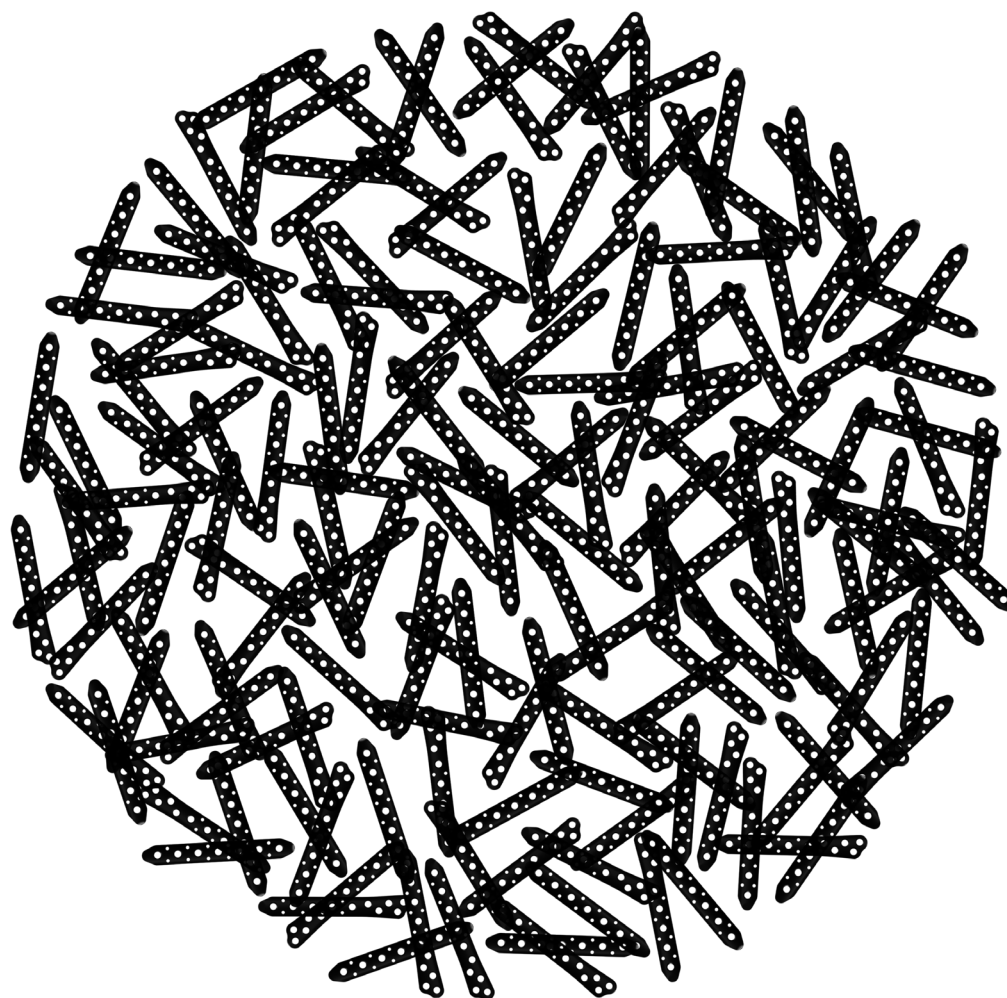


# ITS.

Implants  
trauma



## TLS

Tubular Locking Plates System

**CAUTION:** Federal Law (USA) restricts this device to sale by or on the order of a board certified physician.

**WARNING:** If there is no sufficient bone healing, wrong or incomplete postoperative care, plate might break.

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.

