

Instructions for use No. 5

# ANCHORSYSTEM

*Precision since 1968*



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Before each try-in or final cementation the whole restoration should be cleaned in accordance with current hygiene regulations.

## NOTES ON INDICATION

A stress-breaker with a milled interlock must be incorporated when using ZL anchor attachments with free-end restorations. As a precaution, a stress-breaker should also be included with bounded saddles. This allows the primary situation of the denture to be integrated in the new design without any alteration after loss of the distal abutment tooth.

When working with ZL anchor attachments it is essential to note and adhere to the sections marked in red in the instructions for use.

# THE ZL ANCHOR SYSTEM. EXTRACORONAL ATTACHMENTS FOR RELIABLE PARTIAL PROSTHETIC RESTORATIONS

ZL anchors are rigid extracoronal attachments that provide reliable retention for removable dentures on the residual dentition.

The ZL anchor system with its exchangeable, activatable matrix offers interesting planning options and designs for prosthetic restoration of bilateral free-end and bounded saddles with partial dentures as well as removable bridges. Laboratory technicians will appreciate the simple, precise technique.

The slightly conical shape of the matrix makes it easier for the patient to fit the denture and promotes regular hygiene.



## CLOSE-UP OF A FREE-END RESTORATION

Close-up of a bilateral free-end denture. In this case the ZL matrix is a retentive unit. The mesial stress-breaker is integrated in the design to provide support. The rounded, conical matrix lamellae ensure that the denture is easy to fit.



## DEACTIVATING THE MATRIX

The withdrawal force of the matrix can be reduced or the matrix can be made inactive by inserting the ZL deactivator which presses the lamellae of the matrix together due to its inner conical shape.



## ACTIVATING THE MATRIX

The lamellae can be easily widened if necessary with the activator to reactivate the matrix.



## EXCHANGING THE MATRIX

The ZL matrix is quickly and easily exchanged using the ZL exchange instrument.

## PLANNING GUIDELINES FOR THE ZL ANCHOR SYSTEM

There is a choice of matrix when planning depending on the occlusal relationship:

“N” (Standard)

“M” (Micro).

### STANDARD VERSION “N”

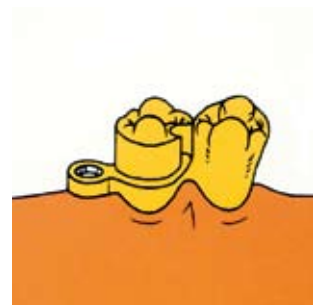
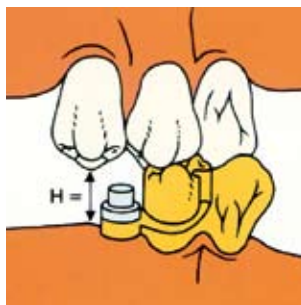
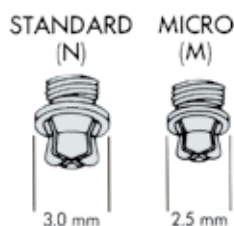
For normal to difficult occlusal relationships.

Space required for the matrix and matrix:

Height 3.75 mm, Ø 3.80 mm.

### CONNECTION OF CROWN AND ANCHOR MATRIX

Zl anchor matrices should always be placed directly over the gingiva (0.5-1.0mm) and close to the crown.



### SIZE SELECTION AND SPACE AVAILABILITY

The type and size of matrix selected always depends on the intraoral space available.

### MICRO VERSION “M”

For very difficult occlusal relationships.

Space required for the matrix and matrix:

Height 3.10 mm, Ø 3.80 mm.

The “N” design generally requires an available space (H) of 4.5 mm between the opposing dentition and alveolar ridge.

With the “M” design a space of (H) of 3.8 mm is adequate. If there is inadequate space, a metal occlusal is required. In this situation the cast on threaded cap (Pt/Ir) is ideal as a matrix holder, which can be cast on with CrCo and precious metal frameworks.

To improve distribution of tensile and compressive stresses, a minimum of two teeth should be crowned and splinted together.

A milled brace support for fitting a stress-breaking arm should be fabricated on the splinted crowns to ensure the required stability for a durable free-end restoration

**A stress-breaker is essential in free-end situations for stabilizing the denture.**

## SELECTION CRITERIA FOR ZL ANCHOR MATRICES AND BARS

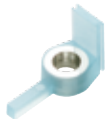
### MATRICES AND BARS (Pt/Ir)

with a plastic sleeve casting aid. Cast on with non-precious, Pd-based and precious metal alloys.

### MATRICES (Pt/Ir)

The matrices are made from a highly abrasion-resistant platinum-iridium alloy surrounded by a non-residual burnout plastic sleeve casting aid.

