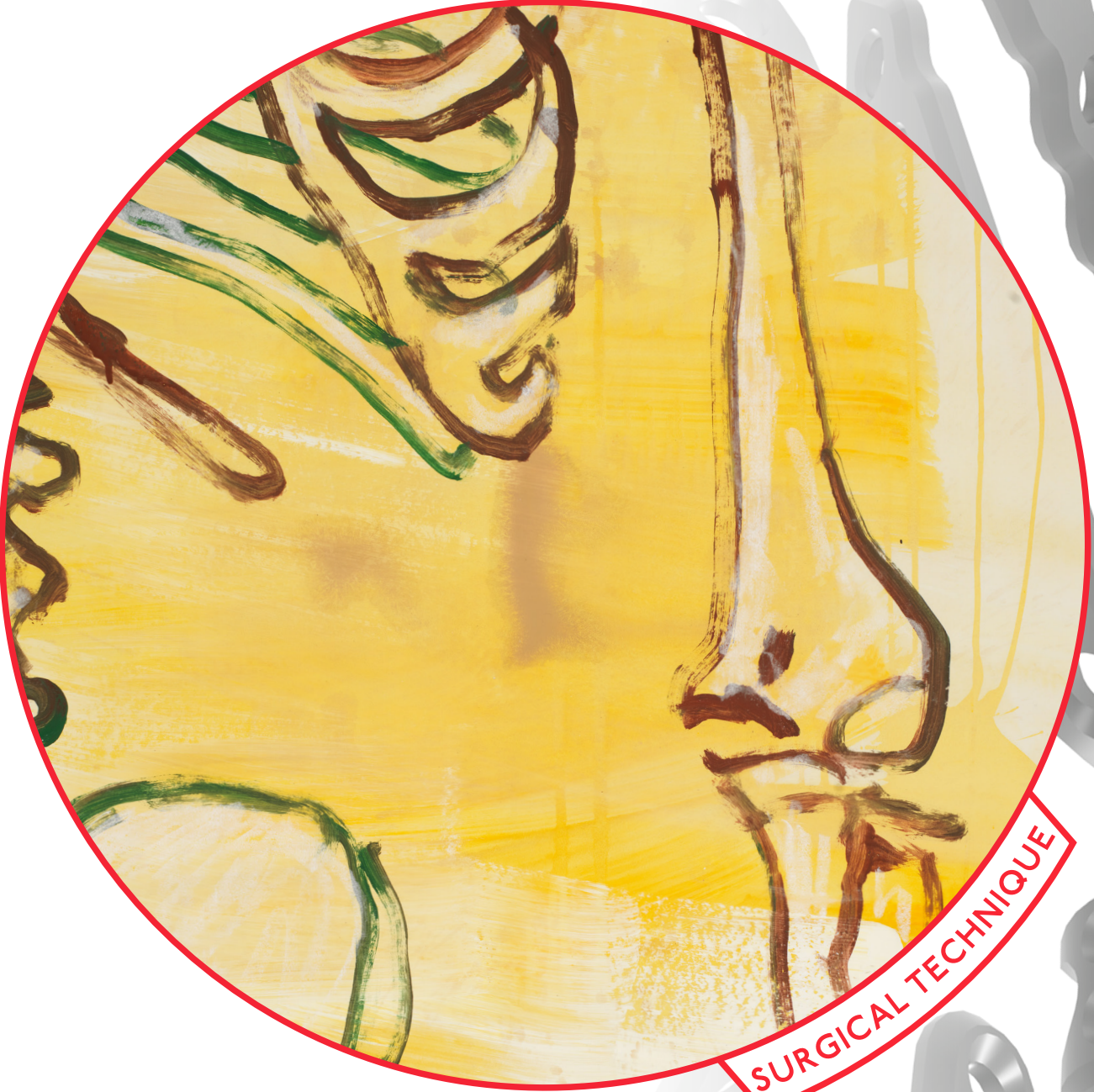


ITS.

Implants for Trauma Surgery



SURGICAL TECHNIQUE

Olecranon Locking Plates System

THE ART of TRAUMA SURGERY

The Art of Trauma Surgery is a collaborative project between ITS. and Austrian artist Oskar Stocker that celebrates the skill, perseverance, and artistry of surgeons and engineers who work tirelessly to improve outcomes for trauma patients.

At ITS., we stand for long-term, trusting relationships with our customers, suppliers, and development partners. Through our devotion to innovation and development, we continuously seek to improve and optimize products and techniques in the field of traumatology.

We believe that the success of our mission lies in the combination of the technical expertise, compassion and dedication of surgeons and engineers to help patients regain their health and well-being. Join us in celebrating these remarkable individuals and *The Art of Trauma Surgery!*

About the Artist

The Austrian artist Oskar Stocker (b. 1956) lives and works in Graz, Austria. He has become known internationally through the exhibition *Facing Nations*, which consists of portraits of more than 120 people of various nationalities living in Graz; it was shown first in Graz itself, then in Vienna, and later culminated in 2010 with its display at the UN Headquarters in New York City.

In addition to the portraits of individual people, he devotes himself to the depiction of landscapes and objects, down to the smallest detail.



All ITS. plates are preformed anatomically as a matter of principle. If adjustment of the plate to the shape of the bone is required, this is possible by carefully bending gently in one direction once. Particular care is required when bending in the region of a plate hole, as deformation of the plate may lead to a failure of the locking mechanism. The plate must not be buckled or bent several times. This is particularly important in the case of titanium implants, to prevent material fatigue and subsequent failure. The method of bending is the conscious responsibility of the operating doctor; I.T.S. GmbH can accept no liability whatsoever for this.

