

SURGICAL TECHNIQUE

# Hand 1.2 – 2.3



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For further information regarding the APTUS product line visit [www.medartis.com](http://www.medartis.com)

# Introduction

## Product Materials

Plates	Pure titanium
Washers	Pure titanium
Screws	Titanium alloy
K-wires	Stainless steel
Instruments	Stainless steel, PEEK, aluminum, Nitinol, silicone or titanium
Containers	Stainless steel, aluminum, PEEK, polyphenylsulfone, polyurethane, silicone

## Indications

### APTUS Hand Group

- Management of the fractures of the distal, middle and proximal phalanges and metacarpals
- Management of all types of transversal fractures, spiral fractures, fractures near joints with or without joint involvement, shaft fractures, comminuted fractures, dislocated fractures, avulsion fractures
- DIP and PIP arthrodeses

### APTUS 2.0/2.3 Four Corner Fusion Plate

The APTUS 2.0/2.3 Four Corner Fusion Plate, an addition to the APTUS Titanium Fixation System, is designed specifically for fusion of carpal bones including: hamate, capitate, lunate, triquetrum and is for use in patients suffering pain and/or loss of function due to osteoarthritis, post-traumatic arthritis, fractures, revision of failed partial wrist fusions, carpal instability, or rheumatoid arthritis. The fusion plate is used in conjunction with locking and non-locking screws that fix the plate to the carpal bones of the hand.

### APTUS CMC-I Fusion Plate System

The APTUS CMC-I Fusion Plate System is intended to be used for fusion of the trapezium with the first metacarpal

## Contraindications

- Preexisting or suspected infection at or near the implantation site
- Known allergies and/or hypersensitivity to foreign bodies
- Inferior or insufficient bone quality to securely anchor the implant
- Patients who are incapacitated and/or uncooperative during the treatment phase
- The treatment of at-risk groups is inadvisable

## Color Coding

System Size	Color Code
1.2	Red
1.5	Green
2.0	Blue
2.3	Brown

### Plates and Screws

Special implant plates and screws have their own color:

Implant plates gold	Fixation plates
Implant plates blue	TriLock plates (locking)
Implant screws gold	Cortical screws (fixation)
Implant screws blue	TriLock screws (locking)

## Possible Combination of Plates and Screws

Plates and screws can be combined within one system size:

### 1.2 / 1.5 Fixation Plates

- 1.2 Cortical Screws, HexaDrive 4
- 1.5 Cortical Screws, HexaDrive 4
- 1.8 Emergency Screws, HexaDrive 4

### 1.5 TriLock Plates

- 1.2 Cortical Screws, HexaDrive 4
- 1.5 Cortical Screws, HexaDrive 4
- 1.5 TriLock Screws, HexaDrive 4
- 1.8 Emergency Screws, HexaDrive 4

### 2.0 / 2.3 Fixation and MC Compression Plates

- 2.0 Cortical Screws, HexaDrive 6
- 2.3 Cortical Screws, HexaDrive 6
- 2.5 Emergency Screws, HexaDrive 6

### 2.0 TriLock Plates

- 2.0 Cortical Screws, HexaDrive 6
- 2.0 TriLock Screws, HexaDrive 6
- 2.3 Cortical Screws, HexaDrive 6
- 2.5 Emergency Screws, HexaDrive 6

### 2.0 / 2.3 TriLock Arthrodesis Plates

- 2.0 Cortical Screws, HexaDrive 6
- 2.0 TriLock Screws, HexaDrive 6
- 2.3 Cortical Screws, HexaDrive 6
- 2.5 Emergency Screws, HexaDrive 6

## Symbols



HexaDrive












































See Instructions for Use  
www.medartis.com

# System Overview

The APTUS Hand fixation system is used for fractures, osteotomies and arthrodesis of the hand. According to the respective APTUS system size (1.2, 1.5, 2.0 and 2.3) and plate technology (fixation vs. locking), plates are available in different designs (e.g. straight vs. grid plates, or L-, Y-, T-shape) and in various plate sizes (e.g. total length, number of holes, thickness).


For the complete implant portfolio, please refer to the APTUS Ordering Catalog, also available at [www.medartis.com](http://www.medartis.com).

Description	Examples			Main Feature	Plate Thickness	System
Straight plates	 A-4300.03				0.6 mm	1.2/1.5
	 A-4350.08			locking	0.8 mm	1.2/1.5
	 A-4600.03				1.0 mm	2.0/2.3
	 A-4650.03			locking	1.0 mm	2.0/2.3
	 A-4645.03			compression	1.3 mm	2.0/2.3
	 A-4655.03			locking	1.3 mm	2.0/2.3
L, Y, T-plates	 A-4300.20	 A-4300.13	 A-4300.11		0.6 mm	1.2/1.5
	 A-4350.14		 A-4350.41	locking	0.8 mm	1.2/1.5
	 A-4600.20	 A-4600.13	 A-4600.11		1.0 mm	2.0/2.3
	 A-4650.20	 A-4650.13	 A-4650.11	locking	1.0 mm	2.0/2.3
	 A-4645.20		 A-4645.16	compression	1.3 mm	2.0/2.3
	 A-4655.20	 A-4655.16	 A-4655.11	locking	1.3 mm	2.0/2.3

Description		Examples		Main Feature	Plate Thickness	System
Grid plates		 A-4300.62	 A-4300.58		0.6 mm	1.2/1.5
		 A-4350.62		locking	0.8 mm	1.2/1.5
		 A-4600.62	 A-4600.58		1.0 mm	2.0/2.3
		 A-4650.62	 A-4650.58	locking	1.0 mm	2.0/2.3
		 A-4655.56		locking	1.3 mm	2.0/2.3
Special plates	Hook plate	 A-4340.32		compression	0.6 mm	1.2/1.5
	Biconcave washers	 A-4300.70			0.6 mm	1.2/1.5
		 A-4600.70			0.8 mm	2.0/2.3
	Condylar plates	 A-4340.30		compression	0.6 mm	1.2/1.5
		 A-4640.30		compression	1.0 mm	2.0/2.3
	Scaphoid plate	 A-4350.80		locking	0.8 mm	1.2/1.5
	Rotation plates	 A-4350.23		locking	0.8 mm	1.2/1.5
		 A-4655.24		locking	1.3 mm	2.0/2.3
Arthrodesis plates		 A-4660.10		locking	1.4 mm	2.0/2.3
		 A-4660.15		locking	1.4 mm	2.0/2.3
		 A-4655.90		locking	1.3 mm	2.0

# Treatment Concept

The table below lists typical clinical findings which can be treated with the implants of the APTUS Hand System 1.2–2.3.

Phalanges & Scaphoid													
													
Plates and Screws (see System Overview)			1.2, 1.5 Cortical Screws	1.2/1.5 Fixation Plates				1.2/1.5 TriLock Plates					
				straight	L / T / Y	grid	special		straight	T	grid	special	
							condylar	hook				rotation	scaphoid
plate thickness (mm)				0.6	0.6	0.6	0.6	0.6	0.8	0.8	0.8	0.8	0.8
Fractures													
extra-articular	simple (transverse, oblique, spiral)		xx	xxx	xxx	xxx	xxx		xx	xx	xx		
	comminuted, multifragmentary			x	x	x			xxx	xxx	xxx		
intra-articular	distal	simple	xxx		x	x	xx		x	x	x		
		complex	xx		x	x				xx	xx		
	proximal	simple	xxx		x	x	xx		x	xx	xx		
		complex			x	x				xxx	xxx		
bony avulsion (mallet finger, skier's thumb)			xx					xxx					
scaphoid non-union										x	x		xxx
Osteotomies													
rotational correction			x								x	xxx	
axial correction					x	x				xx	xxx		
Arthrodesis													
DIP/IP joint			xx										
PIP joint				x		xx			x		xxx		

■ non-locking      ■ Primary recommendation  
■ locking      ■ Recommendation  
■ Possible

The above-mentioned information is a recommendation only. The operating surgeon is solely responsible for the choice of the suitable implant for the specific case.