Standard  
-N-



Micro  
-M-



The large matrix support surfaces must not be prepared after casting so that the precision of the prosthetic framework is maintained right through to completion of the restoration. The parallel-walled vertical backplate provides surface area contact between the crown and denture.

### COMBI-BAR WITH CUSTOMIZABLE BAR LENGTH, INTEGRATED

#### MATRICES (Pt/Ir)

The integrated matrices are made from a highly abrasion-resistant platinum-iridium alloy surrounded by a non-residual burnout plastic sleeve casting aid.

Standard -N-



Micro -M-



The Combi-Bar is ideal for restorations with variable bounded saddles because the length of the bar can be customized. Innovative design options are possible if the bars are used in conjunction with the above matrices (blue).

The large matrix support surfaces of these matrices should also be maintained to ensure the precision of the prosthetic framework right through to completion of the restoration.

### MATRICES AND BARS (Pt/Au),

high-fusing alloy  
with a plastic sleeve casting aid. Can only be cast on with precious metal alloys.

### MATRICES (Pt/Au), high-fusing alloy

The matrices are made from an abrasion-resistant platinum-gold alloy surrounded by a non-residual burnout plastic sleeve casting aid.

Standard  
-N-



Micro  
-M-



The large matrix support surfaces must not be prepared after casting so that the precision of the prosthetic framework is maintained right through to completion of the restoration. The parallel-walled vertical backplate provides surface area contact between the crown and denture.

### COMBI-BAR WITH CUSTOMIZABLE BAR LENGTH, INTEGRATED

#### MATRICES (Pt/Au), high-fusing alloy

The integrated matrices are made from an abrasion-resistant platinum-gold alloy surrounded by a non-residual burnout plastic sleeve casting aid.

Standard -N-



Micro -M-



The Combi-Bar is ideal for restorations with variable bounded saddles because the length of the bar can be customized. Innovative design options are possible if the bars are used in conjunction with the above matrices (red).

The large matrix support surfaces of these matrices should also be maintained to ensure the precision of the prosthetic framework right through to completion of the restoration.

# SELECTION CRITERIA AND AREAS OF APPLICATION FOR SCREW RETENTION WITH THE ZL ANCHOR SYSTEM

Retention for the patrix holder always depends on the planning and design of the denture and is classified according to the technique:

1. **Casting on** threaded caps (Pt/Ir) with CrCo or precious metal frameworks

2. **Soldering** threaded caps (Pd/Ag) onto CrCo or precious metal frameworks

3. Retention caps for polymerizing into **acrylic**

4. **Screw retention** of the anchor with a retention nut for a **solder-free connection**

## **THREADED CAPS (Pt/Ir)** FOR DIRECT CASTING ON WITH CrCo OR PRECIOUS METAL DENTURE FRAMEWORKS

The cast on threaded cap (Pt/Ir) is the ideal form of screw retention with difficult occlusal relationships due to its compact dimensions and is ideal for incorporation in a metal occlusal. Direct casting on with denture frameworks eliminates crevice corrosion.

## **THREADED CAPS (Pd/Ag)** FOR SOLDERING ONTO CrCo OR PRECIOUS METAL DENTURE FRAMEWORKS

Solderable threaded caps (Pd/Ag) are incorporated in the framework if a solder connection is preferred.



Threaded cap (Pd/Ag) for soldering onto the denture framework

## **RETENTION CAPS (Ti)** FOR POLYMERIZATION INTO THE DENTURE

These threaded caps are used for restorations in which a metal-free connection between the denture framework and patrix holder is required.



Retention cap (Ti)

They are also suitable for integration in a finished restoration, e.g. when repairing a damaged threaded unit.

They are particularly suitable for retention of exchangeable patrices in acrylic and duplicate dentures and are ideal caps for repairing damaged threaded units.

Technique accessories\*  
Positioning patrix  
(Order No. 130 -N-/ 230 -M-)  
Laboratory patrix  
(Order No. 131 -N-/ 231 -M-)

Technique accessories\*  
Laboratory patrix  
(Order No. 131 -N-/ 231 -M-)

## **THREADED CAPS (Pd/Ag)** FOR ADHESIVE BONDING INTO CrCo OR PRECIOUS METAL DENTURE FRAMEWORKS

Threaded caps (Pd/Ag) for the adhesive technique are incorporated in the framework if an adhesive connection is preferred.



Threaded cap (Pd/Ag) for adhesive bonding into the denture framework

They are also suitable for integration in a finished restoration, e.g. when repairing a damaged threaded unit.

Technique accessories\*  
Laboratory patrix  
(Order No. 131 -N-/ 231 -M-)  
Duplicating patrix  
(Order No. 133 -N-/ 233 -M-)

## **RETENTION NUTS (Pd/Ag) or (Ti)** FOR SOLDER-FREE SCREW RETENTION

Retention nuts (Pd/Ag) or (Ti) are used if a solder-free connection between the anchor holder and denture framework is required.



