

Instructions for use No. 4

# ROBOLOCK

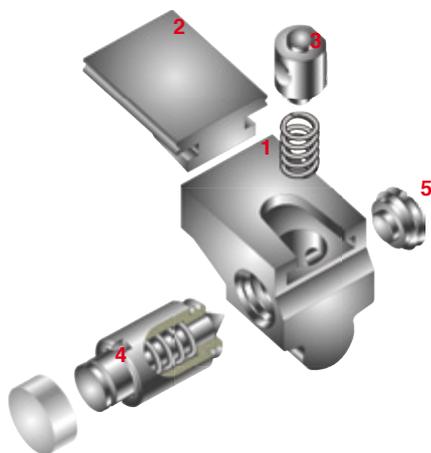
*Precision since 1968*



## THE ROBOLOCK AUTOMATIC LOCK ATTACHMENT CAN BE USED IN ALL FOUR QUADRANTS DUE TO ITS SCREW-ON LOCK GUIDE SLEEVE.

The ROBOLOCK automatic lock attachment is a rigid retentive unit for use with unilateral and bilateral free-end or bounded saddle partial dentures and removable bridges.

The matrix (1), which in this case is incorporated in the removable unit on the denture, is connected with the patrix (2) by a spring-loaded bolt (3), which is inserted in the matrix and engages in a recess in the patrix.



The removal pin or guide sleeve can be inserted lingually or buccally into the matrix. The lock attachment only requires one type of matrix and patrix for use in all four quadrants due to the design of the guide sleeve. The patrix and matrix are separated by a spring-loaded release mechanism (4) screwed into the side of the matrix that pushes the bolt into the matrix. This mechanism ensures frictionless separation. The non-functional thread is sealed with a closure screw (5).

The lock patrix, which is connected to the crown, is made from a platinum-iridium alloy and can be cast on or soldered with all precious, Pd-based and non-precious metal alloys.

The design of the ROBOLOCK automatic lock attachment allows it to be shortened occlusally without any problem, even with difficult bite relationships.

**ROBOLOCK No. 4911** comprising:

**ROBOLOCK No. 4912** comprising:

### Patrix (Pt/Ir)

cast on or solderable with non-precious, Pd-based and precious metal alloys.

### Matrix (Pd/Ag)

solderable with non-precious, Pd-based and precious metal alloys. The matrix can also be used with the adhesive technique.

### INSTRUMENTS AND ACCESSORIES

Original ZL instruments and accessories should always be used to ensure successful application of ZL precision attachments. The following instruments and accessories are required for preparing the ROBOLOCK automatic lock attachment:

**Thread adhesive** No. 391.

**Paralleling mandrel** No. 640.

**Polymerisation pin** No. 641

**Assembly instrument** No. 642

**Lock exchange instrument** No. 643.

**Duplicating screw** No. 646.

These instruments and accessories are contained in the **Starter Kit No. 4980**

### NOTES ON INDICATION

A stress-breaker with a milled interlock must be incorporated when using the ROBOLOCK lock attachment 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.

### Technical data:

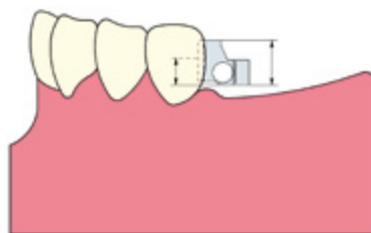
#### Patrix (Pt/Ir)

Melting range: 1830-1855°C

#### Matrix (Pd/Ag)

Melting range: 1170 – 1240°C

### Dimensions for planning:



A = Overall height as supplied  
= 5,5 mm

B = Overall height after max. reduction  
= 3,0 mm

C = Width of the matrix and patrix  
= 3,5 mm

D = Overall width of the matrix with  
release mechanism = 6,9 mm

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

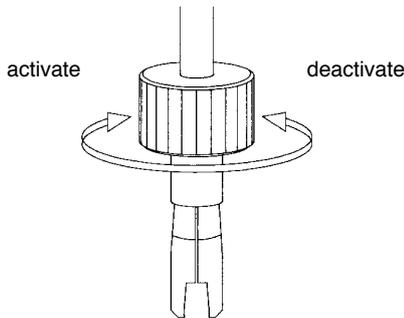
When working with ZL attachments, it is essential to note and adhere to the sections marked in red in the instructions for use.