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Introduction

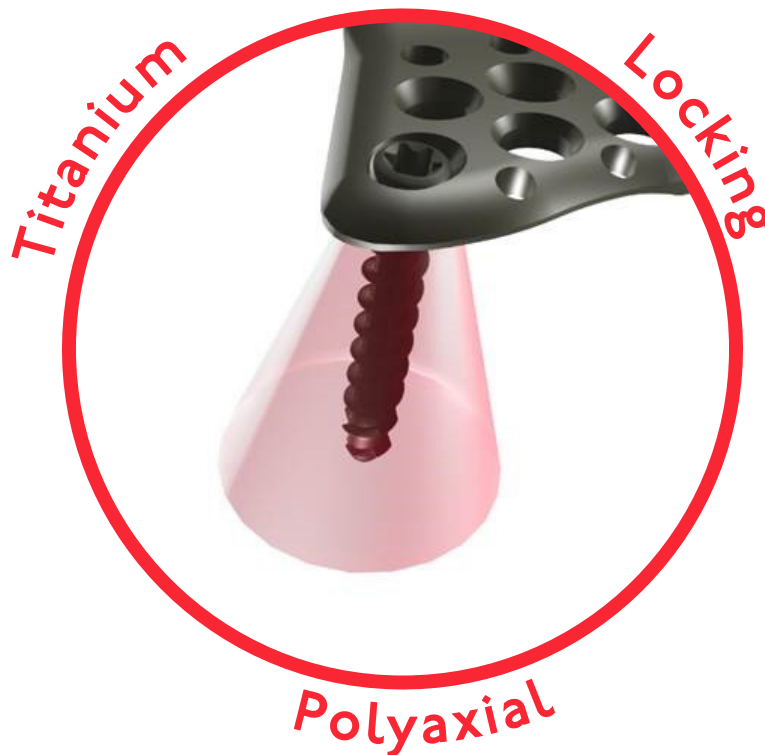


○ Plate Technology

At I.T.S., we stand for long-term, trusting relationships with our customers, suppliers, and development partners. Through our dedication to innovation and development, we continuously seek to improve and optimize products and techniques for trauma surgery.

○NE Technology for all implants

All I.T.S. plates are made from Titanium Grade 2, whereas the screws are made of a harder titanium alloy. This allows the plates to have only non-threaded holes, which all (with the exception of oblong holes) accept both non-locking and locking screws.



When a locking screw is inserted, it forms threads into the plate. There is no cutting and thus no debris is created. Each locking screw can be locked at a free placement within a cone of angulation up to $\pm 15^\circ$ and can be re-positioned up to three times.

○ System Overview

The ITS. Olecranon Locking Plates System offers a specialized and versatile solution for the fixation of olecranon fractures, enabling precise and stable reconstruction of both complex and simpler fractures.

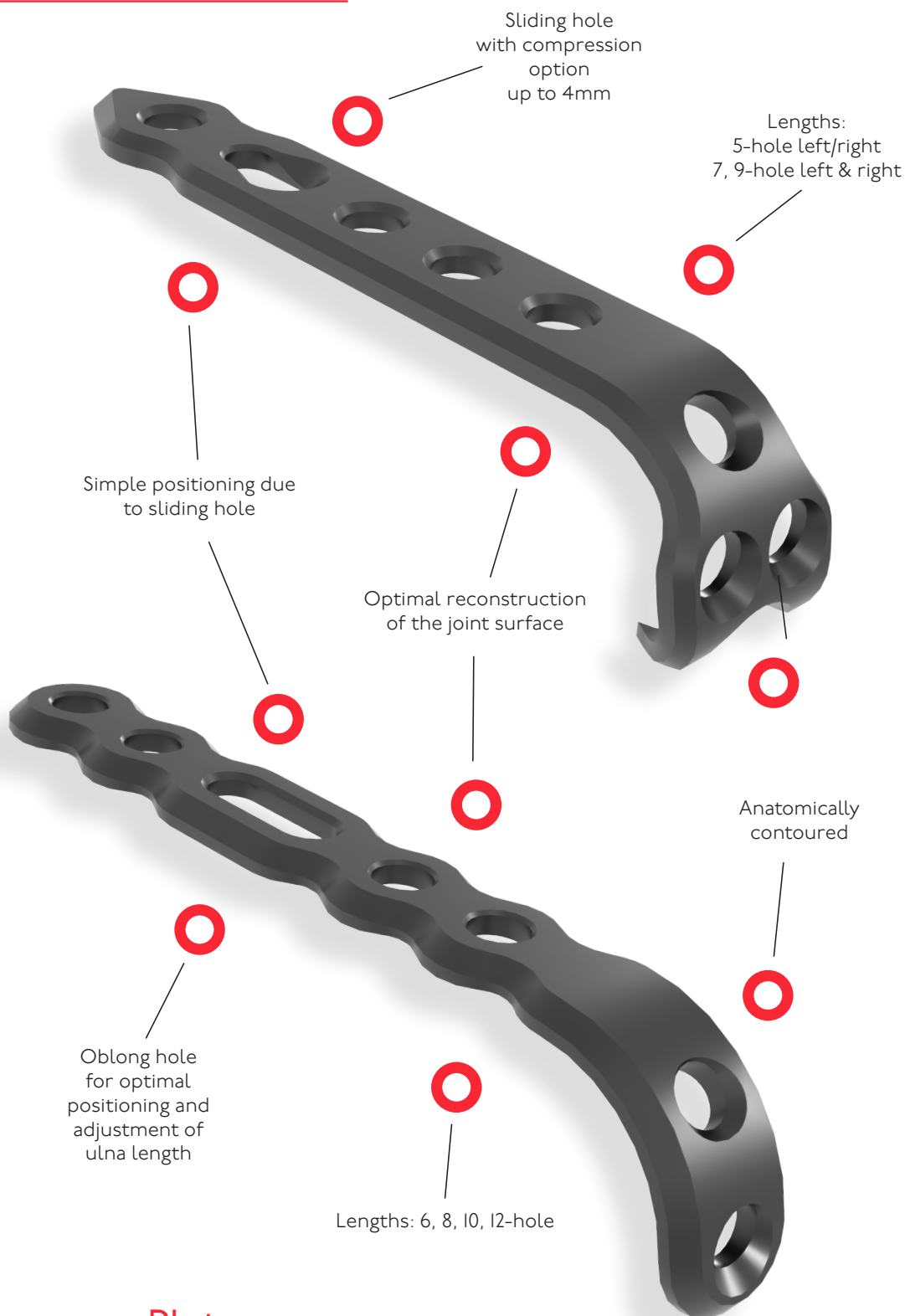
The advantages of locking plating are manifold and particularly relevant for early functional postoperative treatment. Traditional methods of fracture treatment, such as tension banding, often require long-term immobilization of the affected joint, which is particularly problematic in elbow fractures, as immobilization can lead to complications such as heterotopic ossifications.