Retention nut (Pd/Ag)



Retention nut (Titanium)



Spacer (Plastic)

They are particularly suitable for retention of exchangeable patrices in acrylic and duplicate dentures and provide ideal retention for repairing damaged threaded units.

Technique accessories\*  
Laboratory patrix  
(Order No. 131 -N-/ 231 -M-)  
Duplicating patrix  
(Order No. 132 -N-/ 232 -M-)



Duplicating / Positioning cap  
(Technique accessory)

Threaded cap (Pt/Ir) for direct casting on

Positioning screw for securing the threaded cap in the duplicate model

The threaded caps guarantee an extremely accurate fit of the casting if the duplicating aids are used correctly.

Technique accessories\*  
Laboratory patrix  
(Order No. 131 -N-/ 231 -M-)  
Duplicating patrix  
(Order No. 137 -N-/ 237 -M-)

\* All instruments, tools and accessories are included in the overview on Page 23.

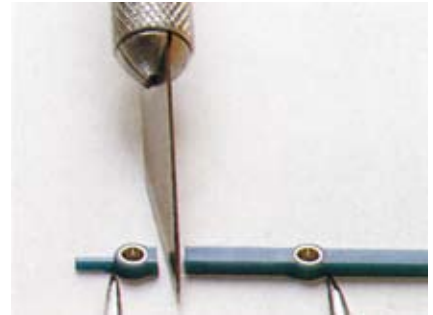
THE COMBI-BAR FACILITATES TREATMENT OF BOUNDED SADDLES IN THE ANTERIOR AND POSTERIOR REGION AS THE LENGTH OF THE BAR CAN BE CUSTOMISED.



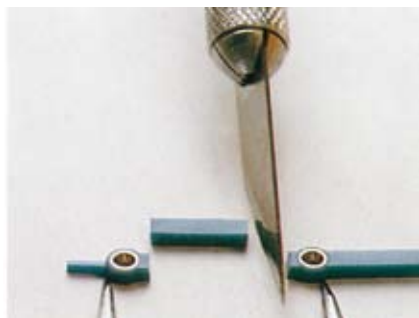
**1** Measure the width of the bounded saddle with dividers or a slide gauge.



**2** Place the bar at the tips of the dividers. Ensure that the width is not altered.



**3** Cut the matrix off with a scalpel.



**4** Then cut off the middle section of the bar at the next matrix.



**5** Place the length of bar against the measured width.



**6** Cut the bar to the width of the single matrix placed next to it.



**7** Insert the single matrix into the remaining length of bar.



**8** Wax the bar together at the junction.



**9** Block out the groove underneath the bar with wax before casting or further preparation.

## A RELIABLE TECHNIQUE FOR PRECISE CASTING RESULTS OF PLATINUM-IRIDIUM COMBI-BARS WITH NON-PRECIOUS, PD-BASED AND PRECIOUS METAL ALLOYS

### CAUTION!

When using a wax degreasing agent, ensure that it is only applied to the wax pattern. Never apply wax degreasing agent to the inner surfaces of the matrices, as there is the risk of metal flowing onto these surfaces during casting.

### Successful casting and an accurate fit depend on precise preparation.

Before investing, check which dental alloy is to be cast onto the matrices.

When using investment with controllable expansion (phosphate-bonded), adhere strictly to the mixing ratio of powder, liquid and liquid concentrate.



**10** Determine the path of insertion and place the prepared bar on the crown walls using the paralleling mandrel No. 150 or No. 250 and wax the bar onto the crowns.



**11** Attach the sprues to the crowns according to the metal manufacturer's instructions and attach an additional sprue approx. 2.5 mm thick to the middle of the bar.



**12** Invest the wax pattern and cast according to the alloy used. Devest the mould after casting and sandblast the crowns and framework with microbeads before preparation. The procedures for preparing the relevant retention – for holding the matrix – are given in the following sections. An overview of the types of retention is included on Page 5 of these instructions for use.

### CAUTION!

To ensure the molten metal casts perfectly onto the Pt/Ir matrix, allow the mould to heat soak at the final temperature for a minimum of 45 minutes during preheating. The mould temperature with Pd-based and non-precious metal alloys should be approx. 920°C-940°C to prevent any temperature loss during casting.

Adhere to the manufacturer's subsequent heating times following the preliminary preheat of the metal ingots, particularly with Pd-based alloys.



## A RELIABLE TECHNIQUE FOR PRECISE CASTING RESULTS OF PLATINUM-IRIDIUM MATRICES WITH NON-PRECIOUS, PD-BASED AND PRECIOUS METAL ALLOYS

### CAUTION!

When using a wax degreasing agent, ensure that it is only applied to the wax pattern. Never apply wax degreasing agent to the inner surfaces of the matrices, as there is the risk of metal flowing onto these surfaces during casting.