## Proximal Phalanges, Metacarpals, Carpals



Plates and Screws (see System Overview)			2.0, 2.3 Cortical Screws	2.0/2.3 Fixation Plates				2.0/2.3 TriLock Plates						2.0/2.3 MC Compr. Plates		2.0/2.3 TriLock Arthrodesis Plates			
				straight	L / T / Y	grid	special	straight		L / T / Y		grid		special	straight	L / T	special		
							condylar						rotation	compression	compression	4 CF	STT	CMC-I	
plate thickness (mm)				1.0	1.0	1.0	1.0	1.0	1.3	1.0	1.3	1.0	1.3	1.3	1.3	1.3	1.4	1.4	1.3
Fractures																			
extra-articular	simple (transverse, oblique, spiral)		xx	xxx	xxx	xxx	xxx	xx	xx	xx	xx	xx	xx		xxx	xxx			
	comminuted, multifragmentary			x	x	x		xxx	xxx	xxx	xxx	xxx	xxx						
intra-articular	distal	simple	xxx		x	x	xx	x	x	x	x	x	x		x	x			
		complex	xx		x	x						xx	xx						
	proximal	simple	xxx		x	x	xx	x	x	xx	xx	xx	xx		x	x			
		complex			x	x				xxx	xxx	xxx	xxx						
subcapital (Boxer)					x	x				xxx	xx	xxx	xx			x			
Bennett			xxx		x	x				x	x	x	x			x			
Winterstein					x	x				xx	xxx	xx	xxx			x			
Rolando					x	x				xx	xxx	xx	xxx			x			
Osteotomies																			
rotational correction			x									x	x	xxx					
axial correction					x	x				xx	xx	xxx	xxx						
Arthrodesis																			
MCP-I joint				x	x	xx		x	x	x	x	xx	xxx			x			
CMC-I joint			x								x		x			x			xxx
4 Corner Fusion																	xxx		
STT Fusion																		xxx	

■ non-locking	■ Primary recommendation
■ locking	■ Recommendation
	■ Possible

The above-mentioned information is a recommendation only. The operating surgeon is solely responsible for the choice of the suitable implant for the specific case.

# Instrument Application

## General Instrument Application

### Plate Holding and Positioning

The plate holding and positioning instrument (A-2350, A-2650) is used to pick up the plate in order to position it on the bone.



A-2350  
1.2/1.5 Plate Holding and Positioning Instrument

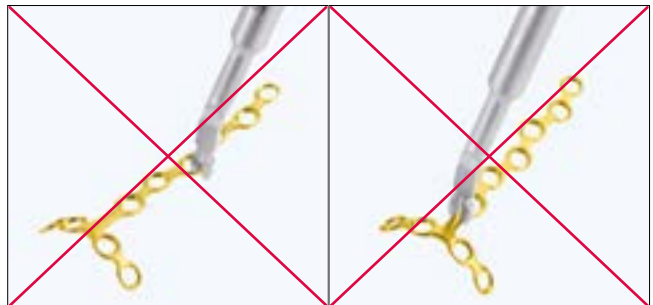


A-2650  
2.0/2.3 Plate Holding and Positioning Instrument

Choose the appropriate plate holding and positioning instrument based on the system size of the plate. Pick up the plate at the bar.

#### Caution

The plate holding and positioning instruments are not compatible with the 1.5 TriLock plates (A-4350.xx).



The ball tip end of the 1.2/1.5 plate holding and positioning instrument (A-2350) facilitates positioning, moving and holding the implant on the bone and can be used with all system sizes.





## Plate Bending

If required, plates can be bent with the plate bending pliers (A-2040). The plate bending pliers have a pin to protect the plate holes during the bending process. The pin fits all 1.2/1.5 and 2.0/2.3 APTUS Hand plates.

### Warning

Wrong bending of the plate may lead to impaired functionality and postoperative construct failure.

The labeled side of the plate must always face upwards when inserting the plate into the bending pliers.

When bending a plate, the plate bending pliers must be held so that the letters “UP” are legible from above. This ensures that the plate holes are not damaged.

While bending, the plate must always be held at two adjacent holes to prevent contour deformation of the intermediate plate hole.

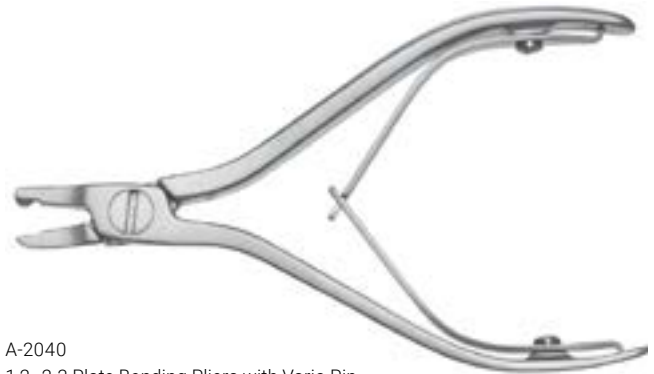
### Warning

Do not bend the plate by more than 30°. Bending the plate further may deform the plate holes and may cause the plate to break postoperatively.

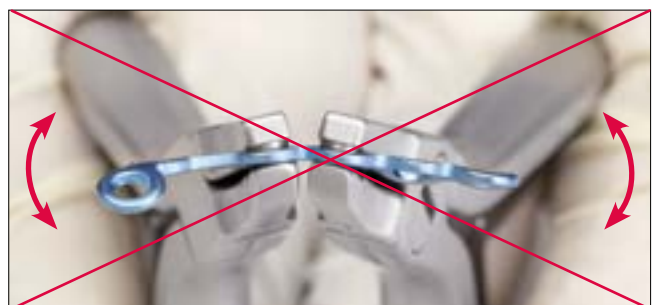
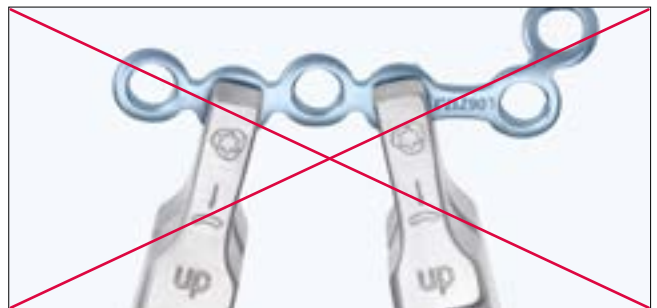
### Warning

Repeatedly bending the plate in opposite directions may cause the plate to break postoperatively.

Always use the provided plate bending pliers to avoid damaging the plate holes. Damaged plate holes prevent correct and secure seating of the screw in the plate and increase the risk of system failure.



A-2040  
1.2-2.3 Plate Bending Pliers with Vario Pin

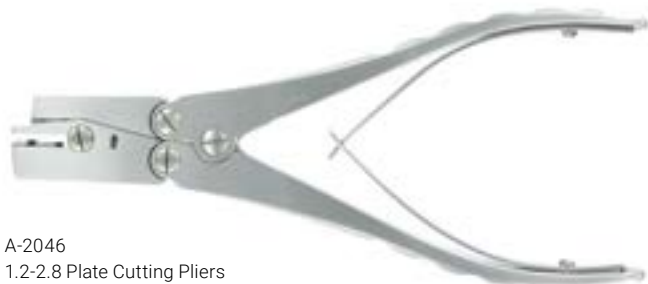


## Cutting

If required, the 1.2–2.8 plate cutting pliers (A-2046) can be used to cut the APTUS Hand plates 1.2/1.5 and 2.0/2.3, as well as K-wires up to a diameter of 1.8 mm.

### Warning

Wrong cutting of the plate may result in sharp edges and lead to injuries of the surrounding tissues.



A-2046  
1.2-2.8 Plate Cutting Pliers

Ensure that there are no remaining plate segments in the cutting pliers (visual check). Insert the plate from the front into the open cutting pliers. Always ensure that the labeled side of the plate is facing upwards. Hold the implantable plate segment with your hand during and after cutting.

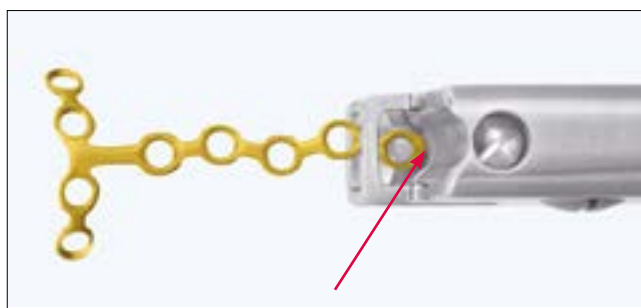
### Recommendation

To facilitate the insertion of the plate, support the cutting pliers slightly with your middle finger.



