

Specialized Implants and Instruments for Orthognathic Surgery

# MatrixORTHOGNATHIC™

Surgical Technique





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#### Image intensifier control

This description alone does not provide sufficient background for direct use of DePuy Synthes products. Instruction by a surgeon experienced in handling these products is highly recommended.

#### **Processing, Reprocessing, Care and Maintenance**

For general guidelines, function control and dismantling of multi-part instruments, as well as processing guidelines for implants, please contact your local sales representative or refer to:

<http://emea.depuysynthes.com/hcp/reprocessing-care-maintenance>

For general information about reprocessing, care and maintenance of Synthes reusable devices, instrument trays and cases, as well as processing of Synthes non-sterile implants, please consult the Important Information leaflet (SE\_023827) or refer to:

<http://emea.depuysynthes.com/hcp/reprocessing-care-maintenance>

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# MatrixORTHOGNATHIC™. Specialized implants and instruments for orthognathic surgery.

## Introduction

The aim of surgical fracture treatment is to reconstruct the bony anatomy and restore its function. According to the AO, internal fixation is distinguished by anatomical reduction, stable fixation, preservation of blood supply, and early, active mobilization. Plate and screw osteosynthesis has been established and clinically recognized for some time.

Keeping the AO philosophy at its core, Matrix is the new plating platform for internal fixation of the cranio-maxillofacial skeleton – addressing neuro, craniofacial, mandibular, and orthognathic surgery. Matrix is a simple yet comprehensive platform that offers flexibility and ease of use.

### Simple

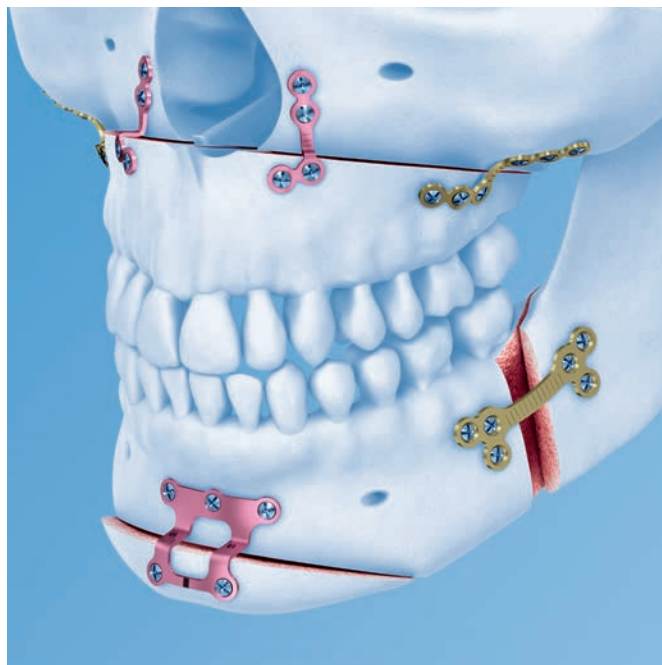
- All screws work with all plates within each Matrix system
- One blade for all screws within each Matrix system
- Color coding by strength for easy identification

### Effective

- Low plate-screw profile, where applicable
- Self retaining screws/blades
- Rounded edges on plates

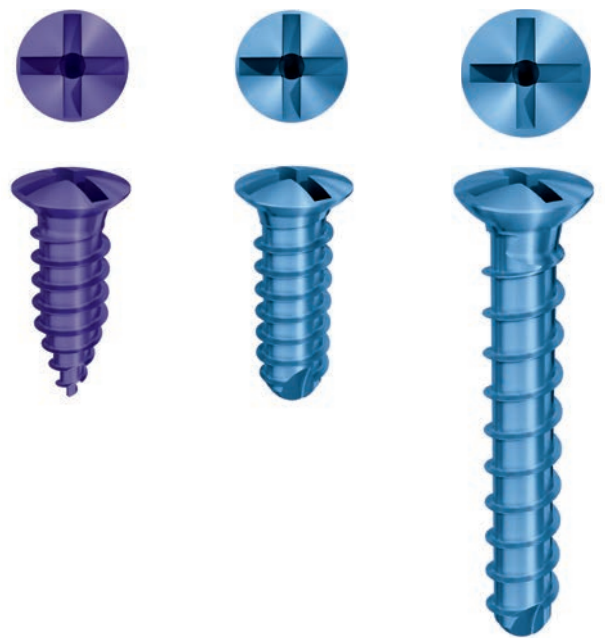
### Efficient

- Standardized instrumentation
- Reduces inventory for hospitals, without compromising clinical solutions



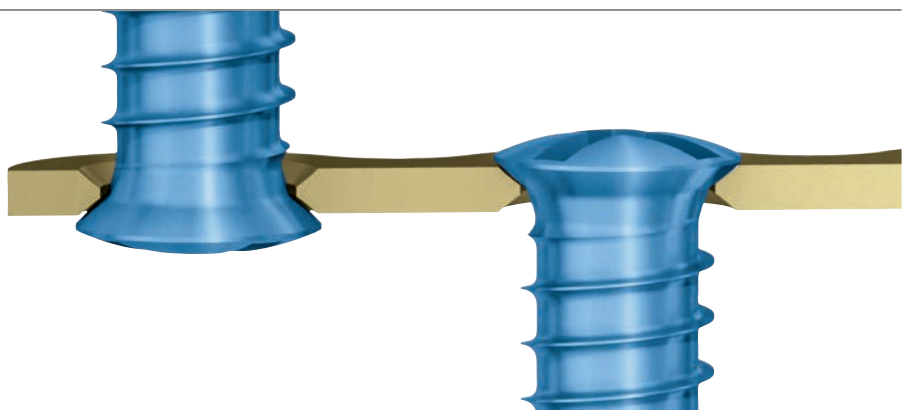
One screw diameter for all orthognathic indications

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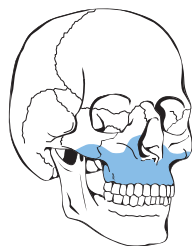
Reversible L-plates

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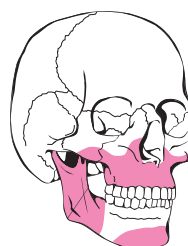


Simple yet comprehensive system  
for orthognathic surgery

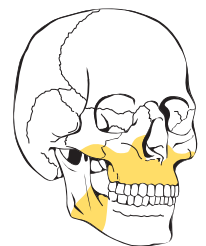
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Maxilla



Mandible

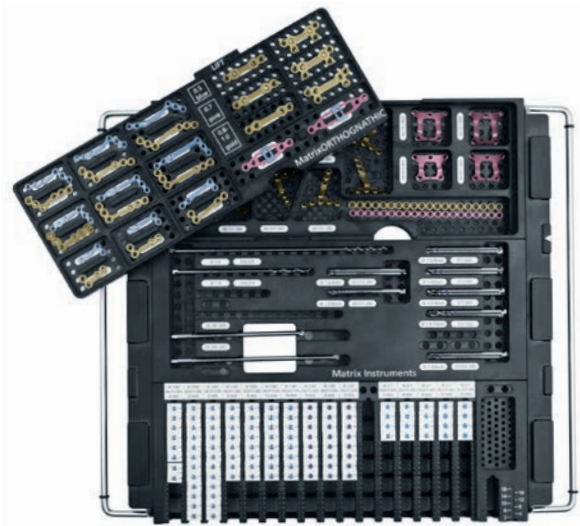


Mandible

# Features and Benefits

MatrixORTHOGNATHIC™ is a simple yet comprehensive system that offers precise implants and instruments for orthognathic surgery.

- One standard screw diameter for all orthognathic indications in the midface and mandible
- Reversible plates allow for reduced inventory (where applicable)
- Etched lines, in 1 mm increments, on implants provide visual aid for plate bending (where applicable)
- Color coding by strength for easy identification
- Compatible with MatrixMIDFACE systems
- The Implants and Instruments Module for MatrixORTHOGNATHIC has multiple auxiliary bins and it can be configured to accommodate various combinations of plates



## MatrixORTHOGNATHIC screws

*One standard screw diameter:*

- Ø 1.85 mm screws (LeFort I\*, BSSO, Genioplasty\*)
- Ø 2.1 mm screws serve as emergency screws

*Screw designs include:*

- Self-drilling (purple)
- Self-tapping (blue)
- Emergency (pink)

*Screws lengths/thread pitch include:*

- 4 mm–8 mm/0.6 mm thread pitch
- 10 mm–28 mm/1.0 mm thread pitch

*Screw recess design allows for:*

- Self-retention for screwdriver blades
- Reduced screwdriver blade cam-out\*\*
- Easy screw/blade re-engagement



Made from titanium alloy.

### \*Notes:

- A Ø 1.5 mm MatrixMIDFACE screw is also compatible with the MatrixORTHOGNATHIC System.
- See page 19 and 22 “Precautions” for limitations regarding mandibular applications.
- See page 34 for ordering information.

\*\* Data on file at Synthes

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## MatrixORTHOGNATHIC plates

### Maxillary plates:

- Low profile
- All plates made from commercially pure titanium



#### *L-plates:*

- Straight and anatomic design
- Reversible design
- Bar width increases as bar length gets longer
- Etched lines, in 1 mm increments, to facilitate bending and placement
- Plates available in 0.5 mm (blue), 0.7 mm (pink) and 0.8 mm (gold) thicknesses



#### *Maxillary plates:*

- Prebent maxillary plates with 2 mm to 10 mm offsets
- Left and right design
- For ease of identification offset and site (L=Left or R=Right) etched on plates
- Plates available in 0.8 mm thickness (gold)



#### *Adaption plates:*

- Plates available with 20 holes
- Plates available in 0.5 mm (blue), 0.7 mm (pink), and 0.8 mm (gold) thicknesses



#### *I-plates:*

- Plates available in 0.5 mm (blue) and 0.7 mm (pink) thicknesses

### Sagittal split plates:

- Etched lines, in 1 mm increments, to facilitate bending and placement
- Low profile
- All plates made from commercially pure titanium



#### *SplitFix plates:*

- Double-strut design with a low profile
- Slider allows intraoperative correction of occlusion during plate fixation
- Plates available 0.7 mm (pink) thickness



#### *Curved and straight BSSO plates:*

- Both designs with 6 mm to 12 mm bar lengths
- Plates available in 1.0 mm (gold) thickness



### Genioplasty plates:

- Prebent chin plates with 4 mm to 10 mm offsets
- For ease of identification offset etched on plates
- Etched midline for easy centering
- Low profile
- Plates available in 0.7 mm (pink) thickness
- Plates made from commercially pure titanium



### Vertical ramus osteotomy (VRO) plates:

- Prebent VRO plates with 0 mm to 6 mm offsets
- For ease of identification offset and site (L = Left or R = Right) etched on plates
- Left and right design
- Low profile
- Plates available in 0.7 mm (pink) thickness
- Plates made from commercially pure titanium

# MatrixORTHOGNATHIC Color Coding

The color coding of implants in the MatrixORTHOGNATHIC system helps to identify the level of strength. The color-coding scale for plates and screws conforms to the Matrix System Strength color-coding scheme:

## Matrix Plates

- Blue = 0.5 mm thick plates
- Pink = 0.7 mm thick plates
- Gold = 0.8 mm thick and greater plates

## Matrix Screws

- Blue = Ø 1.85 mm self-tapping screws
- Purple = Ø 1.85 mm self-drilling screws
- Pink = Ø 2.1 mm self-tapping emergency screws

Also available:

- Bronze = self-tapping Ø 1.5 mm MatrixMIDFACE screws
- Silver = self-drilling Ø 1.5 mm MatrixMIDFACE screws

## Notes:

- A Ø 1.5 mm MatrixMIDFACE screw is also compatible with the MatrixORTHOGNATHIC system.
- See page 19 and 22 “Precautions” for limitations regarding mandibular applications.
- See page 34 for ordering information.