## Contents

### **I. Introduction**

- P. 5 Preface
- P. 6 Screws
- P. 7 Properties
- P. 8 Pre-operative planning
- P. 8 Indications
- P. 9 Contraindications
- P. 9 Time of operation

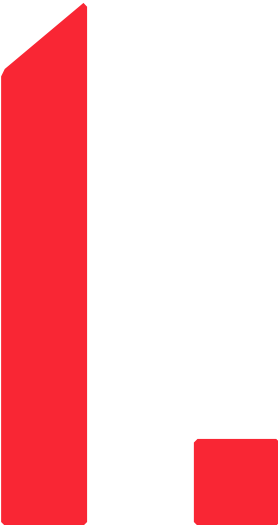
### **2. Surgical technique**

- P. 10 Pre-operative patient preparation
- P. 10 Reduction
- P. 11 Placement of the screws
- P. 12 Postoperative treatment
- P. 12 Explantation

### **3. Information**

- P. 13 Locking
- P. 13 Dotize®
- P. 14 Order list
- P. 15 Notes

# Introduction



## ○ Preface

The Tubular Locking Plates System is an osteosynthesis system for various diaphyseal and metaphyseal fractures.

The special feature of this implant is the free choice of screw placement. The user is able to set any desired screw in any hole, either locking or non-locking screw.

The free choice of screw angulation ( $\pm 15^\circ$ , see page 13) provides an advantage in fracture treatment, especially in the case of complex fractures.

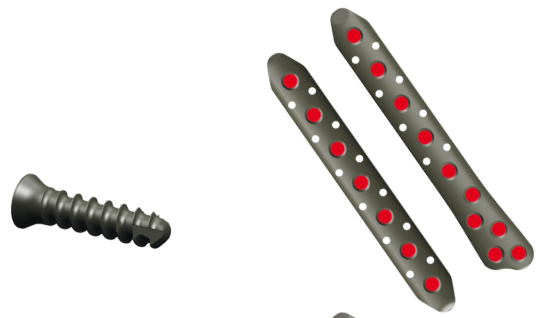


## ○ Screws

32271-XX Cortical Screw, D=2.7mm

61203-100 Spiral Drill, D=2.0mm, L=100mm, AO Connector

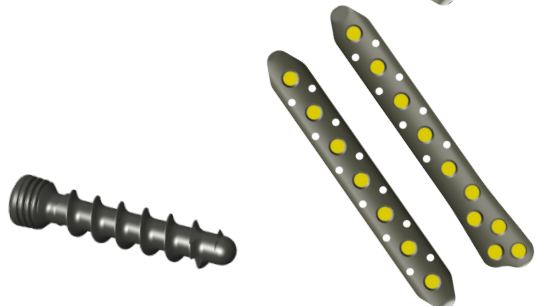
56095-70 Screwdriver, Torque, T9x70



37303-XX Cancellous Stabilization Screw, D=3.0mm, RH

61203-100 Spiral Drill, D=2.0mm, L=100mm, AO Connector

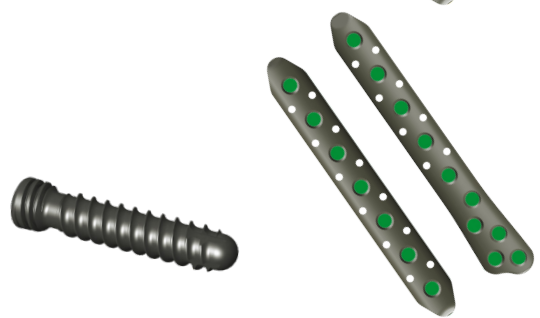
56095-70 Screwdriver, Torque, T9x70



37304-XX Cortical Stabilization Screw, D=3.0mm, RH

61243-100 Spiral Drill, D=2.4mm, L=100mm, AO Connector

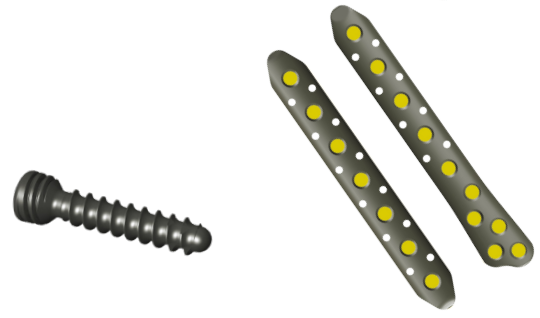
56095-70 Screwdriver, Torque, T9x70



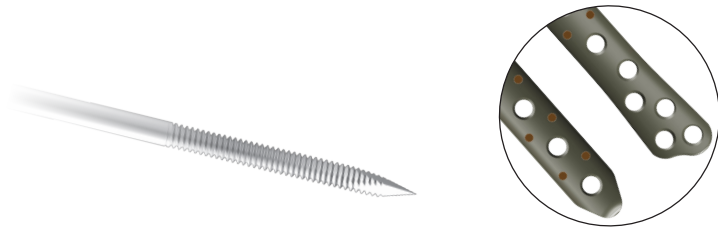
37241-XX Stabilization Screw, D=2.4mm, RH

