



**HexScan® Technique –
With bonded pressed
crowns.**

Instructions for use.

HexScan® Technique.

1 Product name

HexScan®

2 Product description

The HexScan® technology includes a system of auxiliary parts for the laboratory. This system simplifies the production of dentures, as it contains standardized hex stumps in four different sizes for the connection between the artificial teeth and the framework.

3 General information

More information can be found free of charge under www.pekkton.com or www.cmsa.ch/dental.

⚠ Warning symbol for increased caution.

3.1 Intended use

HexScan® is a system of auxiliary parts intended to be used in the laboratory for the production of dentures.

3.2 Disposal

HexScan® waste can be disposed of along with normal household garbage.

4 Instructions for use

For detailed informations refer to page 10.

4.1 Contraindications

HexScan® Body Re-use
HexScan® Body 3mm Not indicated for use with molar teeth in the lower and upper jaw
Framework height in Pekkton® ivory of more than 24 mm.

4.2 Warnings

Not relevant, since the HexScan® products are only used in the laboratory and are not in direct contact with the patient.

4.3 Preventive measures

When grinding, wear protective goggles with a dust mask and use a suction unit.

4.4 Side effects

No known side effects if used as intended.

Indications		minimum length of the HexScan® pegs	maximum length* of the HexScan® pegs
HexScan® 3 mm	Incisor teeth in the lower and upper jaw Canine teeth in the lower jaw	3 mm	5 mm
HexScan® 4 mm	Incisor and canine teeth in the lower and upper jaw	3 mm	8 mm
HexScan® 5 mm	Premolar and molar teeth in the lower and upper jaw	3 mm	10 mm
HexScan® 6 mm	Molar teeth in the lower and upper jaw	3 mm	10 mm

* Valid for framework material in high-performance polymer (Pekkton® ivory)

5 Instructions for use.

(Based on an example of a milled framework in Pekkton® ivory with bonded pressed crowns)

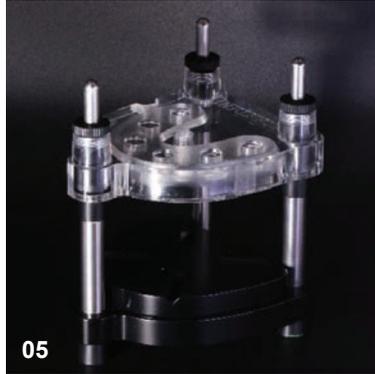


Create the master model using standard implant protocols. (In this example case an upper fixed Peter Wöhrle style full arch restoration was to be created with HexScan® posts as abutments on a milled Pekkton® framework)

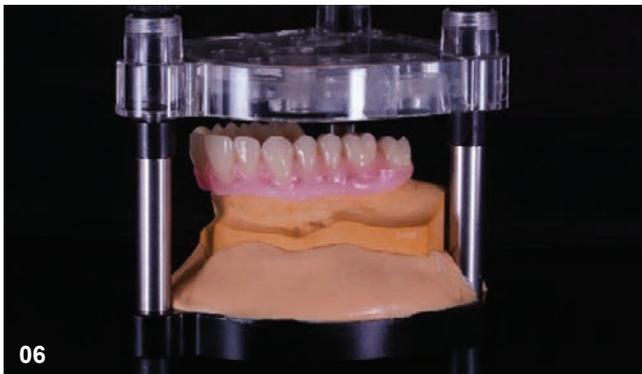


Set up the required situation with denture teeth as per requirements and record the information Fig. 2, 3 and 4.