The free choice of angle provides an advantage in fracture treatment, especially in the case of complex fractures.



○ Properties

Olecranon Hook Plate



Olecranon Plate

○ Screws

3235I-xx

NON-LOCKING

Cortical Screw, D=3.5mm
Spiral Drill, D=2.7mm
WS 2.5



37422-xx-N

LOCKING

Cancellous Screw, D=4.2mm
Spiral Drill, D=2.5mm
WS 2.5



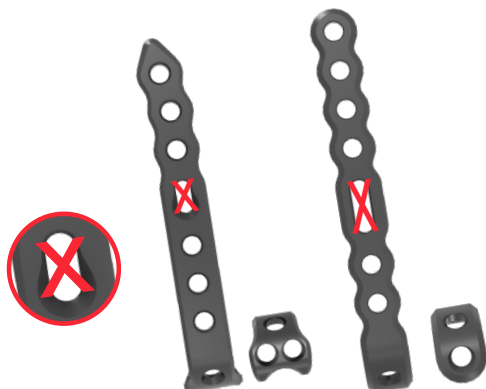
Screws

OPTIONAL

3735I-xx-N

LOCKING

Cortical Screw, D=3.5mm
Spiral Drill, D=2.7mm
WS 2.5



○ Indications

- All dislocated fractures of the olecranon

○ Contraindications

- General problems with blood clotting
- Critical general condition
- Diabetes
- Damage of soft tissue
- Obesity
- Pre-existing arthrosis of the elbow
- Lack of patient compliance

○ Time of operation

- Primary on the first day after the trauma
- Secondary after swelling subsides, temporary fixation in an upper arm plastercast or with an external fixing device