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

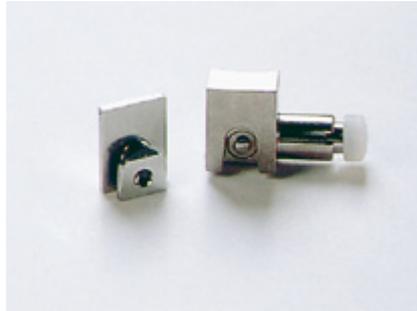
Ensure that no part of the attachment projects into areas to be faced with porcelain, as porcelain does not bond to a platinum-iridium patrix. This eliminates the risk of cracks in the porcelain.

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

Function of the paralleling mandrel:  
The paralleling mandrel is activated by turning the sure-grip screw clockwise and deactivated by turning the screw anticlockwise.



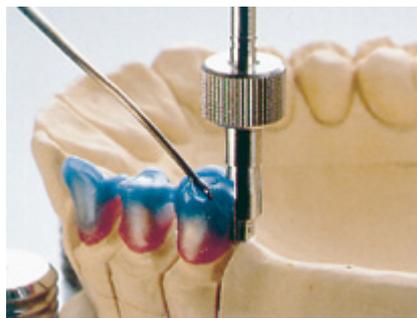
The back of the Pt/Ir patrix should never be surface conditioned (sandblasted, roughened with bonded abrasive stones), as this would cause problems when casting on to the patrix.



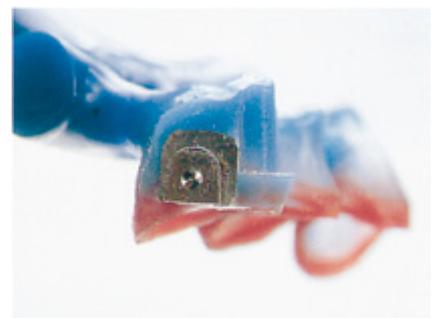
1 ROBOLOCK automatic lock attachment, matrix and patrix



2 Determine the path of insertion and place the patrix temporarily on the crown wall with the paralleling mandrel No. 640. Shorten the patrix if required. Place the patrix in position and mark the outline on the crown. Then create sufficient space for the patrix.



3 Replace the patrix on the crown wall. Wax on the patrix. Ensure that no wax flows onto the guide surfaces of the attachment.



4 Attach the sprues according to the metal manufacturer's instructions. Place the sprues so that the casting alloy reaches the patrix via the shortest path to ensure there is adequate heat for an optimum casting.

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

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

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



**5** Mix the required amount of investment. Hold the rubber base vertically on the vibrator. Use a probe to ensure the investment flows around the attachment channel and lock recess.



**6** Place the casting ring on the base and fill the mould with the investment.

**CAUTION!**

To ensure the molten metal casts perfectly onto the Pt/Ir patrix, 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 to prevent any temperature loss during casting.

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

Ensure when deinvesting the crowns that the investment at the attachment patrix is always removed with an ultrasonic cleaner, if possible. If the framework has to be sandblasted in the area of the patrix, always use microbeads and reduce the sandblasting pressure to max. 2 bar.

## TECHNIQUE FOR A RELIABLE, PRECISE SOLDER CONNECTION BETWEEN THE PLATINUM-IRIDIUM PATRIX AND CROWN

Ensure that no part of the attachment projects into areas to be faced with porcelain, as porcelain does not bond to a platinum-iridium patrix. This eliminates the risk of cracks in the porcelain



**7** Proceed as described in figure 2 on Page 3. Apply separating agent to the patrix before waxing up. Remove the patrix and contour a flow channel for the solder. Attach the sprues according to the metal manufacturer's instructions, invest and cast in the usual way.



**8** After finishing the casting, prepare the recess for the patrix on the crown wall. Place the patrix on the crown wall using the paralleling mandrel. Secure the patrix in position on the crown using resin, wax or a precious metal spot welder.



**9** Fabricate a solder model and solder in the usual way. If the attachment has been spot welded, protect the patrix attachment surfaces with antireflux.