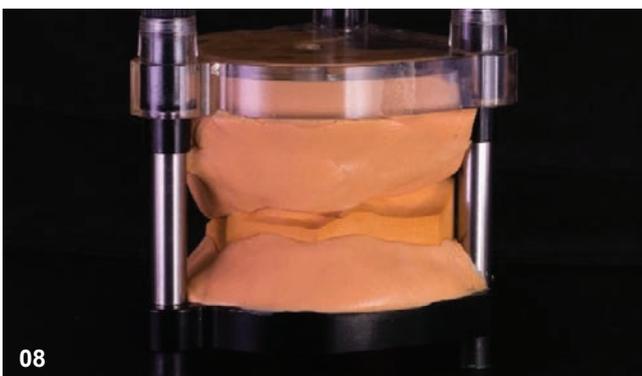
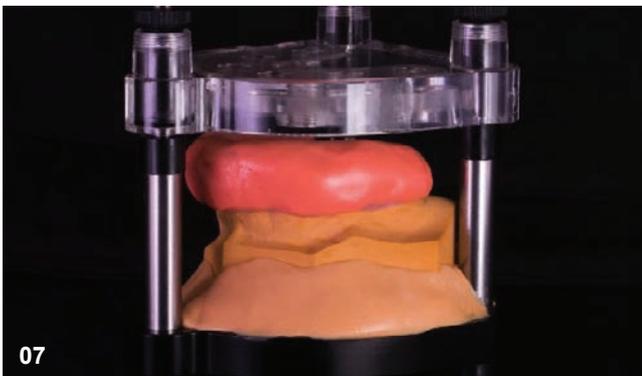




The ideal situation is to use a verticulator to do so, Fig. 5. At this stage it is critical that an accurate lab putty index is recorded on the verticulator Fig. 6 and 7. It is advisable to use a pressure vessel during the setting of the lab putty to be used in the next step



Record the position of your setup or wax up on a verticulator. (A good quality articulator can be used but extra care should be taken to preserve this position).

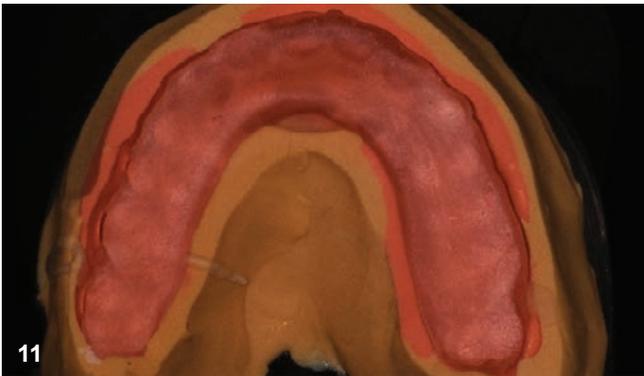


Recording the information

Use a pressure vessel during the setting stage of the putty to get an accurate reproduction of the set-up. This step preserves the set up information and the putty will serve as a duplicating mould in the next step. Fig. 8



Remove the set-up from the mould and trim it at least above of the Zenith of each tooth. Fig. 9 and 10.



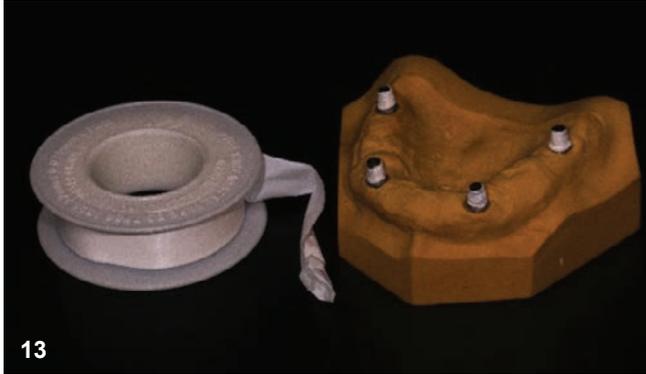
Creating a duplicate of the denture set-up

Fill the mould with cold-cure clear acrylic. About 1 mm past the zenith of each tooth. The PMMA should be able to be used in the lost wax technique and not leave any residue behind during burn out. Fig. 11

Follow the manufacturers instructions for the curing of the material.