61183-100 Spiral Drill, D=1.8mm, L=100mm, AO Connector

56095-70 Screwdriver, Torque, T9x70



35164-150 Guide Wire, Steel, D=1.6mm, L=150mm, TR, with thread



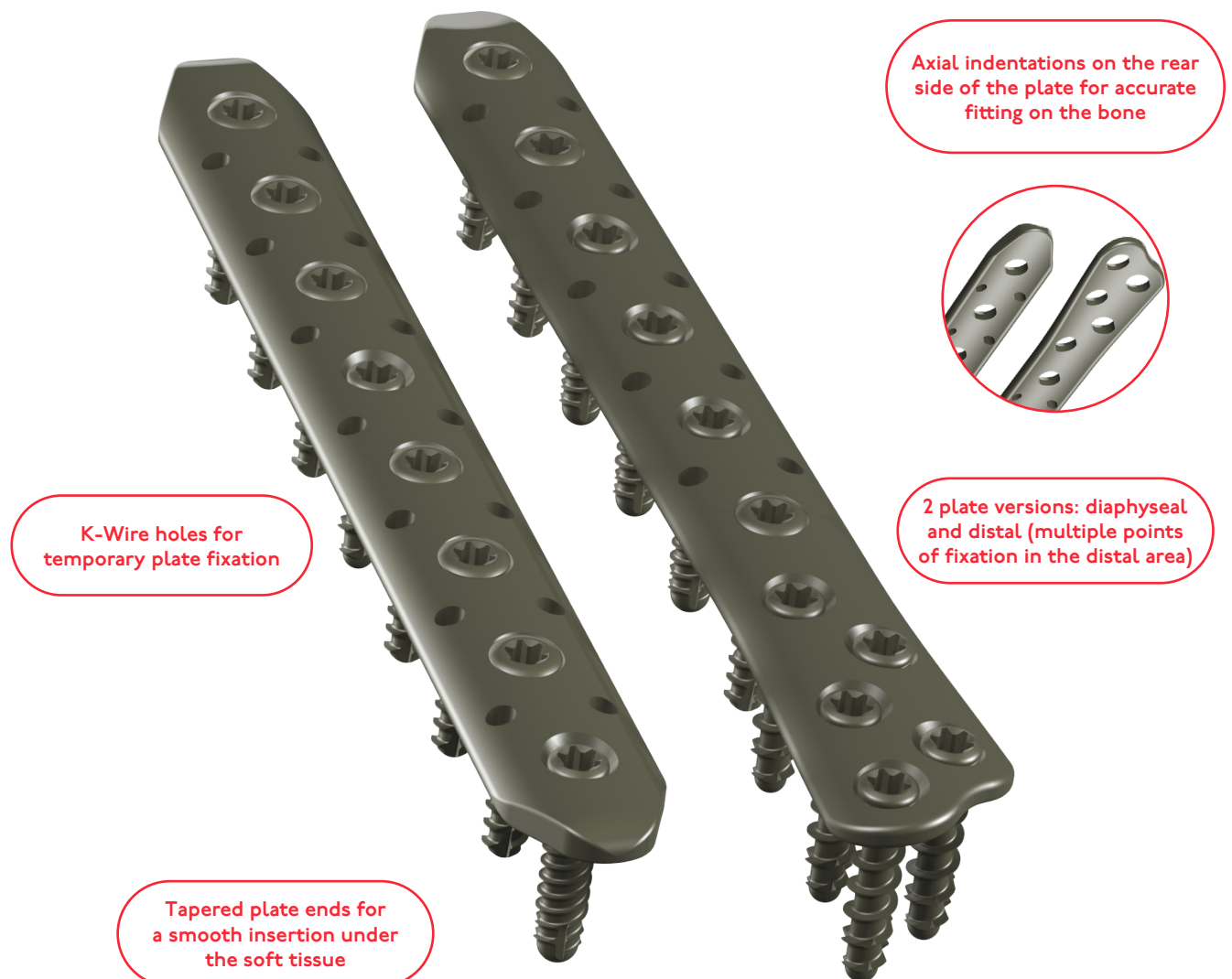
## ○ Properties

### Properties of the material:

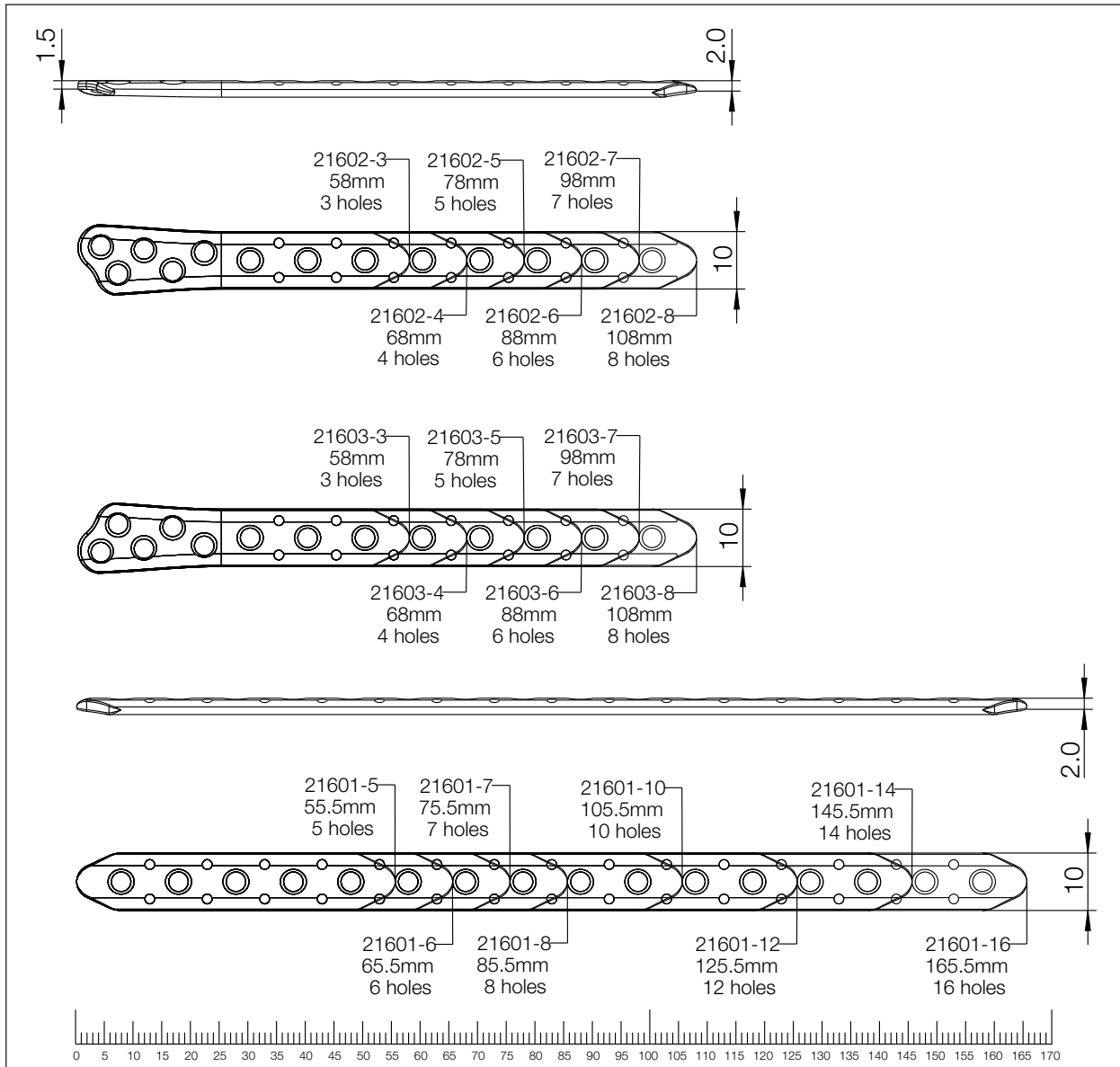
- ◆ Plate material: Titanium
- ◆ Material of screws: TiAl6V4 ELI
- ◆ Easier removal of the implant after the fracture has healed
- ◆ Improved fatigue strength of the implant
- ◆ Reduced risk of cold welding
- ◆ Reduced risk of inflammation and allergy