## Matrix Ø 1.85 mm screws

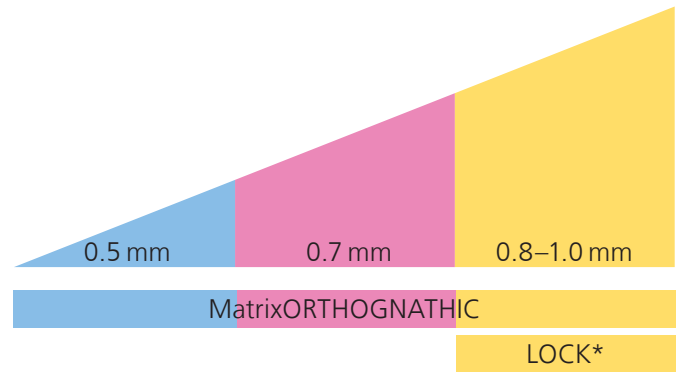
Screw diameter	Lengths	Thread pitch	Drill bit diameter
1.85 mm	4–8 mm	0.6 mm	1.4 mm
1.85 mm	10–28 mm	1.0 mm	1.4 mm, 1.5 mm**

## Matrix Ø 2.1 mm screws (emergency)

Screw diameter	Lengths	Thread pitch
2.1 mm	4–8 mm	0.6 mm
2.1 mm	10–18 mm	1.0 mm

## MatrixMIDFACE Ø 1.5 mm screws

Screw diameter	Lengths	Thread pitch	Drill bit diameter
1.5 mm	4–8 mm	0.6 mm	1.1 mm
1.5 mm	10–18 mm	0.6 mm	1.25 mm



\* For surgical technique and product information for MatrixORTHOGNATHIC LOCK see DSEM/CMF/0716/0145.

\*\* A Ø 1.5 mm drill bit can be used in dense bone to facilitate screw insertion from 12–28 mm lengths.



# AO-Principles

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In 1958, the AO formulated four basic principles, which have become the guidelines for internal fixation<sup>1,2</sup>. They are:

## **Anatomic reduction**

Fracture reduction and fixation to restore anatomical relationships. A comprehensive implant and instrument selection offers the ability to address most simple and complex fixation needs.

## **Stable fixation**

Stability by rigid fixation or splintage, as the personality of the fracture and the injury requires. The Matrix-ORTHOGNATHIC plates and screws are optimized to achieve stable bone fixation.

## **Preservation of blood supply**

Preservation of the blood supply to soft tissue and bone by careful handling and gentle reduction techniques.

## **Early, active mobilization**

Early and safe mobilization of the part and patient. The MatrixORTHOGNATHIC system implants, combined with AO technique, provide stable fixation enough to allow a functional aftercare.

# Intended Use, Indications, Contraindications, Warnings/Precautions, General Adverse Events, Device Specific Adverse Events, MRI Information

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## Intended Use

The MatrixORTHOGNATHIC System is intended for use as a stable internal bone fixation system in orthognathic surgery (surgical correction of dentofacial deformities).

## Indications

The MatrixORTHOGNATHIC system is indicated for use as a stable internal bone fixation system in oral, craniofacial and maxillofacial surgery such as: trauma, reconstruction, orthognathic surgery (surgical correction of dentofacial deformities) of the craniofacial skeleton, mandible and chin, and mandibular maxillary osteotomy treatment of obstructive sleep apnea.

## Contraindications

No specific contraindications.

## Warnings:

- Using an internal fixation system on patients with active or latent infection may cause potential risks which may include construct failure and deterioration of infection. It is at the physician's discretion to evaluate the patient's medical conditions and select a fixation device most appropriate for the individual patient. It is also at the physician's discretion to consider all other necessary treatment methods to effectively manage the infection.
- Confirm the quality of bone at the selected plate position. Using an internal fixation system on patients with insufficient quantity or quality of bone may cause potential risks which may include device loosening and construct failure. It is at the physician's discretion to evaluate the patient's medical conditions and select a fixation device most appropriate for the individual patient.
- These devices can break during use (when subjected to excessive forces or outside the recommended surgical technique). While the surgeon must make the final decision on removal of the broken part based on associated risk in doing so, we recommend that whenever possible and practical for the individual patient, the broken part should be removed.
- Steel may elicit an allergic reaction in patients with hypersensitivity to nickel.
- Instruments and screws may have sharp edges or moving joints that may pinch or tear user's glove or skin.

- Previous changes in the temporomandibular joint may affect surgical outcome.
- Do not excessively bend the plates as it may produce internal stresses which may become the focal point for eventual breakage of the implant.
- Do not alter the bend of the prebent plates by more than 1 mm in either direction.
- The slider is used strictly for intraoperative use only; do not leave it in situ.
- Take care to remove all fragments that are not fixated during the surgery.

## Precautions:

- Physicians should inform their patients about the implant's load restrictions and develop a plan for postoperative behavior and increasing physical loads.
- Predrilling is recommended in dense bone.
- Confirm the quality of bone at the selected plate position.
- Tighten screws in a controlled manner. Applying too much torque to the screws may cause screw/plate deformation, or bone stripping.
- Surgical implants must never be reused. An explanted metal implant must never be reimplanted. Even though the device appears undamaged, it may have small defects and internal stress patterns which could lead to breakage.
- Check instruments periodically for wear or damage.
- Replace worn or damaged instruments prior to use.
- Important considerations in achieving quality outcomes for orthognathic surgery in growing patients include accurate diagnosis, proper treatment planning, and appropriate age sequencing of procedures.<sup>3</sup>
- Damage to developing tooth roots may result in dentoosseous ankylosis and localized dentoalveolar growth impairment.<sup>4</sup>

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### General Adverse Events

As with all major surgical procedures, risks, side effects and adverse events can occur. While many possible reactions may occur, some of the most common include: Problems resulting from anesthesia and patient positioning (e.g. nausea, vomiting, dental injuries, neurological impairments, etc.), thrombosis, embolism, infection, nerve and/or tooth root damage or injury of other critical structures including blood vessels, excessive bleeding, damage to soft tissues, incl. swelling, abnormal scar formation, functional impairment of the musculoskeletal system, pain, discomfort or abnormal sensation due to the presence of the device, allergy or hypersensitivity reactions, side effects associated with hardware prominence, loosening, bending, or breakage of the device, mal-union, non-union or delay union which may lead to breakage of the implant, reoperation.

### Device Specific Adverse Events

Transient and in rare cases permanent sensation disruption (e.g. nerve traction) may occur when large maxillary/mandibular advancements are performed. Skeletal relapse leading to malocclusion may occur when large maxillary/mandibular advancements are performed. Permanent pain and/or discomfort may occur due to inappropriate placement/selection of the implants.

### Magnetic Resonance Environment

#### **Torque, Displacement and Image Artifacts according to ASTM F 2213-06, ASTM F 2052-14 and ASTM F 2119-07**

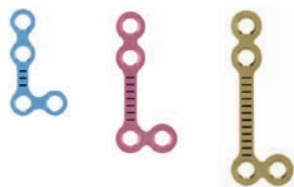

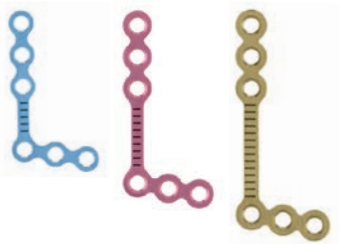

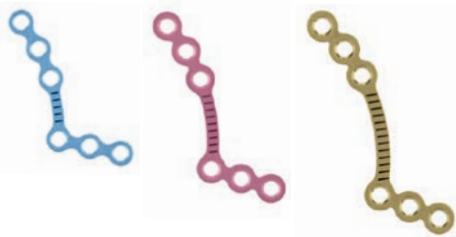

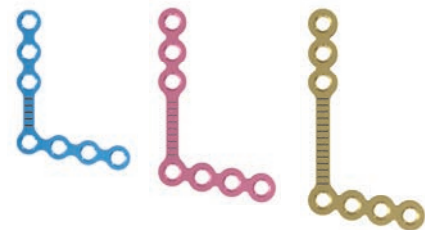

Non-clinical testing of worst case scenario in a 3 T MRI system did not reveal any relevant torque or displacement of the construct for an experimentally measured local spatial gradient of the magnetic field of 5.4 T/m. The largest image artifact extended no more than 56 mm from the construct when scanned using the-Gradient Echo (GE). Testing was conducted on a 3 T MRI system.















#### **Radio-Frequency-(RF-)induced heating according to ASTM F 2182-11a**

Non-clinical electromagnetic and thermal simulations of worst case scenario lead to temperature rises of 3.16°C (1.5 T) and 2.53°C (3 T) under MRI Conditions using RF Coils (whole body averaged specific absorption rate [SAR] of 2 W/kg for 15 minutes).

**Precautions:** The above mentioned test relies on non-clinical testing. The actual temperature rise in the patient will depend on a variety of factors beyond the SAR and time of RF application. Thus, it is recommended to pay particular attention to the following points:

- It is recommended to thoroughly monitor patients undergoing MR scanning for perceived temperature and/or pain sensations.
- Patients with impaired thermoregulation or temperature sensation should be excluded from MR scanning procedures.
- Generally, it is recommended to use a MR system with low field strength in the presence of conductive implants. The employed specific absorption rate (SAR) should be reduced as far as possible.
- Using the ventilation system may further contribute to reduce temperature increase in the body.

