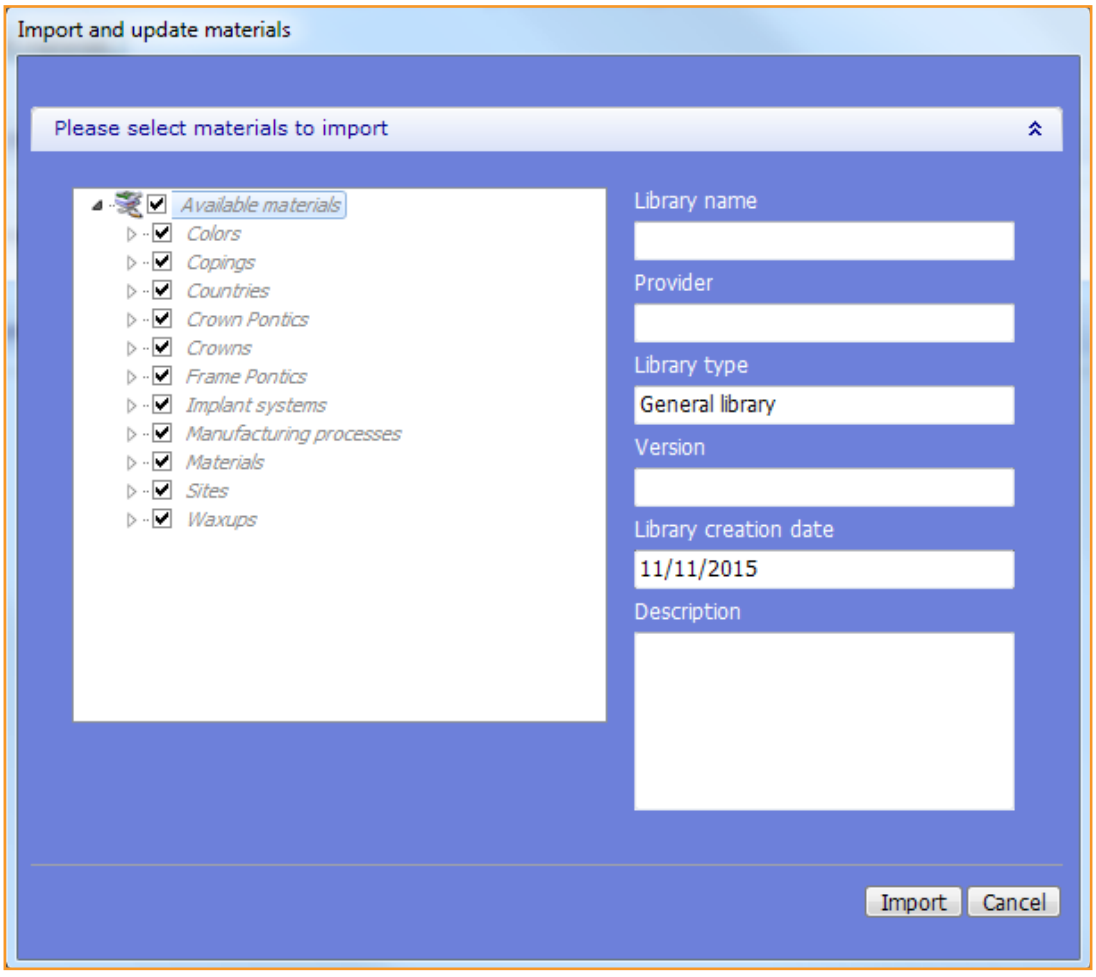


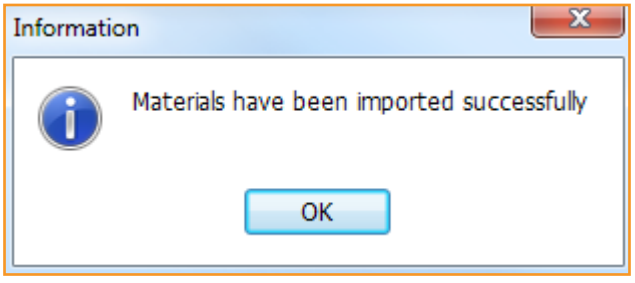
Note: If the user’s dongle has not been enabled for use with incise, the following message will be displayed:

CADOutput3iincise.dll is not in the list of allowed DLLs. Please contact your system supplier.

