Global Dental Impression Trays, Inc.

Jaw Recorder

Directions For Use

The Jaw Relation Recording device facilitates the recording of Centric Relation for the following patients: Complete edentulous, one arch edentulous opposing dentate, both arches dentate or partially dentate. It can also be used to stabilize dentures for fabrication of orthopedic splints and to equilibrate occlusion on full or partial dentures.

It is supplied on a plastic sprue with 5 attachments (figure 1) : A small Pin Receiver, a large Pin Receiver, a small Striking Plate, a large Striking Plate, and a Paralleling Spacer Plate (PSP). All of these are disposable, and intended for single use only. Also included is a metal Pivoting Nut and Pin, which are autoclavable.

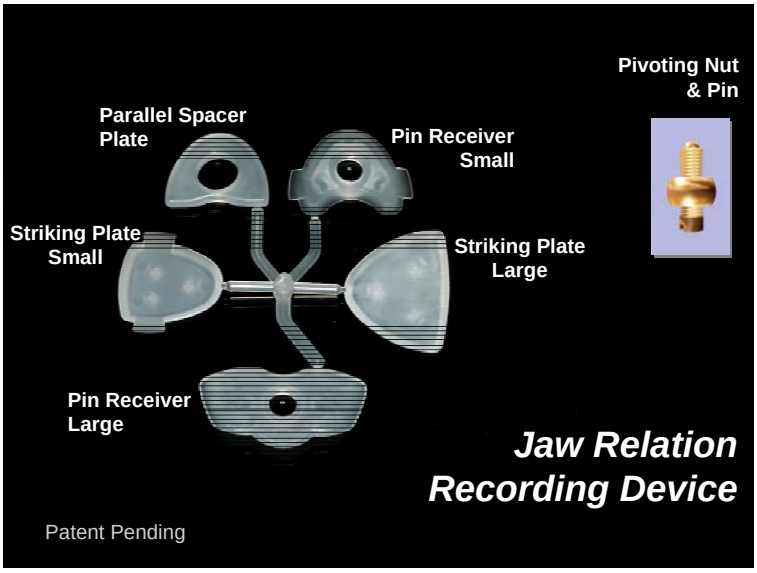

Figure 1

I. Using the Jaw Recorder For Centric Relation Recording Of The Edentulous Patient

I. (A) Mounting the Recorder

Resin baseplates are fabricated on casts made from the patient's final denture impressions: One for the maxilla, and one for the mandible.

The jaw recorder is attached to the baseplates as follows:

1) The Large Pin Receiver is removed from the sprue, and it's edges smoothed as needed.

2) Bonding agent is placed onto the ridge area of the lower baseplate and light cured.

3) A ribbon of light cured resin is placed long the anterior ridge of the baseplate, extending approximately from second bicuspid to second bicuspid.

4) The Pin Receiver is pressed into the resin, with the circular projection facing upward. A small amount of resin is placed over the top of the Receiver edge, for further stabilization. The Receiver should be positioned parallel to the retromolar pads, and slightly below their height. The assembly is placed in a light curing unit until fully hardened.

> Note: Resin material must not be allowed to set within the interior of the circular projection, as this opening will house the Pivoting Nut.

5) The Parallel Spacing Plate (PSP) is placed onto the Pin Receiver. This simply snaps into position on the circular projection.

6) Bonding agent is applied to the palatal area of the maxillary base, and light cured.

7) Light cured resin is placed into the palatal vault of the maxillary resin base. The Maxillary Striking Plate is compressed into the resin. The Striking Plate is held against the mounted PSP, to approximate a parallel position against the Pin Receiver. The maxillary assembly is placed into a light curing unit until fully hardened.

8) The PSP is now removed from the Pin Receiver.

9) The Pivoting Nut is placed into the cylindrical opening in the Pin Receiver with thumb/ finger pressure.

> Note: The Nut has an extremely tight fit within the Receiver - a considerable amount of force is required to fully seat the Nut. Maintaining this friction is necessary for proper function of the Nut and Pin; as such the Nut should not be inserted until the patient appointment.

