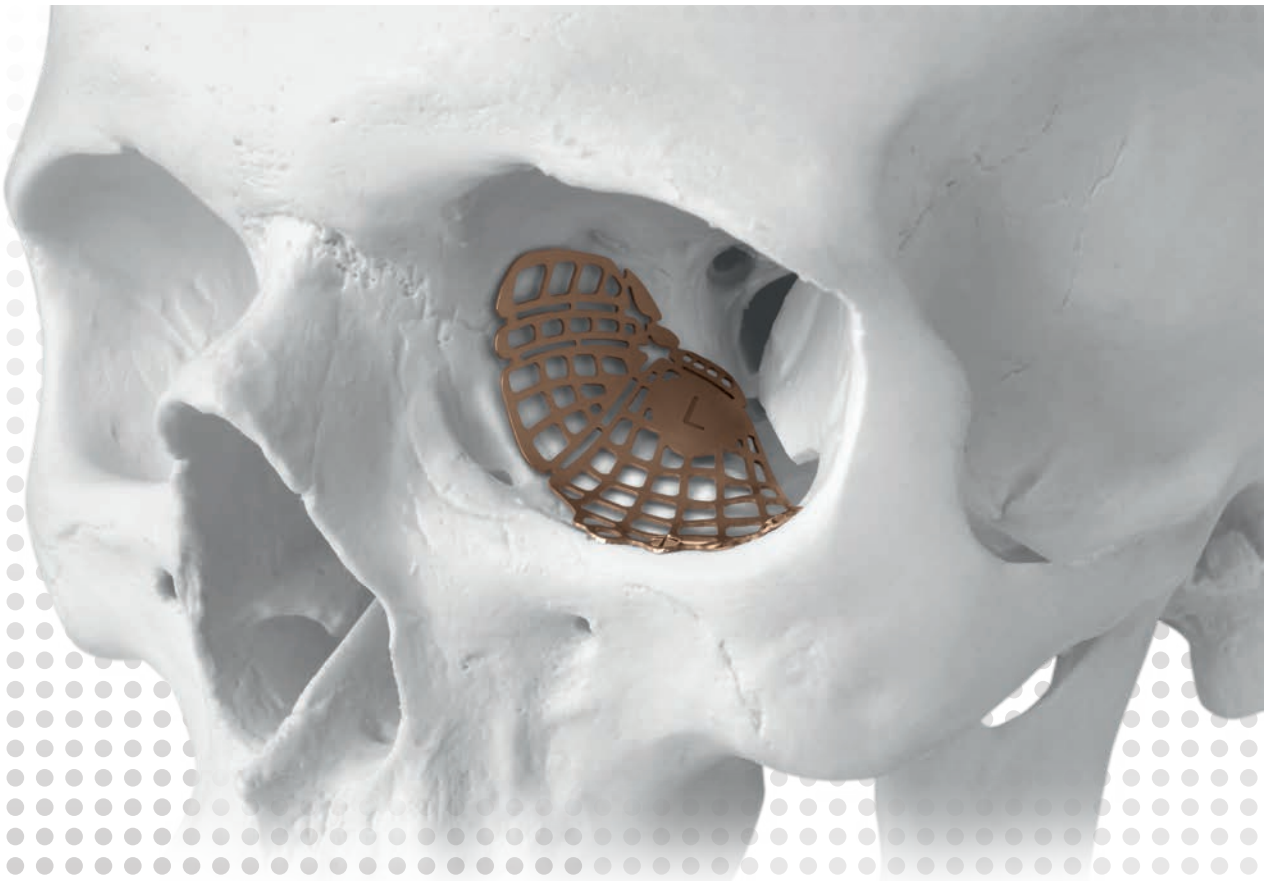
MatrixORBITAL™

MatrixMIDFACE Preformed Orbital Plates

Surgical Technique



AO approved by AO Technical Commission

DePuy Synthes
THE ORTHOPAEDICS COMPANY OF Johnson & Johnson

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 DePuy Synthes reusable devices, instrument trays and cases, as well as processing of DePuy 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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■ **Notes**