Implant	Picture	Recommended anatomic location	Indication(s)
Matrix 90-degree L-Plate, 2+2 holes, reversible; 0.5, 0.7 and 0.8 mm thick		Maxilla 	Orthognathic Trauma Reconstruction
Matrix L-Plate, 3+3 holes, reversible; 0.5, 0.7 and 0.8 mm thick		Maxilla 	Orthognathic Trauma Reconstruction
Matrix Anatomic L-Plate, 3+3 holes, reversible; 0.5, 0.7 and 0.8 mm thick		Maxilla 	Orthognathic Trauma Reconstruction
Matrix L-Plate, 4+3 holes, reversible; 0.5, 0.7 and 0.8 mm thick		Maxilla 	Orthognathic Trauma Reconstruction

Implant	Picture	Recommended anatomic location	Indication(s)
Matrix L-Plate, with centre space 7 mm, 2+2 holes; 0.5 and 0.7 mm thick		Maxilla 	Orthognathic Trauma Reconstruction
Matrix Maxillary Plate, pre-bent, left and right; 0.8 mm thick		Maxilla 	Orthognathic Trauma Reconstruction
Matrix Sagittal Split Plate, curved, with intersection bar, 6 holes; 1.0 mm thick		Mandible 	Orthognathic Trauma
Matrix Sagittal Split Plate, straight, with intersection bar, 4 holes; 1.0 mm thick		Mandible 	Orthognathic Trauma
Matrix SplitFix Plate, 4 holes; 0.7 mm thick		Mandible 	Orthognathic
Matrix Chin Plate, double curved, with offset, 5 holes; 0.7 mm thick		Mandible 	Orthognathic
Matrix Vertical Ramus Osteotomy Plate, with offset, left and right; 0.7 mm thick		Mandible 	Orthognathic

# Confirmation of Screw and Drill Bit Length

## 1. Confirm length of drill bits

The graphic case provides a slot with etched drill length markers to facilitate the confirmation of the correct drill bit length. Choose a drill bit. Place it in the slot (in place of the screw) as shown in the image under Section 2 below. Make sure that the stop of the drill bit (shoulder) rests against the inner edge at the lower end of the slot (see image under Section 2 below). Read the number adjacent to the drill bit tip to identify the drill bit's length.

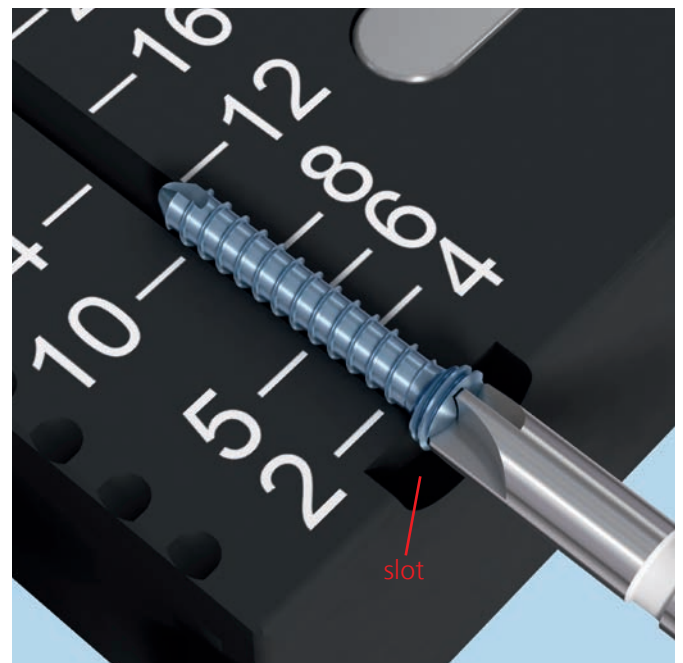


## 2. Confirm length of the screws for plate fixation (Matrix Screws)

### Instruments

03.503.201/202/203	Screwdriver Shafts Matrix-MIDFACE, short, self-holding, with Hexagonal Coupling, lengths 52/76/96 mm
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The graphic case provides a slot with etched screw length markers to facilitate the confirmation of the correct screw length. Choose a screw for plate fixation. Pick up the screw using one of the self-holding screwdriver shafts. Place the screw in the slot as shown in the image. Make sure that the bottom of the screw head rests against the bottom of the counterbore at the lower end of the slot. Read the number adjacent to the screw tip to confirm screw length.





# Maxillary/LeFort I Plate Fixation

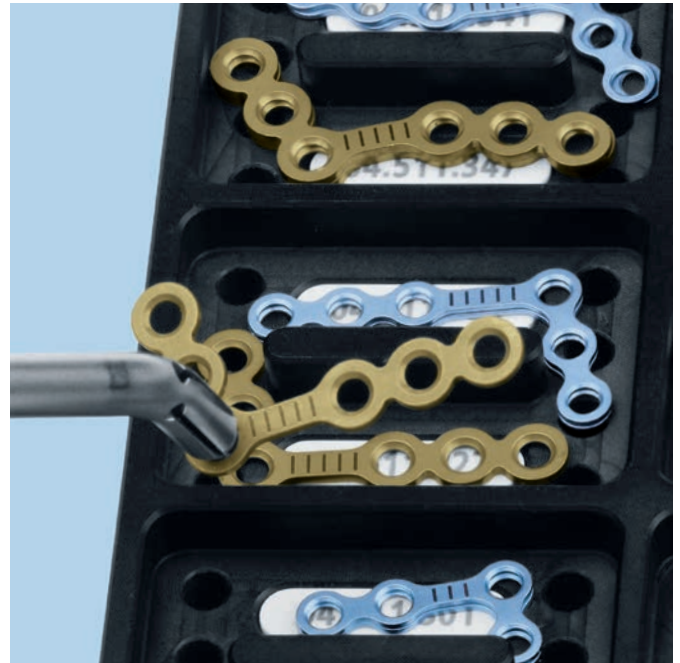
## 1. Select plate design

After the osteotomy has been performed and the new position of the maxilla has been established, select the appropriate plate shape and thickness that best suits the bony anatomy, treatment objective and the quantity and quality of bone.

L-plates and 90 degree L-plates are recommended for both medial and lateral buttress fixation.

Prebent Maxillary plates are recommended for medial buttress fixation.

Anatomic L-Plates are recommended for lateral buttress fixation.



## 2. Select and form bending template

### Instruments

03.511.360 –	Bending Templates for
03.511.362	Matrix Anatomic L-Plates, 3+3 holes
03.511.363 –	Bending Templates for
03.511.365	Matrix L-Plates, 3+3 holes
03.511.366 –	Bending Templates for
03.511.368	Matrix 90° L-Plates, 2+2 holes

Select the appropriate shape and length of bending template according to the plate selection and form it to the bony anatomy.

**Precaution:** Bending templates should not be used as an implant or drill guide for surgical planning.



### 3. Adapt plate to the bone

#### Instruments

03.503.035	Bending Pliers 3D for MatrixMIDFACE Plates
03.503.038	Bending Pliers for MatrixMIDFACE Plates
03.503.039	Plate Cutter for MatrixMIDFACE

Cut and contour the plate according to the bending template and bony anatomy using the plate cutter and the bending pliers, respectively. Bend the plate between the holes as necessary. Ensure that the plate is adapted to the bony anatomy.

**Note:** Etched lines, in 1 mm increments, to facilitate bending and placement.

#### Precautions:

- Confirm that plate positioning, drill bit and screw length allow for adequate clearance of nerves, tooth buds and/or tooth roots, and the edge of the bone.
- Cut the implant adjacent to the screw holes.
- Take care to protect soft tissue from trimmed edges.

#### Warnings:

- Do not alter the bend of the prebent plates by more than 1 mm in either direction.
- Do not excessively bend the plates as it may produce internal stresses which may become the focal point for eventual breakage of the implant.





## 4. Fixate plate to the bone

If pilot hole is desired, select the appropriate drill bit diameter and length (see page 6) to allow for the adequate clearance of nerves, tooth buds and/or tooth roots.

Insert the appropriate length  $\varnothing$  1.85 mm Matrix screws to fixate the plate to the underlying bone.

**Note:** Self-tapping and self-drilling screws are available.

### Precautions:

- Confirm that plate positioning, drill bit and screw length allow for adequate clearance of nerves, tooth buds and/or tooth roots, and the edge of the bone.
- Drill speed rate should never exceed 1,800 rpm, particularly in dense, hard bone.
- Higher drill speed rates can result in:
  - thermal necrosis of the bone
  - soft tissue burns
  - an oversized hole, which can lead to reduced pullout force, increased ease of the screws stripping in bone, suboptimal fixation, and/or the need for emergency screws.
- Always irrigate during drilling to avoid thermal damage to the bone.
- After implant placement is complete, irrigate and apply suction for removal of debris potentially generated during implantation or removal.
- Avoid drilling over nerve or tooth roots.
- Take care while drilling as to not damage, entrap, or tear a patient's soft tissue or damage critical structures.
- Be sure to keep drill clear of loose surgical materials.
- Handle devices with care and dispose worn bone cutting instruments in an approved sharps container.
- Use the appropriate amount of screws to achieve stable fixation for fractures. Stable fixation requires a minimum of two screws per bone segment for osteotomies.



**Warning:** Instruments and screws may have sharp edges or moving joints that may pinch or tear user's glove or skin.

# Sagittal Split Fixation – BSSO Plate

## 1. Select plate design

After the sagittal split osteotomy, adjust the occlusion and the joint-bearing segment, and stabilize by inter-maxillary fixation.

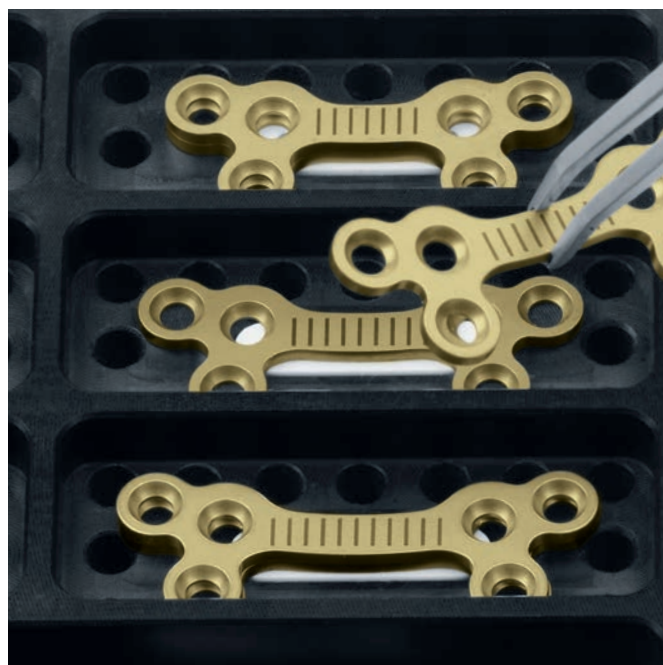
Select the appropriate plate shape that best suits the bony anatomy, treatment objective and the quantity and quality of bone.