You can visually check the desired cutting line through the cutting window in the head of the pliers (see figure). Always leave enough material on the rest of the plate to keep the adjacent hole intact.

Always cut the plate holes individually. If two plate holes need to be cut off, two cutting procedures are necessary.



Shorten the K-wires by inserting the wire through the opening located on the side of the plate cutting pliers. Cut the wire by pressing the pliers.



## Drilling

Color-coded twist drills are available for every APTUS system size. All twist drills are color coded with a ring system.

System Size	Color Code
1.2	Red
1.5	Green
2.0	Blue
2.3	Brown

There are two different types of twist drills available for every system size: The core hole drills are characterized by one colored ring, the gliding hole drills (for lag screw technique) are characterized by two colored rings.

### Notice

Twist drills are also available in different lengths, with different stops and with different shaft ends. For details, please refer to chapter "Implants and Instruments".



A-3130



A-3230



A-3430



A-3530

Core hole drills = one colored ring



A-3131



A-3231



A-3431



A-3531

Gliding hole drills = two colored rings

Drill guides for core holes (for TriLock and cortical screws):

- for 1.2 screws A-2025 (centric drilling)
- for 1.5 screws A-2025 (centric drilling) or A-2023 (one green marking)
- for 2.0 screws A-2020 (centric drilling) or A-2024 (one blue marking)
- for 2.3 screws A-2020 (centric drilling)

Drill guides for gliding holes (only for cortical screws):

- for 1.2 screws A-2025 (centric drilling)
- for 1.5 screws A-2023 (two green markings)
- for 2.0 screws A-2020 (centric drilling) or A-2024 (two blue markings)
- for 2.3 screws A-2020 (centric drilling)

A-2020  
2.0/2.3 Drill Guide, Centric/ExcentricA-2023  
1.5 Drill Guide for Lag ScrewsA-2024  
2.0 Drill Guide for Lag ScrewsA-2025  
1.2/1.5 Drill Guide, Centric/Excentric

This symbol marks the end of the drill guide used for centric drilling. This end is used for all fixation and TriLock holes, as well as for lag screws.



This symbol marks the end of the drill guide used for eccentric drilling. This end is used for compression holes only.

### Warning

The arrow "←" indicates the direction of the compression and must always point towards the fracture line.



### Warning

The twist drill must always be guided through a drill guide. This prevents damage to the screw hole and protects the surrounding tissue from direct contact with the drill. The drill guide also serves to limit the pivoting angle.

After positioning the plate, insert the drill guide and the twist drill into the screw hole. In the APTUS Hand System, the drill is guided by the drill shaft and not the drill flute.



**Warning**

For TriLock plates ensure that the screw holes are predrilled with a pivoting angle of no more than  $\pm 15^\circ$ . For this purpose, the drill guides feature a limit stop of  $\pm 15^\circ$ . A predrilled pivoting angle of  $>15^\circ$  no longer allows the TriLock screws to correctly lock in the plate.

**Countersinking**

In case of inserting a cortical screw without plate, the corresponding countersink (A-3310, A-3610) may be used to create a recess in the bone for the screw head.



A-3310  
1.2/1.5 Countersink for Cortical Screws, Dental



A-3610  
2.0/2.3 Countersink for Cortical Screws, Dental

**Caution**

Use the handle (A-2071) instead of a power tool to reduce the risk of countersinking too far through the near cortex.



A-2071  
Handle with Quick Connector, Dental

## Assigning the Screw Length

The depth gauge (A-2030, A-2032) is used to assign the ideal screw length for use in monocortical or bicortical screw fixation.



A-2030  
1.2/2.3 Depth Gauge



A-2032  
2.0/2.3 Depth Gauge

Retract the slider of the depth gauge.

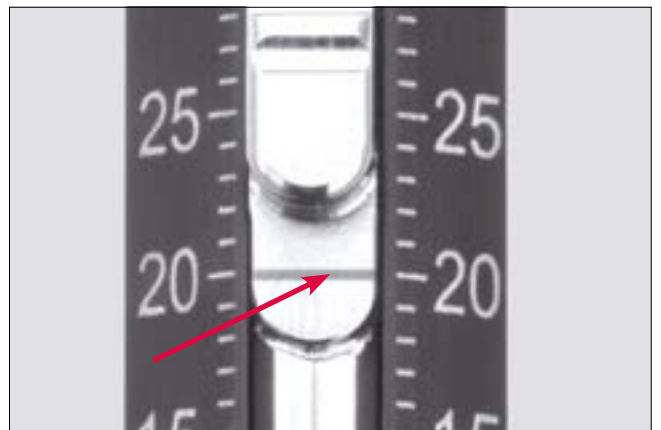
The depth gauge caliper has a hooked tip that is either inserted to the bottom of the hole or is used to catch the far cortex of the bone. When using the depth gauge, the caliper stays static, only the slider is adjusted.



To assign the screw length, place the distal end of the slider onto the implant plate or directly onto the bone (e.g. for fracture fixation with lag screws).



The ideal screw length for the assigned drill hole can be read on the scale of the depth gauge.



## Screw Pick-Up

The screwdrivers (A-2310, A-2610) and the screwdriver blades (A-2311, A-2611) feature the patented HexaDrive self-holding system.



A-2310  
1.2/1.5 Screwdriver, HD4, Self-Holding



A-2610  
2.0/2.3 Screwdriver, HD6, Self-Holding



A-2311  
1.2/1.5 Screwdriver Blade, HD4, AO



A-2611  
2.0/2.3 Screwdriver Blade, HD6, AO



A-2073  
Cannulated Handle with Quick Connector, AO

To remove the screws from the implant container, insert the appropriately color-coded screwdriver perpendicularly into the screw head of the desired screw and pick up the screw with axial pressure.

### Notice

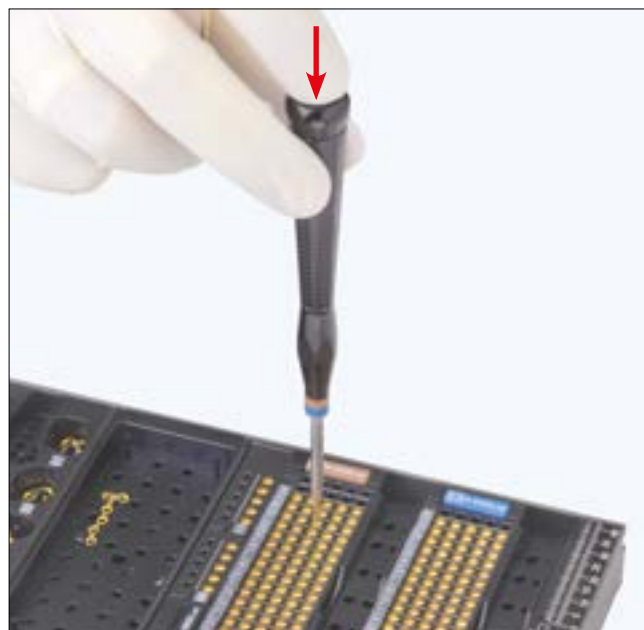
The screw will not hold without axial pressure.

### Caution

Vertically extract the screw from the compartment. Picking up the screw repeatedly may lead to permanent deformation of the self-retaining area of the HexaDrive inside the screw head. Therefore, the screw may no longer be able to be picked up correctly. In this case, a new screw has to be used.

### Notice

Check the screw length and diameter at the scale of the measuring module. The screw length is determined at the end of the screw head.





# Surgical Techniques

## General Surgical Technique

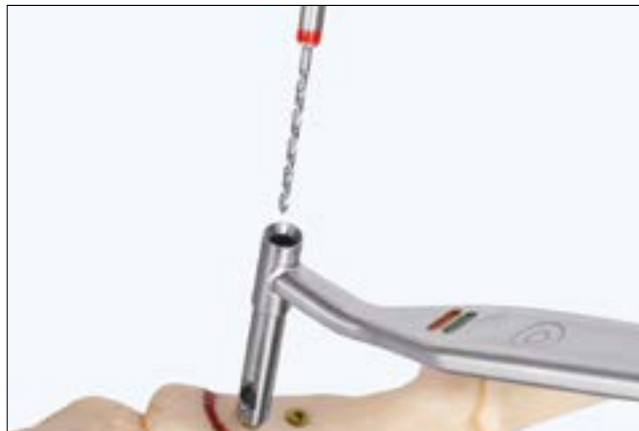
### Lag Screw Technique

#### Warning

Incorrect application of the lag screw technique may result in postoperative loss of reduction.