The duplicated arch next to the Set-up. Fig. 12

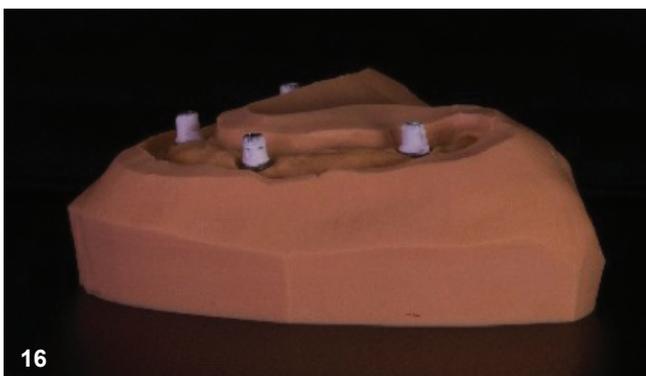


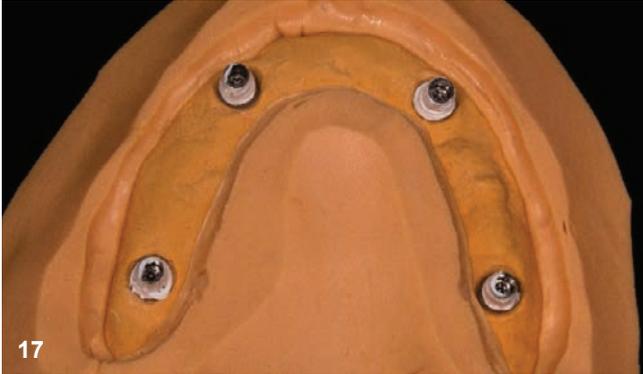
Making the base plate

Cover the Ti-base abutments, for example with PTFE tape, to aid in their retrieval later. Fig. 13 and 14.



Put the set-up on the cast and make a putty key that extends 1mm up the periphery of the denture. Remove the denture and trim evenly leaving at least 1 mm cuff. Fig. 15 –17.



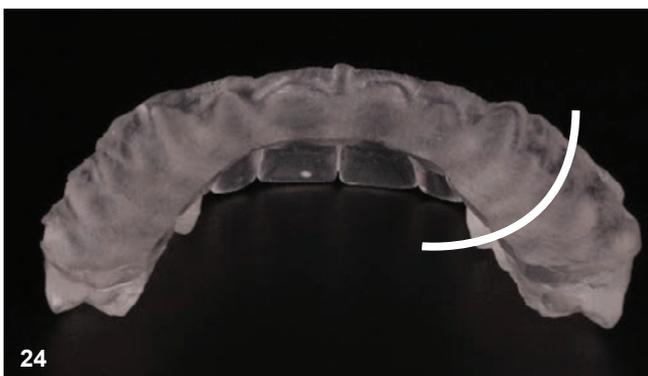


The model ready for thermoforming of the base. Use a 2 mm blank. Mark up the blank and trim. Fig. 18–20.



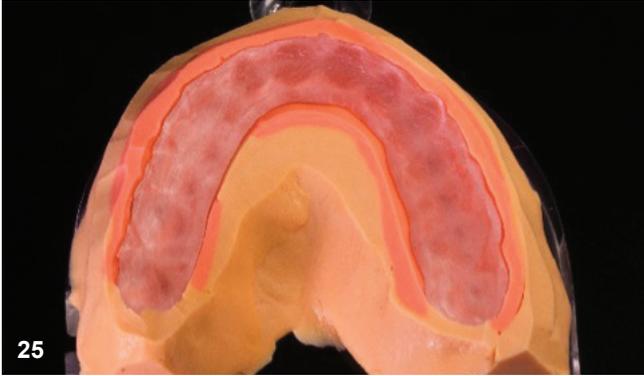


After trimming the baseplate, sandblast occlusal surface with 50 micron or more aluminium oxide. Fig. 21–23.