The straight and curved sagittal split plates are available for mono-cortical screw placement.

The SplitFix plate with adjustable slider is also available if intraoperative occlusal adjustments are necessary (see additional technique steps on pages 20 to 24).

### Notes:

- **For bicortical screw placement, Ø 1.85 mm Matrix screws are available in lengths of up to 28 mm (position screws). Pre-drill using the appropriate drill bit diameter and length (see page 6) without stop.**
- **The 10–28 mm length screws have a larger head diameter for better visibility and force transmission.**



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## 2. Select and form bending template

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### Instruments

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03.511.369 – 03.511.372	Bending Template for Matrix Plate, for sagittal split, curved, 6 holes
03.511.373 – 03.511.376	Bending Template for Matrix Plate, for sagittal split, straight, 4 holes

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Select the appropriate shape and length of bending template according to the plate selection and form it to the bony anatomy.

**Precaution:** Bending templates should not be used as an implant or drill guide for surgical planning.



### 3. Adapt plate to the bone

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#### Instrument

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03.503.038	Bending Pliers for MatrixMIDFACE Plates (2 required)
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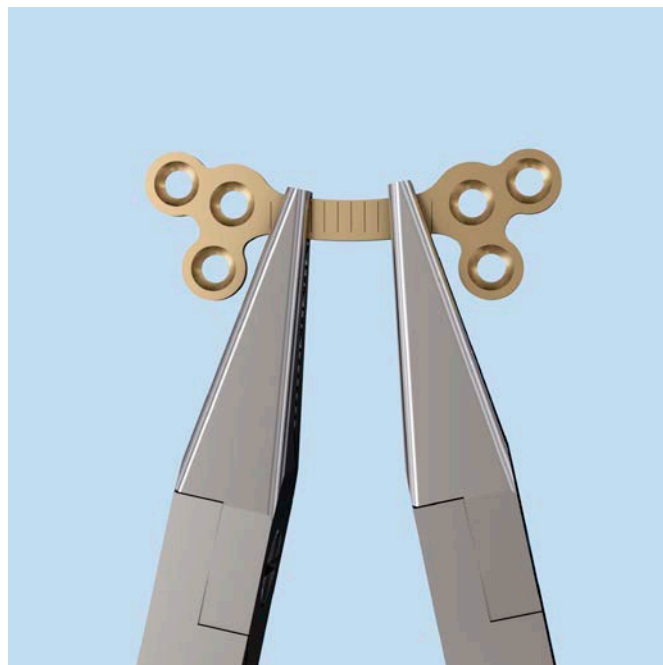
Contour the plate according to the bending template and bony anatomy using the bending pliers. Bend the plate between the holes as necessary. Ensure that the plate is adapted to the bony anatomy.

**Note:** Etched lines, in 1 mm increments, to facilitate bending and placement.

#### Precautions:

- Confirm that plate positioning, drill bit and screw length allow for adequate clearance of nerves, tooth buds and/or tooth roots, and the edge of the bone.
- Cut the implant adjacent to the screw holes.
- Take care to protect soft tissue from trimmed edges.

**Warning:** Do not excessively bend the plates as it may produce internal stresses which may become the focal point for eventual breakage of the implant.



## 4. Fixate plate to the bone

If pilot hole is desired, select the appropriate drill bit diameter and length (see page 6) to allow for the adequate clearance of nerves, tooth buds and/or tooth roots.

Insert the appropriate length  $\varnothing$  1.85 mm Matrix screws to fixate the plate to the underlying bone.

**Note:** Self-tapping and self-drilling screws are available.

### Precautions:

- Confirm that plate positioning, drill bit and screw length allow for adequate clearance of nerves, tooth buds and/or tooth roots, and the edge of the bone.
- Drill speed rate should never exceed 1,800 rpm, particularly in dense, hard bone.
- Higher drill speed rates can result in:
  - thermal necrosis of the bone
  - soft tissue burns
  - an oversized hole, which can lead to reduced pullout force, increased ease of the screws stripping in bone, suboptimal fixation, and/or the need for emergency screws.
- Always irrigate during drilling to avoid thermal damage to the bone.
- After implant placement is complete, irrigate and apply suction for removal of debris potentially generated during implantation or removal.
- Avoid drilling over nerve or tooth roots.
- Take care while drilling as to not damage, entrap, or tear a patient's soft tissue or damage critical structures.
- Be sure to keep drill clear of loose surgical materials.
- Handle devices with care and dispose worn bone cutting instruments in an approved sharps container.
- The  $\varnothing$  1.5 mm MatrixMIDFACE screw is not recommended for sagittal split fixation.
- Use the appropriate amount of screws to achieve stable fixation for fractures. Stable fixation requires a minimum of two screws per bone segment for osteotomies.



**Warning:** Instruments and screws may have sharp edges or moving joints that may pinch or tear user's glove or skin.

# Sagittal Split Fixation – SplitFix Plate

## 1. Select plate design

The SplitFix plates with self-holding slider are available for cases in which intra-operative occlusal adjustments are necessary.

After sagittal split osteotomy, adjust the occlusion and the proximal segment, and stabilize by intermaxillary fixation. Select the appropriate SplitFix plate that best suits the bony anatomy, treatment objective and the quantity and quality of bone.



## 2. Select and form bending template

### Instruments

03.511.377 –	Bending template for Matrix
03.511.378	SplitFix Plate, 4 holes

Select the appropriate length of bending template according to the plate selection and form it to the bony anatomy.

**Precaution:** Bending templates not to be used as an implant or drill guide for surgical planning.





### 3. Adapt plate to the bone

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#### Instrument

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03.503.038	Bending Pliers for MatrixMIDFACE Plates
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Contour the plate according to the bending template and bony anatomy using the bending pliers. Bend the plate between the holes as necessary. Ensure that the plate is adapted to the bony anatomy.

#### Notes:

- Etched lines, in 1 mm increments, to facilitate bending and placement.
- Since the slider will not slide in the contoured section, the plate should be contoured as far proximally as possible.

**Precaution:** Confirm that plate positioning, drill bit and screw length allow for adequate clearance of nerves, tooth buds and/or tooth roots and the edge of the bone.

**Warning:** Do not excessively bend the plates as it may produce internal stresses which may become the focal point for eventual breakage of the implant.



## 4. Primary plate fixation

If pilot hole is desired, select the appropriate drill bit diameter and length (see page 6) to allow for the adequate clearance of nerves, tooth buds and/or tooth roots.

Fixate the SplitFix plate to the bone by drilling and inserting the proper length  $\varnothing$  1.85 mm Matrix Screws in the specified sequence as shown in Figure 2 (1 2 3). Screws should be placed mono-cortically.

**Note:** Self-tapping and self-drilling screws are available.

### Precautions:

- Confirm that plate positioning, drill bit and screw length allow for adequate clearance of nerves, tooth buds and/or tooth roots, and the edge of the bone.
- Drill speed rate should never exceed 1,800 rpm, particularly in dense, hard bone.
- Higher drill speed rates can result in:
  - thermal necrosis of the bone
  - soft tissue burns
  - an oversized hole, which can lead to reduced pullout force, increased ease of the screws stripping in bone, suboptimal fixation, and/or the need for emergency screws.
- Always irrigate during drilling to avoid thermal damage to the bone.
- After implantation is complete, irrigate and apply suction for removal of debris potentially generated during implantation or removal.
- Avoid drilling over nerve or tooth roots.
- Take care while drilling as to not damage, entrap, or tear a patient's soft tissue or damage critical structures.
- Be sure to keep drill clear of loose surgical materials.
- Handle devices with care and dispose worn bone cutting instruments in an approved sharps container.
- The  $\varnothing$  1.5 mm MatrixMIDFACE screw is not recommended for sagittal split fixation.
- The  $\varnothing$  2.1 mm self-tapping screw is not recommended for slider fixation.
- Use the appropriate amount of screws to achieve stable fixation for fractures. Stable fixation requires a minimum of two screws per bone segment for osteotomies.