#### 1. Drilling the core hole

Use the twist drill for core holes (one colored ring) of the required system size (see chapter "Drilling") and drill through both cortices. Drill perpendicular to the fracture line.



#### 2. Drilling the gliding hole

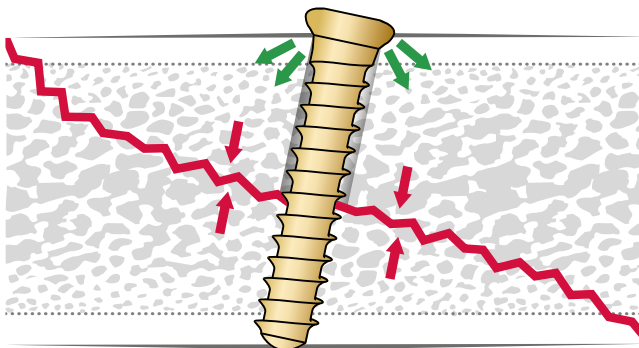
Use the twist drill for gliding holes (two colored rings) of the same system size (see chapter "Drilling") to overdrill the near cortex.

Do not drill further than to the fracture line.



#### 3. Compressing the fracture

Compress the fracture with the corresponding cortical screw.





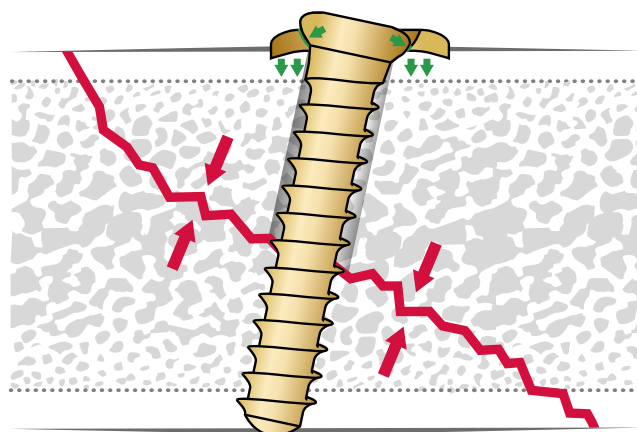
#### 4. Optional steps before compression

If required, use the corresponding countersink (A-3310, A-3610) to create a recess in the bone for the screw head (see chapter "Countersinking").



#### Warning

If the cortical bone is soft, a biconcave washer (A-4300.70, A-4600.70) can be used for the cortical screw in order to distribute the forces over a larger bone surface around the screw head.



# Specific Surgical Techniques

## Hook Plate

A-4340.32 for mallet fractures (avulsion fractures)

### 1. Picking up and positioning the plate

Take the hook plate (A-4340.32) from the implant container and position it on a firm and sterile surface.

Pick up the hook plate with the plate holding and positioning instrument (A-2350) in a 90° angle with axial pressure.

Press the hooks into the avulsed fragment of the extensor tendon and reduce the fracture to its original anatomical shape.

### Caution

Subperiosteal elevation of the nail matrix will prevent pression of the plate on the nail matrix with the risk of nail growth disturbance.



### 2. Drilling

Drill a hole using the drill guide (A-2025) while keeping the plate in place with the holding instrument.

### Warning

To apply compression, the end of the drill guide marked for eccentric drilling has to be used (see chapter "Drilling"). Correct compression is only achieved if the drill guide is hold in a 90° angle to the plate.



### 3. Assigning the screw length

Use the depth gauge (A-2030) to assign the required screw length for bicortical fixation.



### 4. Fixation of the plate

Carefully insert the cortical screw (A-5100.xx, A-5200.xx) and fix the avulsed fragment to the bone.

#### Warning

To apply compression, the screw has to be inserted perpendicularly to the plate into the predrilled eccentric hole. (See step 2).



#### Caution

Check that the hooks of the plate do not impinge the distal joint surface of the middle phalanx.



## Rotation Plates

A-4350.23 for rotational malalignment in phalanges

A-4655.24 for rotational malalignment in metacarpals

### 1. Positioning the plate

Position the rotation plate (at the long bar for A-4350.23, at the laser marking for A-4655.24) over the fracture line or the planned site for the osteotomy. If required, bend the plate with the bending pliers (A-2040) to adapt it to the individual shape of the bone.



### 2. Prefixation of the plate

Fix the straight part of the plate on the bone shaft with two TriLock screws (A-5250.xx, A-5450.xx). To do so, drill the core hole using the drill guide and the twist drill of the corresponding system size, assign the screw length with the depth gauge and insert the screws (see chapter "Drilling" and "Assigning the Screw Length").

In case of an osteotomy, the plate can now be removed and refixed after performing the osteotomy cut.



### 3. Correcting the rotation

Fix the plate on the ulnar or radial side of the oblong hole with a cortical screw (A-5200.xx, A-5400.xx) depending on the necessary correction. Do not fully tighten the screw.



Adjust the alignment by sliding the cortical screw along the oblong hole. Once the correct alignment is reached, tighten the screw.

**Recommendation**

Flex the fingers almost completely (i.e. fist position) to check successful adjustment.

**4. Fixation of the plate**

Fill the screw holes with TriLock screws (A-5250.xx, A-5450.xx).



# Explantation

## Explantation of Hand Plates

### 1. Removing the screws

Unlock/loosen all screws and remove them. The order in which the screws are removed is not relevant. In case the plate sticks to the bone, use a periosteal elevator to carefully lift and detach it from the bone.

### Caution

When removing the screws, ensure that any bone ingrowth in the screw head has been removed, that the screwdriver/screw head connection is aligned in axial direction, and that a sufficient axial force is used between blade and screw.

# TriLock Locking Technology

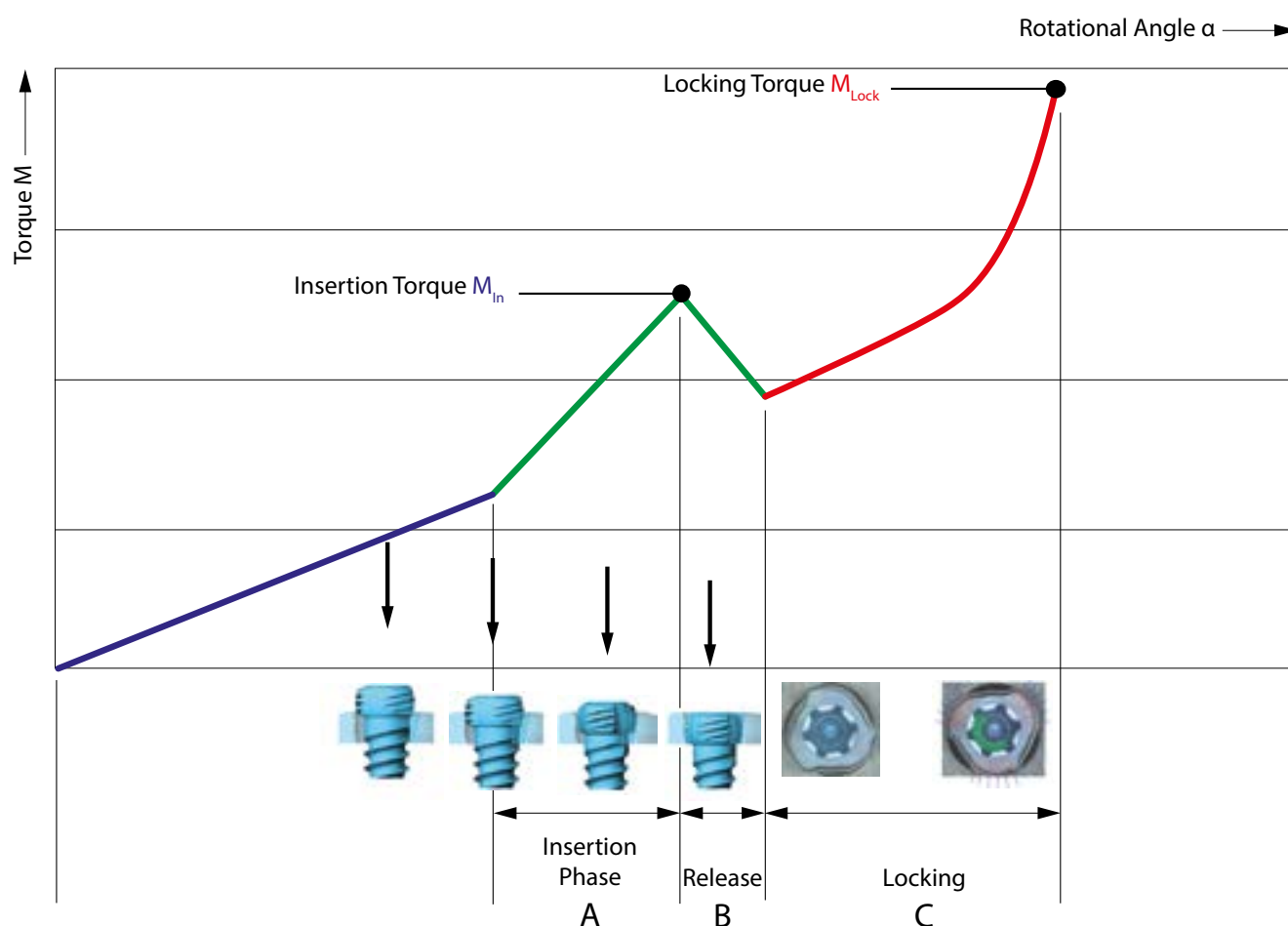
## Correct Application of the TriLock Locking Technology

