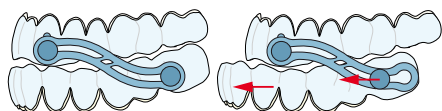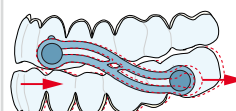# Silensor®-sl   Instruction

Please find a video showing the fabrication under: www.erkodent.com > Service/Download > Videos

In case of sudden propulsion movements during sleep the anchor can slide into the connector. This avoids compressing and overloading the connectors.

The light flexing of the double-S shaped connectors improves the wearing comfort and reduces load in the connecting area of all parts.

Materials & Accessories

Fabrication:
- Silensor®-sl Set (59 60 11, foil Ø 120 mm, EN) or single components.
- Erkodur/ *freeze*, 2.5 mm, hard, necessary for the fabrication of the lower jaw splint in case of poor retention.
- Erkoloc-pro /*blu* /*green* /*pink*, 3.0 mm, soft/hard, 2-layered, high wearing comfort, can always be used for the upper jaw and for the lower jaw only in case of enough retention. · If available, construction bite with the sl-protrusion-gauge. · Aton-Lab 80 (410 700, 2 x 400 ml) for the working steps **16 - 19** page 2/3. · sl-pliers (59 60 60), see p. 4, **10a**
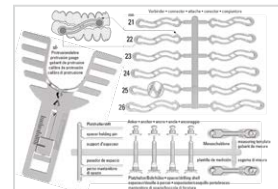
Model preparation:
- Erkogum lilac (110 847) for blocking out, high-fusing wax (725 055 lilac) for filling bubbles in the plaster, Erkoskin (625 050) to relieve the gingival margin.

Finishing:
- Finishing set Quick 3 (110 830) with: Fissure bur for rough cutting out (110 836), HSS-twist drill to cut out the desired form (110 876), cross-cut tungsten carbide bur for fine grinding (110 837), Liskosil-l (223 240) for prepolishing, Liskosil-m (223 230) for interdental areas, Liskosil-s (223 220) for treatment of occlusal premature contacts and inside of a splint. · Polishing set (110 878) to polish hard thermoforming materials.

Important hints

- The **mos**t far-reaching consequences of all lower jaw protrusion splints, thus also of the Silensor®-sl, is tooth migration. It is therefore mandatory to integrate all existing teeth in the splints. It is recommended to keep a duplicate of the initial situation to counteract, if necessary, a possible tooth migration with a simple correction splint.

- If a construction bite with the sl-protrusion-gauge is available, the models will be articulated with it, otherwise in the final bite position.

- The Silensor®-sl can be fabricated in normal bite position or as in most cases with protruded lower jaw. The results of the questionnaire (Silensor®-sl flyer) will help in finding a solution.

- The measuring template can be used with 23 or 25 mm length. The length of 25 mm should be preferred as in this case longer connectors with a better wearing comfort can be used. Only in case of very small jaws the 23 mm length is used for measuring.

23
25

anchor
connector
splint

- If a construction bite with the sl-protrusion-gauge is available, it is measured with 25 mm and the 25 mm long connectors are used. If the patient, after a construction bite, still cannot tolerate the advancement, then the 26 mm connectors can be put in. Without construction bite it is measured in the normal bite position with 25 mm and the 24 mm long connectors are used. (If 23 mm are used for measuring, the connectors with 22 mm length are attached.)

- The ready-made Silensor®-sl shall offer balance contact points. If this is not possible by grinding, it should be adjusted by addition with autopolymerising resin.