### Successful casting and an accurate fit depend on precise preparation.

Before investing, check which dental alloy is to be cast onto the matrices.

When using investment with controllable expansion (phosphate-bonded), adhere strictly to the mixing ratio of powder, liquid and liquid concentrate.

### CAUTION!

To ensure the molten metal casts perfectly onto the Pt/Ir matrix, allow the mould to heat soak at the final temperature for a minimum of 45 minutes during preheating. The mould temperature with Pd-based and non-precious metal alloys should be approx. 920°C-940°C to prevent any temperature loss during casting.

Adhere to the manufacturer's subsequent heating times following the preliminary preheat of the metal ingots, particularly with Pd-based



**13** Determine the path of insertion and place the matrix on the crown wall using the parallelometer and paralleling mandrel No. 150 or No. 250.



**14** If the back plate of the matrix is to be placed intracoronally, mark the matrix outline and create sufficient space. Then replace the matrix on the crown wall and wax it in position.



**15** Attach the sprues according to the metal manufacturer's instructions and attach an additional arch-shaped sprue approx. 1.5 mm thick to the matrix.



**16** Place the casting ring on the base.



**17** Fill the mould with the investment and cast according to the alloy used.



**18** Devest the mould after casting and sand-blast the crowns and framework with micro-beads before preparation. The procedures for preparing the relevant retention – for holding the matrix – are given in the following sections. An overview of the types of retention is included on Page 5 of these instructions for use.



## A RELIABLE, PRECISE ADHESIVE CONNECTION BETWEEN THE ATTACHMENT THREADED CAP AND THE DENTURE FRAMEWORK

### **Fabricating a duplicate model**

Soak the model in water at 40-50°C for 10 minutes. Then dab the model with a soft cloth and duplicate it immediately (with reusable duplicating material). Ensure that the reusable duplicating material is not too old to prevent any inaccuracies in the height.



**19** Adhesive aid No. 133 Normal and No. 233 Micro.



**20** Insert the adhesive aid No. 133 Normal or No. 233 Micro into the anchor matrix.



**21** Wax out under the matrix and surround it with a layer of wax approx. 0.2 - 0.3 mm thick. The adhesive aid should not be covered with wax.



**22** Duplicate according to instructions. The duplicating aid is clearly defined on the investment model after removal of the duplicating material.



**23** Surround the duplicated adhesive aid with a layer of wax 0.5 mm thick. The occlusal of the adhesive aid should not be covered with wax (outlet for excess DuroBond). Invest and cast in the usual way.



**24** Replace the adhesive aid No. 133 Normal or No. 233 Micro with the threaded cap No. 144 Normal or No. 244 Micro and the relevant patrx.



**25** Prepare the CrCo framework in the usual way. The threaded cap recess in the CrCo framework should not be prepared.



**26** Unscrew the matrix from the threaded cap.



**27** Screw the positioning pin No. 147 into the threaded cap. Block out the matrix recess of the threaded cap and the stress-breaker arm with wax (protection when sandblasting).



**28** Screw the positioning pin No. 147 into the threaded cap. Block out the matrix recess of the threaded cap and the stress-breaker arm with wax (protection when sandblasting).



**29** Assemble the threaded cap and matrix. Insert the matrix and threaded cap into the matrix. Block out the underside of the matrix with wax. Degrease the threaded cap with acetone if necessary.



**30** Mix DuroBond according to the instructions on the pack.



**31** Apply DuroBond to the threaded cap and in the CrCo framework. Place the CrCo framework on the crowns and check the accuracy of fit. To light cure the DuroBond, place the model in a light-curing unit for at least 3 minutes.



**32** After the DuroBond has cured, separate the CrCo framework from the crowns. Then unscrew the attachment matrix from the threaded cap in the CrCo framework and remove any adhesive that has exuded from the side. The denture is set up and finished in the usual way.

## PLATINUM-IRIDIUM THREADED CAPS ARE CAST ON WITH NON-PRECIOUS, PD-BASED OR PRECIOUS METAL ALLOY DENTURE FRAMEWORKS AND ARE IDEAL FOR INTEGRATION IN METAL OCCLUSALS



Platinum-iridium threaded caps N = 149 / M = 249 are indicated for ensuring a homogeneous casting with CrCo or precious metal denture frameworks. The compact dimensions of the threaded cap make it ideal for integration into metal occlusals. One-piece casting with the denture framework eliminates crevice corrosion.

To ensure accurate casting results, the cast on threaded cap is supplied fully assembled: threaded cap (Pt/Ir) with fitted brass duplicating cap and stainless steel retention screw.

The retention screw has been designed to cover the patrix base recess to prevent metal flowing into the recess during casting.

### **Threaded caps (Pt/Ir)**

for one-piece casting with non-precious, Pd-based or precious metal alloy denture frameworks.