▲ **Precautions**
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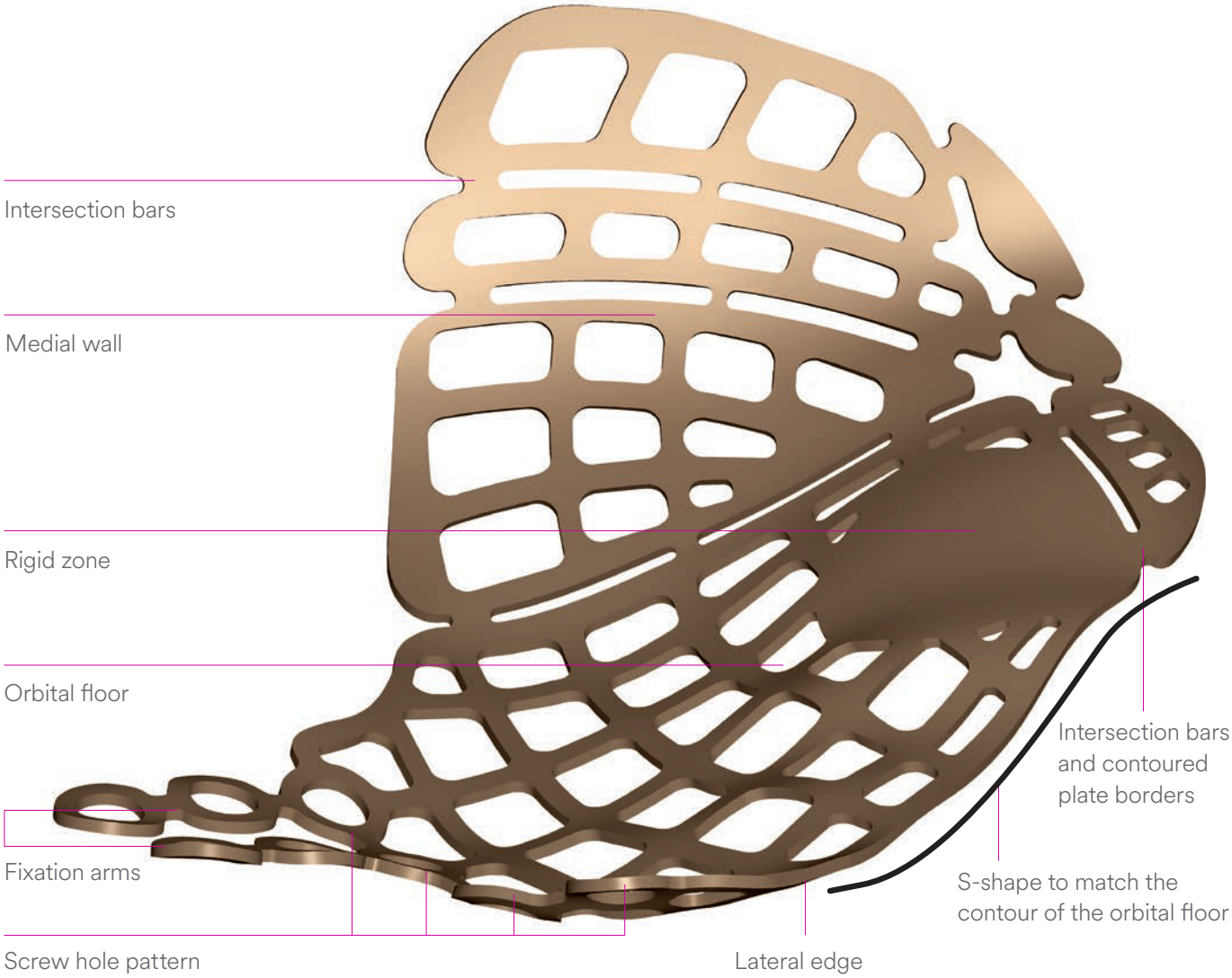
MatrixORBITAL

MatrixMIDFACE Preformed Orbital Plates

Overview

MatrixORBITAL plates have

- Preformed three-dimensional shape for minimal bending and cutting,
- Contoured plate edges,
- Segmented design to customize plate size,
- Rigid zone which restores the shape of the posterior orbital floor.