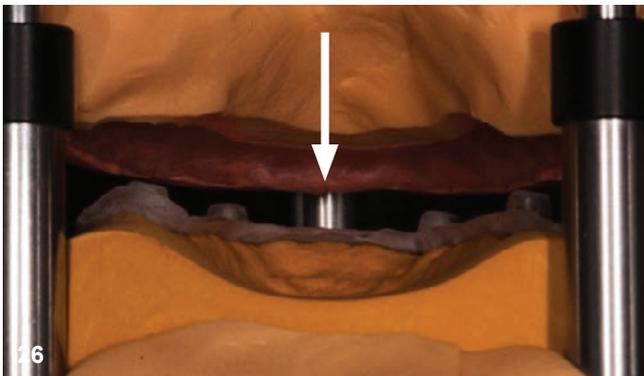


Preparing to drill each tooth where a HexScan® post will be required

Trim the excess material on the duplicate. Create a concave surface on the ridge side. Fig. 24



Insert the duplicate into the putty mould on the verticator.
Fig. 25

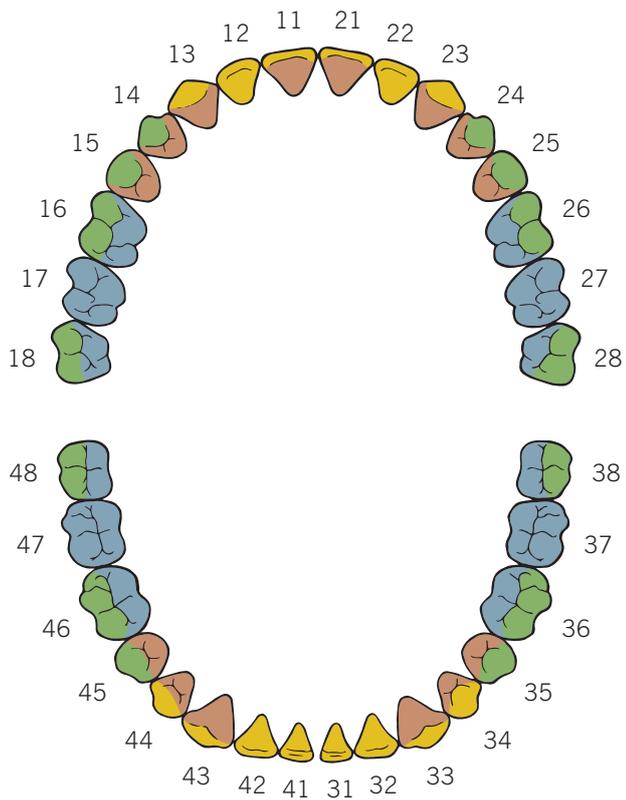


Close the verticator down and ensure there is clearance
between the PMMA duplicate and the base plate.
Fig. 26 and 27.



Always check that the verticator is completely down in
its home position before proceeding. Fig. 28

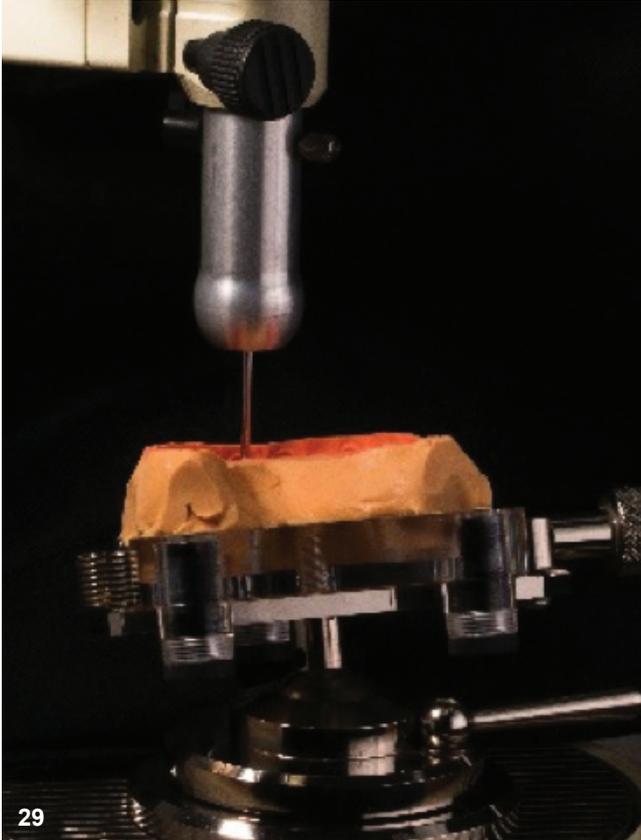
Graphic of recommended sizes of the HexScan® pillars per tooth



Recommendation

Linking teeth in high stress and load areas is an advantage. The frame will also become more rigid if required. It is important to increase the volume of frame as much as possible between the linked segments of teeth as this will become a flex point in the arch. For removable frames it is helpful to link units where an anchor housing is located.