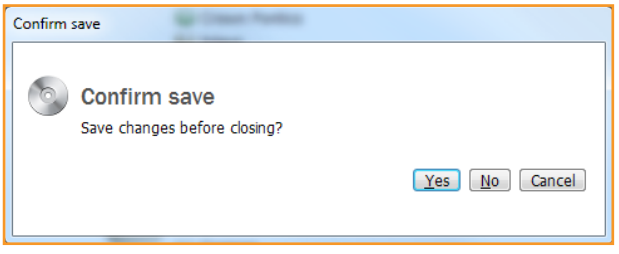
Click “OK” and continue with the import. The message will not appear again.

5. Ensuring all the checkboxes are checked, click “Import” and OK the confirmation.





6. Exit the “Dental System Control Panel” and be sure to click “Yes” to save the changes.



Your PC is now ready to design frameworks and submit them to incise central manufacturing.

Note: All of the data, allowable restoration and material types that are suitable for the machining process are set up in the incise 3shape material file.

Create a design

These parameters are specific to 3shape Dental Designer to allow you to submit frameworks for central manufacture with Renishaw. The incise 3shape material file will preset default values for the following parameters that, in most instances, will not need adjusting. Any changes that are made should not violate the guidelines below:

Coping design parameters

Parameter	Guideline
Remove undercuts **yes** / no?	It is essential to enable this option for a framework to seat correctly. Select **Yes**.
Drill compensation **yes** / no?	Drill compensation should be enabled for incise zirconia, wax and temporary PMMA frameworks. It is fixed as disabled for incise CoCr frameworks.
Cement gap	The margin cement gap should not be reduced below 0.000 mm (zero).
Extra cement gap	For copings, the extra cement gap should not be set below 0.055 mm. For bridges, the size of the cement gap should scale with the span of the bridge.
Distance to margin line	The recommended distance for most copings is 0.5 mm. This can be reduced down to 0.1 mm where the preparation is steep and with very little reduction. Copings on implant abutments should use a distance of 0.1 mm.
Smooth distance	The value is not critical and 0.2 mm will be ideal in most cases.
Drill radius	Drill radius is the effective size of the milling tool used. This value should be set to 0.440 mm for zirconia. This value should be set to 0.550 mm for wax and PMMA. This value is fixed at 0.000 mm (zero) for CoCr.
Drill compensation offset	Drill compensation offset defines the distance from the margin line where drill compensation is used. This value should not be reduced below 0.5 mm. Be aware that increasing this value will increase the chance that sharp features on the preparation will catch on the framework, requiring some manual trimming.
Margin line offset	The margin line offset default is 0.15 mm. Reducing this value will result in a coping which is too thin at the margin for manufacturing. Values larger than this are permitted.
Offset angle #1	Offset angle #1 default is 65°, angles larger than this should **not** be used.
Extension offset	The extension offset default is 0.1 mm, values smaller than this should **not** be used.
Connector geometry (minor and major axis sizes, assumed elliptical)	The connector geometry should avoid sharp features such as spikes or folds, and where possible the thickness should be biased in the loaded direction (usually vertical).
Connector area	The connector area must not be less than 6 mm^2.
Wall thickness	The coping minimum thickness must not be less than 0.5 mm.

Implant - supported restorations

Supported implants

Implant platform
Astra Osseospeed 3.5 4.0 Aqua
Astra Osseospeed 4.5 5.0 Lilac
BioHorizons External Hex 3.5
BioHorizons External Hex 4.0
BioHorizons External Hex 5.0
BioHorizons External Hex 6.0
BioHorizons Internal Hex 3.5
BioHorizons Internal Hex 4.5
BioHorizons Internal Hex 5.7
Biomet® 3i® Certain® 3.4
Biomet® 3i® Certain® 4.1
Biomet® 3i® Certain® 5.0
Biomet® 3i® Certain® 6.0
Biomet® 3i® External Hex 3.4
Biomet® 3i® External Hex 4.1
Biomet® 3i® External Hex 5.0
Biomet® 3i® External Hex 6.0
MIS Conical Connection SP
MIS Conical Connection WP
MIS Internal Hex NP
MIS Internal Hex SP
MIS Internal Hex WP
Nobel Biocare™ NobelActive™ Internal 3.5 NP
Nobel Biocare™ NobelActive™ Internal 4.3 RP
Nobel Biocare™ NobelActive™ Internal 5.0 RP
Nobel Biocare™ Brånemark System® Mk III 3.3 NP
Nobel Biocare™ Brånemark System® Mk III 4.1 RP
Nobel Biocare™ Brånemark System® Mk III 5.0 WP
Nobel Biocare™ Replace® Select 3.5 NP
Nobel Biocare™ Replace® Select 4.3 RP
Nobel Biocare™ Replace® Select 5.0 WP
Nobel Biocare™ Replace® Select 6.0 WP
Osteo-Ti Ezee Combi Abutment
Straumann® Bone Level 3.3 NC
Straumann® Bone Level 4.1 RC
Straumann® Bone Level 4.8 RC