Intended Use, Indications and Contraindications, Warnings, Precautions, Adverse Events can be found in the corresponding system Instructions for Use.

MRI Information on Torque, Displacement, Image Artifacts and Radio-Frequency-(RF-)induced heating can be found in the corresponding System Instructions for Use.

The AO Principles of Fracture Management

Mission

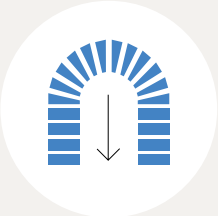
The AO's mission is promoting excellence in patient care and outcomes in trauma and musculoskeletal disorders.

AO Principles[1,2]

1.

Fracture reduction and fixation to restore anatomical relationships.

2.



Fracture fixation providing absolute or relative stability, as required by the "personality" of the fracture, the patient, and the injury.

3.

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

4.

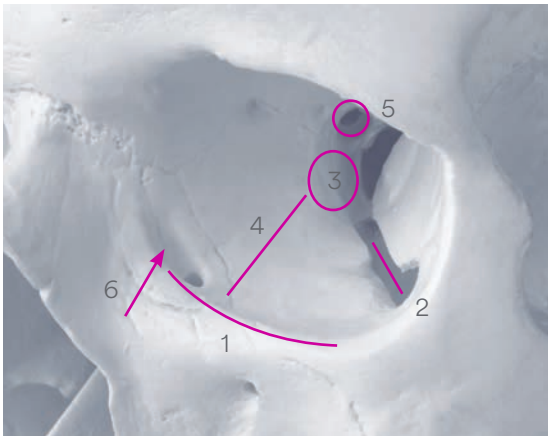
Early and safe mobilization and rehabilitation of the injured part and the patient as a whole.

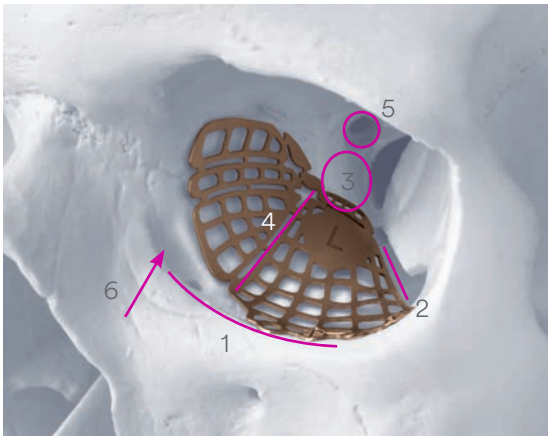
[1] Müller ME, Allgöwer M, Schneider R, Willenegger H. Manual of Internal Fixation. 3rd ed. Berlin, Heidelberg New York: Springer 1991.
[2] Buckley RE, Moran CG, Apivatthakakul T. AO Principles of Fracture Management: 3rd ed. Vol. 1: Principles, Vol. 2: Specific fractures. Thieme; 2017.

Orbital Landmarks

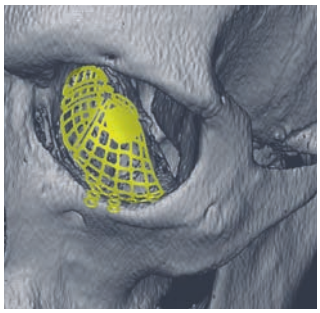
Implant placement according to the orbital landmarks

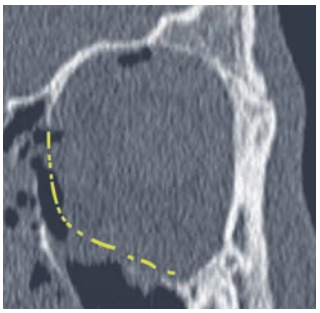
1. Orbital rim
2. Inferior orbital fissure
3. Posterior orbital ledge
4. Transition zone* between the orbital floor and medial wall
5. Optic canal
6. Lacrimal fossa