0700 0238	HexScan® Body 3 mm
0700 0238	HexScan® Body 4 mm
0700 0238	HexScan® Body 5 mm
0700 0238	HexScan® Body 6 mm

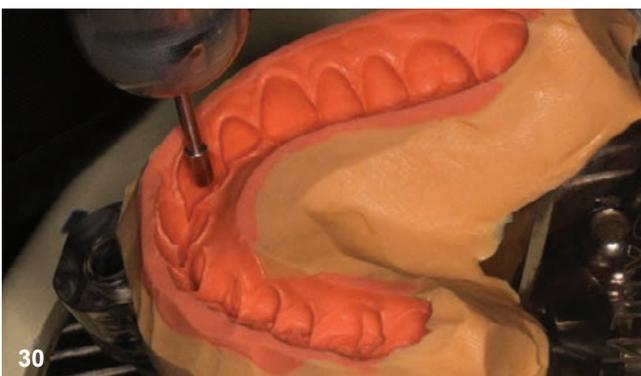


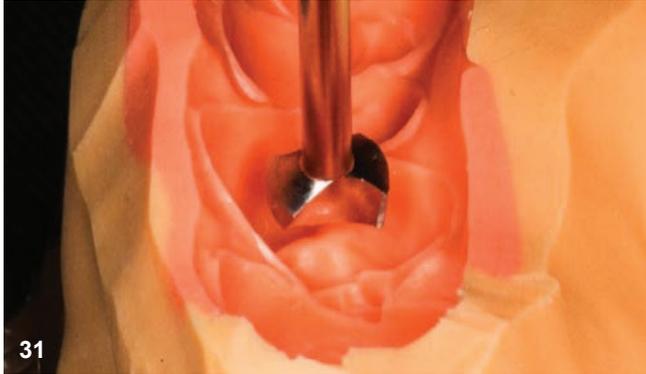
Mount the model on a surveyor table of a parallelometer unit and select the correct direction of insertion using the HexScan® Positioner 3mm. Fig.29. The so determined direction of insertion should then be valid for the rest of the teeth in the arch.

Drill out each tooth using the largest drill possible without compromising the ultimate strength of the final crown

Prior to drilling the holes, use the centering drill first on each tooth (at 15 000 rpm) in order to have an exact positioning for the HexScan® Drill.

Ideal revolution of the HexScan® Drill is between 5 000 (HexScan® Drill 6 mm) to max. 10 000 rpm (HexScan® Drill 3 mm), thus depends on the diameter of the drill. When trimming PMMA use short bursts of pressure and ensure the drill bit does not get too warm.