### Properties of the implant:

- ◆ Multi-directional Locking
- ◆ Anatomically shaped
- ◆ 2 plate versions: diaphyseal and distal (multiple points of fixation in the distal area)
- ◆ Free choice of plate position (lateral, dorsal, ventral)
- ◆ Plate lengths, universal: 5, 6, 7, 8, 10-hole
- ◆ Plate strength, universal: 2.0mm
- ◆ Plate lengths, distal: 3, 4, 5, 6, 7, 8-hole
- ◆ Plate strength, distal: 2.0mm (shaft), 1.5mm (distal)



## ○ Pre-operative planning



## ○ Indications

- ◆ For treatment of fractures, osteotomies and degenerative transformations. Primary: fibula; secondary: radius, ulna
- ◆ Pediatric humeral and tibia fractures
- ◆ Dislocated ankle-fractures group B+C according to Weber [with or without comminuted zones]



## ○ **Contraindications**

- ◆ The plates are not intended for shaft fractures of large bones such as humerus, femur and tibia (except pediatric humeral and tibia fractures)
- ◆ Common situations that do not allow osteosynthesis
- ◆ With advanced osteoporosis
- ◆ In cases of skin and soft tissue problems that prevent a tension-free skin closure
- ◆ Obesity
- ◆ Lack of patient compliance

## ○ **Time of operation**

- ◆ Immediately after trauma or delayed
- ◆ After regression of swelling

## **Surgical Technique**

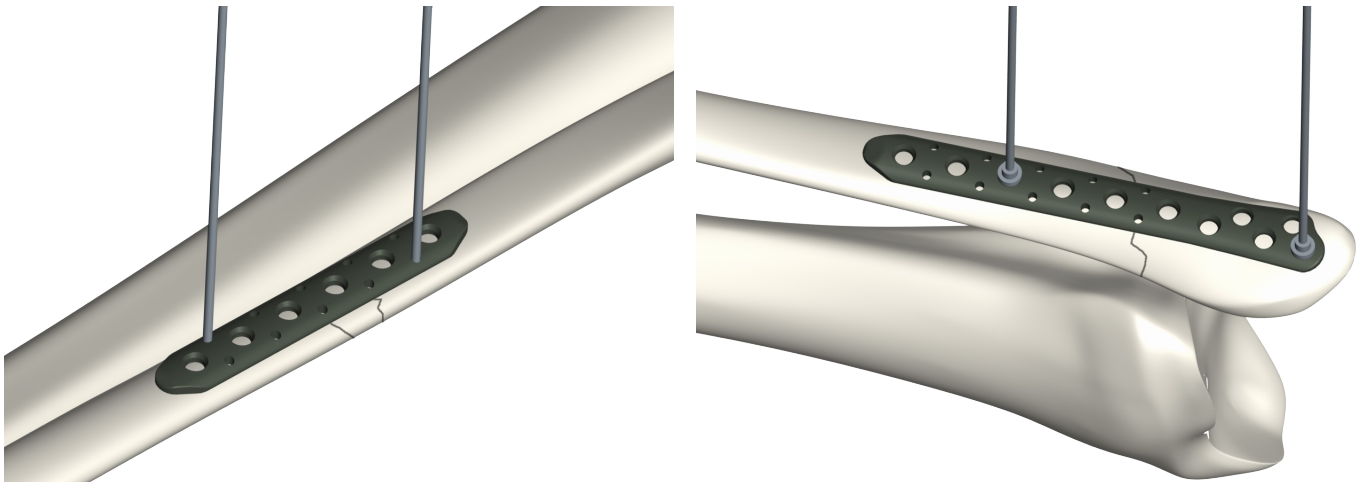
# **2.**

## ○ Pre-operative patient preparation

- ◆ General anaesthesia, regional anaesthesia or combination can be used
- ◆ Tourniquet/partial deprivation of the blood supply