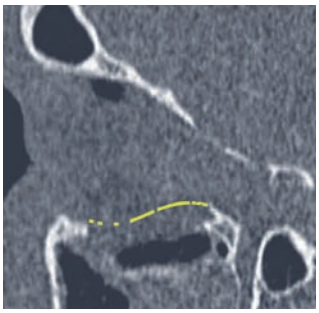




Preoperative planning**


3D


Coronal


Sagittal

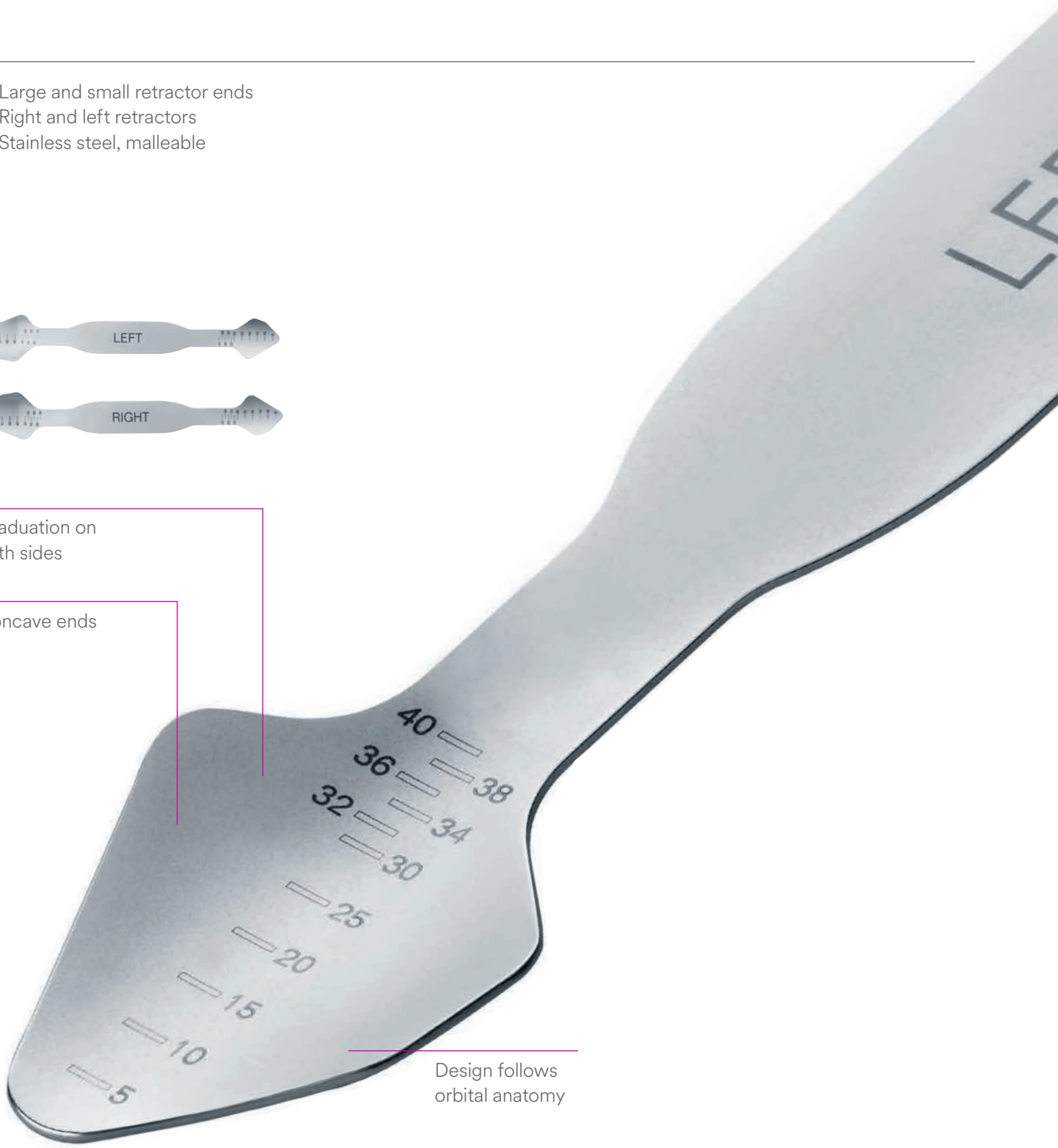

Axial

* Transition zone is located at the infero-medial aspect of the orbital floor and refers to an inner buttress at the junction to the lower end of the medial orbital wall.