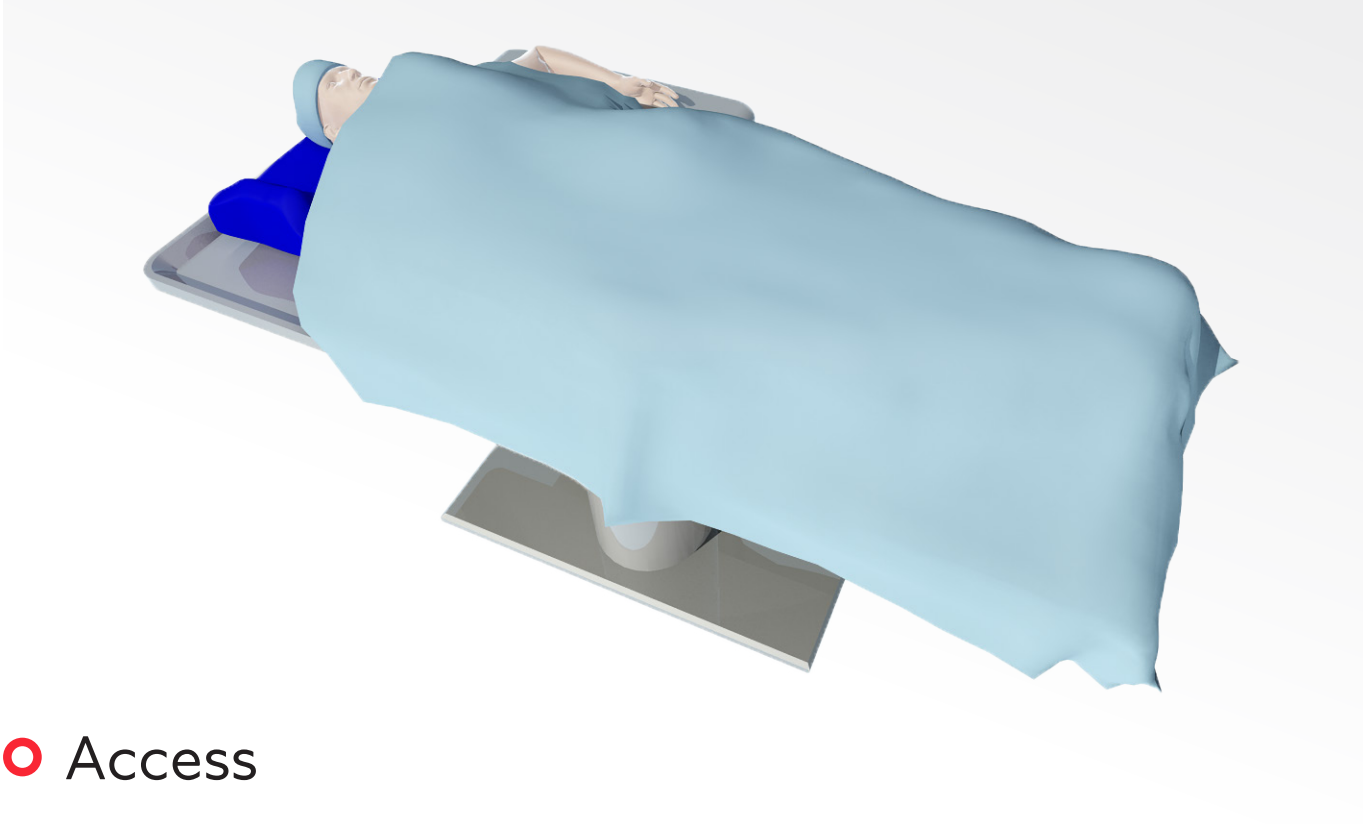


Surgical Technique

2.

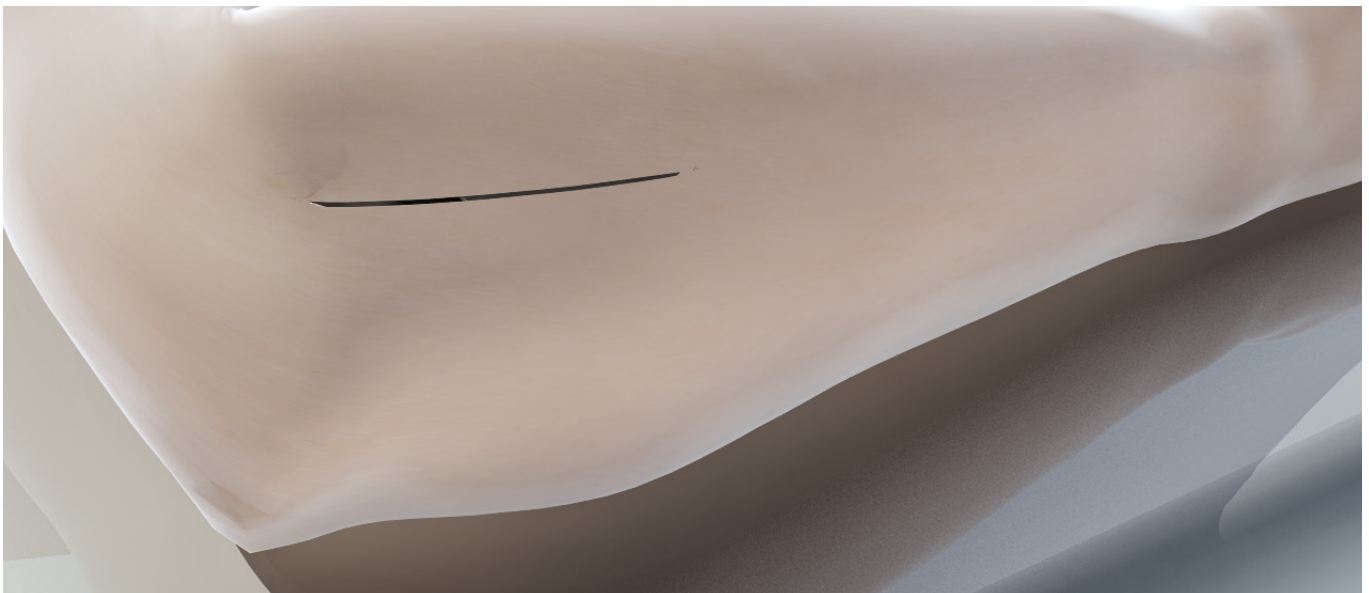
○ Pre-operative Patient Preparation

- Under a general anaesthesia or plexus anaesthesia with pneumatic partial deprivation of blood supply
- Supine position or abdominal position



○ Access

- A slightly bow-shaped skin incision should be made in the radial direction, deviating from the ulnar edge, in order to create a soft tissue flap which will cover the plate.
- The scar should not extend directly above the plate.
- However, in individual cases, pre-existing scars or deep abrasions can cause access to be changed.



○ Implantation

The bone is skillfully prepared with the scalpel. The fracture segments should be exposed as carefully as possible in order to not further decrease blood flow. The elbow joint should be radially exposed as far as necessary to enable a good view of the joint surface of the olecranon, and of the final reduction.

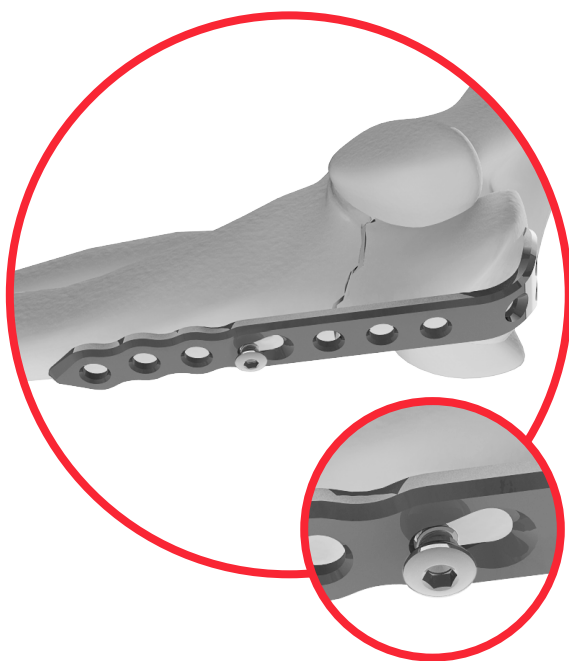
○ Implantation of single fragment fractures

Single-fragment fractures can be reduced directly with the olecranon hook plate, which are applied like reduction hooks. The plate is then screwed to the ulna with a non-locking cortical screw (3235I-XX) in the sliding/compression hole according to the measured length using the screw length gauge, solid small fragment screws (59022).

