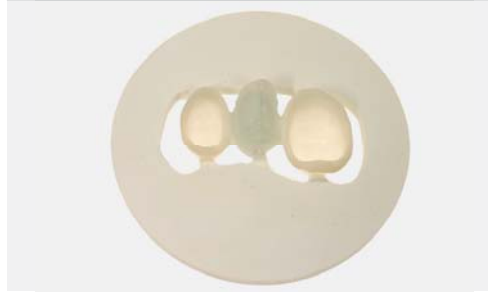


WORKING MANUAL

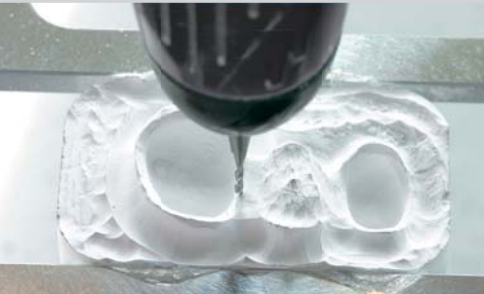
01 RESIN MOCK-UP FRAME CONSTRUCTION



02 MAKING THE FRAME TEMPLATE



03 PLACEMENT IN MILLING TABLE / MILLING



04 PRE-SINTER COLOURING



05 SINTERING



06 PORCELAIN VENEERING ZIRCONIA



RESIN MOCK-UP FRAME CONSTRUCTION

01



Relieve sharp corners, block out undercuts, grooves and imperfections and separate with Vaseline.

02



Apply T-Rigid

03



Stay 1mm above margin and light cure

04



Complete margin with Rigid

05



Finish crown contours without trimming

06



Place pontics (light cure tray material)

07



Eliminate rocking - cut through pontic

08



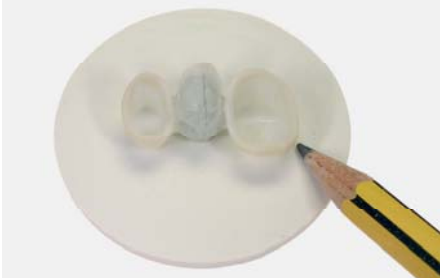
Rejoin bridge with light-cure Glue (remove pontic segment from model)

09



Frame template disc

10



Outline bridge position

11



Bridge location

12



Mark connector points

13



Cut out with tungsten bur

14



Template disc cut out

15



Fix mock-up frame with Attak Flex Gel

16



Double-check fit on model

CAUTION

Double check fit before milling after trying mock-up framework in-situ! Mill case on the day of margin completion, bridge assembly and placement in template! **Required time for mock-up frame construction: 10 - 15 minutes per unit**



RECOMMENDED PROCEDURE FOR MOCK-UP FRAME CONSTRUCTION

01



Make sure coping is completely seated when placing back onto die

02



Lightly tap coping and die onto benchtop to ensure perfect seat

03



Bridge framework will not rock when individual copings are perfectly seated

MAKING THE FRAME TEMPLATE

01



Open tins Frame A and Frame B

02



Mix each thoroughly

03



Fill Frame A and Frame B into separate bottles

04



Separate template mould with Separating Spray

05



Pour Frame A and Frame B (50:50) into glass and mix thoroughly

06



Pour mix into template mould

07



Resin cured in mould

08



Push plunger from bottom

09



Remove template disc

10



Finished template disc

PLACEMENT IN MILLING TABLE/MILLING

CEMENTATION OF THE RESIN BRIDGE

01



Place table insert of corresponding template size in milling table and lock down. Seat template into insert without tension.

02



Fix template with Attak Flex Gel and Accelerator Spray from both sides

03



Align zirconia blank with mock-up frame

04



Check for sufficient zirconia material for milling: From side to side...

05



...and top to bottom.

CAUTION

Double-check fit before milling after trying mock-up framework in-situ! Mill case on the day of margin completion, bridge assembly and placement in template!