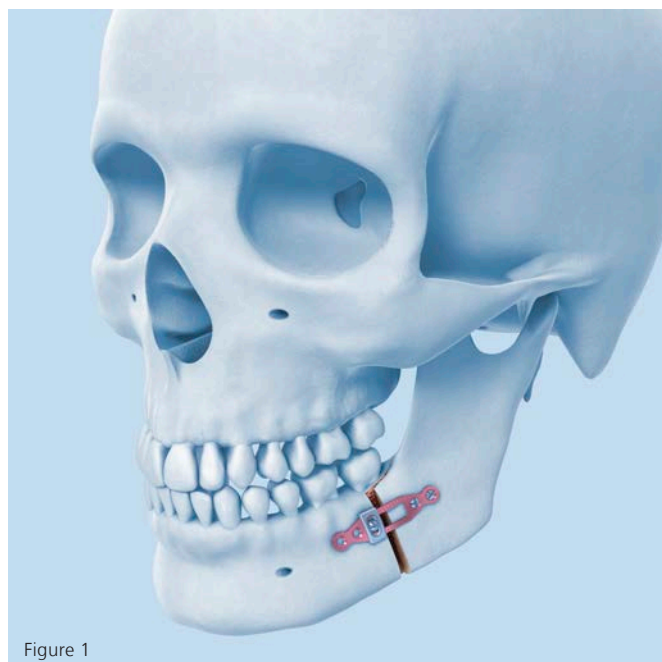


Figure 1

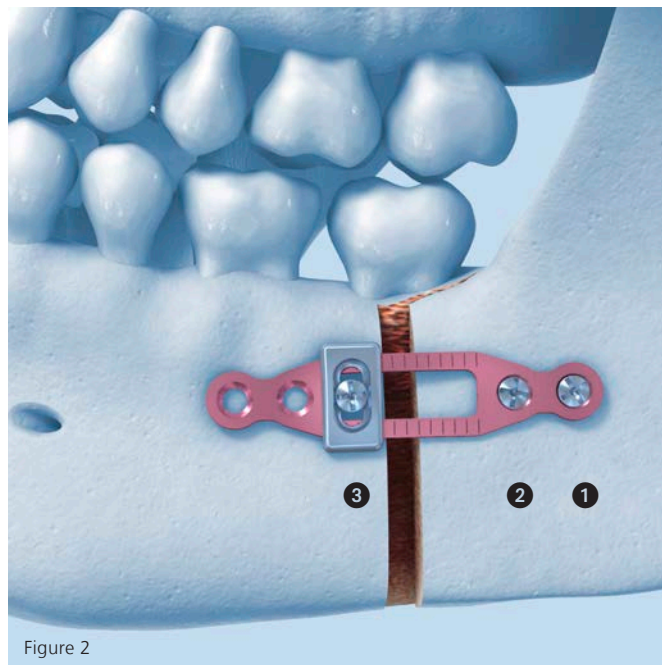


Figure 2

**Warning:** Instruments and screws may have sharp edges or moving joints that may pinch or tear user's glove or skin.



## 5. Intraoperative correction of occlusion

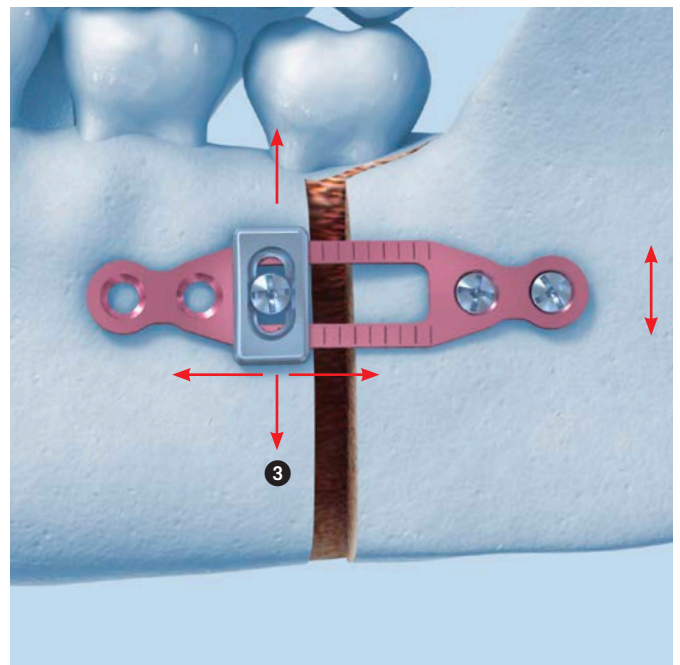
Release the intermaxillary fixation and inspect the occlusion. If the occlusion needs to be adjusted, loosen the screw ③ in the slider plate.

The distal bone segment can now be shifted horizontally and vertically until the occlusion has been corrected.

Retighten the screw ③ in the slider.

The process can be repeated as many times as necessary.

**Precaution:** Ensure that the desired condylar positioning has been achieved.



## 6. Final plate fixation

Using an appropriate drill bit diameter and length (see page 6) to pre-drill, insert the remaining  $\varnothing$  1.85 mm Matrix screws of the appropriate length in holes ④ and ⑤.

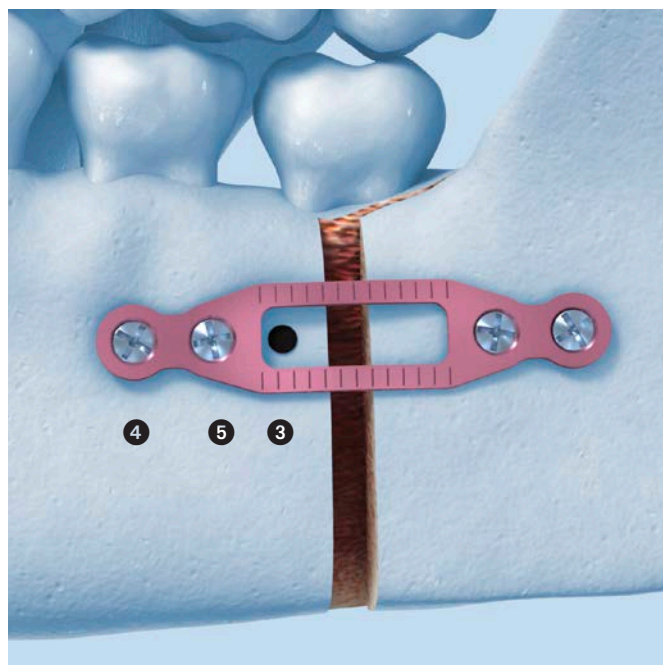
Remove the screw ③ and slider plate component. Repeat this step on contralateral side. Ensure fixation of the mandible is adequate to withstand the sagittal forces.

### Precautions:

- Drill speed rate should never exceed 1,800 rpm, particularly in dense, hard bone.
- Higher drill speed rates can result in:
  - thermal necrosis of the bone
  - soft tissue burns
  - an oversized hole, which can lead to reduced pullout force, increased ease of the screws stripping in bone, suboptimal fixation, and/or the need for emergency screws.
- Always irrigate during drilling to avoid thermal damage to the bone.
- After implantation is complete, irrigate and apply suction for removal of debris potentially generated during implantation or removal.
- Avoid drilling over nerve or tooth roots.
- Take care while drilling as to not damage, entrap, or tear a patient's soft tissue or damage critical structures.
- Be sure to keep drill clear of loose surgical materials.
- Handle devices with care and dispose worn bone cutting instruments in an approved sharps container.
- Use the appropriate amount of screws to achieve stable fixation for fractures. Stable fixation requires a minimum of two screws per bone segment for osteotomies.

### Warnings:

- The slider is used strictly for intraoperative use only; do not leave it in situ.
- Previous changes in the temporomandibular joint may affect surgical outcome.
- Instruments and screws may have sharp edges or moving joints that may pinch or tear user's glove or skin.



# Genioplasty Fixation

## 1. Select plate design

After the osteotomy has been performed and the position/advancement of the genioglossus segment has been established, select the plate size that best suits the bony anatomy, treatment objective, and the quantity and quality of bone.

The prebent double curved Matrix chin plates are available in 4 mm to 10 mm offsets.



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## 2. Adapt plate to the bone

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### Instruments

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03.503.038	Bending Pliers for MatrixMIDFACE Plates (2 required)
------------	--

---

Contour the selected plate to the bone using the bending pliers. Bend the plate between the holes as necessary. Ensure the plate is adapted to the bony anatomy.

**Note:** Etched centerline helps with plate alignment on the bone.

**Precaution:** Confirm that plate positioning, drill bit and screw length allow for adequate clearance of nerves, tooth buds and/or tooth roots, and the edge of the bone.

**Warnings:**

- Do not alter the bend in the prebent plates to achieve more than a 1 mm adjustment in either direction.
- Do not excessively bend the plates as it may produce internal stresses which may become the focal point for eventual breakage of the implant.



### 3. Fixate plate to the bone

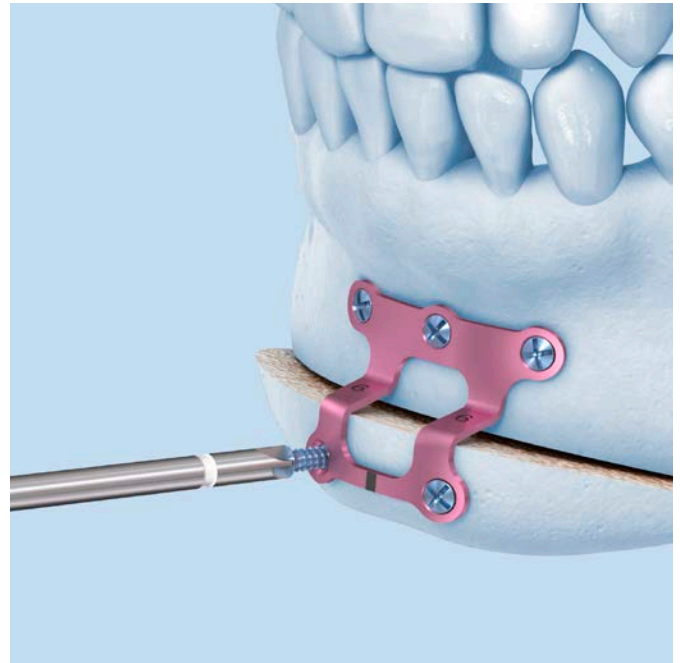
If pilot hole is desired, select the appropriate drill bit diameter and length (see page 6) to allow for the adequate clearance of nerves, tooth buds and/or tooth roots.

Insert the appropriate length  $\varnothing$  1.85 mm Matrix screws to fixate the plate to the underlying bone.

**Note:** Self-tapping and self-drilling screws are available.

#### Precautions:

- Confirm that plate positioning, drill bit and screw length allow for adequate clearance of nerves, tooth buds and/or tooth roots, and the edge of the bone.
- Drill speed rate should never exceed 1,800 rpm, particularly in dense, hard bone.
- Higher drill speed rates can result in:
  - thermal necrosis of the bone
  - soft tissue burns
  - an oversized hole, which can lead to reduced pullout force, increased ease of the screws stripping in bone, suboptimal fixation, and/or the need for emergency screws.
- Always irrigate during drilling to avoid thermal damage to the bone.
- After implantation is complete, irrigate and apply suction for removal of debris potentially generated during implantation or removal.
- Avoid drilling over nerve or tooth roots.
- Take care while drilling as to not damage, entrap, or tear a patient's soft tissue or damage critical structures.
- Be sure to keep drill clear of loose surgical materials.
- Handle devices with care and dispose worn bone cutting instruments in an approved sharps container.



- The  $\varnothing$  1.5 mm MatrixMIDFACE screw is not recommended for genioplasty fixation.
- Use the appropriate amount of screws to achieve stable fixation for fractures. Stable fixation requires a minimum of two screws per bone segment for osteotomies.

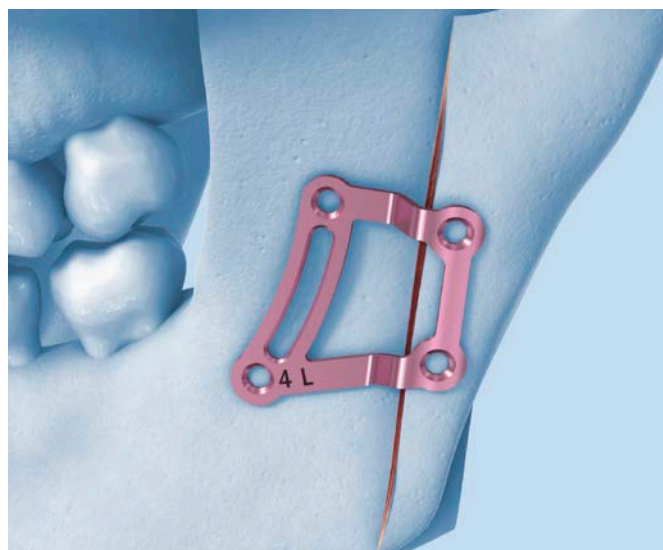
**Warning:** Instruments and screws may have sharp edges or moving joints that may pinch or tear user's glove or skin.