- The connectors are easily exchangeable, for example if more protrusion is required for a sufficient effect.
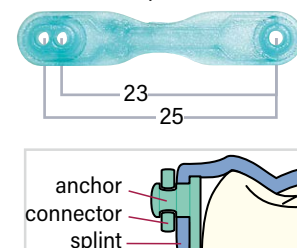
sl-protrusion gauge allows a simple registration on the patient of the lower jaw protrusion for the Silensor®-sl

Recommendation for mandibular advancement splints:
The advancement of the lower jaw shall correspond to the half of the maximum protrusion achievable by the patient. Or an already known effective advancement will be adjusted.

protrusion sled

The features of the sl-protrusion-gauge:

1. protrusion sled
2. elastic registration areas
3. conical registration retentions
4. frontal teeth bite area for upper and lower jaw
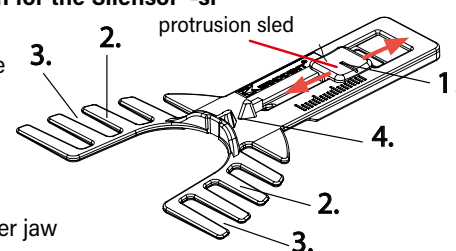
1. Insert the sl-protrusion-gauge. Watch the centre of the frontal teeth.

2. Mark the habital bite situation. Push the lower jaw forward to the maximum without …

3. … lateral deviations. Mark the maximum protrusion. Remove the gauge.

4. Mark the desired protrusion and adjust the gauge to it.

**5.** Insert the gauge and register.

Gauge with removed registration.

If a construction bite taken with the sl-protrusion gauge is available the measuring length (25 or 23 mm) and the connector length are the same. The sl-protrusion gauge thereby also compensates the opening rotation of the connectors caused by the foil thickness. Deviations to the registration are thus largely avoided.

If no construction bite is available the models are measured in the final bite position, the advancement of 2 - 3 mm will be achieved by a different measuring length (25 or 23 mm) and connector length (24 or 22 mm) plus opening rotation (bite elevation caused by foil thickness).

Model preparation

1.

2.

Erkogum lilac
Wax lilac
Erkoskin

3.

4.

5.
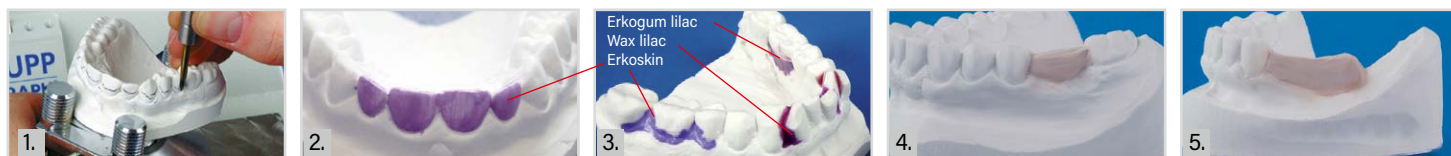
In case of a very retentive teeth situation, the marking of the prosthetic equator is recommended (1.).
With the exception of the fixation points, the splint ends in case of large undercuts at the equator, otherwise 1-2 mm below.

In case of using Erkodur (hard), relieve tension from the four upper front teeth by applying Erkoskin (2.).

Block out undercuts and spaces with Erkogum, block out bubbles in the plaster with high-fusing wax. Relieve tension from the gingival margin in the area where the splint possibly has contact (3.).

If the measuring point is located on an edentulous area, this must be filled with plaster (4.).
In case of a free-end situation, a plaster wall is put on the ridge (5.).

Fabrication with construction bite

25 mm
23 mm

1. Separate the measuring templates.

25 mm or 23 mm ?, see hints, page 1, paragraph 4 + 5.

2. Articulate the models using a rubber band and the construction bite that has been taken off the sl-protrusion gauge and cut to shape.

3. Fix measuring template as near as possible to the occlusal plane with Erkogum. Initial point is the upper canine or canine area. The lower pivot point results from the measurement (see hints).

Fix the measuring template with the drilling shells that way that a parallel drilling is possible.

4. Cut the spacer holding pins.

Put the marked end in the drilled holes, see **7.**

5. Drill with the 1.4 mm drill (**10 000 rev/min!**) through the drilling shell into the model, first in the canine area (3 mm depth of drilled hole or more).