### **TECHNICAL DATA: Threaded caps (Pt/Ir)**

Cast on  
Melting range: 1830 – 1850°C

**Duplicating cap:** Brass

**Retention screw:** Stainless steel

### **INSTRUMENTS AND ACCESSORIES**

The duplicating patrix N = 137 / M = 237 must be used to ensure an accurate casting result. The duplicating patrix and duplicating cap of the threaded caps have the same shape of head and dimensions. This guarantees precise positioning of the threaded cap in the duplicating mould during investing and ensures a precise snap-on point of the patrix after casting. During preparation always use the laboratory patrix N = 131 / M 231. This should not be replaced by the original patrix N = 100 / M = 200 until the denture is finished.

The following accessories and instruments are contained in the instrument cassette of the

### **Starter Kit 1680:**

**Paralleling mandrel N = 150 / M = 250:**  
for paralleling the anchor matrices

**Exchange instrument N / M 151:**  
for exchanging the patrix

**Deactivator N = 152 / M = 252:**  
for deactivating the patrix

**Thread tap (M2) N / M = 153:**  
for all retention units

**Patrx thread holder N / M = 157:**  
for all patrices

**Activator N / M = 158:**  
for all patrices

**20 Spacers N = 135 / M = 235:**  
stainless steel for adjusting the snap-on point

**Tungsten carbide cutter N / M = 159:**  
for burnishing the metal collar

## THREADED CAPS (Pt/Ir) ONE-PIECE CASTING WITH NON-PRECIOUS, PD-BASED OR PRECIOUS METAL ALLOY DENTURE FRAMEWORKS

### Fabricating a duplicate model

Soak the model in water at 40-50°C for 10 minutes. Then dab the model with a soft cloth and duplicate it immediately (with reusable duplicating material). Ensure that the reusable duplicating material is not too old to prevent any inaccuracies in the height.

### Before investing

After removing the model from the duplicating mould, place the cast-on threaded caps with the brass duplicating caps in the impression cavity left by the laboratory patrx.

With reusable duplicating material the duplicating cap should be placed in the impression cavity left by the laboratory patrx without applying excessive pressure.

With silicone duplicating material it is advisable to coat the duplicating cap with grease or oil.

This raises the duplicating cap automatically to the correct height if it has been pressed in too far.



**33** Block out under the attachment bar and matrix with wax. Cover the bar and matrix with a layer of wax approx. 0.10 - 0.15 mm thick and reduce until parallel.



**34** Place the activated, cleaned duplicating patrx on the matrix.



**35** Duplicate according to instructions.



**36** After removing the master model from the duplicate mould, place the cast on threaded caps in the mould.



**37** To ensure the retention screw is surrounded bubble-free with investment, cover it with investment before filling the duplicate mould.



**38** After removing the duplicating material, remove the duplicating caps from the threaded caps. Harden the model in the usual way.



**39** Wax up the CrCo framework in the usual way. A metal backing or metal occlusal can easily be waxed up with cast on threaded caps. Attach the sprues according to the metal manufacturer's instructions and invest in the usual way.



**40** To avoid overoxidation of the positioning screws during preheating, the mould should not be held at the final temperature (950-1050°C) for longer than 30 minutes.



**41** After casting, deinvest and sandblast the CrCo framework. The retention screw is not removed from the threaded cap until sandblasting is completed.



**42** After finishing and polishing, insert the original matrix to check the function.



**43** If the matrix cannot be fitted immediately into the threaded cap because the mould was held at the preheat temperature for too long, the thread should be retapped using the thread tap No. 153 and oil.



**44** After finishing the CrCo framework, burnish the matrix collar with the tungsten carbide cutter No. 159. This prevents plaque deposits.



**45** The laboratory matrix No. 131 or No. 231 is used in place of the original matrix until the denture is finished.

# PALLADIUM-SILVER THREADED CAPS, FOR A RELIABLE SOLDER CONNECTION WITH NON-PRECIOUS, PD-BASED OR PRECIOUS METAL ALLOY DENTURE FRAMEWORKS



Solderable palladium-silver threaded caps No. 144 = N / No. 244 = M are incorporated in the framework when a solder connection is indicated for specific reasons. They can also be incorporated at a later date, e.g. when repairing a damaged threaded unit.

## **Threaded caps (Pd/Ag)**

solderable on non-precious, Pd-based or precious metal alloy denture frameworks

When using the adhesive technique, proceed as described on page 9.

## **TECHNICAL DATA: Threaded caps (Pd/Ag)**

solderable

Melting range: 1050 – 1130°C

## **INSTRUMENTS AND ACCESSORIES**

The following instruments and accessories are essential to ensure correct preparation and accurate results. To avoid damaging the original patrix, the laboratory patrix N = 131 / M 231 is inserted during finishing and the positioning patrix N = 130 / M 230 is inserted for positioning the threaded cap. The patrix N = 100 / M = 200 should not be inserted until the denture is finished.