# Vertical Ramus Osteotomy Fixation

## 1. Select plate design

After the vertical ramus osteotomy has been performed, position the distal segment with the teeth wired into intermaxillary fixation on a pre-planned surgical splint. Select the appropriate plate design that best suits the bony step created from the overlap of the bony segments, and the quantity and quality of bone.

The Matrix Vertical Ramus Osteotomy plates are prebent, available in left and right design and in 0 (flat), 2, 4 and 6 mm offsets.



---

## 2. Adapt plate to the bone

---

### Instrument

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03.503.038	Bending Pliers for MatrixMIDFACE Plates (2 required)
------------	--

---

Contour the selected plate to the bone using the bending pliers. Bend the plate between the holes as necessary.

In reducing the acute bend of the plate, the bony edge of the proximal segment can be trimmed down to enable easier adaptation of the plate to the bone. Ensure that the plate is adapted to the bony anatomy.

**Precaution:** Confirm that plate positioning, drill bit and screw length allow for adequate clearance of nerves, tooth buds and/or tooth roots, and the edge of the bone.

### Warnings:

- Do not alter the bend in the prebent plates by more than 1 mm in either direction.
- Do not excessively bend the plates as it may produce internal stresses which may become the focal point for eventual breakage of the implant.





### 3. Primary plate fixation

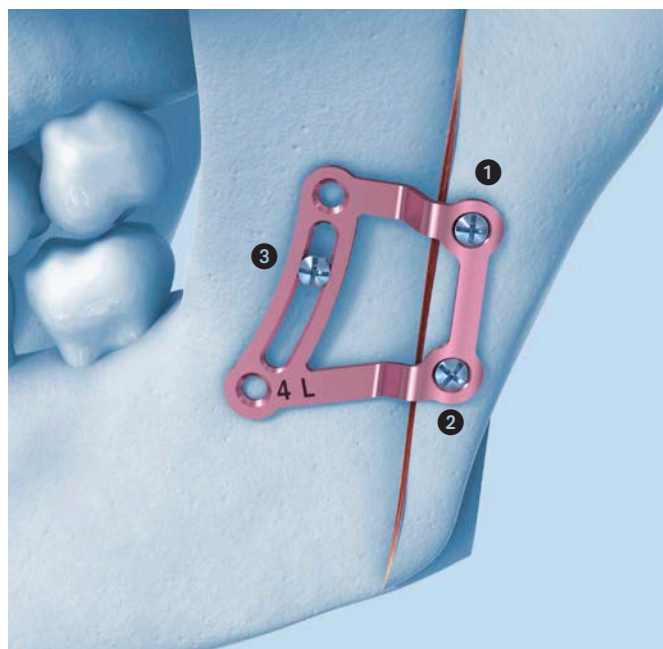
To fixate the Matrix Vertical Ramus Osteotomy plate to the bone, use a 90° screwdriver (see brochure DSEM/CMF/1115/0098) with an appropriate drill bit diameter and length (see page 6) to pre-drill and insert the Ø 1.85 mm Matrix screws of the appropriate length in the specified sequence **1 2 3**. The two screws on the proximal segment are fixed first. Place the third screw at the sliding slot by using the Subcondylar Ramus Fixation Set (see surgical technique DSEM/CMF/0615/0070).

The screws placed on the proximal bone segment can be fixed bi-cortically whereas the screws placed on the distal segment are recommended to be fixed mono-cortically in the region where the path of inferior alveolar nerve may be damaged.

**Note:** Self-tapping and self-drilling screws are available.

#### Precautions:

- Confirm that plate positioning, drill bit and screw length allow for adequate clearance of nerves, tooth buds and/or tooth roots, and the edge of the bone.
- Drill speed rate should never exceed 1,800 rpm, particularly in dense, hard bone. This corresponds to a maximum input speed of 3600 rpm (gear ratio of 2:1).
- Higher drill speed rates can result in:
  - thermal necrosis of the bone
  - soft tissue burns
  - an oversized hole, which can lead to reduced pull-out force, increased ease of the screws stripping in bone, suboptimal fixation, and/or the need for emergency screws.
- Always irrigate during drilling to avoid thermal damage to the bone.
- After implantation is complete, irrigate and apply suction for removal of debris potentially generated during implantation or removal.



- Handle devices with care and dispose worn bone cutting instruments in an approved sharps container.
- Avoid drilling over nerve or tooth roots.
- Take care while drilling as to not damage, entrap, or tear a patient's soft tissue or damage critical structures.
- Be sure to keep drill clear of loose surgical materials.
- The Ø 1.5 mm MatrixMIDFACE screw is not recommended for vertical ramus osteotomy fixation.
- Use the appropriate amount of screws to achieve stable fixation for fractures. Stable fixation requires a minimum of two screws per bone segment for osteotomies.

**Warning:** Instruments and screws may have sharp edges or moving joints that may pinch or tear user's glove or skin.



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## 4. Repeat steps for bilateral procedure

Repeat steps ❶ ❷ ❸ on the contralateral side.

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## 5. Intraoperative correction of occlusion

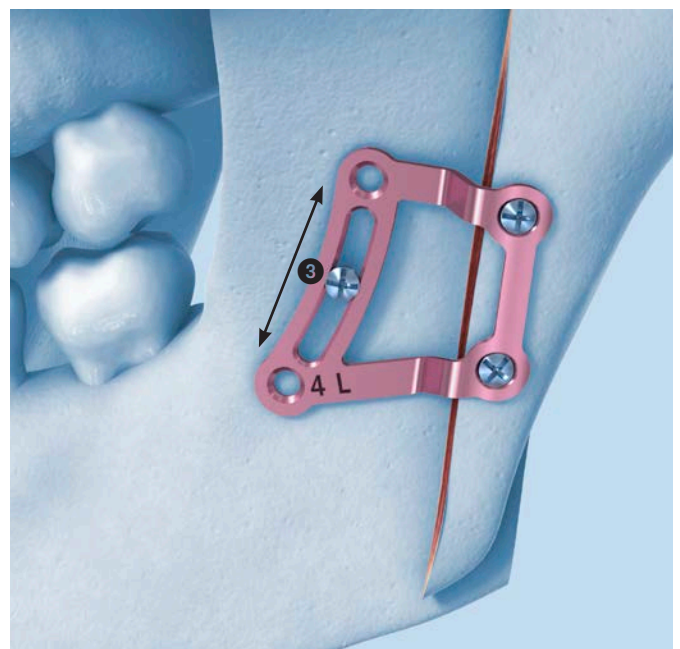
Release the intermaxillary fixation and inspect the occlusion. If the occlusion needs to be adjusted, loosen the screw ❸ in the plate slot.

The distal bone segment can now be shifted in the sagittal plane until the occlusion has been corrected.

Retighten the screw ❸ in the plate slot.

The process can be repeated if necessary.

**Precaution:** Ensure that the desired condylar position has been achieved.



## 6. Final plate fixation

Using a 90° screwdriver (DSEM/CMF/1115/0098) with a Ø 1.4 mm drill bit, insert the remaining Ø 1.85 mm Matrix screws of the appropriate length in holes ④ and ⑤. Alternatively, the screws may be inserted transorally with a standard screwdriver shaft.

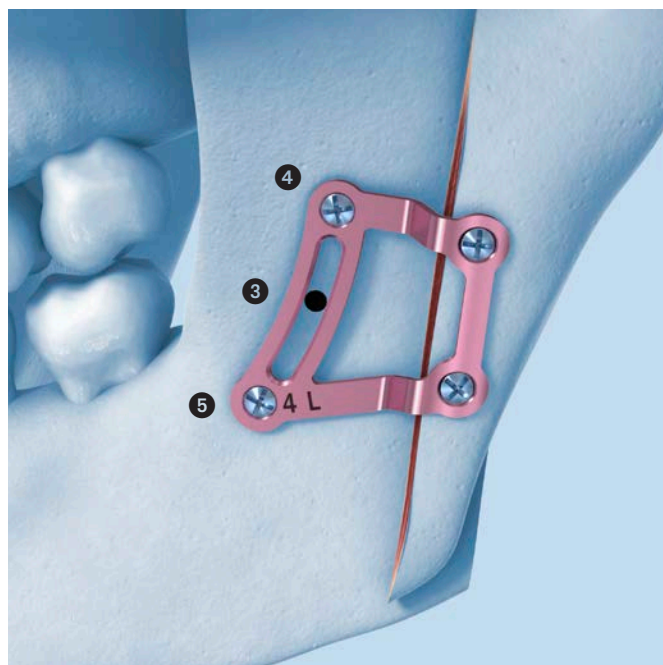
**Optional:** Remove the screw ③ from the plate slot.

Repeat this step for the contra-lateral side.

Tighten all screws to ensure fixation of the mandible is adequate to withstand the sagittal forces.

### Precautions:

- Drill speed rate should never exceed 1,800 rpm, particularly in dense, hard bone. This corresponds to a maximum input speed of 3600 rpm (gear ratio of 2:1).
- Higher drill speed rates can result in:
  - thermal necrosis of the bone
  - soft tissue burns
  - an oversized hole, which can lead to reduced pull-out force, increased ease of the screws stripping in bone, suboptimal fixation, and/or the need for emergency screws.
- Always irrigate during drilling to avoid thermal damage to the bone.
- After implantation is complete, irrigate and apply suction for removal of debris potentially generated during implantation or removal.
- Handle devices with care and dispose worn bone cutting instruments in an approved sharps container.
- Avoid drilling over nerve or tooth roots.
- Take care while drilling as to not damage, entrap, or tear a patient's soft tissue or damage critical structures.
- Be sure to keep drill clear of loose surgical materials.
- Use the appropriate amount of screws to achieve stable fixation for fractures. Stable fixation requires a minimum of two screws per bone segment for osteotomies.



### Warnings:

- Previous changes in the temporomandibular joint or preoperative temporomandibular disorder may affect surgical outcomes.
- Instruments and screws may have sharp edges or moving joints that may pinch or tear user's glove or skin.

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## 7. Device Removal

While the surgeon must make the final decision on implant removal, we recommend that whenever possible and practical for the individual patient, fixation devices should be removed once their service as an aid to healing is accomplished. Implant removal should be followed by adequate post-operative management to avoid re-fracture.