## ○ Reduction

- ◆ Temporary fixation of the plate using guide wires
- ◆ Anatomical reduction of the fracture segments to the plate
- ◆ Subsequent control under fluoroscopy



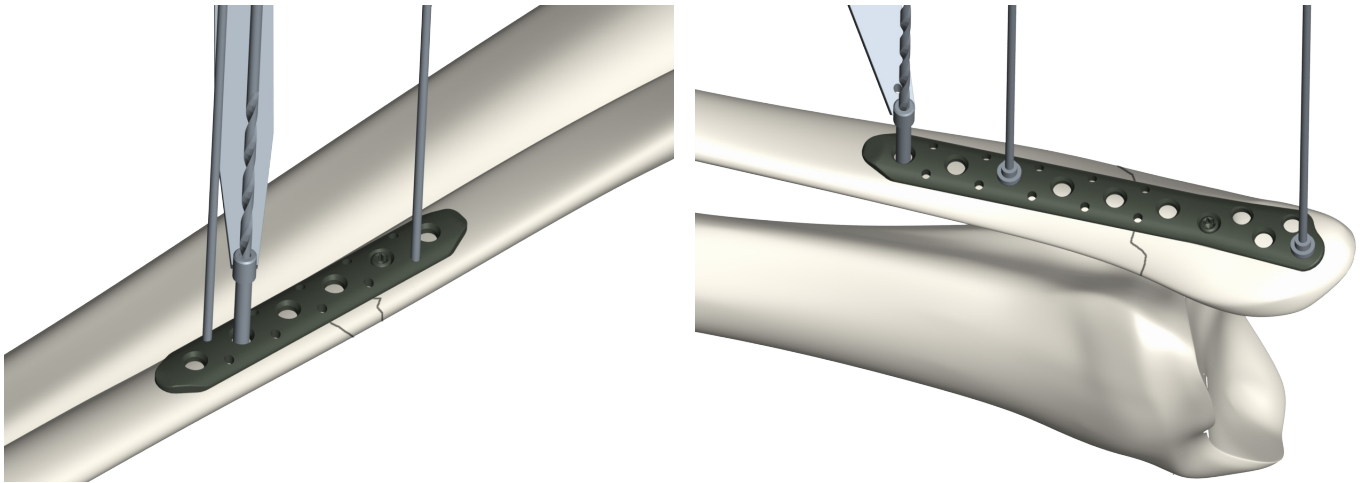
Optionally, the plate can be stabilized using the ITS. Temporary Plate Holder (58164-I50).



## ○ Placement of the screws

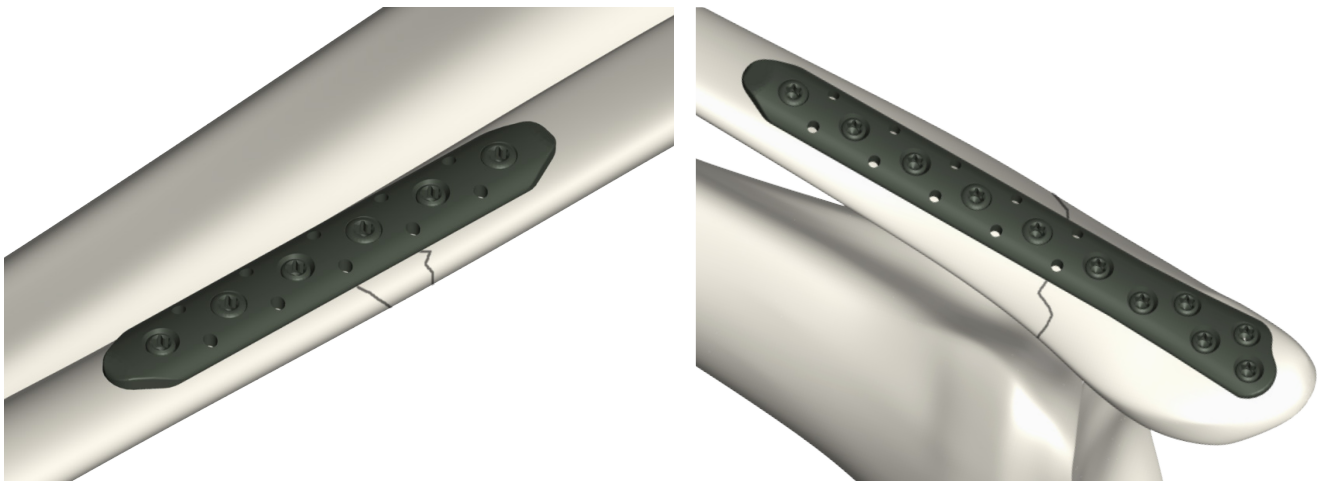
Use the drill guide, D=2.0/2.4mm (**62215**) to bore with the spiral drill, D=2.0mm, L=100mm, AO Connector (**61203-100**) into the plate holes close to fracture.