The following accessories and instruments are contained in the instrument cassette of the **Starter Kit 1680**:

**Paralleling mandrel N = 150 / M = 250:**  
for paralleling the anchor matrices

**Exchange instrument N / M 151:**  
for exchanging the patrix

**Deactivator N = 152 / M = 252:**  
for deactivating the patrix

**Thread tap (M2) N / M = 153:**  
for all retention units

**Patrx thread holder N / M = 157:**  
for all patrices.

**Activator N / M = 158:**  
for all patrices

**20 Spacers N = 135 / M = 235:**  
stainless steel for adjusting the snap-on point

**Tungsten carbide cutter N / M = 159:**  
for burnishing the metal collar.



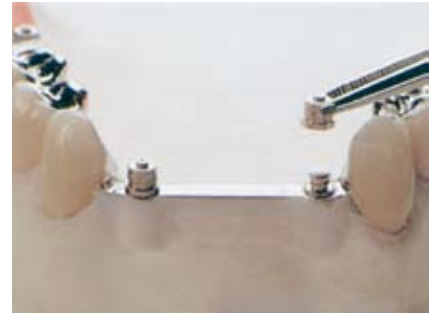
## THREADED CAPS (Pd/Ag), SOLDERABLE TO NON-PRECIOUS, PD-BASED OR PRECIOUS METAL ALLOY DENTURE FRAMEWORKS

### Fabricating a duplicate model

Soak the model in water at 40-50°C for 10 minutes. Then dab the model with a soft cloth and duplicate it immediately (with reusable duplicating material). Ensure that the reusable duplicating material is not too old to prevent any inaccuracies in the height.



**46** Block out under the attachment bar and matrix with wax. Cover the bar and matrix with a layer of wax approx. 0.10 - 0.15 mm thick and reduce until parallel.



**47** Place the activated laboratory matrix No. 131 or No. 231 with fitted solderable threaded caps in the attachment bar and matrices.



**48** Fabricate a duplicate model according to instructions.



**49** Wax up the CrCo denture. Ensure that the duplicated threaded caps are not covered occlusally with wax (for subsequent retention of the threaded caps). Invest and cast in the usual way.



**50** After finishing the CrCo framework, burnish the matrix collar with the tungsten carbide cutter No. 159. This prevents plaque deposits.



**51** Replace the laboratory patrx No. 131 or No. 231 with the positioning patrx No. 130 or No. 230 before retaining the threaded cap in position with resin.



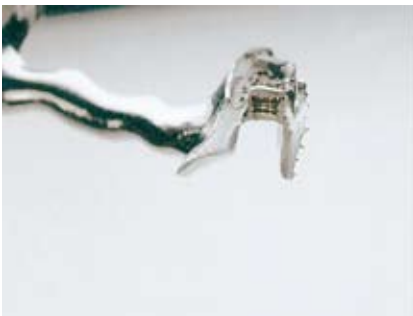
**52** Once the cap is retained in position, unscrew the frictionless positioning patrx from the threaded cap.



**53** To ensure the threaded cap is securely retained in the solder model, insert the positioning screw No. 147 into the threaded cap. Then fabricate a solder model and solder in the usual way.



**54** If a spot-welding unit is available, insert the frictionless positioning patrx No. 130 or No. 230 into the threaded cap beforehand and remove it after spot welding. Protect the thread of the solderable cap with antifix. Apply flux to the threaded cap and solder in the usual way.



**55** After soldering, check that the solder has flowed completely round the threaded cap.



**56** Before finishing the CrCo framework, check the accuracy of fit with the original patrx No. 100 or No. 200.

# TITANIUM RETENTION CAPS FOR A SOLDER-FREE CONNECTION WITH THE CRCO DENTURE AND POLYMERIZATION INTO THE ACRYLIC



The titanium retention caps N = 143 / M = 243 are indicated for a prosthetic restoration when a solder-free connection of the patrix or patrix holder and the CrCo framework is required. They are also ideal as holders for exchangeable, activatable patrices in acrylic and duplicate dentures. These retention caps are very useful in the repair of damaged threaded units.

## TECHNICAL DATA:

### **Titanium retention caps**

These threaded caps, which are rigidly incorporated in a prosthetic restoration, should never be subjected to procedures involving heat, e.g. soldering.

## INSTRUMENTS AND ACCESSORIES

The following instruments and accessories are essential to ensure correct preparation and accurate results. During preparation always use the laboratory patrix N = 131 / M 231. This should not be replaced by the original patrix N = 100 / M = 200 until the denture is finished.