The screw is inserted through the plate hole into a predrilled canal in the bone. An increase of the tightening torque will be felt as soon as the screw head gets in contact with the plate surface.

This indicates the start of the "Insertion Phase" as the screw head starts entering the locking zone of the plate (section "A" in the diagram). Afterwards, a drop of the tightening torque

occurs (section "B" in the diagram). Finally, the actual locking is initiated (section "C" in the diagram) as a friction connection is established between screw and plate when tightening torque is firmly.

The torque applied during fastening of the screw is decisive for the quality of the locking as described in section "C" of the diagram.



## Correct Locking ( $\pm 15^\circ$ ) of the TriLock Screws in the Plate

The example below representatively depicts the correct locking position of a 2.0 mm screw in a straight 1.0 mm thick plate. Correct locking occurs only when the screw head is locked flush with the locking contour (fig. 1 and 3).

However, if there is still a noticeable protrusion (fig. 2 and 4), the screw head has not completely reached the locking position. In this case, the screw has to be retightened to obtain full penetration and proper locking. In case of poor bone quality, a

slight axial pressure might be necessary to achieve proper locking. Due to the system characteristics, a screw head protrusion of max. 0.2 mm exists when using plates with 1.0 mm thickness or thinner.

**After having reached the locking torque (M<sub>Lock</sub>), do not further tighten the screw, otherwise the locking function cannot be guaranteed anymore.**

Correct: LOCKED



Figure 1

Incorrect: UNLOCKED



Figure 2

Correct: LOCKED



Figure 3

Incorrect: UNLOCKED



Figure 4



# Implants and Instruments

## 1.2 Cortical Screws, HexaDrive 4

Material: Titanium alloy (ASTM F136)



Length	Art. No.	Pieces / Pkg	Art. No.	Pieces / Pkg
4 mm	A-5100.04/1	1	A-5100.04	5
5 mm	A-5100.05/1	1	A-5100.05	5
6 mm	A-5100.06/1	1	A-5100.06	5
7 mm	A-5100.07/1	1	A-5100.07	5
8 mm	A-5100.08/1	1	A-5100.08	5
9 mm	A-5100.09/1	1	A-5100.09	5
10 mm	A-5100.10/1	1	A-5100.10	5
11 mm	A-5100.11/1	1	A-5100.11	5
12 mm	A-5100.12/1	1	A-5100.12	5
13 mm	A-5100.13/1	1	A-5100.13	5
14 mm	A-5100.14/1	1	A-5100.14	5
16 mm	A-5100.16/1	1	A-5100.16	5
18 mm	A-5100.18/1	1	A-5100.18	5
20 mm	A-5100.20/1	1	A-5100.20	5

## 1.5 Cortical Screws, HexaDrive 4

Material: Titanium alloy (ASTM F136)



Length	Art. No.	Pieces / Pkg	Art. No.	Pieces / Pkg
4 mm	A-5200.04/1	1	A-5200.04	5
5 mm	A-5200.05/1	1	A-5200.05	5
6 mm	A-5200.06/1	1	A-5200.06	5
7 mm	A-5200.07/1	1	A-5200.07	5
8 mm	A-5200.08/1	1	A-5200.08	5
9 mm	A-5200.09/1	1	A-5200.09	5
10 mm	A-5200.10/1	1	A-5200.10	5
11 mm	A-5200.11/1	1	A-5200.11	5
12 mm	A-5200.12/1	1	A-5200.12	5
13 mm	A-5200.13/1	1	A-5200.13	5
14 mm	A-5200.14/1	1	A-5200.14	5
15 mm	A-5200.15/1	1	A-5200.15	5
16 mm	A-5200.16/1	1	A-5200.16	5
17 mm	A-5200.17/1	1	A-5200.17	5
18 mm	A-5200.18/1	1	A-5200.18	5
19 mm	A-5200.19/1	1	A-5200.19	5
20 mm	A-5200.20/1	1	A-5200.20	5
21 mm	A-5200.21/1	1	A-5200.21	5
22 mm	A-5200.22/1	1	A-5200.22	5
23 mm	A-5200.23/1	1	A-5200.23	5
24 mm	A-5200.24/1	1	A-5200.24	5

1.2/1.5 Biconcave Washer

Material: Titanium (ASTM F67)



Art. No.	Pieces / Pkg	Art. No.	Pieces / Pkg
A-4300.70/1	1	A-4300.70	5

1.5 TriLock Screws, HexaDrive 4

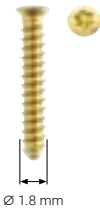
Material: Titanium alloy (ASTM F136)



Length	Art. No.	Pieces / Pkg	Art. No.	Pieces / Pkg
4 mm	A-5250.04/1	1	A-5250.04	5
5 mm	A-5250.05/1	1	A-5250.05	5
6 mm	A-5250.06/1	1	A-5250.06	5
7 mm	A-5250.07/1	1	A-5250.07	5
8 mm	A-5250.08/1	1	A-5250.08	5
9 mm	A-5250.09/1	1	A-5250.09	5
10 mm	A-5250.10/1	1	A-5250.10	5
11 mm	A-5250.11/1	1	A-5250.11	5
12 mm	A-5250.12/1	1	A-5250.12	5
13 mm	A-5250.13/1	1	A-5250.13	5
14 mm	A-5250.14/1	1	A-5250.14	5
16 mm	A-5250.16/1	1	A-5250.16	5
18 mm	A-5250.18/1	1	A-5250.18	5
20 mm	A-5250.20/1	1	A-5250.20	5

1.8 Emergency Screws, HexaDrive 4

Material: Titanium alloy (ASTM F136)



Length	Art. No.	Pieces / Pkg	Art. No.	Pieces / Pkg
6 mm	A-5300.06/1	1	A-5300.06	5
10 mm	A-5300.10/1	1	A-5300.10	5

## 2.0 Cortical Screws, HexaDrive 6

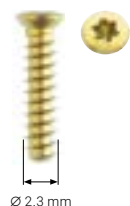
Material: Titanium alloy (ASTM F136)



Length	Art. No.	Pieces / Pkg	Art. No.	Pieces / Pkg
4 mm	A-5400.04/1	1	A-5400.04	5
5 mm	A-5400.05/1	1	A-5400.05	5
6 mm	A-5400.06/1	1	A-5400.06	5
7 mm	A-5400.07/1	1	A-5400.07	5
8 mm	A-5400.08/1	1	A-5400.08	5
9 mm	A-5400.09/1	1	A-5400.09	5
10 mm	A-5400.10/1	1	A-5400.10	5
11 mm	A-5400.11/1	1	A-5400.11	5
12 mm	A-5400.12/1	1	A-5400.12	5
13 mm	A-5400.13/1	1	A-5400.13	5
14 mm	A-5400.14/1	1	A-5400.14	5
15 mm	A-5400.15/1	1	A-5400.15	5
16 mm	A-5400.16/1	1	A-5400.16	5
17 mm	A-5400.17/1	1	A-5400.17	5
18 mm	A-5400.18/1	1	A-5400.18	5
19 mm	A-5400.19/1	1	A-5400.19	5
20 mm	A-5400.20/1	1	A-5400.20	5
21 mm	A-5400.21/1	1	A-5400.21	5
22 mm	A-5400.22/1	1	A-5400.22	5
23 mm	A-5400.23/1	1	A-5400.23	5
24 mm	A-5400.24/1	1	A-5400.24	5