Determine appropriate length using the depth gauge, PROlock (**59023**). Insert the D=2.7mm cortical screws (**32271-XX**) with the screwdriver, torque, T9x70, (**56095-70**).



Subsequently, place either locking or non-locking screws in the plate holes far from the fracture (suitable drills and screws see page 6).

Finally, control plate position under fluoroscopy.



## ○ Postoperative treatment

- ◆ Physical therapy immediately following surgery (no immobilization required)
- ◆ In case of poor bone quality or insecure fixation, movement fixator for a maximum of 6 weeks
- ◆ When a locking screw connection has been used, it is necessary to be aware that the diagnosis of a non-union may be very delayed.

## ○ 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 problem of cold welding was resolved by using a special surface treatment (for further information see page 13).

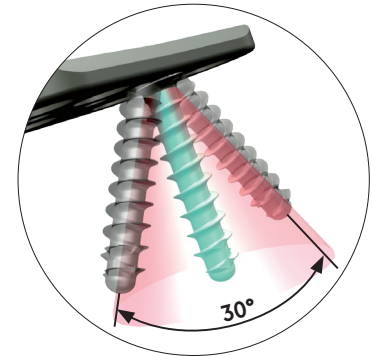
## Information



## ○ Locking

### Locking works because:

- ◆ Screw material (TiAlV) is slightly harder than plate material (Titanium Grade 2)
- ◆ Screw head **forms** thread into the plate (no cutting)



### Benefits:

- ◆  $\pm 15^\circ$  and Locking
- ◆ No pre threading
- ◆ No cold welding
- ◆ No debris
- ◆ You can re-set the screw up to 3 times

## ○ Dotize®

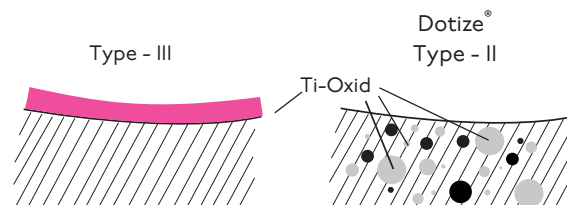
### Chemical process - anodization in a strong alkaline solution\*

#### Type III anodization

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

#### Dotize 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\*

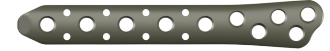
- ◆ Oxygen and silicon absorbing conversion layer
- ◆ Decrease in protein adsorption
- ◆ Closing of micro pores and micro cracks
- ◆ Reduced risk of inflammation and allergy
- ◆ Hardened titanium surface
- ◆ Reduced tendency of cold welding of titanium implants
- ◆ Increased fatigue resistance of implants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

## ○ Order list

Universal Tubular Plate, 5-Hole	21601-5
Universal Tubular Plate, 6-Hole	21601-6
Universal Tubular Plate, 7-Hole	21601-7
Universal Tubular Plate, 8-Hole	21601-8
Universal Tubular Plate, 10-Hole	21601-10