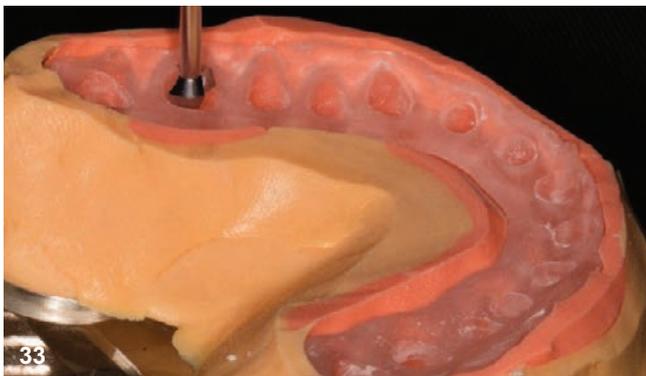


Drilling the holes & forming the HexScan® shape in the teeth

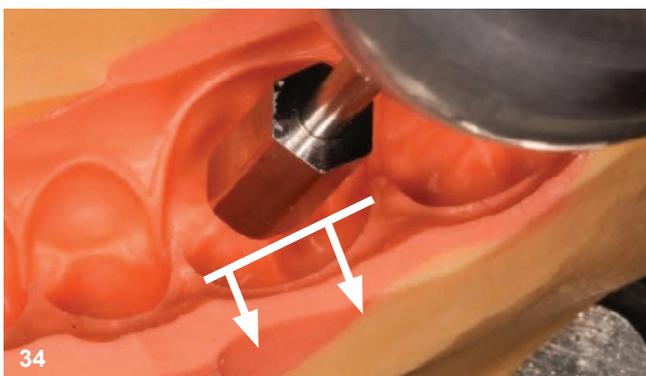
Use a drill bit to help establish the ideal position. Fig. 31. Care must be taken in the premolar region to fit the hole within the mesio-distal width of the tooth if a less vertical path of insertion is used. A narrower diameter may work better in this situation.



Drill each hole carefully. Find your maximum depths with the duplicate denture removed and then replace it and drill. It is possible to drill by hand but you have to ensure the holes are as parallel as possible. A slightly larger hole than the required HexScan® Body is desirable and will help in this situation. For the smaller holes a small twist drill with a small diameter used for placing implants works well. Fig. 32.



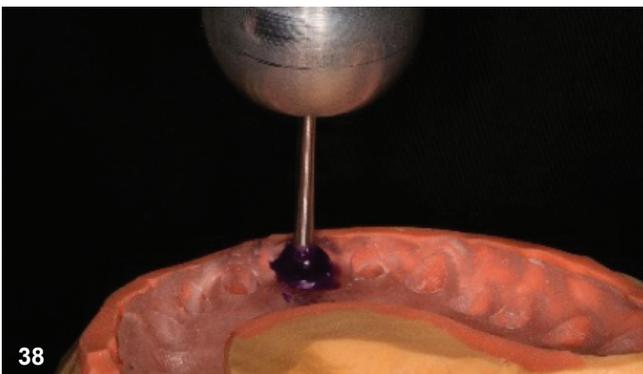
Continue the process for each required tooth. Fig. 33



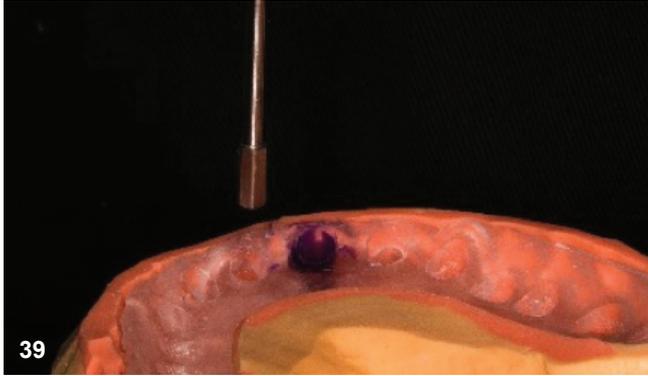
⚠ Avoid the positioning of one of the hex edges pointing towards labial/buccal of the tooth. On lower anteriors or very small teeth it may be necessary to use the flat sides on the mesial and distal due to space constraints. Fig. 34



Line up the HexScan® Positioner with the drilled hole and drip some melted wax or Pi-Ku-Plast into the hole. (If wax is used, warm up the HexScan® Positioner slightly before pouring the wax to compensate shrinkage and better flowing). Insert the tool into the material of choice while it is still fluid and wait for it to set. (Vaseline can be used as a separator) Fig. 35 to 37



Drip wax in the hole and insert the HexScan® parallel tool. (A pattern resin can be used here but process will take longer due to setting times) Remove it while the wax is still warm but not fluid. Fig. 38 and 39.



Repeat this process for all the teeth. Select and change to the appropriate diameter HexScan® positioner for each hole. Please use the guide located on the page 10.



Trimming the HexScan® Body

Insert the smooth end of the HexScan® into the required tooth and marry the verticulator halves. Mark the estimated amount to be cut off. Fig. 40.