Straumann® SynOcta 4.8 RN	
Straumann® SynOcta 6.5 WN	
TBR Internal Octagon 3.5	
TBR Internal Octagon 4.0	
TBR Internal Octagon 5.0	
TBR Morse Taper M 3.2	
TBR Morse Taper M 3.9	
TBR Morse Taper M 4.7	
Zimmer Tapered Screw-Vent 3.5	
Zimmer Tapered Screw-Vent 4.5	
Zimmer Tapered Screw-Vent 5.7	
Parameters	
Vertical offset	0.45 mm
Use screw hole yes/**no**	It is essential that this option is disabled as it will conflict with the manufacturing process.
Angled screw hole yes/**no**	It is essential that this option is disabled as it will conflict with the manufacturing process.

Materials supported

For crown and bridge frameworks:

incise central manufacturing	Zirconia, translucent zirconia*, CoCr*, wax and temporary PMMA*

For custom abutments:

incise central manufacturing	CoCr*

* Available in Europe only

Shades supported

Zirconia	All shades listed with '(incise)'
Temporary PMMA	Shades A1 (incise), A2 (incise), A3 (incise), A3.5 (incise), B1 (incise), B2 (incise), B3 (incise), B4 (incise), C1 (incise), C2 (incise), D2 (incise), D3 (incise) and D4 (incise)
Translucent zirconia	Shades Bleach White (incise), A1 (incise), A2 (incise), A3 (incise), A3.5 (incise), B1 (incise), B2 (incise), B3 (incise), C1 (incise), C2 (incise), C3 (incise), C4 (incise), D2 (incise) and D3 (incise)

Cement gap for copings

	Minimum	Typical	Maximum
Tooth supported	0.055 mm	0.075 mm	0.095 mm
Abutment supported	0.055 mm	0.055 mm	0.075 mm

Cement gap for bridges

Single retainer and cantilever bridges follow the rules defined above. Multiple retainer bridges have the following cement gap.

No. of units	Minimum	Typical	Maximum
3	0.075 mm	0.095 mm	0.115 mm
4	0.100 mm	0.100 mm	0.125 mm
5	0.125 mm	0.125 mm	0.125 mm
6 – 16	0.150 mm	0.150 mm	0.150 mm

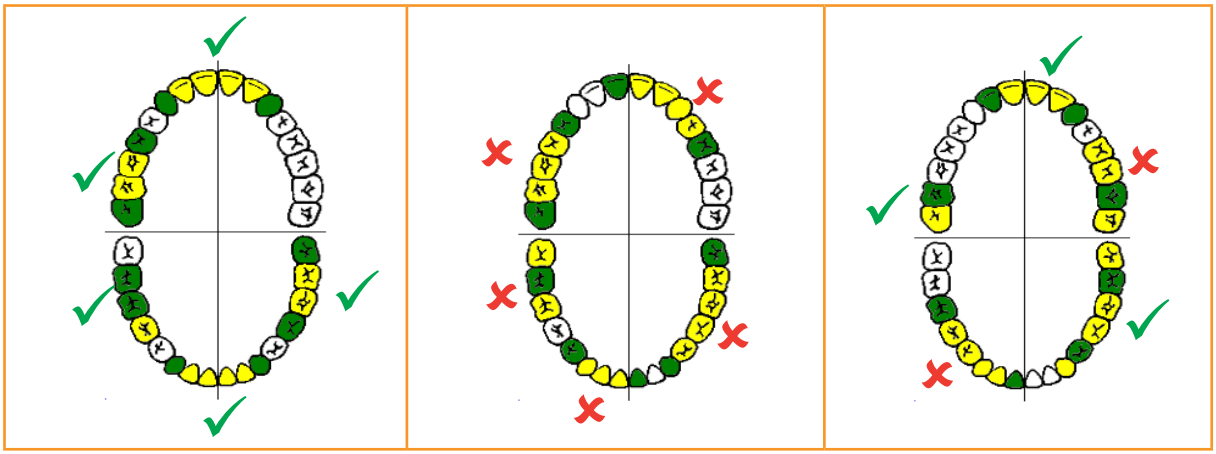
Note: For bridges, the distance to the margin line value is still determined by the type of retainer, i.e. 0.100 for abutment copings and 0.500 for tooth supported copings.