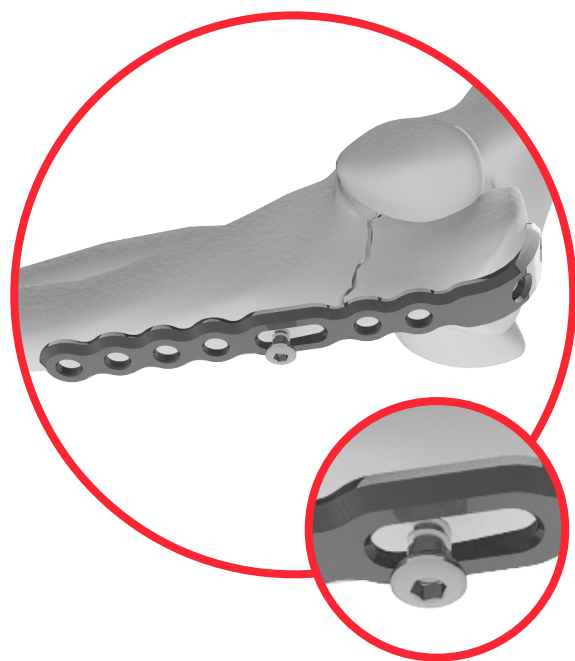
When compression principle of the sliding hole is fully utilized, compression up to 4mm can occur.

CAUTION: In this case, it is vital to capture the ventral ulna cortices in order to attain a stable hold of the screw used for compression.

Olecranon Hook Plate



Olecranon Plate



- The remaining plate holes are then filled with either locking or non-locking screws in order to secure all fracture parts.

NOTE: The objective of the operative treatment is to achieve stable fixation of the fragments.

Olecranon Hook Plate



Olecranon Plate

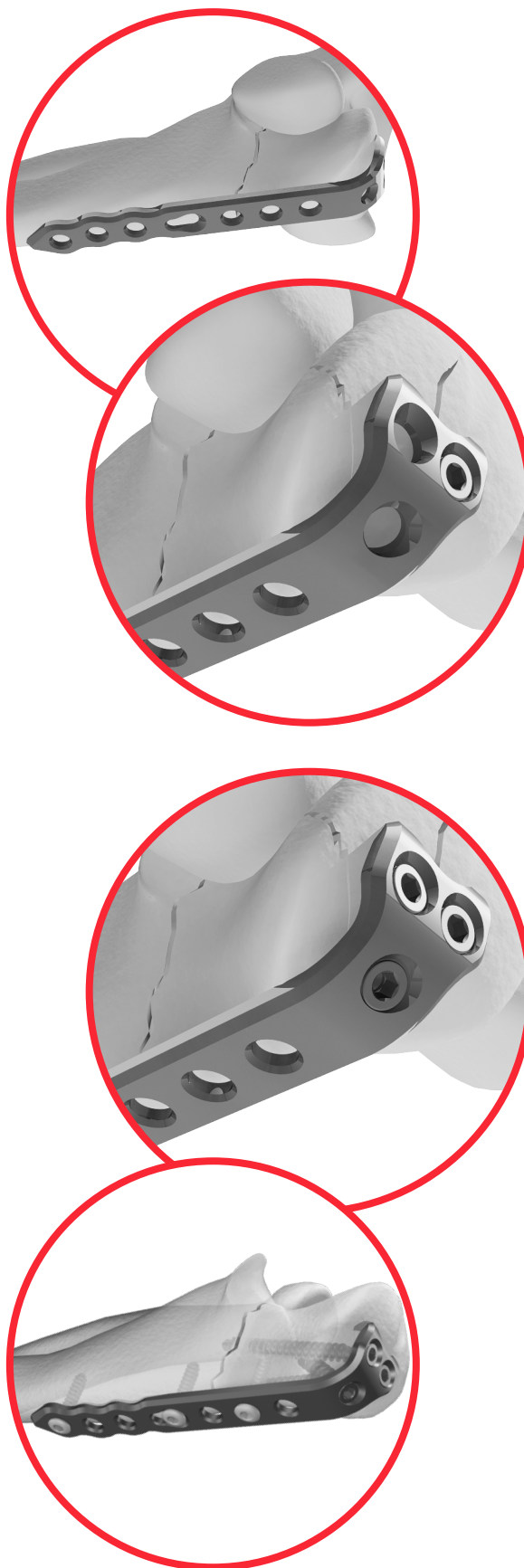


○ Implantation of multi fragment fractures

- In the case of multi-fragment fractures, K-wires can be used to temporarily fix intermediate fragments. Depending on the fracture, the sliding hole can initially be loosely engaged.
- Depending on the fracture situation, the sliding hole can first be inserted loosely according to the measured length using the Screw Length Gauge, Solid Small Fragment Screws (59022) with a non-locking cortical screw (3235I-XX). The olecranon hook fragments are then screwed together with locking cancellous screws (37422-XX) before the main fracture is finally fixed by tightening the screw in the sliding hole.

- The remaining plate holes are then filled with either locking or non-locking screws in order to secure all fracture parts.

NOTE: The objective of the operative treatment is to achieve stable fixation of the fragments.