10) With the Nut in place, the Pin may be inserted into the threads of the Nut, with the rounded end facing upward.

The Jaw Recorder assembly is now completed, and can be used to record the patient's Centric Relation.

I. (B) Recording Centric Relation

1) Reference points are placed on the patient's nose and chin in the form of dots.

2) A caliper is set to the distance between the dots at the patient's desired OVD (Occlusal Vertical Dimension), and locked at this measurement.

> Note: OVD can be determined in any manner of the operator's choosing. The preferred method is to determine the Physiologic Rest Position, then reduce this measurement by the desired amount of Freeway Space. This Freeway Space is usually 1-5mm, depending upon the age and muscular coordination of the patient.

3) The maxillary and mandibular baseplates with the Jaw Recorder attached, are placed in the patient's mouth.

4) The Pivoting Nut should be rotated within the Pin Receiver until the Pin is perpendicular to the Striking Plate.

5) The Pin is adjusted within the Pivoting Nut, until the contact between the Pin and the Striking Plate hold the patient at the desired OVD.

6) The maxillary baseplate is removed, and the Striking Plate is painted with an inking solution.

7) After returning the baseplate to the patient's mouth, the patient is instructed to "rub" the Pin against the Striking Plate as follows: Foward, Back, Forward, Back, and Side-to-Side while retruded.

8) The maxillary baseplate is again removed, and the Striking Plate viewed for the presence of a Gothic Arch Tracing arrow. The point of this arrow is the patient's Centric Relation.

> *If the arrow is not present or is not clear, the Plate should be re-inked, and the process repeated. If the arrow persists as inadequate, Orthopedic Splint Treatment or TMJ evaluation should be considered.

9) Using a #12 round bur, a slight indentation is made at the arrow point.

10) The maxillary baseplate is returned to the mouth, and the patient is instructed to close until the Pin is seated within the indentation.

11) With the patient maintaining this position, a rigid bite registration material is injected between the maxillary and mandibular baseplates and allowed to set

12) The entire assembly is removed from the mouth in one piece, and used to mount the patient's models on the articulator.

II. Using the Jaw Recorder For Centric Relation Recording Of The Dentate or Partially Dentate Patient

II. (A) Mounting the Recorder

For a dentate or partially dentate patient, resin bases similar to orthodontic retainers are fabricated to support the Jaw Recorder. These can be fabricated in a number of designs, with the requirements being that the bases are stable within the arch, and that they provide a mounting area for the Recorder on the lingual aspect of the mandibular arch, and the palatal area of the maxillary arch. One base is required for the mandibular arch, and one for the maxillary arch.

The jaw recorder is attached to the bases as follows:

1) The Small Pin Receiver is removed from the sprue, and it's edges smoothed as needed.

2) Bonding agent is placed onto the lingual aspect of the lower base and light cured.

3) A ribbon of light cured resin is placed long the lingual aspect of the lower base, extending approximately from second bicuspid to second bicuspid.

4) The Pin Receiver is pressed into the resin, with the circular projection facing upward. A small amount of resin is placed over the top of the Receiver edge, for further stabilization. The Receiver should be positioned below the mandibular plane of occlusion, and parallel to the plane. The assembly is placed in a light curing unit until fully hardened.

5) The Parallel Spacing Plate (PSP) is placed onto the Pin Receiver. This simply snaps into position on the circular projection.

6) Bonding agent is applied to the palate of the maxillary base and light cured.

7) Light cured resin is placed into the palatal vault of the maxillary resin base. The Maxillary Striking Plate is compressed into the resin. The Striking Plate is held against the PSP, to approximate a parallel position against the Pin Receiver. The maxillary assembly is placed into a light curing unit until fully hardened.

8) The PSP is now removed from the Pin Receiver.

9) The Pivoting Nut is placed into the cylindrical opening in the Pin Receiver with thumb/ finger pressure.