FIXING THE ZIRCONIA BLANK AND BRIDGE REMOVAL

06



Fix blank with Attak Flex Gel and cure with Accelerator Spray

07



After milling cut connection points. Maintain the support base by cuts inside the outer glue joints

08



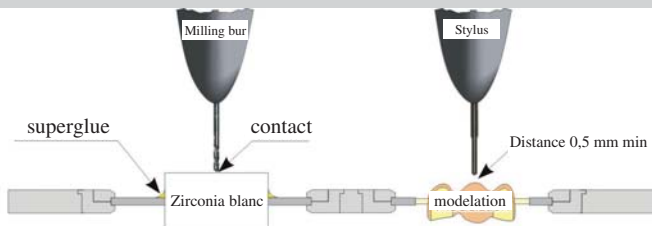
Once base is cut through bridge will simply drop in hand

⚠ CAUTION

Do not use too many glue joints in fixing the blank (max. 6). Too much gel can cause shrinkage and tension in the zirconia blank which may lead to bridge fracture during milling!

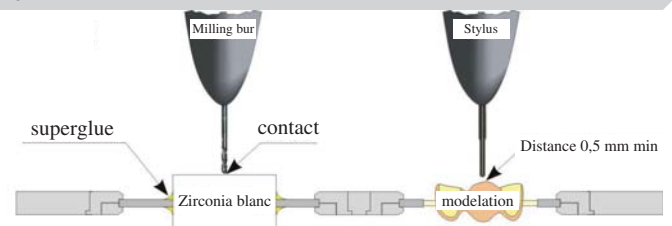
BLANK ALIGNMENT

01



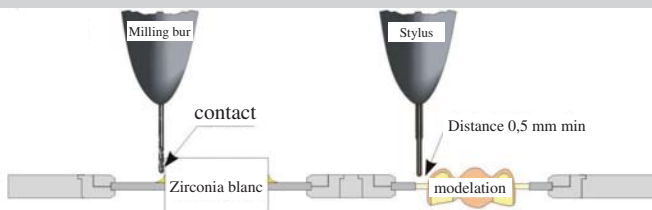
Top: Milling bur touches blank - Stylus 1 mm distance to mock-up framework

02



Bottom: Milling bur touches blank - Stylus 1 mm distance to mock-up framework

03

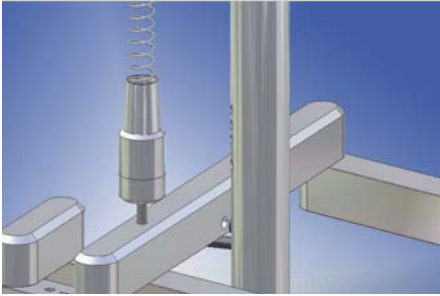


Left and right side: Milling bur touches blank - Stylus 1 mm distance to mock-up framework.

After alignment attach blank with Attak Flex Gel and cure with Accelerator Spray.

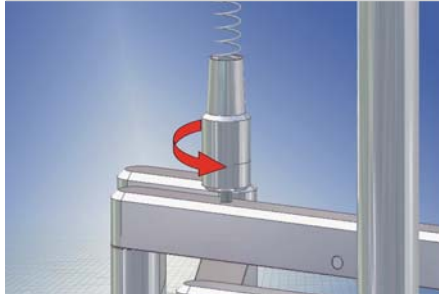
ADDITIONAL INFORMATION

01



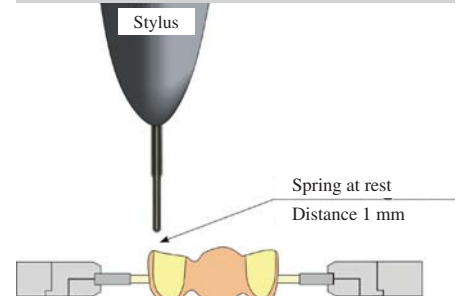
Always seat the milling arm on the designated rest when not in use

02



Adjust spring tension for arm's idle position just above the milling object.

03



Spring at rest: Distance 1 mm



OPTIMAL MILLING

01



Normal milling position

02



Rotate unit by 90 degrees for milling of blind spots not seen or covered in normal position

03



Rotated position

MILLING PROCEDURE

01



Fix blank at outer ends from both sides

02



Premill outer dimensions with 4L bur

03



Mill without pressure – let tool do the work

04



Remove material on outer perimeter

05



Reduce height to margin level

06



Mill inside coping

07



Refine contours with bur 2L

08



Perfect surfaces with bur 1L

09



Milling complete – ready for removal

10



Remove bridge by cutting inside the glue joints

11



Once base is cut through bridge will simply drop in hand

12



Complete bridge with support base

⚠ CAUTION

Do not use 'air brush' pedal continuously during milling process – only apply in short bursts. If used non-stop milling head bearings will get contaminated by dust in short time! **Milling time: 10 - 15 min per unit**