## 2.3 Cortical Screws, HexaDrive 6

Material: Titanium alloy (ASTM F136)



Length	Art. No.	Pieces / Pkg	Art. No.	Pieces / Pkg
5 mm	A-5500.05/1	1	A-5500.05	5
6 mm	A-5500.06/1	1	A-5500.06	5
7 mm	A-5500.07/1	1	A-5500.07	5
8 mm	A-5500.08/1	1	A-5500.08	5
9 mm	A-5500.09/1	1	A-5500.09	5
10 mm	A-5500.10/1	1	A-5500.10	5
11 mm	A-5500.11/1	1	A-5500.11	5
12 mm	A-5500.12/1	1	A-5500.12	5
13 mm	A-5500.13/1	1	A-5500.13	5
14 mm	A-5500.14/1	1	A-5500.14	5
15 mm	A-5500.15/1	1	A-5500.15	5
16 mm	A-5500.16/1	1	A-5500.16	5
17 mm	A-5500.17/1	1	A-5500.17	5
18 mm	A-5500.18/1	1	A-5500.18	5
19 mm	A-5500.19/1	1	A-5500.19	5
20 mm	A-5500.20/1	1	A-5500.20	5
21 mm	A-5500.21/1	1	A-5500.21	5
22 mm	A-5500.22/1	1	A-5500.22	5
23 mm	A-5500.23/1	1	A-5500.23	5
24 mm	A-5500.24/1	1	A-5500.24	5
26 mm	A-5500.26/1	1	A-5500.26	5
28 mm	A-5500.28/1	1	A-5500.28	5
30 mm	A-5500.30/1	1	A-5500.30	5
32 mm	A-5500.32/1	1	A-5500.32	5
34 mm	A-5500.34/1	1	A-5500.34	5

2.0/2.3 Biconcave Washer

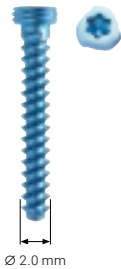
Material: Titanium (ASTM F67)



Art. No.	Pieces / Pkg	Art. No.	Pieces / Pkg
A-4600.70/1	1	A-4600.70	5

2.0 TriLock Screws, HexaDrive 6

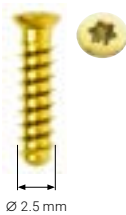
Material: Titanium alloy (ASTM F136)



Length	Art. No.	Pieces / Pkg	Art. No.	Pieces / Pkg
6 mm	A-5450.06/1	1	A-5450.06	5
7 mm	A-5450.07/1	1	A-5450.07	5
8 mm	A-5450.08/1	1	A-5450.08	5
9 mm	A-5450.09/1	1	A-5450.09	5
10 mm	A-5450.10/1	1	A-5450.10	5
11 mm	A-5450.11/1	1	A-5450.11	5
12 mm	A-5450.12/1	1	A-5450.12	5
13 mm	A-5450.13/1	1	A-5450.13	5
14 mm	A-5450.14/1	1	A-5450.14	5
16 mm	A-5450.16/1	1	A-5450.16	5
18 mm	A-5450.18/1	1	A-5450.18	5
20 mm	A-5450.20/1	1	A-5450.20	5

2.5 Emergency Screws, HexaDrive 6

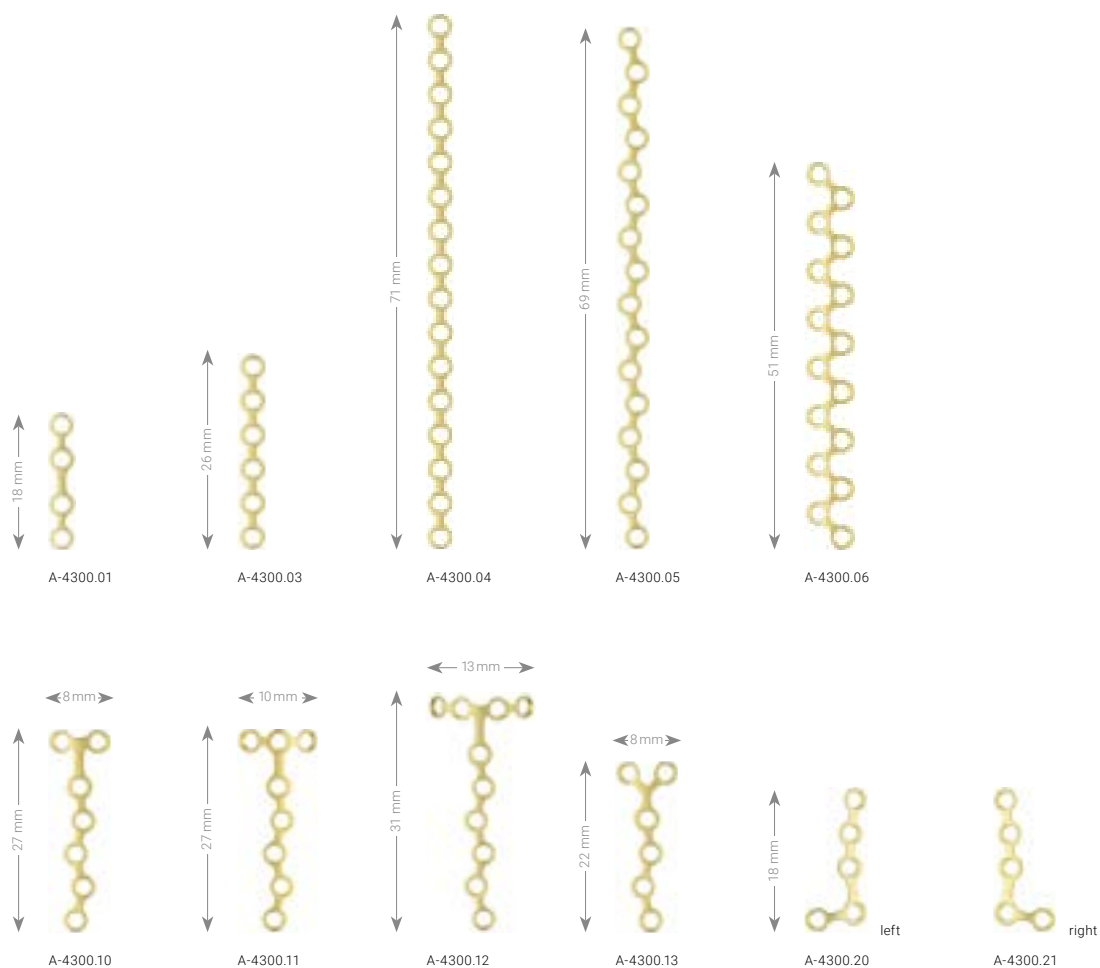
Material: Titanium alloy (ASTM F136)



Length	Art. No.	Pieces / Pkg	Art. No.	Pieces / Pkg
6 mm	A-5600.06/1	1	A-5600.06	5
10 mm	A-5600.10/1	1	A-5600.10	5