** Images courtesy of Prof. Dr. Dr. R. Schmelzeisen, Dr. Dr. M. C. Metzger, Department of Craniomaxillofacial Surgery, University of Freiburg, Germany.

Orbital Retractors

- Large and small retractor ends
- Right and left retractors
- Stainless steel, malleable



1. Select implant

Implants	
04.503.801	Preformed Orbital Plate, small, left
04.503.802	Preformed Orbital Plate, large, left
04.503.811	Preformed Orbital Plate, small, right
04.503.812	Preformed Orbital Plate, large, right

Select the preformed orbital plate that best suits the patient's orbital anatomy, the fracture type and extent, and which is based on the preoperative plan.

Notes:

- In three-wall fractures involving the lateral wall, an additional orbital implant must be used (e.g. Synthes orbital mesh plate).
- For the surgical technique for MatrixMIDFACE, refer to the surgical technique guide.

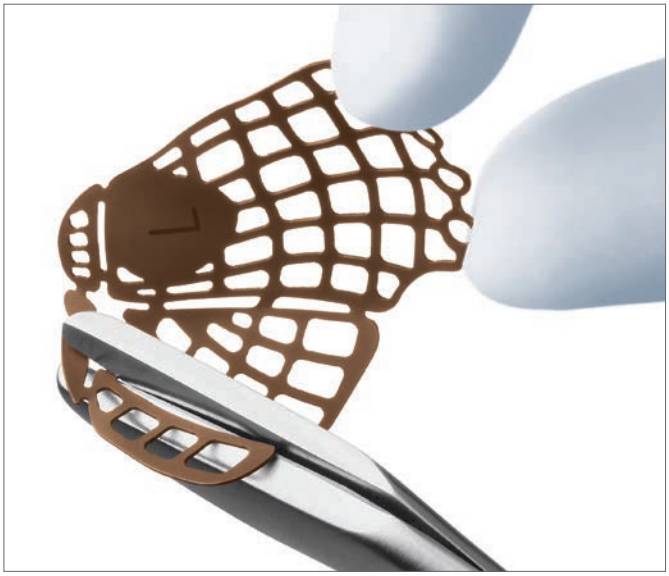
2. Size implant (if required)

Instruments	
03.503.033	Cutting Scissors for Mesh Plates, short
03.503.037	Cutting Scissors for Mesh Plates, long

Reduce the height of the medial wall and/or orbital floor length when not used for bridging the fracture. Always cut the implant along the cutting lines to ensure smooth edges, using scissors or mesh cutters.

▲ Precaution:

Take care to protect soft tissue from trimmed plate edges.



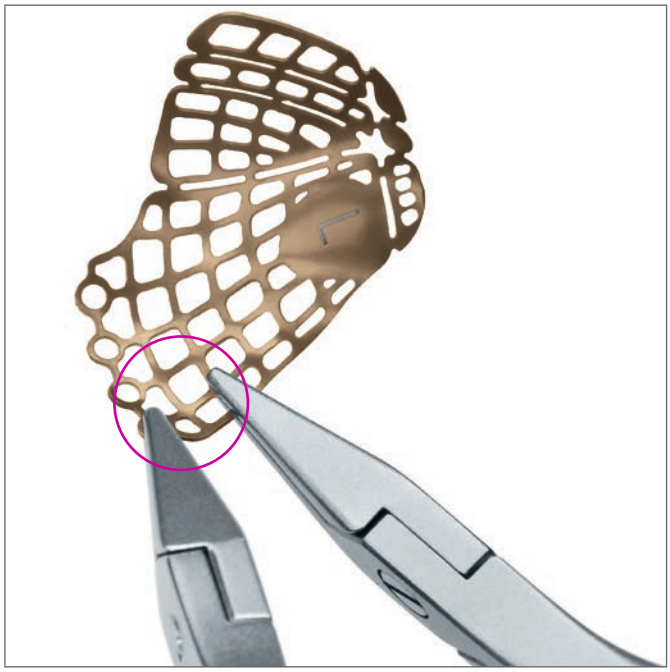
3. Contour implant (if required)

Instrument	
03.503.038	Bending Pliers for MatrixMIDFACE Plates (two bending pliers required)

The implant can be further contoured to match patient anatomy.