> Note: The Nut has an extremely tight fit within the Receiver - a considerable amount of force is required to fully seat the Nut. Maintaining this friction is necessary for proper function of the Nut and Pin; as such the Nut should not be inserted until the patient appointment.

With the Nut in place, the Pin may be inserted into the threads of the Nut, with the rounded end facing upward.

The Jaw Recorder assembly is now completed, and can be used to record the patient's Centric Relation.

II. (B) Recording Centric Relation

1) Reference points are placed on the patient's nose and chin in the form of dots.

2) A caliper is set to the distance between the dots at the patient's desired OVD (Occlusal Vertical Dimension), and locked into position

> Note: OVD can be determined in any manner of the operator's choosing. The preferred method is to determine the Physiologic Rest Position, then reduce this measurement by the desired amount of Freeway Space. This Freeway Space is usually 1-5mm, depending upon the age and muscular coordination of the patient.

3) The maxillary and mandibular baseplates with the Jaw Recorder attached, are placed in the patient's mouth.

4) The Pivoting Nut should be rotated within the Pin Receiver until the Pin is perpendicular to the Striking Plate.

5) The Pin is adjusted within the Pivoting Nut, until the contact between the Pin and the Striking Plate hold the patient at the desired OVD. The distance between the reference dots at this position is recorded.

6) The Pin is now extended further, until the patient is able to rub the Pin against the Striking Plate without the remaining teeth impeding this movement. The amount of additional opening beyond the OVD measurement is recorded.

7) The maxillary baseplate is removed, and the Striking Plate is painted with an inking solution.

8) After returning the baseplate to the patient's mouth, the patient is instructed to "rub" the Pin against the Striking Plate as follows: Foward, Back, Forward, Back, and Side-to-Side while retruded

9) The maxillary baseplate is again removed, and the Striking Plate viewed for the presence of a Gothic Arch Tracing arrow. The point of this arrow is the patient's Centric Relation.

> *If the arrow is not present or is not clear, the Plate should be re-inked, and the process repeated. If the arrow persists as inadequate, Orthopedic Splint Treatment or TMJ evaluation should be considered.

10) Using a #12 round bur, a slight indentation is made at the arrow point.

11) The maxillary baseplate is returned to the mouth, and the patient is asked to close until the Pin is seated within the indentation.

12) With the patient maintaining this position, a rigid bite registration material is injected between the maxillary and mandibular baseplates and allowed to set

13) The entire assembly is removed from the mouth in one piece

14) The patient’s maxillary model is mounted to a semi- or fully-adjustable articulator with a face bow mounting procedure.

> Note: It is imperative that a face bow mounting be performed when utilizing an open-bite Centric Relation mounting. This insures that the case is mounted on the arc of closure, and that the vertical dimension can be altered without compromising the jaw relationship

15) The Jaw Recorder assembly is used to mount the lower model in the proper relationship to the upper model.

16) After mounting, the articulator’s incisal pin is closed by the same amount that the patient’s OVD was opened during the previous step (step 6). The case will now be mounted in Centric Relation at the proper OVD.

III. Using the Jaw Recorder For Equilibrating the Occlusion of a Finished Prosthesis

III. (A) Mounting the Jaw Recorder

For equilibrating complete dentures, the Jaw Recorder components are mounted directly to the finished appliances as follows:

1) The Small Pin Receiver is removed from the sprue, and it's edges smoothed as needed.

2) A small amount of bonding agent is placed onto the lingual aspect of the lower denture and light cured.

3) A ribbon of light cured resin is placed long the lingual aspect of the denture, extending approximately from second bicuspid to second bicuspid.

4) The Pin Receiver is pressed into the resin, with the circular projection facing upward. A small amount of resin is placed over the top of the Receiver edge, for further stabilization. The Receiver should be positioned below the plane of occlusion, and parallel to the plane. The assembly is placed in a light curing unit until fully hardened.