The following accessories and instruments are contained in the instrument cassette of the **Starter Kit 1680**:

**Paralleling mandrel N = 150 / M = 250:**  
for paralleling the anchor matrices

**Exchange instrument N / M 151:**  
for exchanging the patrix

**Deactivator N = 152 / M = 252:**  
for deactivating the patrix

**Thread tap (M2) N / M = 153:**  
for all retention units

**Patrix thread holder N / M = 157:**  
for all patrices

**Activator N / M = 158:**  
for all patrices

**20 Spacers N = 135 / M = 235:**  
stainless steel for adjusting the snap-on point

**Tungsten carbide cutter N / M = 159:**  
for burnishing the metal collar

## TITANIUM RETENTION CAPS FOR A SOLDER-FREE CONNECTION WITH THE CRCO DENTURE AND POLYMERIZATION INTO THE ACRYLIC

### Fabricating a duplicate model

Soak the model in water at 40-50°C for 10 minutes. Then dab the model with a soft cloth and duplicate it immediately (with reusable duplicating material). Ensure that the reusable duplicating material is not too old to prevent any inaccuracies in the height.



**57** Block out under the matrices with wax and surround them with a layer of wax approx. 0.10 - 0.15 mm thick, which is reduced until parallel. Fill the inside of the matrices with wax. The wax should be flush with the top of the matrix.



**58** Duplicate in the usual way and fabricate a duplicate model.



**59** Wax up a CrCo framework in the usual way. Ensure that the wax does not flow onto the top of the matrices on the duplicate model. Attach the sprues according to the metal manufacturer's instructions. Then invest and cast in the usual way.



**60** After finishing and polishing the CrCo framework, place it on the master model.



**61** Insert a laboratory patrx No. 131 / 231 into the retention cap with tabs and press it into the matrix. If required, the appendix of the tab can be bent to reduce its height by approx. 40°.



**62** Retain the tabs of the retention cap with self-curing resin. Finish the CrCo denture in the usual way.

# TITANIUM OR PALLADIUM-SILVER RETENTION NUTS FOR SOLDER-FREE SCREW RETENTION WITH CRCO DENTURES



The titanium retention nuts No. 140 and palladium-silver retention nuts No. 141 are indicated for prosthetic restorations in which a solder-free connection between the patrix or patrix holder and the CrCo framework is required.

The palladium-silver nut is marked with a circumferential groove to distinguish it from the titanium nut. The spacers (accessories) made from non-residual burnout plastic are incorporated in the wax-up of the CrCo framework and ensure the flat surface required between the patrix base and retention nut.

## TECHNICAL DATA:

### Retention nut No. 141 (Pd/Ag)

### Retention nut No. 140 (Titanium)

These retention nuts, which are rigidly incorporated into a prosthetic restoration, should never be subjected to procedures involving heat, e.g. soldering. Plastic spacers No. 142 can be burned out without residue.

## INSTRUMENTS AND ACCESSORIES

The following instruments and accessories are essential to ensure correct preparation and accurate results.

The duplicating patrix N = 132 / M = 232 (without a thread) is required for duplicating. After preparing the CrCo framework, insert the laboratory patrix N = 131 / M = 231.

This should not be replaced by the original patrix N = 100 / M = 200 until the denture is finished.

The following accessories and instruments are contained in the instrument cassette of the **Starter Kit 1680**:

**Paralleling mandrel N = 150 / M = 250:**  
for paralleling the anchor matrices

**Exchange instrument N / M 151:**  
for exchanging the patrix

**Deactivator N = 152 / M = 252:**  
for deactivating the patrix

**Thread tap (M2) N / M = 153:**  
for all retention units

**Patrix thread holder N / M = 157:**  
for all patrices

**Activator N / M = 158:**  
for all patrices

**20 Spacers N = 135 / M = 235:**  
stainless steel for adjusting the snap-on point

**Tungsten carbide cutter N / M = 159:**  
for burnishing the metal collar

## TITANIUM OR PALLADIUM-SILVER RETENTION NUTS FOR SOLDER-FREE SCREW RETENTION WITH CRCO DENTURES

### **Fabricating a duplicate model**

Soak the model in water at 40-50°C for 10 minutes. Then dab the model with a soft cloth and duplicate it immediately (with reusable duplicating material). Ensure that the reusable duplicating material is not too old to prevent any inaccuracies in the height.



**63** Wax out under the attachment bar and matrix. Cover the bar and matrix with a layer of wax approx. 0.10-0.15 mm thick and reduce until parallel.



**64** Insert the activated, cleaned duplicating patrices into the matrices. Ensure that the duplicating patrices fit flush on the matrices.



**65** Duplicate according to instructions and fabricate a duplicate model.



**66** Place the plastic spacers No. 142 on the duplicating patrices of the investment model.



**67** Wax around the plastic spacers. Ensure that wax is not applied to the top of the spacers. Wax up the CrCo framework in the usual way. After casting, prepare the CrCo framework. Ensure that the spacers cast in metal are not damaged when preparing with a rotary cutter. The fitting surfaces of the cast spacers are waxed out during polishing.