## 1.2/1.5 Fixation Plates

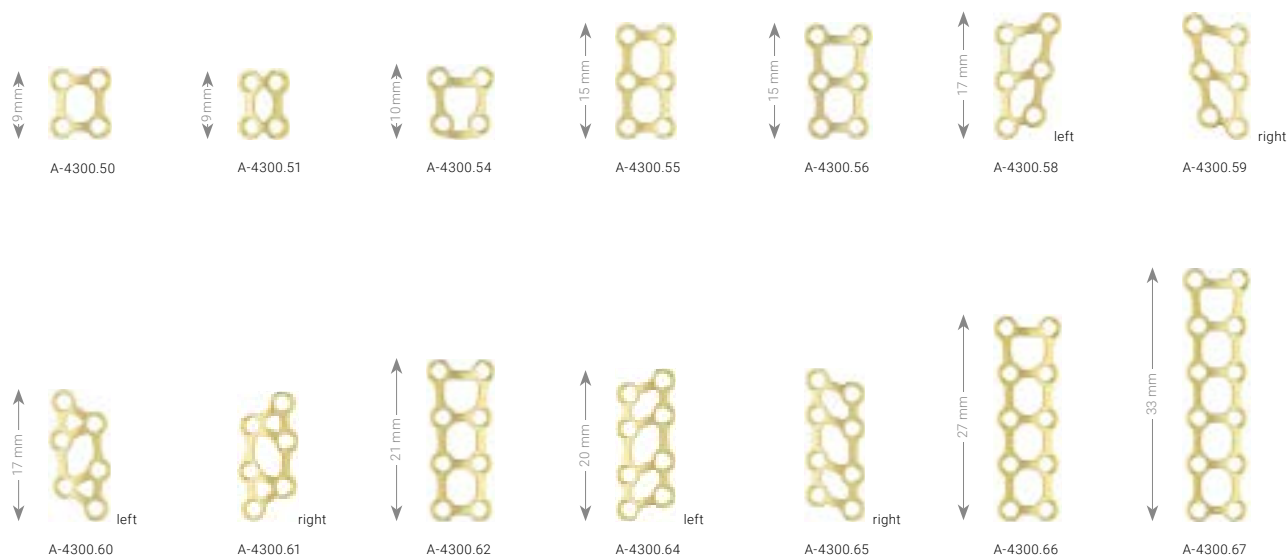
Material: Titanium (ASTM F67)  
Plate thickness: 0.6 mm



Art. No.	Description	Holes	Pieces / Pkg
A-4300.01	straight	4	1
A-4300.03	straight	6	1
A-4300.04	straight	16	1
A-4300.05	straight	16	1
A-4300.06	offset	16	1
A-4300.10	T	7 (2/5)	1
A-4300.11	T	8 (3/5)	1
A-4300.12	T	10 (4/6)	1
A-4300.13	Y	6 (2/4)	1
A-4300.20	L left	5 (2/3)	1
A-4300.21	L right	5 (2/3)	1

## 1.2/1.5 Grid Fixation Plates

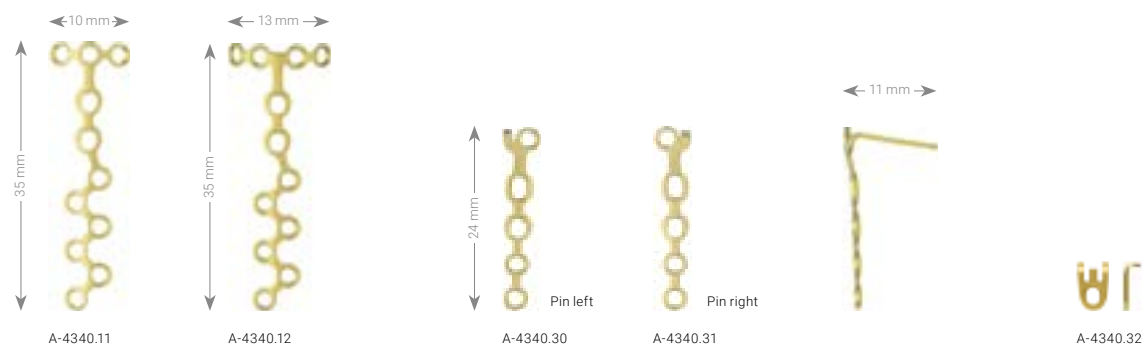
Material: Titanium (ASTM F67)  
Plate thickness: 0.6 mm



Art. No.	Description	Holes	Pieces / Pkg
A-4300.50	rectangular	4 (2 × 2)	1
A-4300.51	rectangular narrow	4 (2 × 2)	1
A-4300.54	trapezoid	4 (2 × 2)	1
A-4300.55	rectangular	6 (3 × 2)	1
A-4300.56	trapezoid	6 (3 × 2)	1
A-4300.58	trapezoid left	6 (3 × 2)	1
A-4300.59	trapezoid right	6 (3 × 2)	1
A-4300.60	angled left	6 (3 + 3)	1
A-4300.61	angled right	6 (3 + 3)	1
A-4300.62	trapezoid	8 (4 × 2)	1
A-4300.64	angled left	8 (4 × 2)	1
A-4300.65	angled right	8 (4 × 2)	1
A-4300.66	trapezoid	10 (5 × 2)	1
A-4300.67	trapezoid	12 (6 × 2)	1

## 1.2/1.5 Compression / Compression Condyle / Compression Hook Plates

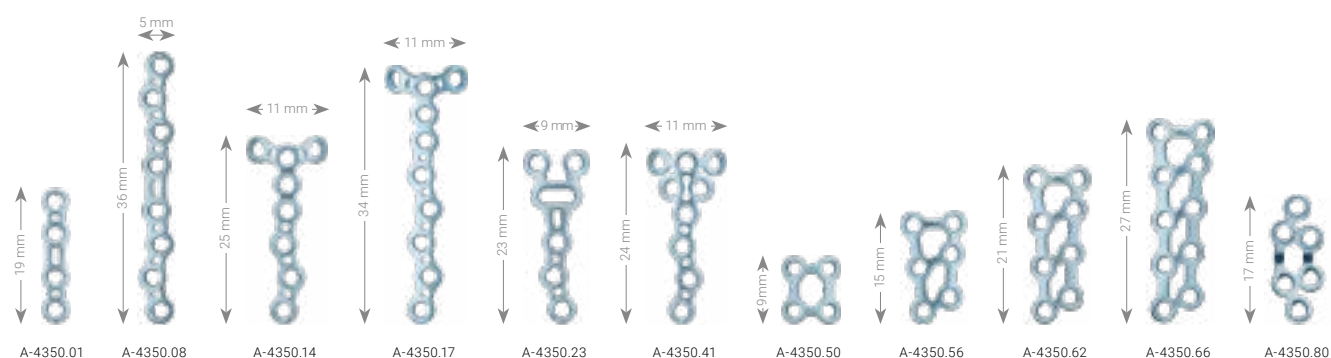
Material: Titanium (ASTM F67)  
Plate thickness: 0.6 mm



Art. No.	Description	Holes	Pieces / Pkg
A-4340.11	T, offset	11 (3 / 8)	1
A-4340.12	T, offset	12 (4 / 8)	1
A-4340.30	with pin left	5	1
A-4340.31	with pin right	5	1
A-4340.32	2 hooks	1	1

## 1.2/1.5 TriLock Plates

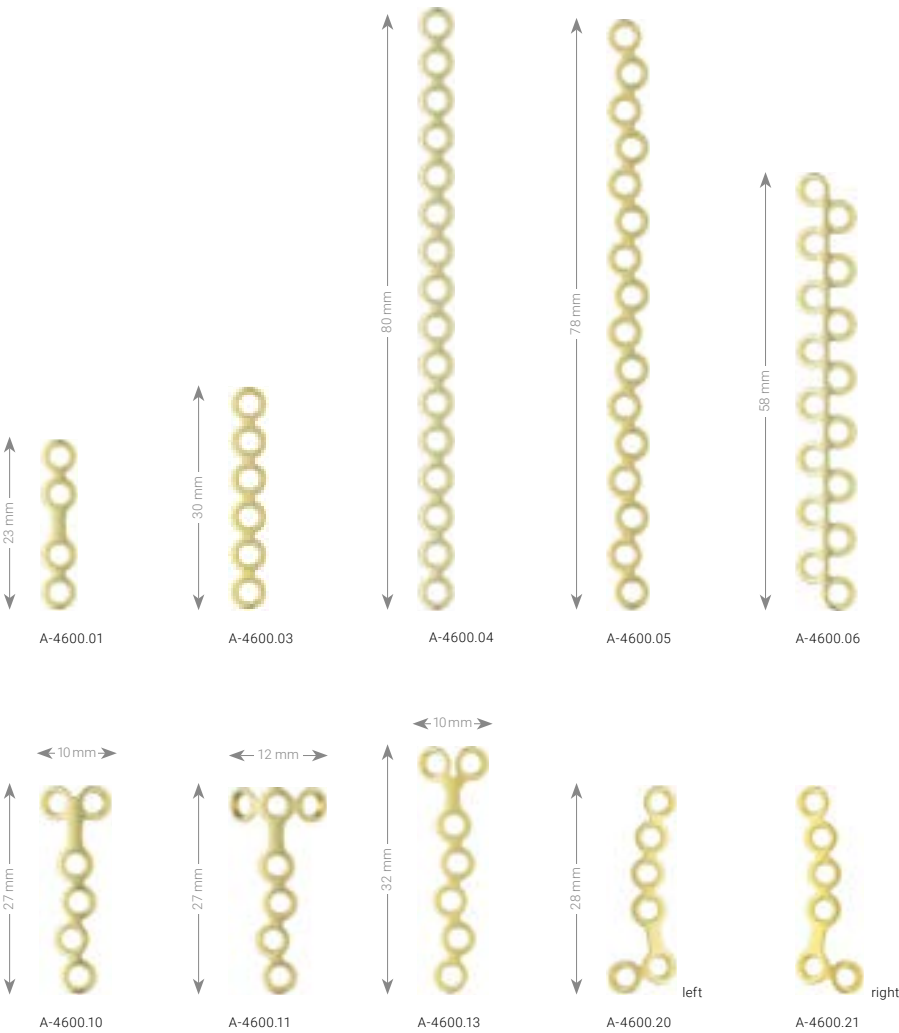
Material: Titanium (ASTM F67)  
Plate thickness: 0.8 mm