5) The Parallel Spacing Plate (PSP) is placed onto the Pin Receiver. This simply snaps into position on the circular projection.

6) A small or large Striking Plate is selected, with the requirement being that the Striking Plate fit between the teeth of the maxillary denture in the palatal vault.

7) A small amount of bonding agent is placed on the palate of the upper denture and light cured.

8) Light cured resin is placed into the palatal vault of the maxillary denture. The Maxillary Striking Plate is compressed into the resin, between the teeth. The Striking Plate is held against the PSP, to approximate a parallel position against the Pin Receiver, and the dentures are hand-articulated. The maxillary assembly is placed into a light curing unit until fully hardened.

9) The PSP is now removed from the Pin Receiver.

10) The Pivoting Nut is placed into the cylindrical opening in the Pin Receiver with thumb/ finger pressure.

> Note: The Nut has an extremely tight fit within the Receiver - a considerable amount of force is required to fully seat the Nut. Maintaining this friction is necessary for proper function of the Nut and Pin; as such the Nut should not be inserted until the patient appointment.

11)With the Nut in place, the Pin may be inserted into the threads of the Nut, with the rounded end facing upward.

The Jaw Recorder assembly is now completed, and can be used equilibrate the dentures.

III. (B) Denture Equilibration

When mounted on the finished prostheses, the Pin and Striking Plate of the Jaw Recorder perform 2 functions. 1) They act as a central bearing point, stabilizing the appliances through constant, centralized pressure. 2) The pin can be adjusted until the teeth are slightly apart, and then slowly closed. Through this gradual closure, the smallest occlusal prematurities can be discerned and appropriately adjusted. The procedure is as follows:

1) The maxillary and mandibular dentures with the Jaw Recorder attached, are placed in the patient's mouth.

2) The Pivoting Nut should be rotated within the Pin Receiver until the Pin is perpendicular to the Striking Plate.

3) The Pin is lengthened within the Pivoting Nut, until the dentures are not in occlusal contact with each other.

4) The Pin is shortened in small increments, until the patient reports first occlusal contact.

5) Articulating paper is used to identify this prematurity, and appropriate adjustment is made.

6) The Pin is again slightly shortened, and subsequent prematurities identified and adjusted. This procedure continues until even, simultaneous contacts are present bilaterally.

7) The Jaw Recorder components are removed from the denture bases, and the dentures polished.

IV. Using the Jaw Recorder For Orthopedically Repositioning the Mandible of a Denture Patient (Splint Therapy)

Many times, a denture patient will present a severely over-closed jaw position. It is important to return the facial musculature to the proper vertical position prior to final Centric Relation Recording. Muscles which are programmed to an improper occlusion will make Centric Recording difficult, and also make it difficult for the patient to adapt to the new prosthesis. Fabrication of an accurate , patient generated occlusal splint will accomplish these goals.

IV. (A) Mounting the Jaw Recorder

For fabrication of an occlusal splint, the Jaw Recorder will be mounted on the patient's existing dentures, or on duplicates of these dentures. In order to have optimal stabilization of the dentures or duplicates against the oral tissues, the dentures should be refitted with a resilient reline material prior to mounting of the Jaw Recorder.

> Note: In the following description, the term "denture" is used to describe either the actual denture, or a duplicate of the denture.

The Recorder is mounted as follows:

1) The Small Pin Receiver is removed from the sprue, and it's edges smoothed as needed.

2) A small amount of bonding agent is placed onto the lingual aspect of the lower denture and light cured.

3) A ribbon of light cured resin is placed long the lingual aspect of the denture, extending approximately from second bicuspid to second bicuspid.

4) The Pin Receiver is pressed into the resin, with the circular projection facing upward. A small amount of resin is placed over the top of the Receiver edge, for further stabilization. The Receiver should be positioned below the plane of occlusion, and parallel to the plane. The assembly is placed in a light curing unit until fully hardened.

5) The Parallel Spacing Plate (PSP) is placed onto the Pin Receiver. This simply snaps into position on the circular projection.