**68** Press the original patrices into the matrices.



**69** Fit the CrCo framework over the patrices.



**70** Place the threaded nuts on the thread and tighten them using the screwdriver No. 156.





















**71** After securing the nuts in position on the patrices, remove the CrCo framework from the crowns and hold the patrix with the exchange instrument No. 151. Place the screwdriver No. 156 onto the nut and tighten fully to connect the two components.



**72** If the height of the plastic spacers has been altered due to incorrect preparation or polishing of the spacers, the spacer No. 135 or No. 235 for regulating the snap point can be inserted to restore the original snap point of the patrix.

## INSTRUMENTS, TOOLS AND ACCESSORIES FOR ZL ANCHOR ATTACHMENTS

Order No.		Laboratory patrix (V4A) for positioning solderable threaded caps (-N- No. 144/-M- No. 244)	Order No.	Screwdriver for retention nuts
130	230		156	
131	231	Laboratory patrix (Brass) for try-in and finishing the denture 	157	ZL patrix thread holder 
132	232	Laboratory patrix (Brass) for duplicating when using retention nuts (No. 140/141) 	158	ZL patrix activator 
133	233	ZL patrix adhesion/ soldering aid (-N- No. 133/-M- No. 233) 	159	Tungsten carbide cutter, shank Ø 2.35 mm, head Ø 3.0 mm 
135	235	Spacers (Stainless steel) for adjusting the snap-on point of a ZL patrix 	391	ZL patrix thread adhesive 
137	237	Laboratory patrix (Brass) for duplicating with cast on threaded caps (-N- No. 149/-M- No. 249) 		
138	238	Laboratory patrix (Brass) for impression taking and repairs to damaged threaded caps 		
139	239	Laboratory matrix (V4A) for positioning ZL patrices in the stone model 		
147		Positioning screw for securing solderable threaded caps (-N- No. 144/-M- No. 244) in the soldering model 		
150	250	ZL anchor matrix paralleling mandrel 		
151		ZL patrix exchange instrument 		
152	252	ZL patrix deactivator 		
153		Thread tap for retention caps 		

## TECHNICAL DATA OF THE ALLOYS

Alloy	Palladium-Silver (Pd/Ag)	Platinum-Gold (Pt/Au)	Gold-Platinum (Au/Pt)	Platinum-Iridium (Pt/Ir)	MainBond EH (Au/Pt)	Titanium (Ti)
Colour	white	white	yellow	white	yellow	white
Melting range (°C)	1170 - 1240	1360 - 1460	900 - 930	1830 - 1855	895 - 1010	1610
Vickers hardness VH tempered	245	250	250	225	295	270
0.2% Proof stress (daN/mm <sup>2</sup> ) tempered	60	78	67	55	60	25
Tensile strength (daN/mm <sup>2</sup> ) tempered	80	82	82	72	76	54
Elongation at rupture (%) tempered	18	15	20	18	21	22
Tempering	0-500°C, allow to cool slowly for 10 min.	0-700°C, allow to cool slowly for 30 min.	0-350°C, allow to cool slowly for 15 min.	0-700°C, allow to cool slowly for 30 min.	0-450°C, allow to cool slowly for 15 min.	

Titanium retentive units must not be subjected to procedures involving heat, e.g. soldering.

Plastic components burn out without residue.

Information on our products and techniques is based on ongoing technical development and monitoring.

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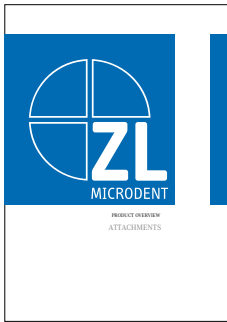
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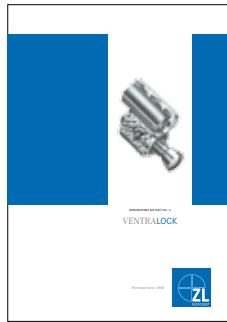
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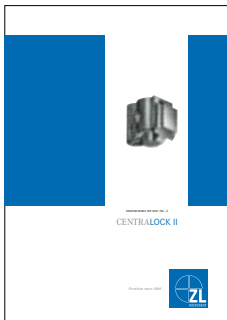
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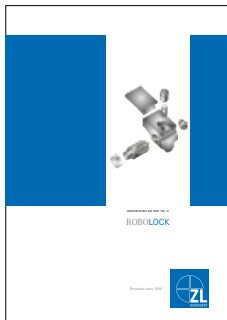
Instructions for use No.1  
DUOLock / LOGA®



Instructions for use No. 2  
VENTRALock



Instructions for use No. 3  
CENTRALock



Instructions for use No. 4  
ROBOlock



Product Overview  
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