**RoboLock®**

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.

![Diagram](image)

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 attached to the crown, is made of 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.

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**Caution for instructions for use**

When working with attachments, it is essential to note and follow the specific instructions for use, marked in green, which you will find underneath a grey-highlighted line.

**Caution**

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

**Patrix (Pt-Ir)**
Can be cast on or soldered with precious, Pd-based and non-precious metal alloys.

**Matrix (Pd-Ag)**
Solderable with precious, Pd-based and non-precious metal alloys. The matrix can also be used with the adhesive technique.

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**Technical data**

**Patrix (Pt-Ir)**
Melting range: 1830-1855°C.

**Matrix (Pd-Ag)**
Melting range: 1170-1240°C.

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**Dimensions for planning:**

- **A** Overall height as supplied = 5.5mm
- **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

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**Instruments and accessories**

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

- Attachment adhesive REF 5951.
- Paralleling mandrel REF 5971.
- Polymerisation pin.
- Lock exchange instrument REF 5976.
- Duplicating screw.
- Bolt retention instrument REF 5973.

These instruments and accessories are included in the **Starter Kit REF 5970**.

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**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.
**Caution**

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. Allow for this when contouring the shape. 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.

**Fig. 1:**
RoboLock automatic lock attachment, matrix and patrix.

**Fig. 2:**
Determine the path of insertion and place the patrix temporarily on the crown wall with the paralleling mandrel REF 5971. If the attachment has to be shortened, mark the section of the patrix to be reduced according to the occlusal relationship. Shorten the patrix before placing it in position and marking the outline on the crown. Then create sufficient space for the patrix.
Platinum-Iridium Patrix

Caution

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.

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

Fig. 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.
Precise adhesive or solder connection
Technique for a reliable, precise solder connection between the Platinum-Iridium Patrix and crown.

Successful casting and an accurate fit depend on precise preparation!
Before investing, check which dental alloy is to be cast onto the patrices and use the mixing ratio recommended in the instructions for use for the investment.

**Caution**
Ensure when devesting 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.

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. Allow for this when contouring the shape. This eliminates the risk of cracks in the porcelain.

**Fig. 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.

**Fig. 6:**
Place the casting ring on the base and fill the mould with the investment.
Precise adhesive or solder connection

**Fig. 7:**
Proceed as described in Figure 2 on Page 4. Contour a flow channel for the solder. Attach the sprues according to the metal manufacturer’s instructions, invest and cast in the usual way.

**Fig. 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.

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

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

**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.
Precise adhesive or solder connection
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.

Fig. 11:
Assemble the patrix 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.

Caution
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.

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

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

Fig. 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.
Precise adhesive or solder connection

Fig. 15: Finish the metal denture framework. The adhesive gap between the matrix and metal denture 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 metal denture framework fits passively on the crowns and fitted attachment.

Fig. 16: Unscrew the lock from the matrix. Hold the lock bolt in position with instrument REF 5973 to prevent it springing out spontaneously.

Fig. 17: Remove the lock bolt and compression spring.

Fig. 18: Metal denture framework and disassembled matrix (showing individual components).

Fig. 19: All the surfaces of the matrix (facing surface, side with lock, basal surface at insertion opening) and of the metal denture 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 μm at 5 bar.

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

Fig. 21: Assemble the lock in reverse sequence as described in Fig. 18, 17. 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.
Precise adhesive or solder connection

Fig. 22:
Mix Attachment bond or Durobond according to the manufacturer’s instructions.

Fig. 23:
Apply the composite to the matrix and adhesive recess in the metal denture framework. Place the metal denture framework on the crowns and check the accuracy of the fit.

Fig. 24:
After the composite has cured, lift the metal denture framework from the crowns and remove any excess composite. Check that the lock is functioning properly.
Solder connection between matrix and metal denture framework

Creating a solder connection between the matrix and metal denture framework.

Fig. 25:
After devesting and finishing the metal denture framework, place it on the model. Before fitting it, remove the duplicating screw from the matrix. Check the opening in the metal denture framework using the polymerisation pin and widen it if required.

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

Fig. 27:
Spot weld the metal segments to the matrix appendix from the inside to the outside.

Fig. 28:
Before soldering, unscrew the press lock from the matrix and remove the bolt and spring as described in Fig. 16, 17 and 18 in the instructions for the adhesive technique.

Fig. 29:
Coat the threads and attachment channel of the matrix with antiflux.

Fig. 30:
Apply flux to the outer surfaces of the matrix and metal denture framework.
Solder connection between matrix and metal denture framework

Fig. 31: Vibrate the metal denture framework with an instrument to ensure the flux flows into the solder gap.

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

Fig. 33: Check that the solder has flowed completely round the attachment matrix. Prepare the solder joint and polish the metal denture framework. Assemble the spring, bolt and press lock and check that the attachment is functioning properly.
**Finishing in acrylic**

Important information about finishing in acrylic.

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**Fig. 34:** Exchange the lock for the polymerisation pin when setting up the teeth. Replace the original lock for the wax try-in.

**Fig. 35:** After the wax try-in, remove the lock and replace it with the polymerisation pin in the matrix.

**Fig. 36:** Fabricate a silicone over-cast and boil out the wax in the usual way.

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

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

**Fig. 39:** After finishing the restoration, seal the thread of the lock guidance sleeve with a drop of screw adhesive REF 5951 to prevent spontaneous loosening of the lock. If required, cover the opening mechanism with the white plastic cap.
### Materials and technical data

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<th>Composition in % by weight</th>
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**Titanium Grade 2**

| 30 | Ti 99.7% 7065 |

**Titanium Grade 5**

| 31 | Ti 90.00%, Al 6.00%, V 4%, C 0.08%, Fe 0.25%, O 0.13%, N 0.05%, H 0.012% |

**Stainless steel**

| 32 | 1.4305 X100CrNi189 |

**Plastic**

| 33 | PTFE polytetrafluoroethylene |

**Titanium alloy**

| 35 | Ti 99.00%, C 0.10%, Fe 0.30%, O 0.5%, H 0.015% |

**Plastic**

| 36 | PMMA Polymethylmethacrylate |

**Plastic**

| 37 | POM Polyoxymethylene |

**Aluminium oxide**

| 38 | Al, O |

**Plastic**

| 39 | ABS Acrylnitrile butadiene styrene |

**Plexiglas**

| 40 | Methylmethacrylate-based acrylic resin |

**Polypropylene**

| 41 | |

**Poly styrene**

| 42 | |

**Fe-Cr**

| 43 | Cu 1.60%, Cr 17.00%, Fe 67.00%, Ni 10.00%, Mn 2.00%, Si 1.00% |

**Plastic**

| 44 | PMMA 7 N |

**Stainless steel**

| 45 | 1.4301 X5CrNi1810 |

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*Please note!*

Individual components (matrices and patrices) of certain attachments are available in different alloys. High-fusing alloys components are cast-on (only with certain bonding alloys with a high melting range).
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