6. Immediately insert a spacer holding pin through the drill guide. Only now drill the second hole. Drill the other side in the same way. Remove pins and templates …

7. … the models can now be separated. Now put all 4 spacer holding pins into the drilling holes. Strongly diverging spacer holding pins have to be adjusted.

Hint for drilling: If the model has been drilled through, fix the spacer holding pin with Erkogum. Fix chipped plaster pieces and the pin with quick-acting glue.

8. Put a poor quantity of Erkogum lilac onto the pins.
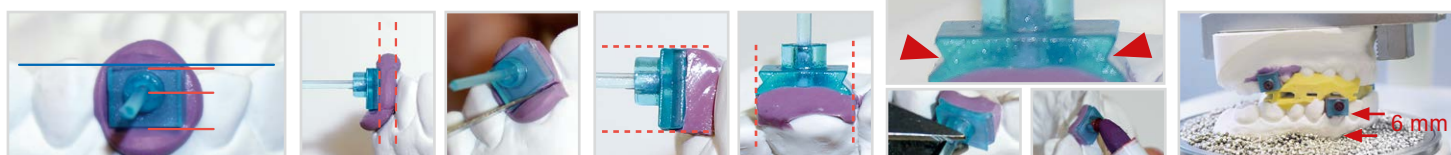
Cut the spacers without overhang.

9. Push a spacer holder as illustrated onto the spacer holding pin and press it on as near as possible.
The small side always points towards the occlusal plane.

10. Pay attention to a parallelism of the modelling pads.

Remove excessive Erkogum with a knife.

11. Undercuts between spacer holding pin and model have to be filled up.

12. Marked areas have to be free of Erkogum. Cut all pins.
Now mark the outermost surface of each spacer with an appropriate pen.

6 mm

13. Articulate the models with the construction bite (Erkoform units serie 3 with Occluform-3). Leave the area below the spacer at least 6 mm free of granules.

approx. 2 mm

14. Keep the construction bite. Lower the bite at the supporting pin to a gap of approx. 2 mm between the front teeth. Pull off the insulating foil of the Erkolen foil (1.0 mm) and keep it.

15. Now thermoform, immediately put the Erkolen foil (reusable) onto the model and close the Occluform.
The result is a plane occlusal surface.

16. Now take a silicone key for the opposing bite (Aton-Lab 80). Put the modelling silicone in the unit onto the splint and imprint the opposing bite with the Occluform, if necessary, slightly adapt.

17. Take model with foil out of the Occluform model pot and roughly cut out (fissure bur > 20 000 rev/min)

18. Lock the lower joint of the Occluform with the swivel screw. Fix lower jaw model in the Occluform model pot, fill up with granules and put the silicone key onto it. (Instructions Occluform)

19. Fix upper jaw model on the Occluform model plate. Articulate the models using the silicone key. Open the Occluform and remove the silicone key.

20. Press the cut insulating foil of the Erkolen foil with the adhesive side down on the occlusal surface of the splint.
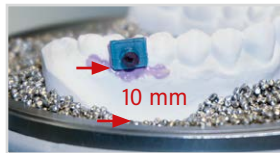
10 mm

**21.** Pay attention that at least 10 mm around the spacers are free of granules.

22. Now execute the second thermoforming process. As soon as the foil is adapted, close the Occluform.
Allow to cool completely. Uncover all spacers before taking the splints off the model. Thereto, **carefully** grind through the plate …

23. … until the coloured marking on the spacers is just abraded, **not more and not less** (tungsten carbide bur > 20 000 rev/min). **Ensure a level surface.** Take the splints off the models.

➡ **Continue at Finishing**

Fabrication without construction bite
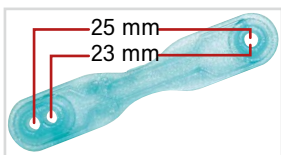
25 mm
23 mm

1. Separate the measuring templates.

25 mm or 23 mm ?, see hints, page 1, paragraph 4 + 5.