# Implants

## Matrix screws, Titanium alloy (TAN)\*

### Matrix screws Ø 1.85 mm, self-tapping, in clip\*\*

Art. No.	Length	Pitch
04.511.204.01C	4 mm	
04.511.205.01C	5 mm	
04.511.206.01C	6 mm	
04.511.208.01C	8 mm	
04.511.210.01C	10 mm	Coarse
04.511.212.01C	12 mm	Coarse
04.511.214.01C	14 mm	Coarse
04.511.216.01C	16 mm	Coarse
04.511.218.01C	18 mm	Coarse



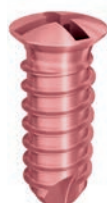
### Matrix screws Ø 1.85 mm, self-drilling, in clip\*\*

Art. No.	Length
04.511.224.01C	4 mm
04.511.225.01C	5 mm
04.511.226.01C	6 mm
04.511.228.01C	8 mm



### Matrix screws Ø 2.1 mm, self-tapping, in clip

Art. No.	Length	Pitch
04.511.234.01C	4 mm	
04.511.235.01C	5 mm	
04.511.236.01C	6 mm	
04.511.238.01C	8 mm	
04.511.240.01C	10 mm	Coarse
04.511.242.01C	12 mm	Coarse
04.511.244.01C	14 mm	Coarse
04.511.246.01C	16 mm	Coarse
04.511.248.01C	18 mm	Coarse



\* Refer to page 47 for the ordering information on sterile implants and drill bits.

\*\* 4–12 mm screw lengths are also available in packs of 4 screws in clip.  
Substitute “.01C” with “.04C” in the part number to order.

Other Matrix screws additionally available.

## Matrix plates, Pure titanium\*

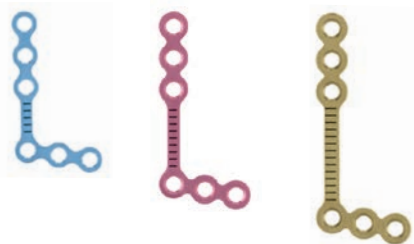
### 90° L-plates, 2 + 2 holes, reversible\*

Art. No.	Bar length	Thickness
04.511.301	short	0.5 mm
04.511.302	medium	0.5 mm
04.511.303	long	0.5 mm
04.511.304	short	0.7 mm
04.511.305	medium	0.7 mm
04.511.306	long	0.7 mm
04.511.307	short	0.8 mm
04.511.308	medium	0.8 mm
04.511.309	long	0.8 mm



### L-plates, 3 + 3 holes, reversible\*

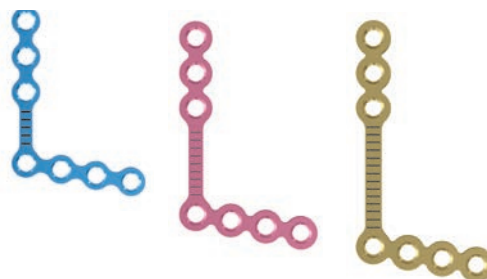
Art. No.	Bar length	Thickness
04.511.321	short	0.5 mm
04.511.322	medium	0.5 mm
04.511.323	long	0.5 mm
04.511.324	short	0.7 mm
04.511.325	medium	0.7 mm
04.511.326	long	0.7 mm
04.511.327	short	0.8 mm
04.511.328	medium	0.8 mm
04.511.329	long	0.8 mm



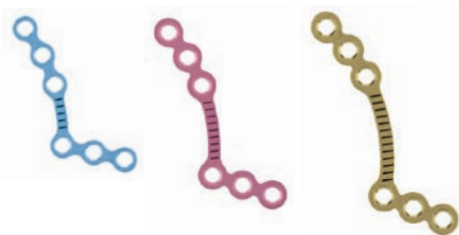
\* Refer to page 47 for the ordering information on sterile implants and drill bits.

**L-plates, 4 + 3 holes, reversible**

Art. No.	Bar length	Thickness
04.511.331	short	0.5 mm
04.511.332	medium	0.5 mm
04.511.333	large	0.5 mm
04.511.334	short	0.7 mm
04.511.335	medium	0.7 mm
04.511.336	large	0.7 mm
04.511.337	short	0.8 mm
04.511.338	medium	0.8 mm
04.511.339	large	0.8 mm

**Anatomic L-plates, 3 + 3 holes, reversible\***

Art. No.	Bar length	Thickness
04.511.341	short	0.5 mm
04.511.342	medium	0.5 mm
04.511.343	long	0.5 mm
04.511.344	short	0.7 mm
04.511.345	medium	0.7 mm
04.511.346	long	0.7 mm
04.511.347	short	0.8 mm
04.511.348	medium	0.8 mm
04.511.349	long	0.8 mm

**L-Plates, 2 + 2 holes**

Art. No.	Intersection bar	Thickness
04.511.350	7 mm	0.5 mm
04.511.370	7 mm	0.7 mm



\* Refer to page 47 for the ordering information on sterile implants and drill bits.

### Maxillary plates, prebent, thickness 0.8 mm\*

Art. No.	Shape	Offset
04.511.381	left	2 mm
04.511.382	right	2 mm
04.511.383	left	4 mm
04.511.384	right	4 mm
04.511.385	left	6 mm
04.511.386	right	6 mm
04.511.387	left	8 mm
04.511.388	right	8 mm
04.511.389	left	10 mm
04.511.390	right	10 mm



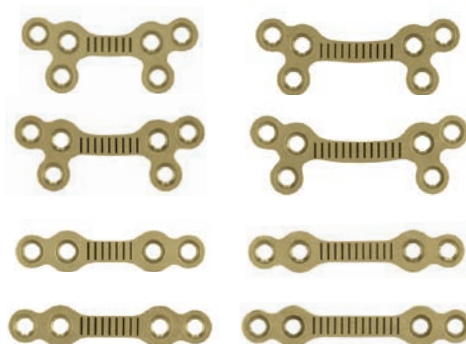
### MatrixMIDFACE Adaption Plates, 20 holes\*

Art. No.	Thickness
04.503.346	0.5 mm
04.503.376	0.7 mm
04.503.396	0.8 mm



### Sagittal split plates, thickness 1.0 mm\*

Art. No.	Shape	Bar length	Holes
04.511.401	curved	6 mm	6
04.511.402	curved	8 mm	6
04.511.403	curved	10 mm	6
04.511.404	curved	12 mm	6
04.511.421	straight	6 mm	4
04.511.422	straight	8 mm	4
04.511.423	straight	10 mm	4
04.511.424	straight	12 mm	4



\* Refer to page 47 for the ordering information on sterile implants and drill bits.

**SplitFix plates, with Slider, 4 holes,  
thickness 0.7 mm**

Art. No.	Length
04.511.444	33 mm
04.511.445	40 mm



**Note:** Split Fix plates and slider may be ordered separately.

04.511.443	Slider for Matrix SplitFix Plate*
04.511.441	Matrix SplitFix Plate, 4 holes, length 33 mm*
04.511.442	Matrix SplitFix Plate, 4 hole, length 40 mm*

**Chin plates, double curved, 5 holes,  
thickness 0.7 mm\***

Art. No.	Offset
04.511.461	4 mm
04.511.462	6 mm
04.511.463	8 mm
04.511.464	10 mm


**Vertical ramus osteotomy plates, thickness 0.7 mm**

Art. No	Offset	Left/Right
04.511.501	0 mm	left
04.511.502	0 mm	right
04.511.520	2 mm	right
04.511.521	2 mm	left
04.511.540	4 mm	right
04.511.541	4 mm	left
04.511.560	6 mm	right
04.511.561	6 mm	left



\* Refer to page 47 for the ordering information on sterile implants and drill bits.



# Instruments

03.511.003 Plate Holder for Matrix Plates



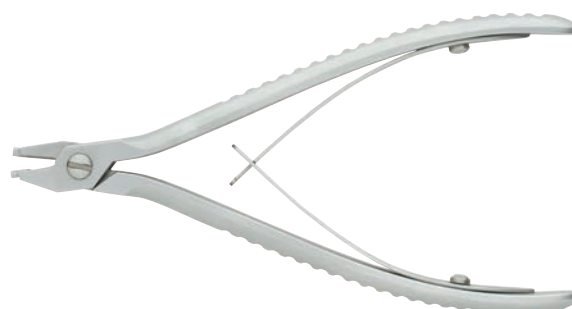
03.511.004 Matrix Screwdriver Handle, with Locking, with Hexagonal Coupling



03.503.034 Plate Holder, long



03.503.035 Bending Pliers 3D for MatrixMIDFACE Plates



03.503.038 Bending Pliers for MatrixMIDFACE Plates



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03.503.039 Plate Cutter for MatrixMIDFACE




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MatrixMIDFACE Screwdriver Shafts, Self-holding, with Hexagonal coupling

- 03.503.201 short, length 52 mm
- 03.503.202 medium, length 76 mm
- 03.503.203 long, length 96 mm




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Matrix Drill Bits Ø 1.4 mm with Stop, for J-Latch Coupling\*

- 03.511.244 length 44.5/4 mm
- 03.511.246 length 44.5/6 mm
- 03.511.248 length 44.5/8 mm
- 03.511.252 length 44.5/12 mm




---

Matrix Drill Bits Ø 1.4 mm without Stop, for J-Latch Coupling\*

- 03.511.310 length 80 mm
- 03.511.320 length 110 mm
- 03.511.330 length 125 mm



- 
- 03.511.240 Matrix Drill Bit Ø 1.4 mm, length 110/32 mm, for J-Latch Coupling\*

\* Refer to page 47 for the ordering information on sterile implants and drill bits.

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**Transbuccal Instruments MatrixMANDIBLE\***

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03.511.340      Matrix Drill Bit Ø 1.4 mm,  
length 125 mm, for J-Latch Coupling,  
for Nos. 03.503.045 and 03.503.047



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03.503.045      Drill Sleeve, long, for MatrixMANDIBLE



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397.213          Cannula and Obturator 2.0



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397.211          Universal Handle for Drill Sleeves



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397.420          Cheek Retractor 2.0, for No. 397.213




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397.232          Cheek Retractor, for MatrixMANDIBLE,  
U-shaped, flexible



\* For specific information on the transbuccal instruments, refer to the MatrixMANDIBLE surgical technique (DSEM/CMF/0814/0025).

397.430	Cheek Retractor Ring 2.0, for No. 397.213	
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60035258	Colour Plate, labelled**	
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\*\* For MatrixORTHOGNATHIC, the drill depth chart shows the length of the position screw (bicortical).