Bridge configuration (tooth or implant supported)

Maximum span for bridges (total number of units)	8 units for zirconia, 4 units for translucent zirconia, 16 units for all other materials
Maximum number of pontics between retainers	4 between teeth UR3 to UL3 or LR3 to LL3*, 2 elsewhere
Maximum number of cantilevered pontics on the SAME retainer	1

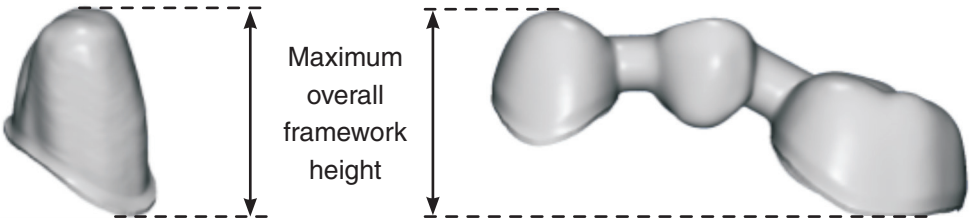
* Teeth numbers given in Palmer Notation. Equivalents in alternative numbering systems are 13 – 23, 33 – 43 FDI World Dental Association Notation or 6 – 11, 22 – 27 Universal Numbering System.

Here are several examples of both legitimate and illegitimate bridge configurations.



Retainer Pontic

Framework height



Material	Central manufacture	In-lab manufacture
Zirconia	19.7 mm	15.8 mm
Translucent zirconia	15.8 mm	15.8 mm
PMMA	19.7 mm	Not available
Wax	15.8 mm	15.8 mm
CoCr	No height restriction	Not available

Connector size

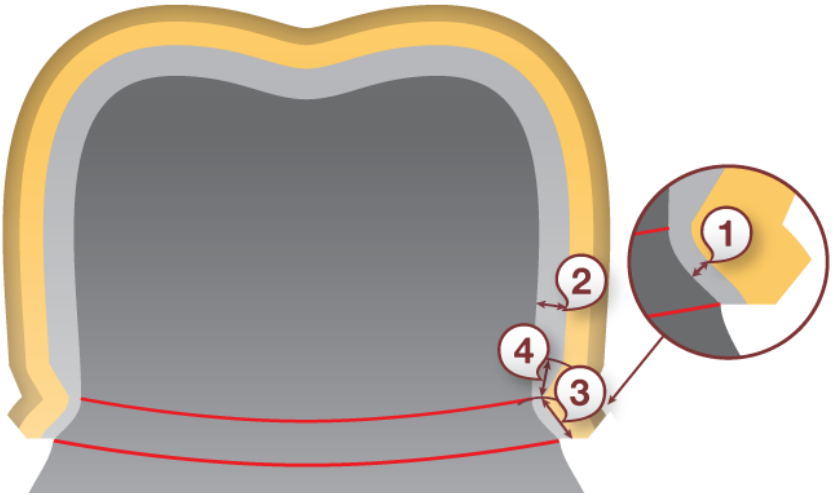
Connector sizes should be based on a design strength of 900 MPa for zirconia, translucent zirconia and CoCr and 96 MPa for temporary PMMA. The design strength is less than the material's flexural strength (1200 MPa zirconia, translucent zirconia and CoCr, 117 MPa for temporary PMMA) to allow for a factor of safety. The use of lower values may result in a framework which cannot be manufactured or that cannot withstand *in vivo* forces.

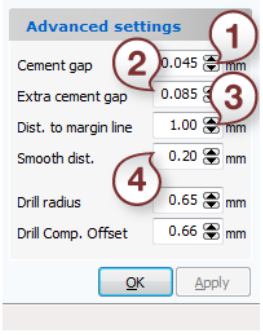
Custom abutment design limitations

The maximum abutment height is 15 mm.
The maximum angulation from the implant direction is 30°.