Distal Tubular Plate, 3-Hole, Left	21602-3
Distal Tubular Plate, 3-Hole, Right	21603-3
Distal Tubular Plate, 4-Hole, Left	21602-4
Distal Tubular Plate, 4-Hole, Right	21603-4
Distal Tubular Plate, 5-Hole, Left	21602-5
Distal Tubular Plate, 5-Hole, Right	21603-5
Distal Tubular Plate, 6-Hole, Left	21602-6
Distal Tubular Plate, 6-Hole, Right	21603-6
Distal Tubular Plate, 7-Hole, Left	21602-7
Distal Tubular Plate, 7-Hole, Right	21603-7
Distal Tubular Plate, 8-Hole, Left	21602-8
Distal Tubular Plate, 8-Hole, Right	21603-8



Cancellous Stabilization Screw, D=3.0mm, L=10mm, RH	37303-10
Cancellous Stabilization Screw, D=3.0mm, L=12mm, RH	37303-12
Cancellous Stabilization Screw, D=3.0mm, L=14mm, RH	37303-14
Cancellous Stabilization Screw, D=3.0mm, L=16mm, RH	37303-16
Cancellous Stabilization Screw, D=3.0mm, L=18mm, RH	37303-18
Cancellous Stabilization Screw, D=3.0mm, L=20mm, RH	37303-20
Cancellous Stabilization Screw, D=3.0mm, L=22mm, RH	37303-22
Cancellous Stabilization Screw, D=3.0mm, L=24mm, RH	37303-24



Cortical Screw, D=2.7mm, L=10mm	32271-10
Cortical Screw, D=2.7mm, L=12mm	32271-12
Cortical Screw, D=2.7mm, L=14mm	32271-14
Cortical Screw, D=2.7mm, L=16mm	32271-16
Cortical Screw, D=2.7mm, L=18mm	32271-18
Cortical Screw, D=2.7mm, L=20mm	32271-20
Cortical Screw, D=2.7mm, L=22mm	32271-22
Cortical Screw, D=2.7mm, L=24mm	32271-24








Cortical Stabilization Screw, D=3.0mm, L=10mm, RH	37304-10
Cortical Stabilization Screw, D=3.0mm, L=12mm, RH	37304-12
Cortical Stabilization Screw, D=3.0mm, L=14mm, RH	37304-14
Cortical Stabilization Screw, D=3.0mm, L=16mm, RH	37304-16
Cortical Stabilization Screw, D=3.0mm, L=18mm, RH	37304-18
Cortical Stabilization Screw, D=3.0mm, L=20mm, RH	37304-20
Cortical Stabilization Screw, D=3.0mm, L=22mm, RH	37304-22
Cortical Stabilization Screw, D=3.0mm, L=24mm, RH	37304-24



Stabilization Screw, D=2.4mm, L=10mm, RH	37241-10
Stabilization Screw, D=2.4mm, L=12mm, RH	37241-12
Stabilization Screw, D=2.4mm, L=14mm, RH	37241-14
Stabilization Screw, D=2.4mm, L=16mm, RH	37241-16
Stabilization Screw, D=2.4mm, L=18mm, RH	37241-18
Stabilization Screw, D=2.4mm, L=20mm, RH	37241-20
Stabilization Screw, D=2.4mm, L=22mm, RH	37241-22
Stabilization Screw, D=2.4mm, L=24mm, RH	37241-24



Screwdriver, Torque, T9x70	56095-70	
Depth Gauge, PROlock	59023	
Spiral Drill, D=2.0mm, L=100mm, AO Connector	61203-100	
Drill Guide, D=2.0/2.4mm	62215	
Guide Wire, Steel, D=1.6mm, L=150mm, TR, w. thread	35164-150	

Sterilization Tray, Tubular Plates System

**Optional (on request)**

Temporary Plate Holder	58164-150	
------------------------	-----------	---



**I.T.S. USA**  
**1778 Park Avenue N, Suite 200**  
**Maitland, FL 32751**

**Tel.: 877 - 971 - 8054**  
**Fax: 877 - 971 - 8056**  
**info@its-implantusa.com**  
**www.its-implantusa.com**



Order No. TLS-OP-0224-USA  
Edition: February/2024

© ITS. GmbH Graz/Austria 2024.  
Subject to technical alterations, errors and misprints excepted.