**10** Prepare the solder joint and check that the solder has flowed fully through the solder gap.

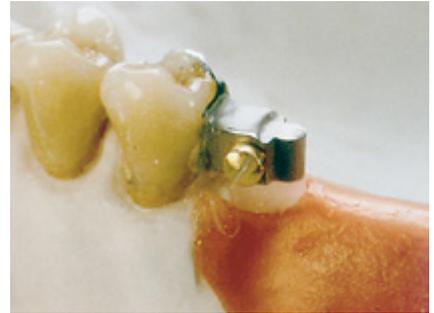
## A RELIABLE, PRECISE ADHESIVE OR SOLDER CONNECTION OF THE MATRIX WITH THE DENTURE FRAMEWORK

### **Fabricating the duplicate model with reusable duplicating material**

Soak the model in water at 40-50°C for 10 minutes. Then dab the model with a soft cloth and duplicate it immediately. Ensure that the temperature of the reusable duplicating material is the same as the water for soaking the model.



**11** Assemble the matrix and matrix to prevent the duplicating material flowing into the matrix threads. Insert the duplicating screw into the side of the matrix selected by the operator. Seal the non-functional matrix thread with the system closure screw.



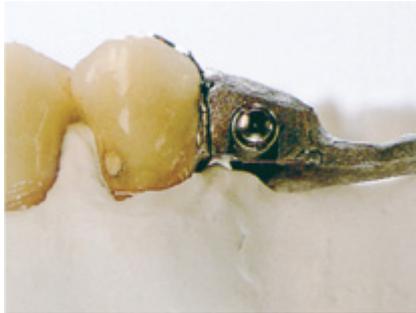
**12** Wax out the gap between the matrix and matrix and wax out under the appendix of the matrix. Surround the matrix with a layer of wax max. 0.2 mm thick for the adhesive or solder gap. Duplicate in the usual way.



**13** The attachment matrix with the duplicating screw is clearly defined on the investment model.



**14** Surround the attachment matrix with a layer of wax approx. 0.5 mm thick. Do not cover the duplicating screw on the model with wax. Invest and cast in the usual way.



**15** Finish the CrCo framework. The adhesive gap between the matrix and CrCo framework should not exceed 0.2 mm. Cut a slot basally in the metal surrounding the matrix on the side with the lock so that the CrCo framework fits passively on the crowns and fitted attachment.



**16** Unscrew the lock from the matrix. Hold the lock bolt in position with instrument No. 642 to prevent it springing out spontaneously.



**17** Remove the lock bolt and compression spring.



**18** CrCo framework and disassembled matrix (showing individual components).

Ensure that the large conical drill hole in the lock bolt always points towards the press lock. The surface of the lock bolt with the small drill hole should point towards the closure screw.



**19** All the surfaces of the matrix (facing surface, side with lock, basal surface at insertion opening) and of the CrCo framework that are not to be sandblasted should be covered with wax. Sandblast the surfaces to be bonded with adhesive thoroughly using aluminium oxide grit size 250  $\mu\text{m}$  at 5 bar.



**20** Remove the wax and ensure that all components are free of grease (steam clean).



**21** Assemble the lock in reverse sequence as described in figures 17 and 16. Place the matrix on the matrix and wax out the gap between the two units. Surround the press lock with a layer of wax to prevent composite inadvertently flowing into the lock.



**22** Mix the DuroBond according to the manufacturer's instructions.



**23** Apply the DuroBond to the matrix and adhesive recess in the CrCo framework. Place the CrCo framework on the crowns and check the accuracy of the fit.



**24** After the DuroBond has cured, lift the CrCo framework from the crowns and remove any excess composite. Check that the lock functions properly.

## CREATING A SOLDER CONNECTION BETWEEN THE MATRIX AND CRCo FRAMEWORK



**25** After devesting and finishing the CrCo framework, place it on the model. Before fitting it, remove the duplicating screw from the matrix. Check the opening in the CrCo framework using the polymerisation pin No. 641 and widen it if required.



**26** If a spot welder is available, cut a T-shape in the CrCo framework at the matrix appendix. Then check the fit of the CrCo framework on the matrices and crowns. To prevent inaccuracies, screw the lock pin through the CrCo framework into the matrix.



**27** Spot weld the metal segments to the matrix appendix from the inner surface towards the outer surface.



**28** Before soldering, unscrew the press lock from the matrix and remove the bolt and spring as described in figures 16 and 17.