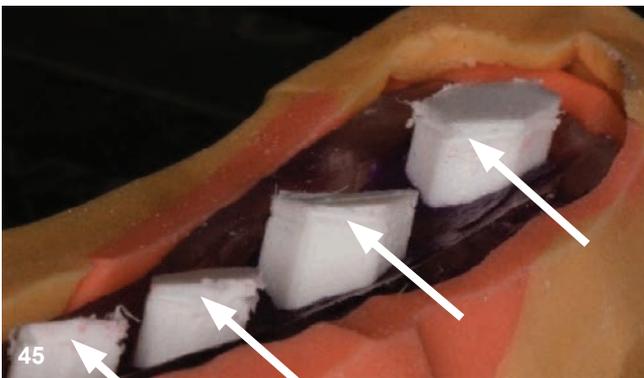
Shorten the length of each HexScan® Body. There should be no contact with any of the HexScan® bodies and the surface of the base plate in order to maintain the vertical dimension.

Fig. 41





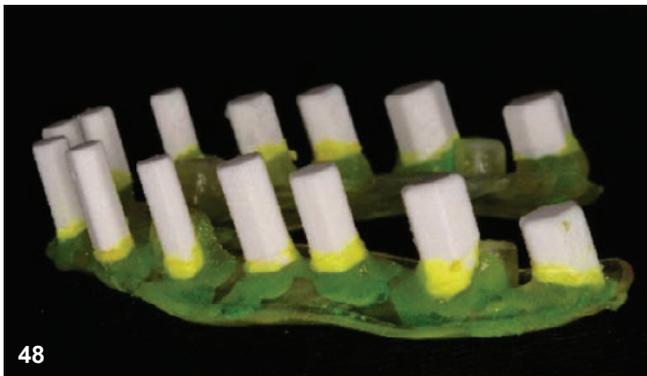
Repeat the process for the remaining teeth. Cut a small retentive groove at the base of the HexScan® body for retention. Fig. 42–45



➔ Retention groove



Linking in the HexScan® Bodies to the base plate
 Connect each HexScan® Body to the thermoformed base plate using a self-curing resin (e.g.: Pi-Ku-Plast). Fig. 46–48.



Trimming the duplicate arch

The duplicate teeth/arch can now be cut back where the pink would have been. The root emergence of each tooth can be formed and the arch can be sectioned into the desired segments. The teeth can be pressed as single units or linked together (as a bridge). Fig. 49 and 50

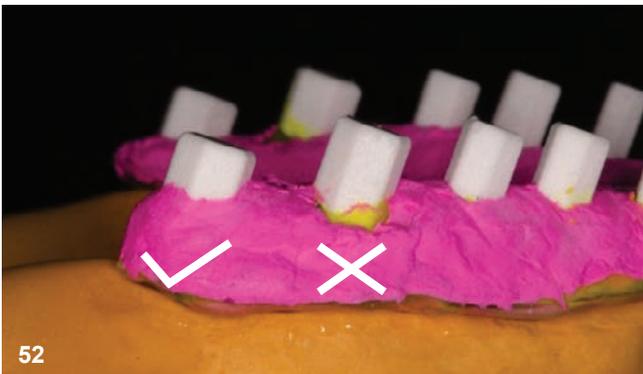


51

Positioning the Blu tack (kneading mass)

Stretch and push the Blu tack to the desired position. The aim is to NOT make contact with the teeth. A small gap should be left between the Blu tack and the duplicate teeth. This will later be filled with composite. The frame is now ready to be copy scanned. Fig. 51

⚠ Note this is the maximum length of the HexScan® Bodies. 3mm–5mm work the best
Instead of a kneading mass, you can also use wax.



52

The final contour and volume part of the frame is created with Blu tack. The Blu tack is to create volume to speed up the digital process. A smoothing tool should be used once scanned.

⚠ Each HexScan® Body should have a smooth flowing emergence from the Blu tack or material of your choice. The curved radius will reinforce the connection itself. Sharp junctions or connections can cause pre-determined breaking points. Fig. 52 shows an example of a poor junction and a good junction.