2. Articulate the models using a rubber band.

3. Fix measuring template as near as possible to the occlusal plane with Erkogum. Initial point is the upper canine or canine area. The lower pivot point results from the measurement (see hints).

Fix the measuring template with the drilling shells that way that a parallel drilling is possible.
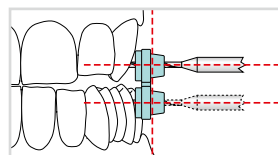
4. Cut off the spacer holding pins.
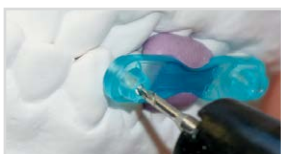
Put the marked end in the drilled holes, see **7.**

5. Drill with the 1.4 mm drill (**10 000 rev/min!**) through the drilling shell into the model, first in the canine area (3 mm depth of drilled hole or more).

6. Immediately insert a spacer holding pin through the drill guide. Only now drill the second hole. Drill the other side in the same way. Remove pins and templates …
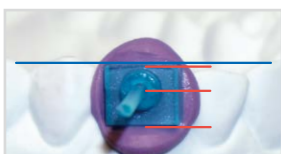

7. … the models can now be separated. Now put all 4 spacer holding pins into the drilled holes. Strongly diverging spacer holding pins have to be adjusted.
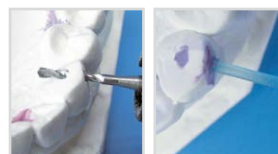

Hint for drilling: If the model has been drilled through, fix the spacer holding pin with Erkogum. Fix chipped plaster pieces and the pin with quick-acting glue.

8. Press a small quantity of Erkogum lilac onto the pins.
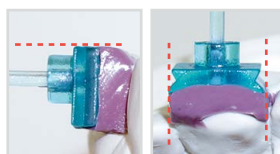
Cut the spacers without overhang.

9. Push a spacer holder as illustrated onto the spacer holding pin and press it on as near as possible. The small side always points to the occlusal plane.
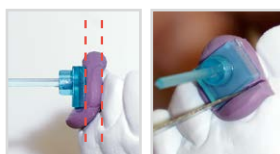
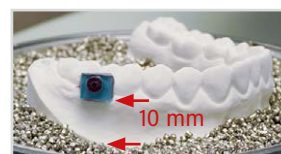**10.** Pay attention to a parallelism of the modelling pads.

Remove excessive Erkogum with a knife.

11. Undercuts between spacer holding pin and model have to be filled up.

12. Marked areas have to be free of Erkogum. Now mark the outermost surface of each spacer with an appropriate pen.

10 mm

13. Embed the models into the granules, leave the area below the spacer at least 10 mm free of granules. Thermoform the models one after the other.

14. Immediately after the adaptation apply the Erkolen foil (1 mm) without insulating foil and press it on along the teeth row especially in the area of the front teeth, in doing so run with the …


15. … finger back and forth. Do not stay too long at one place, **hot!**

The result is a plane occlusal surface.

16. Take the models out of the unit and roughly cut out before removing the splint from the model (fissure bur > 20 000 rev/min).

17. Uncover all spacers before taking the splints off the model. Thereto, **carefully** grind through the plate until the coloured marking on the spacers is just abraded, …
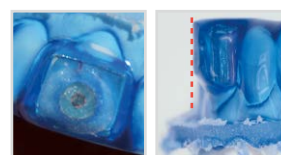
18. … not more and not less! (tungsten carbide bur > 20 000 rev/min) **Ensure a level surface.** Take the splints off the models.

➡ **Continue at Finishing**

Finishing

1. Cut the final form with the HSS twist drill (>20 000 rev/min, without pressure), leave sufficient material (min. 2 mm) around the fixation points.
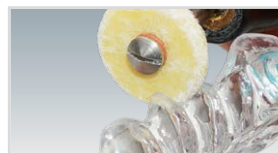

2. Grind the borders with the tungsten carbide bur (>20 000 rev/min).

Smooth the borders, …

3. Smooth the borders, grinded areas with Liskosil-l, …

4. … narrow zones and interdental spaces with Liskosil-m. Liskosil-s for treatment of occlusal premature contacts and the inside of a splint (10 000 rev/min).