**29** Coat the threads and attachment channel of the matrix with antifix.



**30** Apply flux to the outer surfaces of the matrix and to the CrCo framework.



**31** Vibrate the CrCo framework with an instrument to ensure that the flux flows into the solder gap.



**32** Ensure that the flux does not flow into the threads and inner surfaces of the matrix. Solder in the usual way.



**33** Check that the solder has flowed completely round the attachment matrix. Prepare the solder joint and polish the CrCo framework. Assemble the spring, bolt and press lock and check that the attachment functions properly.

## FOLLOW THESE STEPS WHEN FINISHING



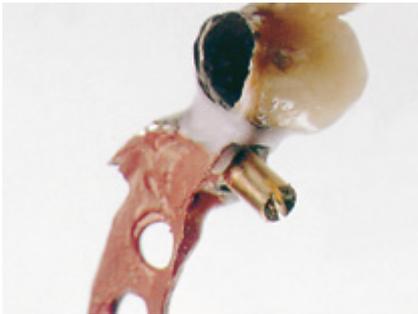
**34** Exchange the lock for the polymerisation pin No. 641 when setting up the teeth. Replace the original lock for the wax try-in.



**35** After the wax try-in, remove the lock and replace it with the polymerisation pin No. 641 in the matrix.



**36** Fabricate a silicone overcast and boil out the wax in the usual way.



**37** Block out the attachment with wax and pour the acrylic. The polymerisation pin should be lightly coated with Vaseline before pouring the acrylic.



**38** After the acrylic has cured, remove the polymerisation pin. Disassemble the lock, finish and polish the restoration before final assembly of the lock.



**39** After finishing the restoration, seal the thread of the lock guidance sleeve with a drop of screw adhesive No. 391 to prevent spontaneous loosening of the lock. If required, cover the opening mechanism with the white plastic cap.

## 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.

This does not release the user from the obligation of checking our instructions and recommendations before use to ensure their fitness for the intended purpose.

If modifications are made to our products in the course of ongoing technical development, we reserve the right to supply the modified version.

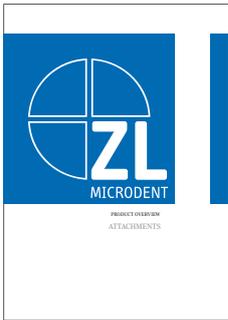
If modifications are made to our products in the course of ongoing technical development, we reserve the right to supply the modified version.

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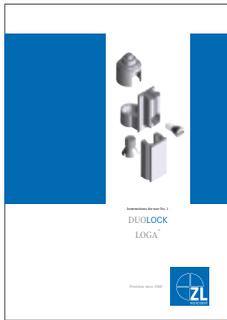
**We reserve the right to make technical changes.**

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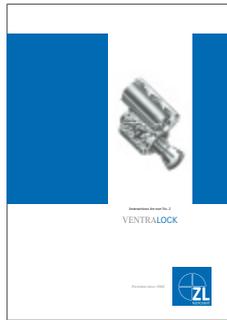
Precision since 1968



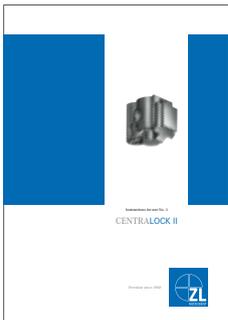
Product overview  
ATTACHMENTS



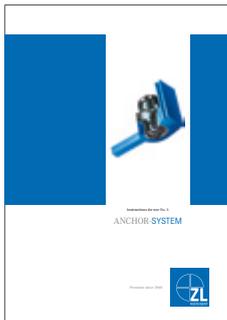
Instructions for use No.1  
DUOLOCK / LOGA



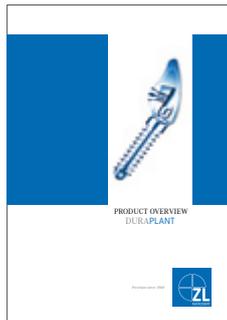
Instructions for use No. 2  
VENTRALOCK



Instructions for use No. 3  
CENTRALOCK



Instructions for use No. 5  
ANCHOR-SYSTEM



Product Overview  
DURAPLANT

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