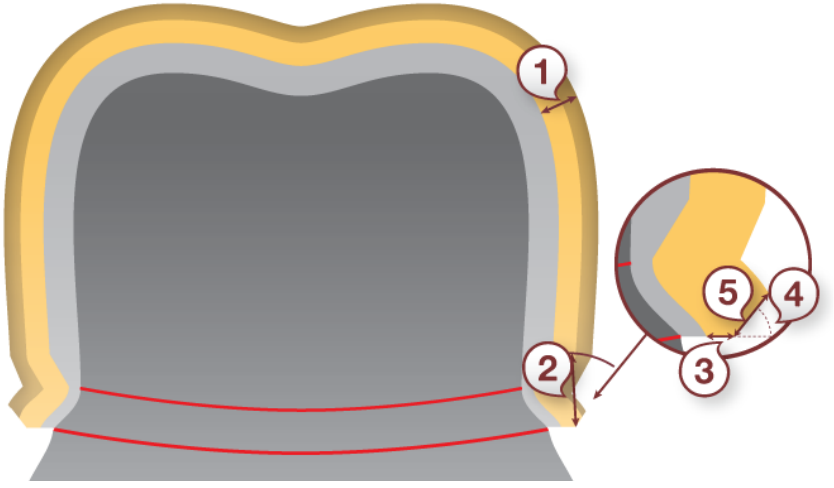
3shape parameter definition

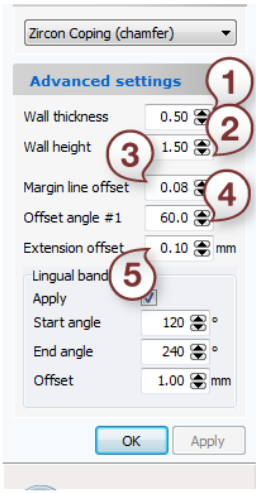
Die interface parameters





Coping parameters





Design procedures

Notes:

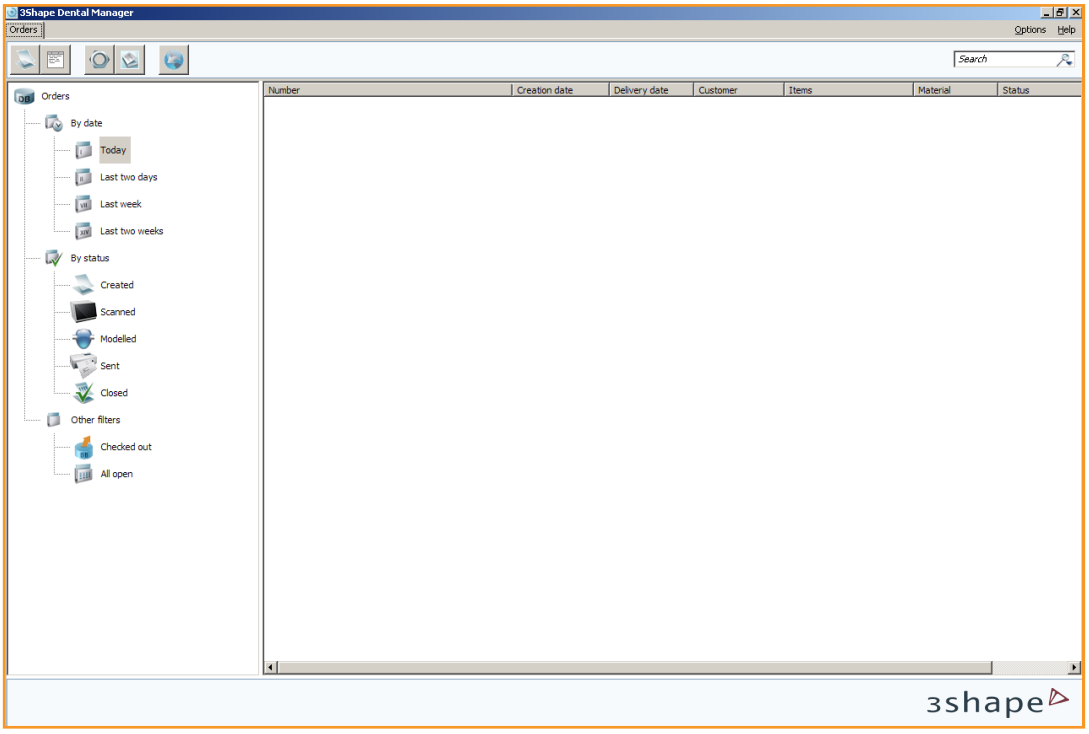
The use of values other than those defined is not recommended and may result in either a framework design that cannot be manufactured or one that does not conform to regulatory requirements.