TIPS FOR LARGE OR FULL-SPAN BRIDGES

01



Trim only with 'fine' grade small-diameter instruments

02



Avoid cracking: Maximum 10.000 rev/min

03



Maintain broad support base – only sinter in vertical position

04



Blow off dust before colouring

COLOURING

01



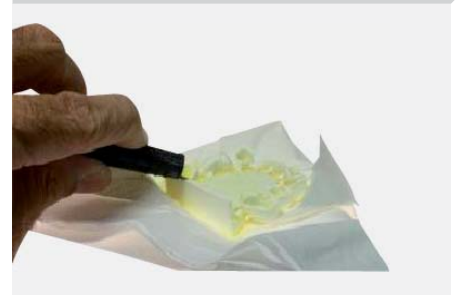
Pour Colour Liquid into glass.

02



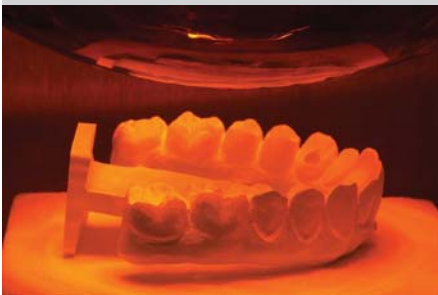
Dip framework 5 to 15 seconds using metal tweezers. Clean tweezers after dipping

03



Blow dry dipped frame over a tissue

04



Place zirconia frame on a firing tray and dry it under the infrared drying lamp „Zirkonlampe 250“; use of fume extractor is recommended or dry in well ventilated area.



Drying Lamp „Zirkonlampe 250“



CAUTION

- Return Colour Liquid to original container after use, close lid tightly and store in a cool place (5°C - 10°C)
- Zirconia framework must be completely dry before dipping in Colour Liquid or shade results can be compromised
- Use acid-proof gloves when handling Colour Liquid (mild acid solution)
- Do not direct air blow towards persons or metal surfaces when blow drying framework (danger of acid burn or corrosion)



HINT

Should final shades appear too dark dilute Colour Liquid with distilled water (add 10- 20 % of weight volume).

RENEW COLOUR LIQUID

One component of the liquid, the Stabilizer, may partly evaporate with time. This can cause blotchy discolouration of framework.

HINT

If this occurs add fresh Stabilizer to the Colour Liquid. See table below:

Weight: Colour Liquid & bottle without lid	Add Stabilizer
120 g	5 g
100 g	4 g
80 g	3 g
60 g	2 g
40 g	1 g

CAUTION

Fill and empty weighing container for Stabilizer once, then tare container weight before filling with desired amount. This procedure allows for possible remains in the container which may result in a shortfall of actual Stabilizer added.

SINTERING

01



Place objects on the firing tray with occlusal side down. Large-span bridges need to be sintered in upright position.

02



Use Ceramic cover over framework. Framework must not touch the Ceramic cover.

03



Ceramic cover in centered position on firing tray

04



Open furnace door

05



Place firing tray in centered position in furnace

06



Close furnace door and lock

07



First rotate yellow/red main switch to ON

08



Furnace is operational within 5 seconds. The display shows OFF which alternates with the current program number selected

09



To change to another program press button until RECNO appears (see illustration).

10




Scroll the program selection up or down by pushing the ,orange triangle' buttons on right side until desired program number appears.



11



Confirm selected program by pushing  button again (RECNO = Recognize Number). Display reverts to original screen.

12



Now push green button to start program

13



The selected program is fully automated confirming as „Zirkonzahn Programm running“ followed by the program number selected. After program completion the display „TIMER END“ appears. Sintered object can be removed

CAUTION

- Never open furnace door above 200°C (Possible damage of furnace lining, heating elements or sinter objects by cold shock!)
- In case of very large or heavy framework only open furnace when below 70°C or sinter objects may crack.
- With use of the Ceramic cover do not exceed the heat rise rate of 8°C/min. (Risk of fracture).