5. Polish Erkodur with polishing agent for plastics (polishing set, 110 878).

6. Press spacers inwards out of the splint (for ex. with the Liskosil mandrel shank), it might be necessary to firmly press. (or **10a**.)

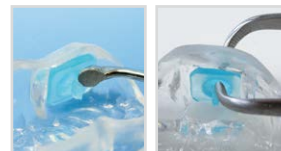**7.** Remove the insulating/shrinkage compensation foil.

sl-pliers (59 60 60) Video: to fix and remove the Silensor-sl components

8. Cut the anchors as shown on the picture.

Take the anchors at the retaining lip and …

9. … put them into the splint as replacement for the spacers.

10. Firmly press into position, if necessary, also carefully with suitable pliers. (**sl-pliers**, 59 60 60), see **10b**.
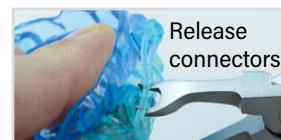

10a. Removing the spacers

10b. Insert the anchors
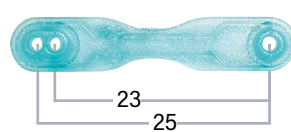
Release connectors

11. Cut the connectors, always opposing connectors have the same length.

Choose the connector length:

The connectors are exchangeable, for example if more protrusion is necessary for a sufficient effect.

The shorter the connector is chosen in comparison to the measurement, the larger is the advancement of the lower jaw.
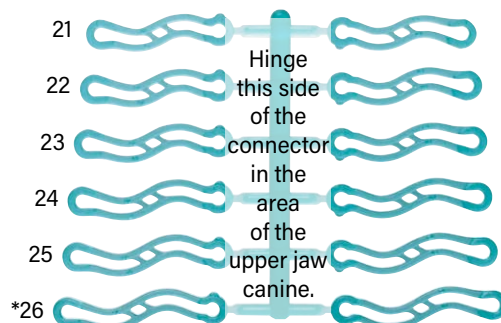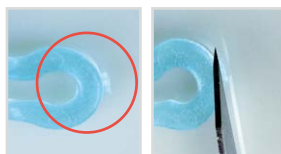

23
25

without construction bite: measured, 23 / 25 mm

connector, 22 / 24 mm

with construction bite: measured, 23 / 25 mm

connector, 23 / 25 mm

21
22
23
24
25
*26

Hinge this side of the connector in the area of the upper jaw canine.

*The 26 mm connector is used when the patient, after a construction bite, still does not tolerate the advancement.
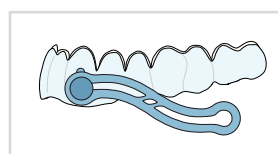

12. Remove sharp cutting edges!
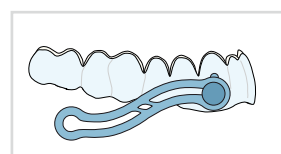

13. Hinge the connector into the long slot and pull it into its final position.
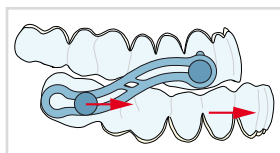

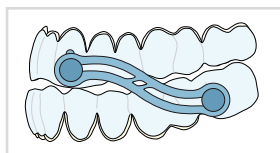**14.** Observe upper jaw canine side of the connector.

Upper jaw, obligatory run of the connectors, on the left and right.

15. Hinge the connector into the other splint. Please check correct positioning of the splint. In case of propulsion movements (feed) the …

16. … connector shall slide out of the anchor of the lower jaw, see picture, if not, hinge the connector about-face.

Connected splints, obligatory run of the connectors, on the left and right.
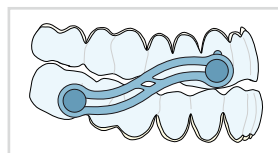
17. Now cut the retaining lips off the anchor. Finished.