6) A small or large Striking Plate is selected, with the requirement being that the Striking Plate fit between the teeth of the maxillary denture in the palatal vault.

7) A small amount of bonding agent is placed on the palate of the upper denture and light cured

8) Light cured resin is placed into the palatal vault of the maxillary denture. The Maxillary Striking Plate is compressed into the resin, between the teeth. The Striking Plate is held against the PSP, to approximate a parallel position against the Pin Receiver, and the dentures are hand-articulated. The maxillary assembly is placed into a light curing unit until fully hardened.

9) The PSP is now removed from the Pin Receiver.

10) The Pivoting Nut is placed into the cylindrical opening in the Pin Receiver with thumb/ finger pressure.

> Note: The Nut has an extremely tight fit within the Receiver - a considerable amount of force is required to fully seat the Nut. This friction is necessary for proper function of the Nut and Pin; as such the Nut should not be inserted until one hour or less before the patient appointment.

11) With the Nut in place, the Pin may be inserted into the threads of the Nut, with the rounded end facing upward.

The Jaw Recorder assembly is now completed, and can be used to fabricate the occlusal splint on the lower denture or duplicated denture.

IV. (B) Splint Fabrication

The patient-generated occlusal splint is fabricated as follows:

1) Reference points are placed on the patient's nose and chin in the form of dots.

2) A caliper is set to the distance between the dots at the patient's desired OVD (occlusal Vertical Dimension), and locked into position

Note: OVD can be determined in any manner of the operator's choosing. The preferred method is to determine the Physiologic Rest Position, then reduce this measurement by the desired amount of Free-way Space. This Freeway Space is usually 1-5mm, depending upon the age and muscular coordination of the patient.

3) The maxillary and mandibular dentures / duplicates with the Jaw Recorder attached, are placed in the patient's mouth.

4) The Pivoting Nut should be rotated within the Pin Receiver until the Pin is perpendicular to the Striking Plate.
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5) The Pin is adjusted within the Pivoting Nut, until the contact between the Pin and the Striking Plate hold the patient at the desired OVD.

6) With the patient at the OVD position, the dentures are examined and adjusted so that the following criteria are met:

a) There are no tooth contacts when the patient rubs the Pin against the Striking Plate in all excursions

b) There is at least 2-3mm of posterior spacing during excursions, to allow for adequate thickness of splint acrylic

7) All areas which will not be included in the splint surface are covered with petroleum jelly, or (preferably) with a silicone-based lubricant masking product. These areas include all maxillary occlusal surfaces, and mandibular surfaces anterior to the bisucpids.

8) A tooth colored methyl or ethyl methacrylate is mixed, and monomer from this material is used to prime the mandibular posterior occlusal area.

9) When the methacrylate material reaches a “doughy” consistency, a ribbon of the material is placed bilaterally on the lower denture, in enough quantity to contact the maxillary posterior teeth when the patient closes to the previously determined OVD.

Note: Methyl and Ethyl Methacrylate odors are caustic, and should only be used in well ventilated areas. High speed suction should be placed adjacent to the patient’s mouth to control these fumes.

These Methacrylate materials also undergo a significant exothermic reaction, and care should be taken to avoid trauma to the patient.

8) After returning the denture to the patient's mouth, the patient is instructed to "rub" the Pin against the Striking Plate in all directions. This action is continued until the acrylic has set, and the exotherm dissipated.

10) The mandibular denture with the acrylic platform attached, is submerged in water within a pressure pot at 20lbs of pressure for 10 minutes. This pressure treatment will eliminate any free acrylic monomer

11) Once curing in the pressure pot is completed, the acrylic platform on the lower denture is trimmed to remove any excess acrylic that has not been shaped by the jaw movements.

12) The splint is polished, and all lubricant materials removed.

For more information about these and other removable prosthodontic procedures, refer to Dr. Massad's DVD release, "Predictable Complete Dentures: The Platinum Series", as well as to his course offerings.