▲ Precautions:

- Avoid contouring of the implant in situ that may lead to implant malposition and/or posterior cantilever effect.
- The lateral anterior part of the plate (circled right) is intentionally prebent higher than the orbital rim anatomy to allow free plate movement during plate positioning. The lateral anterior part can be further contoured to match patient anatomy.
- If contouring is necessary, the surgeon should avoid bending the device at a screw hole.
- Avoid sharp bends, repetitive and reverse bending as it increases the risk of implant breakage.



4. Rectract soft tissue

Instruments	
03.503.801	Orbital Retractor, left
03.503.802	Orbital Retractor, right

The malleable orbital retractors can be used to retract the soft tissue as well as size the defect.

The spoon shaped shield of the malleable retractors is bent perpendicular to the handle.

Fat prolapsing beside the retractor shield can be retracted by the additional insertion of a flexible foil.

■ Note:

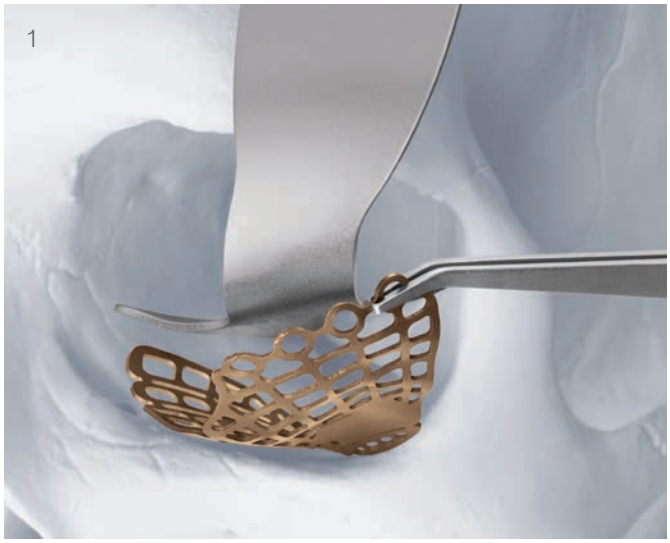
Make an angled bend (red line) to allow the hand position to rest conveniently and away from the surgical view on the patient's forehead. Twisting of the bent end can further improve or facilitate the handling.

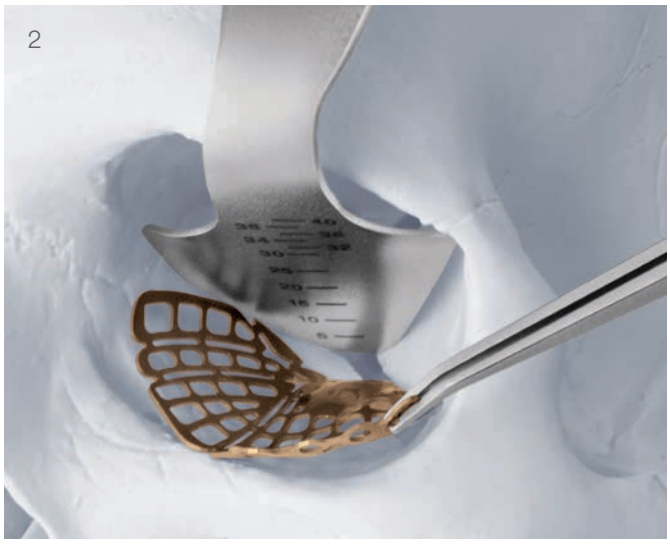
5. Insert implant

Position the lateral edge of the plate along the inferior orbital fissure. Since the implant is anatomic and pre-formed, it should be positioned in the same location for every patient. The orientation of the implant does not need to change based on the anatomy of the fracture. Place the plate on the stable bony contour.