○ Postoperative treatment

- Dependent on swelling and the condition of the soft tissue, application of an upper arm cast until wound is completely healed
- Physical therapy
- Free early functional therapy following removal of the sutures

○ Explantation

If desired by the patient, the implant can be removed.

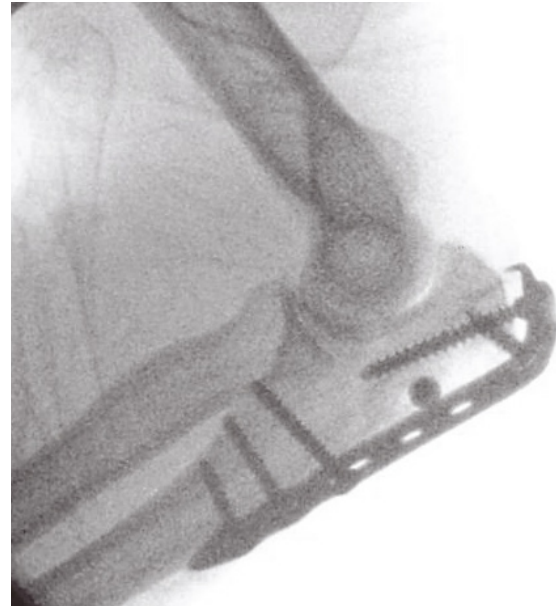
Removal should be performed at the earliest 6 months - 1 1/2 years later or after radiographic verification of the healed bone.

The ITS. Type II anodization surface treatment reduces the risk of cold welding of titanium implants (for more information, see page 23).

○ Case studies

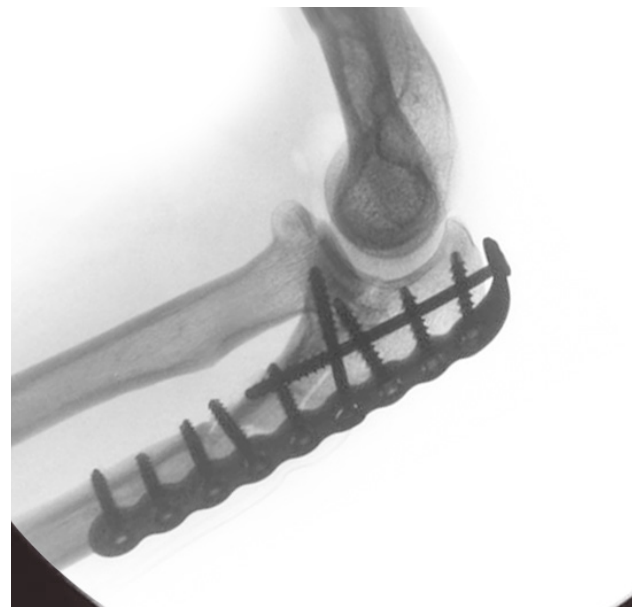
Case I - Olecranon Hook Plate

- Pre- and intraoperative radiographs following fixed angle fixation of a multi fragment fracture of the olecranon AO 2I B1.



Case I - Olecranon Plate

- Pre- and intraoperative radiographs following fixed angle fixation of a fracture of the olecranon AO 2I A1.

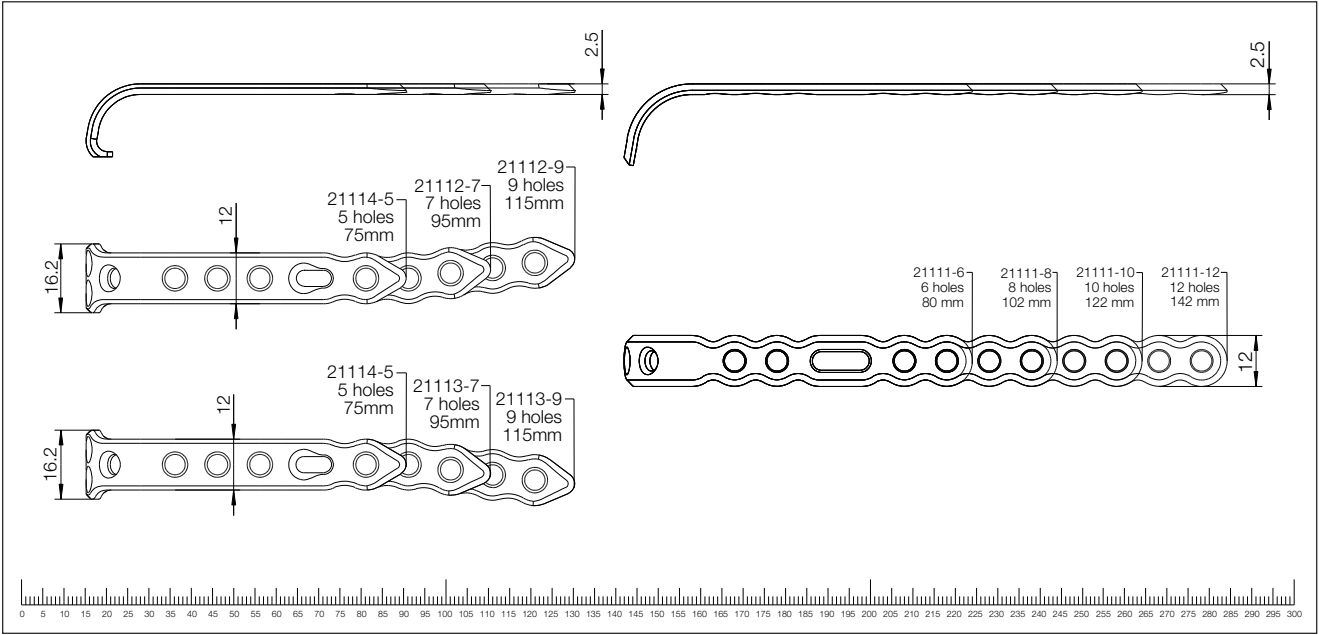




Information

3.