Do not change the “Minimum Manufacturing Parameters” located in the “Material Settings” of the “Control Panel”.

The procedures below are a guide to preparing designs for manufacture. They do not cover the use of 3shape’s dental designer software. This information can be found in 3shape’s own user documentation.

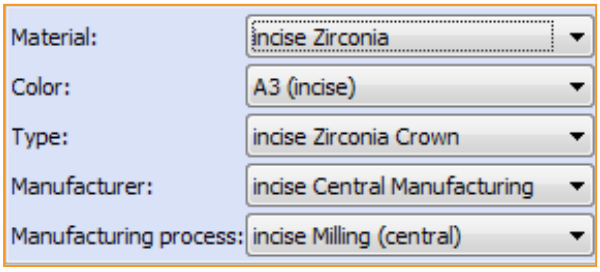
Crown and coping design

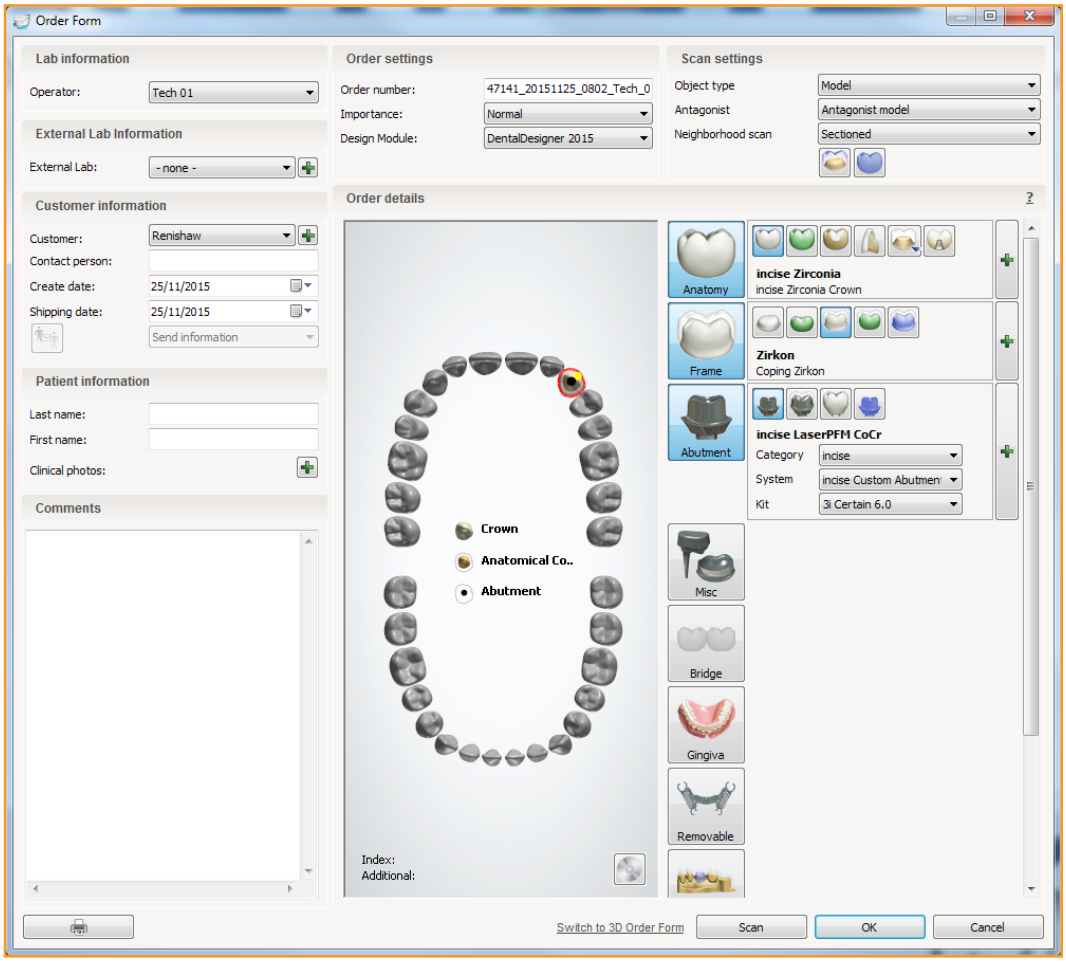
1. Open the 3shape Dental Manager software.