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## MatrixORTHOGNATHIC Bending Templates

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Bending Template for Matrix Anatomic L-Plate, 3+3 holes

03.511.360 short  
03.511.361 medium  
03.511.362 long




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Bending Template for Matrix L-Plate, 3+3 holes

03.511.363 short  
03.511.364 medium  
03.511.365 long




---

Bending Template for Matrix 90° L-Plate, 2+2 holes

03.511.366 short  
03.511.367 medium  
03.511.368 long




---

Bending Template for Matrix Sagittal Split Plate, curved, 6 holes

03.511.369 with intersection bar 6 mm  
03.511.370 with intersection bar 8 mm  
03.511.371 with intersection bar 10 mm  
03.511.372 with intersection bar 12 mm




---

Bending Template for Matrix Sagittal Split Plate, straight, 6 holes

03.511.373 with intersection bar 6 mm  
03.511.374 with intersection bar 8 mm  
03.511.375 with intersection bar 10 mm  
03.511.376 with intersection bar 12 mm




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Bending Template for Matrix SplitFix Plate, 4 holes

03.511.377 length 33 mm  
03.511.378 length 40 mm

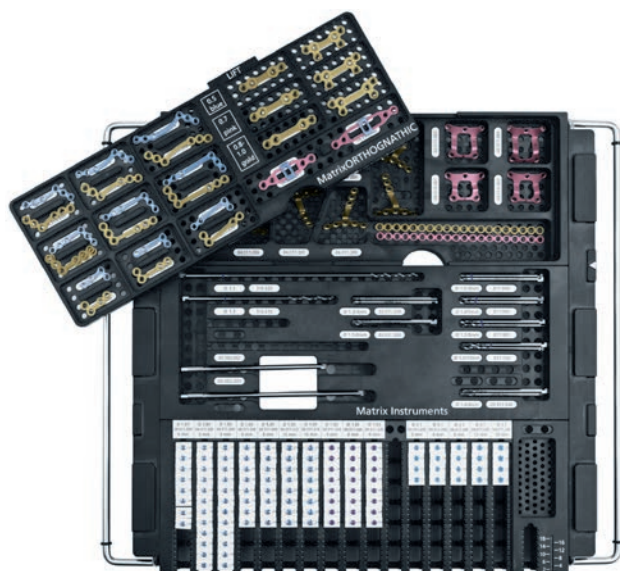



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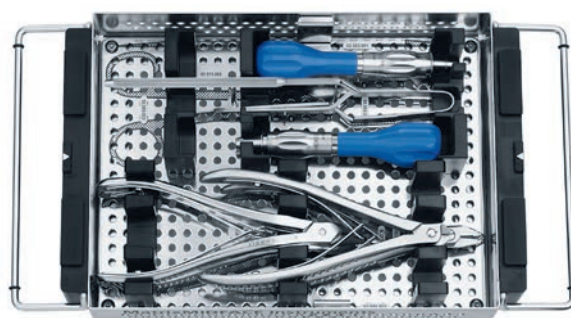
03.503.366 Bending Template for Adaption Plates, MatrixMIDFACE, 20 holes

# Modules

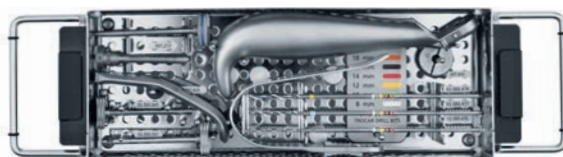
68.511.001 Module for MatrixORTHOGNATHIC Plate, Screw and Instrument Set, 3/3, with Lid, without Contents



61.503.603 Instrument Tray MatrixMIDFACE, 2/3, with Lid, without Contents



61.503.841 Instrument Tray for MatrixMANDIBLE Transbuccal Instruments, 1/3, with Lid, without Contents



# Additionally Available

## Implants

### MatrixMIDFACE Screws, Titanium Alloy (TAN)\*,\*\*

#### Self-tapping screws Ø 1.5 mm

	Length	Pitch
04.503.204.01C	4 mm	
04.503.205.01C	5 mm	
04.503.206.01C	6 mm	
04.503.208.01C	8 mm	
04.503.210.01C	10 mm	coarse
04.503.212.01C	12 mm	coarse
04.503.214.01C	14 mm	coarse
04.503.216.01C	16 mm	coarse
04.503.218.01C	18 mm	coarse

#### Self-drilling screws Ø 1.5 mm

	Length
04.503.224.01C	4 mm
04.503.225.01C	5 mm
04.503.226.01C	6 mm
04.503.228.01C	8 mm

#### Self-tapping screws Ø 1.85 mm

	Length	Pitch
04.511.260	20 mm	coarse
04.511.262	22 mm	coarse
04.511.264	24 mm	coarse
04.511.266	26 mm	coarse
04.511.268	28 mm	coarse

### Transbuccal Instruments

03.511.009	Drill Sleeve, long, for MatrixORTHOGNATHIC
397.422	Transbuccal Guide 2.0/2.4/3.0

\* Refer to page 47 for the ordering information on sterile implants and drill bits.

\*\* 4–12 mm screw lengths are also available in packs of 4 screws in clip.  
Substitute “.01C” with “.04C” in the part number to order.

### Drill bits, length 125 mm, for Nos. 03.503.045 and 03.503.047\*

	Diameter
03.511.341	Matrix Drill Bit Ø 1.4 mm, length 125 mm, for Mini Quick Coupling
03.503.476	MatrixMANDIBLE Drill Bit Ø 1.5 mm, 2-flute, for J-Latch Coupling
03.503.479	Drill Bit Ø 1.5 mm, for MatrixMANDIBLE, length 125 mm, 2-flute, for Mini Quick Coupling

### Instruments

319.520	Depth Gauge for Screws Ø 1.5 to 2.0 mm, measuring range up to 45 mm
03.503.032	Plate Holder, short
397.433	Drill Sleeve 1.5, for No. 397.422

### Screwdriver Shafts MatrixMIDFACE, with holding sleeve, with Hexagonal Coupling

03.503.205	medium, length 79 mm
03.503.206	long, length 95 mm

### Handles, with Hexagonal Coupling

311.005	small
311.006	medium
311.007	large

### Screwdriver Handle, with Hexagonal Coupling

311.023	Ratcheting Screwdriver Handle
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### Cutting Scissors

03.503.033	for Mesh Plate, short
03.503.037	for Mesh Plate, long

### Cheek Retractors

397.423	U-shaped, for No. 397.422
397.424	Ring, for No. 397.422



### Drill Bits\*

#### Matrix Drill Bit Ø 1.4 mm, for Mini Quick Coupling

03.511.284	with Stop, length 44.5/4 mm
03.511.286	with Stop, length 44.5/6 mm
03.511.288	with Stop, length 44.5/8 mm
03.511.292	with Stop, length 44.5/12 mm
03.511.311	length 80 mm
03.511.321	length 110 mm
03.511.280	length 110/32 mm
03.511.331	length 125 mm

#### Drill Bits Ø 1.5 mm, for J-Latch Coupling\*\*

317.640	with Stop, length 44.5/4 mm
317.660	with Stop, length 44.5/6 mm
317.680	with Stop, length 44.5/8 mm
317.720	with Stop, length 44.5/12 mm
316.510	length 80 mm
316.520	length 125 mm

#### Drill Bit Ø 1.5 mm, for Mini Quick Coupling\*\*

317.740	with Stop, length 44.5/4 mm
317.760	with Stop, length 44.5/6 mm
317.780	with Stop, length 44.5/8 mm
317.820	with Stop, length 44.5/12 mm
316.710	length 80 mm
316.521	length 125 mm

#### Drill Bit Ø 1.4 mm, for Quick Coupling

03.511.342	length 100 mm
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### MatrixMIDFACE Drill Bits, for J-latch Coupling

	Diameter	Length
03.503.244	1.1 mm	with Stop, 44.5/4 mm
03.503.246	1.1 mm	with Stop, 44.5/6 mm
03.503.248	1.1 mm	with Stop, 44.5/8 mm
03.503.110	1.25 mm	with Stop, 44.5/10 mm
03.503.112	1.25 mm	with Stop, 44.5/12 mm
03.503.120	1.25 mm	80 mm
03.503.121	1.25 mm	125 mm
03.503.122	1.5 mm	with Stop, 8/125

### MatrixMIDFACE Drill Bits, for Mini Quick Coupling

	Diameter	Length
03.503.284	1.1 mm	with Stop, 44.5/4 mm
03.503.286	1.1 mm	with Stop, 44.5/6 mm
03.503.288	1.1 mm	with Stop, 44.5/8 mm
03.503.140	1.25 mm	with Stop, 44.5/10 mm
03.503.142	1.25 mm	with Stop, 44.5/12 mm
03.503.150	1.25 mm	80 mm
03.503.151	1.25 mm	125 mm

\* Refer to page 47 for the ordering information on sterile implants and drill bits.

\*\* A Ø 1.5 mm drill bit can be used in dense bone to facilitate screw insertion (from 12 mm lengths).

## Modules

61.511.001	Module for MatrixORTHOGNATHIC Plate, Screw and Instrument Set, with Lid, without Contents, 1/2
61.511.002	MatrixMIDFACE/ORTHOGNATHIC Instrument Tray, size 1/2, with Lid
68.505.060	MatrixORTHOGNATHIC Mini Module, for Instrument Tray, for Screwdriver 90°
61.503.600	Module MatrixMIDFACE for use with sterile implants, with Lid, without Contents, 1/3
60.511.007	Screw, Drill, Blade Insert with Non-Recessed Screw Holes For MatrixORTHOGNATHIC System

## Sets

01.505.001	Screwdriver 90°
01.505.300	Universal Screw Removal Set
115.680	Subcondylar Ramus Fixation Set

## Screw/plate overview

	Pack of 1 unit	Pack of 4 units	Pack of 1 unit, sterile	Pack of 4 units, sterile
<b>Self-tapping screws (in clips)</b>	04.5xx.xxx.01C	04.5xx.xxx.04C (up to 12 mm screw length)	04.5xx.xxx.01S	04.5xx.xxx.04S (up to 12 mm screw length)
<b>Self-tapping screws</b> Ø 1.85 mm, lengths 20–28 mm	04.511.26x		04.511.26xS	
<b>Self-drilling screws (in clips)</b>	04.5xx.xxx.01C	04.5xx.xxx.04C	04.5xx.xxx.01S	04.5xx.xxx.04S
<b>Emergency screws (in clips)</b>	04.5xx.xxx.01C		04.5xx.xxx.01S	
<b>Plates</b>	04.5xx.xxx		04.5xx.xxxS	
<b>Drill bits</b>	xxx.xxx		xxx.xxxS	

# References

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1. Müller ME, Allgöwer M, Schneider R, Willenegger H (1995) Manual of Internal Fixation. 3<sup>rd</sup>, expanded and completely revised ed. 1991. Berlin, Heidelberg, New York: Springer
  2. Rüedi TP, Buckley RE, Moran CG (2007) AO Principles of Fracture Management. 2<sup>nd</sup> expanded ed. 2002. Stuttgart, New York: Thieme
  3. Schendel SA, Wolford LM, Epker BN. Surgical advancement of the mandible in growing children: Treatment results in twelve patients. J Oral Surg. 1976; 45.
  4. Wolford LM, Karras SC, Mehra P. Considerations for orthognathic surgery during growth, part 2: maxillary deformities. Am J Orthod dentofacial Orthop. 2001; 119: 102–105.