Technical Information



For detailed cleaning and sterilization instructions,
please refer to package insert.

Not true to scale

○ Type II Anodization

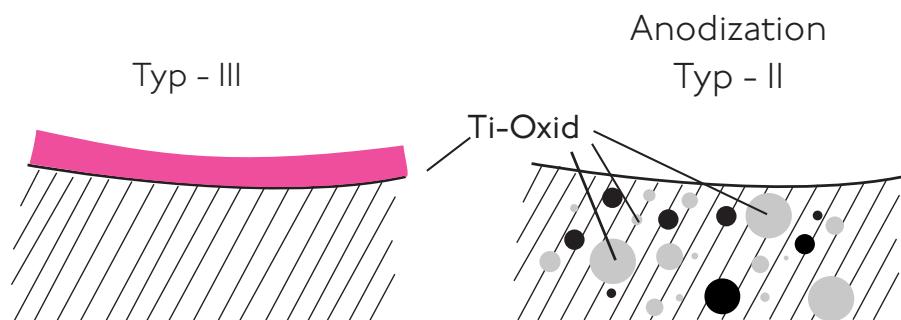
Chemical process - anodization in a strong alkaline solution*

Type III anodization

- Layer thickness 60-200nm
- + Different colors
- Implant surface remains sensitive to:
 - Chipping
 - Peeling
 - Discoloration

Type II anodization

- Layer thickness 2000-10 000nm
- + Film becomes an interstitial part of the titanium
- No visible cosmetic effect



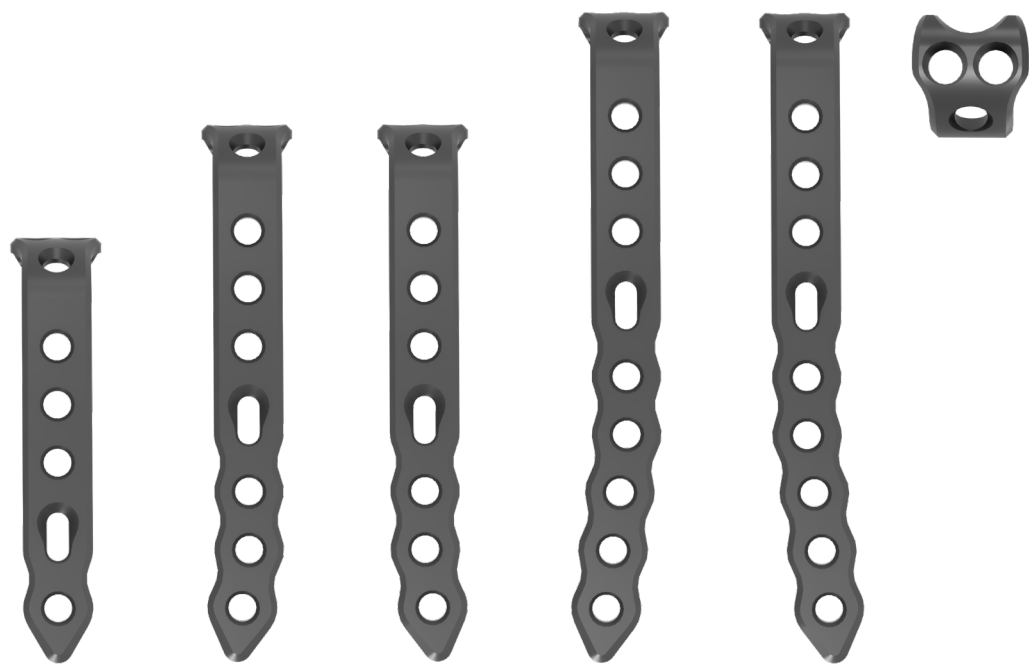
Anodization Type II leads to following benefits*

- Oxygen and silicon absorbing conversion layer
- Decrease in protein adsorption
- Closing of micro pores and micro cracks
- Reduced risk of inflammation and allergy
- Hardened titanium surface
- Reduced tendency of cold welding of titanium implants
- Increased fatigue resistance of implants
- Improved wear and friction characteristics

* White Paper: Ti6Al4V with Anodization Type II: Biological Behavior and Biomechanical Effects; Axel Baumann, Nils Zander