2. Create a new order and select either “Anatomy” or “Frame” for a crown or coping.

3. Click the green plus sign and a dialogue box will appear. Here you will see that there are additional incise presets within the drop down menus.



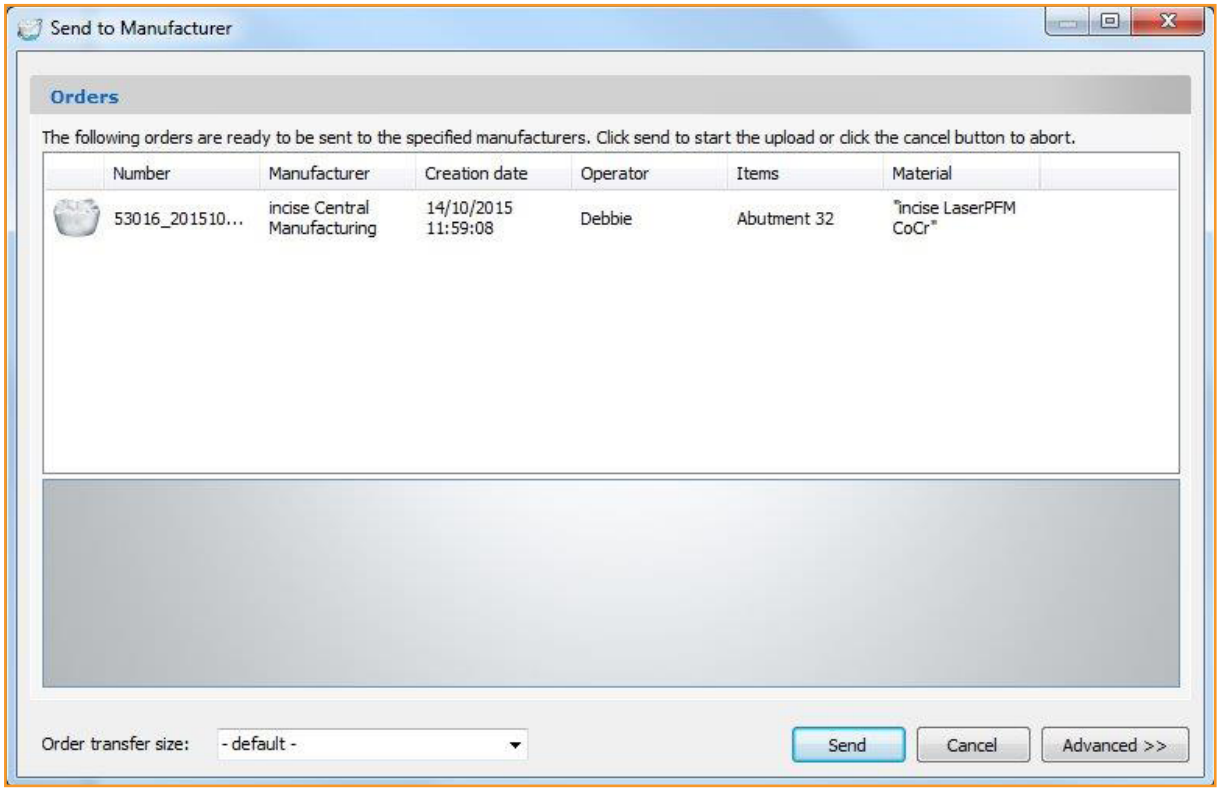


4. Use the Dental Manager program as normal to create your design and click “Next” when complete.

5. Scan case following the 3shape procedure.

6. Dental Designer will now open, which again should be used in accordance with 3shape documentation.

7. When the design is complete, click on “Send”. This will open the “Send to Manufacturer” screen. Click “Send” to start the upload or click the “Cancel” button to abort if necessary.



Renishaw plc
New Mills, Wotton-under-Edge
Gloucestershire, GL12 8JR
United Kingdom

T +44 (0)1453 524524
F +44 (0)1453 524901
E uk@renishaw.com

www.renishaw.com

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H-5711-8000-05

Issued 12.2015

Part no. H-5711-8000-05-A