■ Note:

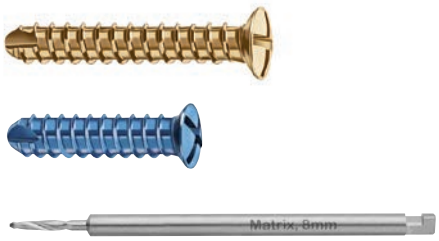
Confirm appropriate dissection. Insert the medial wall section of the plate first (1). While inserting the rest of the plate, turn the plate (2) until the implant is in the correct anatomical position (3). (Refer to orbital landmarks section.)





6. Drill the hole (when using self-tapping screws)

Drill the hole with the appropriate diameter and length drill bit.



■ Notes:

- Screws are available in self-drilling (silver), self-tapping (bronze), and emergency (blue) designs.
- If a pilot hole is desired, use the appropriate 1.1 mm diameter MatrixMIDFACE drill bit for drilling up to 8 mm length and the 1.25 mm diameter MatrixMIDFACE drill bit for screw lengths of 10 mm or more.

▲ Precautions:

- Confirm that plate positioning allows for adequate clearance of nerves and any other critical structures.
- Confirm that drill bit length and diameter correspond to selected screw length prior to drilling.
- 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 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 and ensure drill bit is concentric to plate hole.
- 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.

7. Secure implant

Stabilize the implant with the appropriate number of MatrixMIDFACE screws inserted through selected screw holes in the plate.

Fixation arms should be removed when not used for fixation.

■ Note:

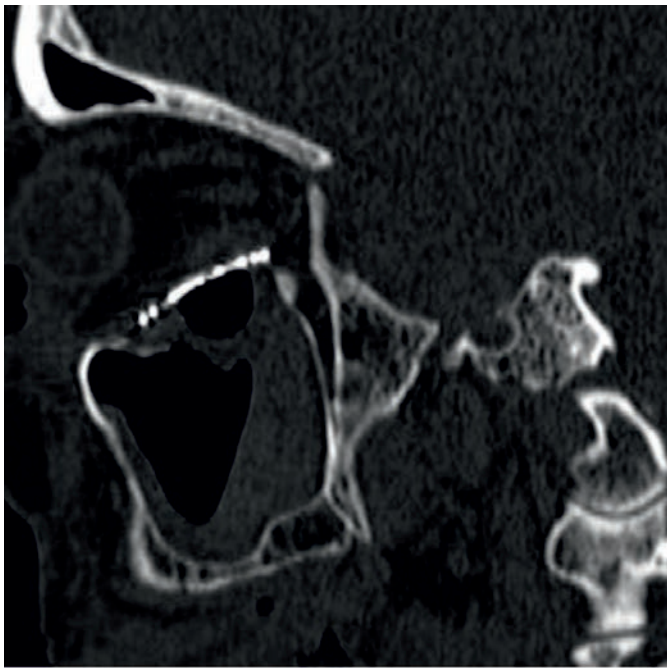
Test for impingement: A forced duction test must be completed to ensure unrestricted lateral and medial movement of the globe.

▲ Precautions:

- Confirm screw length prior to implantation.
- Tighten screws in a controlled manner. Applying too much torque to the screws may cause screw/plate
- deformation or bone stripping. If bone becomes stripped, remove the screw from the bone and replace it with an emergency screw.
- In order to determine the appropriate amount of screws needed to achieve stable construct fixation, the surgeon should consider the fracture size and shape.

8. Confirm plate placement*

Sagittal view of the correct plate placement is demonstrated in the image. Placement on the posterior ledge should be confirmed intraoperatively.



* Image courtesy of Prof. Dr. Dr. M. Rasse, Department of Craniomaxillofacial Surgery, University of Innsbruck, Austria.