○ Ordering Information

Olecranon Hook Plate



2III4-5

2III2-7

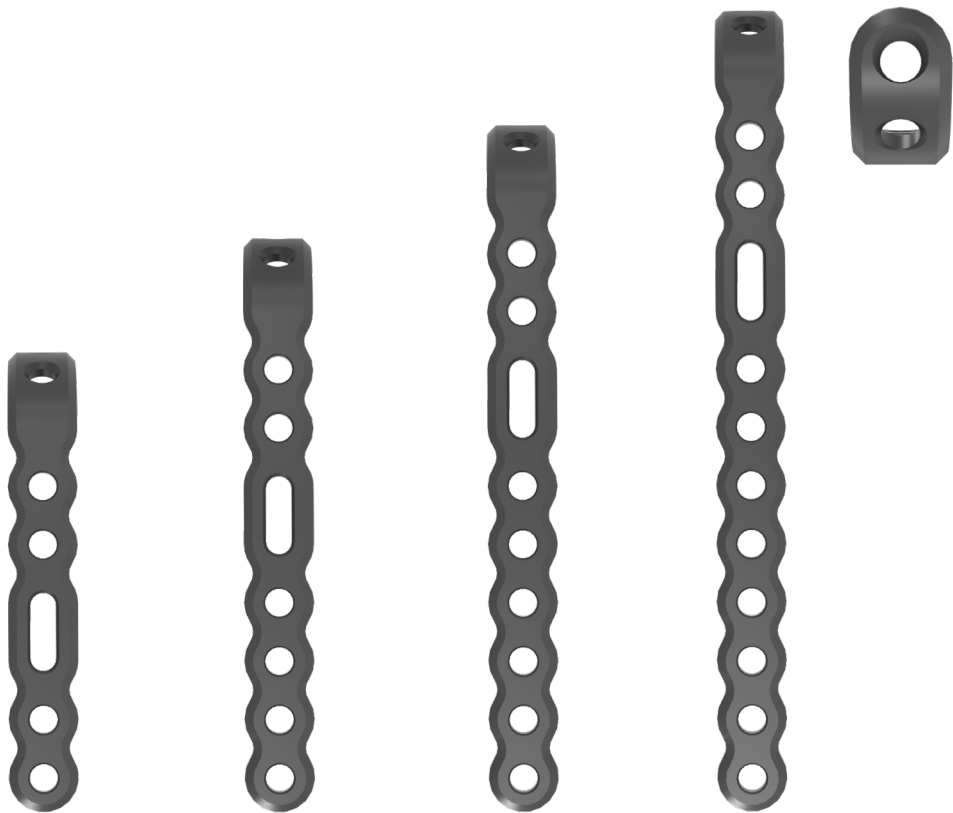
2III3-7

2III2-9

2III3-9

Description		Holes	Article Number
Olecranon Hook Plate	Right/Left	5	2III4-5
Olecranon Hook Plate	Left	7	2III2-7
Olecranon Hook Plate	Right	7	2III3-7
Olecranon Hook Plate	Left	9	2III2-9
Olecranon Hook Plate	Right	9	2III3-9

Olecranon Plate



2IIII-6


2IIII-8


2IIII-10

2IIII-12


Description	Holes	Article Number
Olecranon Plate	6	2IIII-6
Olecranon Plate	8	2IIII-8
Olecranon Plate	10	2IIII-10
Olecranon Plate	12	2IIII-12

Screws

Cortical Screw, D=3.5mm	Length	Article Number
<div> Non-Locking  </div>	10	3235I-10
	12	3235I-12
	14	3235I-14
	16	3235I-16
	18	3235I-18
	20	3235I-20
	22	3235I-22
	24	3235I-24

Cancellous Screw D=4.2mm	Length	Article Number
<div> Locking  </div>	24	37422-24-N
	26	37422-26-N
	28	37422-28-N
	30	37422-30-N
	32	37422-32-N
	34	37422-34-N
	36	37422-36-N
	38	37422-38-N
	40	37422-40-N
	42	37422-42-N
	44	37422-44-N
	46	37422-46-N
	48	37422-48-N
	50	37422-50-N
	55	37422-55-N
	60	37422-60-N

(Optional)

Cortical Screw, D=3.5mm	Length	Article Number
<div> Locking  </div>	12	3735I-12-N
	14	3735I-14-N
	16	3735I-16-N
	18	3735I-18-N
	20	3735I-20-N
	22	3735I-22-N
	24	3735I-24-N

Instruments

(Optional) Plate Holder



58164-I50

Description	Article Number
Temporary Plate Holder, For 3.5/4.2mm Screws	58164-I50

Depth Gauge



59022

Description	Article Number
Depth Gauge, Solid Small Fragement Screws	59022

Spiral Drill



61253-II0



61273-I00

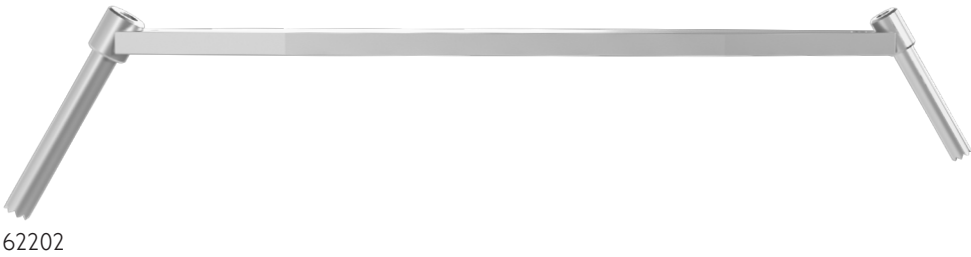
Description	Article Number
Spiral Drill, D=2.5mm, L=110mm, AO Connector	61253-II0
Spiral Drill, D=2.7mm, L=100mm, AO Connector	61273-I00

Screwdriver



Description	Article Number
Screwdriver, WS 2.5, with self-holding sleeve	56252

Drill Guide



Description	Article Number
Drill Guide, D=2.0/2.7mm	62202

Disclaimer:

The intended users are limited to medical personnel with appropriate product training by the medical product consultants or knowledge of the surgical procedure to be applied. The medical staff must ensure that the use of I.T.S. GmbH medical devices is appropriate, taking into account the medical condition and medical history of the patient. Prior to product use, medical personnel must refer to complete information on product label and in IFU, including, but not limited to, indications, contraindications, warnings and preventative measures, and cleaning and sterilization instructions. Product availability is dependent on country registrations and clearances. For more information, please visit www.its-implant.com or contact us at office@its-implant.com. Unless otherwise noted, all information herein is the intellectual property of I.T.S. GmbH.



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