VENEERING ZIRCONIA

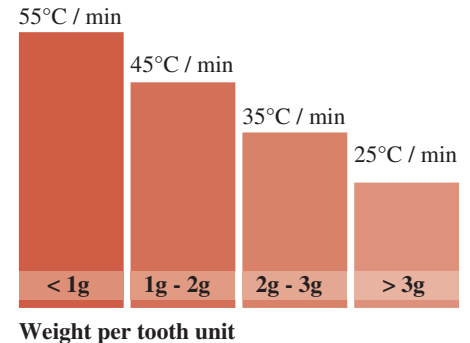
HEAT RATE WHEN FIRING THE PORCELAIN

Zirconia is known to be a poor thermal conductor.

The heat-rate therefore has to be tailored to the volume of the framework during firing. If this is not done, temperature stresses are created (varying expansion due to differences in temperature) that can result in crazing of the restoration.

Zirconia frameworks should also be cooled slowly down for the same reason.

The rule is: the larger the framework, the longer the cooling period. The illustrated diagram shows the recommended heat rates.



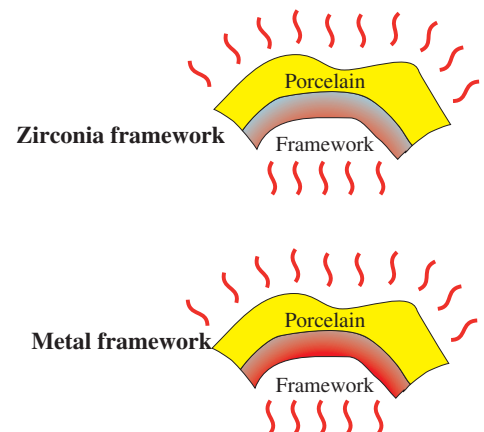
BENDING STRENGTH PORCELAIN - ZIRCONIA

A minimum hold time of 2 minutes is required to attain an optimal bending strength between the zirconia framework and facing porcelain.

The reason for this is also the different thermal conductivity of metal alloys and zirconia.

Metal alloy frameworks also conduct a great deal of heat to the porcelain, which is not the case with zirconia frameworks. It takes a lot longer until the heat is transmitted to the porcelain.

The illustrated diagrams show that the contact surface to porcelain is much colder with zirconia than with metal.



HINT

- When separating the sinter base from the zirconia framework slowly cut off the connector with a diamond disc. Ensure that no glowing hot areas are produced during separation.
- We advise sandblasting (aluminium oxide 100 µm at 4 bar) the zirconia framework in the proximal region. This is to roughen the surface slightly and clean off any residual debris.
- Avoid heat concentration on one area (steam cleaning, sandblasting, high-lustre polishing)
- Complete a dentine wash firing cycle (100°C higher than the normal firing temperature) to ensure an optimal bending strength.
- The larger the framework, the slower the heat rate has to be.
- The hold time must be at least 2 minutes (regardless of the size of framework).
- Cooling should be slow (3 minutes minimum).
- Avoid temperature shocks during firing (particularly with large frameworks): slow heating and cooling. Do not remove the framework from the furnace until the temperature falls below 200°C.
- Never place hot restorations on a cold base (e.g. bench top), as the risk of cracks can occur.



Sandblast the surface (100 µm; 4 bar)



CORRECT

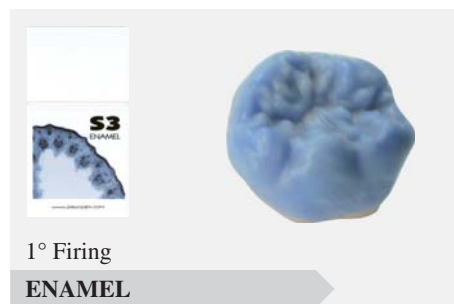


CAUTION Too low temperature!

FIRING CHART ICE ZIRCONIA

Start temperature	300°C
Drying time	2 min.
Preheating time	6 min.
Heating rate	25 - 55°C / min.
Wash firing (with dentine)	920°C
First firing	820°C (+/- 10°C)
Second firing and glaze firing	0°C - 15°C less (final temperature)
Hold time	2 - 3 min.
Vacuum on	400°C
Vacuum off	820°C (+/- 10°C)
Vacuum level	max.
Cooling	3 - 5 min.

CERAMIC VENEERING: EXAMPLE 1



CERAMIC VENEERING: EXAMPLE 2



CERAMIC VENEERING: EXAMPLE 3