Plates

MatrixMIDFACE Preformed Orbital Plates, 0.4 mm thickness, malleable, pure titanium

04.503.801	small	left
04.503.802	large	left
04.503.811	small	right
04.503.812	large	right

Screws

MatrixMIDFACE Screws, Titanium Alloy (TAN)

Self-tapping screws ∅ 1.5 mm	
04.503.204	length 4 mm
04.503.205	length 5 mm
04.503.206	length 6 mm
04.503.208	length 8 mm

Self-drilling screws ∅ 1.5 mm	
04.503.224	length 4 mm
04.503.225	length 5 mm
04.503.226	length 6 mm
04.503.228	length 8 mm

Emergency screws ∅ 1.8 mm, self-tapping	
04.503.234	length 4 mm
04.503.235	length 5 mm
04.503.236	length 6 mm
04.503.238	length 8 mm

Screw/plate overview

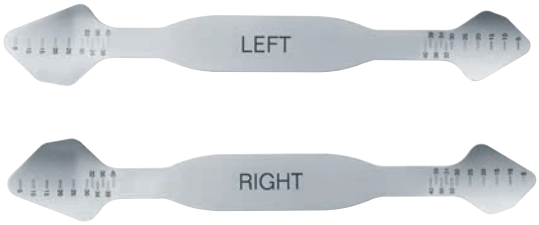
	Pack of 1 unit	Pack of 4 units	Pack of 1 unit, sterile	Pack of 4 units, sterile	Labelling clips
Self-tapping screws (in clips)	04.503.xxx**.01C**	04.503.xxx**.04C**	04.503.xxx**.01S**	04.503.xxx**.04S**	04.503.xxx**LC**
Self-drilling screws (in clips)	04.503.xxx**.01C**	04.503.xxx**.04C**	04.503.xxx**.01S**	04.503.xxx**.04S**	04.503.xxx**LC**[1]
Emergency screws (in clips)	04.503.xxx**.01C**	–	04.503.xxx**.01S**	–	04.503.xxx**LC**
Plates	04.503.xxx	–	04.503.xxxS	–	04.503.xxx**LC**

[1] Labeling clips for self-drilling screws are marked with “SD”.

Instruments

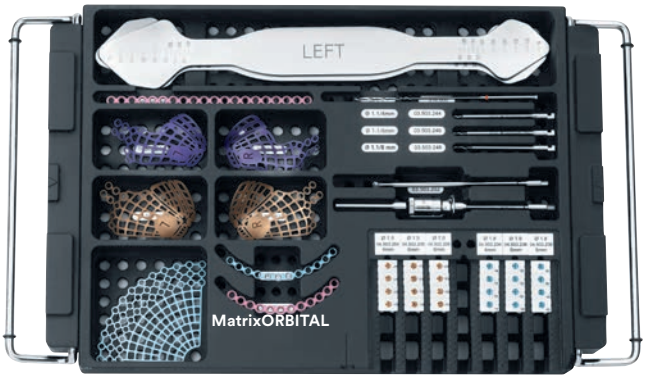
Orbital Retractors

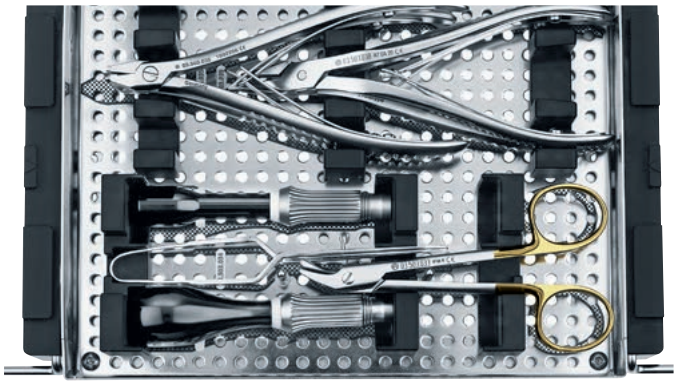
03.503.801	Orbital Retractor, left
03.503.802	Orbital Retractor, right



Modules

61.503.800	Module MatrixORBITAL Set
61.503.603	MatrixMIDFACE Instrument Tray





Not all products are currently available in all markets.
This publication is not intended for distribution in the USA.
Intended use, Indications and Contraindications can be found in the corresponding system Instructions for Use.
All Surgical Techniques are available as PDF files at www.depuysynthes.com/ifu

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