53

⚠ When manufacturing a screw retained implant supported prosthesis and the screw channels compromise the HexScan® Bodies it is important to link the adjacent crowns. A connector can be thickened and positioned subgingival. Linking units will make the frame more rigid. Fig. 53



54

Scanning and Pressing the teeth

The teeth can now be sectioned and pressed or processed as required in a material of your choice. Linking of units will increase rigidity in the frame and speed up working times. This is very useful in a fixed case where a screw access hole has compromised the integrity of the pillar. This frame is also rigid enough to work on your teeth to completion while your frame is being milled.



55



Blu tack

Blu tack is a form of poster putty or similar material. In some countries it is called Poster putty, Press Stick or Patafix to name a few.



56

Milling technique

⚠ For milled Pekkton® ivory framework, please read the instructions for use CAD/CAM Technology.

For scanning of the frame add for example some Blu tack to the frame to increase the volume of the frame to the required thickness within the parameters of the material being milled with Pekkton® ivory. Fig. 56–57.



57

Alternative materials

The Hexscan® technique can also be used with frameworks in CoCr, zirconia or titanium.

Press technique

Short explanation: For the press technique please follow all the steps above except just add more Pi-Ku-Plast instead of Blu tack. The HexScan® Bodies will burn out residue free. Please follow the Press instructions.

Refine your design on any CAD program and mill your frame in Pekkton® ivory. Pekkton® ivory milling blanks are available in different forms and thicknesses. Refer also to: www.pekkton.com.

6 Disinfection

Not relevant, since the HexScan® products are only used in the laboratory and are not in direct contact with the patient.

7 Cleaning and care

Not relevant, since the HexScan® products are only used in the laboratory and are not in direct contact with the patient.

8 Traceability of the batch numbers

Not relevant, since the HexScan® products are only used in the laboratory and are not in direct contact with the patient.

9 Ordering information

Order No.		Description	Contents
0700 0250		HexScan® Kit 4x Hexscan® Positioner (3 mm, 4 mm, 5 mm, 6 mm) 4x Hexscan® Drills (3 mm, 4 mm, 5 mm, 6 mm) 1x Hexscan® Centering bur 30x Hexscan® Bodies (12 x 3 mm, 6 x 4 mm, 6 x 5 mm, 6 x 6 mm)	39 pieces
0700 0238		HexScan® Body 3 mm	6 pieces
0700 0239		HexScan® Body 4 mm	6 pieces
0700 0240		HexScan® Body 5 mm	6 pieces
0700 0241		HexScan® Body 6 mm	6 pieces
0700 0246		HexScan® Drill 3 mm	1 piece
0700 0247		HexScan® Drill 4 mm	1 piece
0700 0248		HexScan® Drill 5 mm	1 piece
0700 0249		HexScan® Drill 6 mm	1 piece
0700 0259		HexScan® Centering bur	1 piece

10 Symbols



Date of manufacture



Manufacturer



Patient No.



Catalogue number



Batch code



Quantity



Consult instructions for use

Rx only

Attention: According to US federal law, this product may only be sold by or on behalf of a physician.



Cendres+Métaux SA products with CE labeling meet the requirements of the Medical Device Directive 93/42/EEC.



Do not re-use



Non-sterile



Keep away from sunlight



Attention (observe accompanying documents)

11 Disclaimer / Validity

The issuing of these instructions for use renders all previous versions invalid.

The manufacturer rejects any liability for damages resulting from non-compliance with these instructions for use. In case of complaints, please always include the batch number.

The latest instructions are available on the Cendres+Métaux homepage. www.cmsa.ch/dental

The product must be used exclusively by skilled persons.

12 Availability

Country-specific differences in product range are possible.

13 Copyright and trademarks

HexScan® is a registered trademark of Cendres+Métaux Holding SA, Biel/Bienne, Switzerland.

Reprints or publication – even excerpts – require the written permission of the publisher.

14 Note of thanks

Photographs of processing courtesy of: Brian Plomaritis Analog Implant Laboratory Ltd.