Art. No.	Description	Holes	Pieces / Pkg
A-4350.01	straight	4	1
A-4350.08	straight	8	1
A-4350.14	T	8 (3 / 5)	1
A-4350.17	T	10 (3 / 7)	1
A-4350.23	rotation	6 (3 / 3)	1
A-4350.41	double-row, T	9 (5 / 4)	1
A-4350.50	Grid, rectangular	4 (2 × 2)	1
A-4350.56	Grid, trapezoid	6 (3 × 2)	1
A-4350.62	Grid, trapezoid	8 (4 × 2)	1
A-4350.66	Grid, trapezoid	10 (5 × 2)	1
A-4350.80	for scaphoid	6 (3 × 2)	1

2.0/2.3 Fixation Plates

Material: Titanium (ASTM F67)  
Plate thickness: 1.0 mm

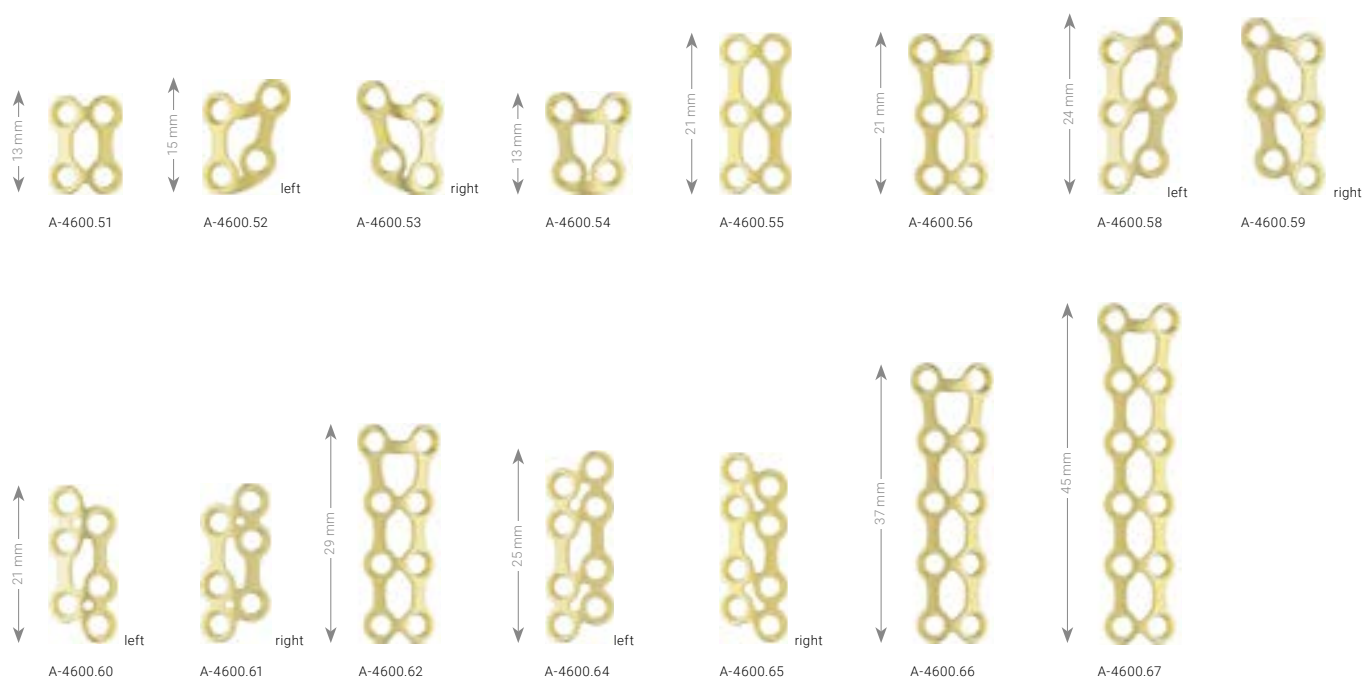


Art. No.	Description	Holes	Pieces / Pkg
A-4600.01	straight	4	1
A-4600.03	straight	6	1
A-4600.04	straight	16	1
A-4600.05	straight	16	1
A-4600.06	offset	16	1
A-4600.10	T	6 (2 / 4)	1
A-4600.11	T	7 (3 / 4)	1
A-4600.13	Y	7 (2 / 5)	1
A-4600.20	L left	6 (2 / 4)	1
A-4600.21	L right	6 (2 / 4)	1



## 2.0/2.3 Grid Fixation Plates

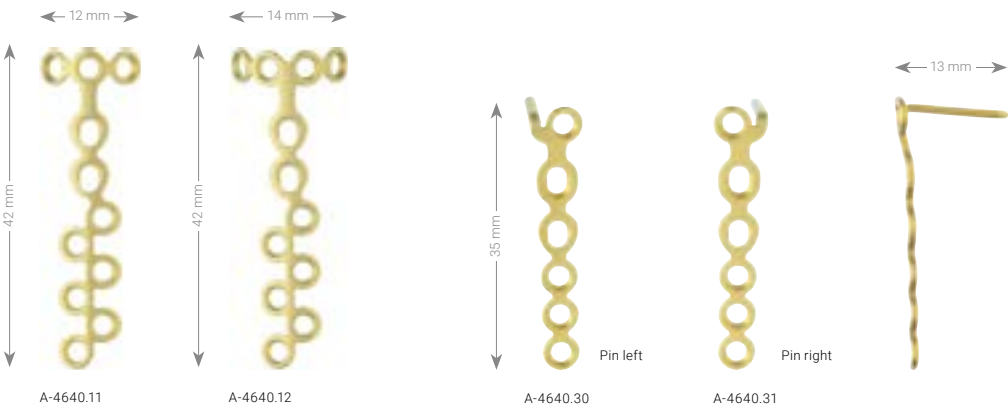
Material: Titanium (ASTM F67)  
Plate thickness: 1.0 mm



Art. No.	Description	Holes	Pieces / Pkg
A-4600.51	rectangular	4 (2 × 2)	1
A-4600.52	trapezoid left	4 (2 × 2)	1
A-4600.53	trapezoid right	4 (2 × 2)	1
A-4600.54	trapezoid	4 (2 × 2)	1
A-4600.55	rectangular	6 (3 × 2)	1
A-4600.56	trapezoid	6 (3 × 2)	1
A-4600.58	trapezoid left	6 (3 × 2)	1
A-4600.59	trapezoid right	6 (3 × 2)	1
A-4600.60	angled left	6 (3 + 3)	1
A-4600.61	angled right	6 (3 + 3)	1
A-4600.62	trapezoid	8 (4 × 2)	1
A-4600.64	angled left	8 (4 × 2)	1
A-4600.65	angled right	8 (4 × 2)	1
A-4600.66	trapezoid	10 (5 × 2)	1
A-4600.67	trapezoid	12 (6 × 2)	1

2.0/2.3 Compression / Compression Condyle Plates

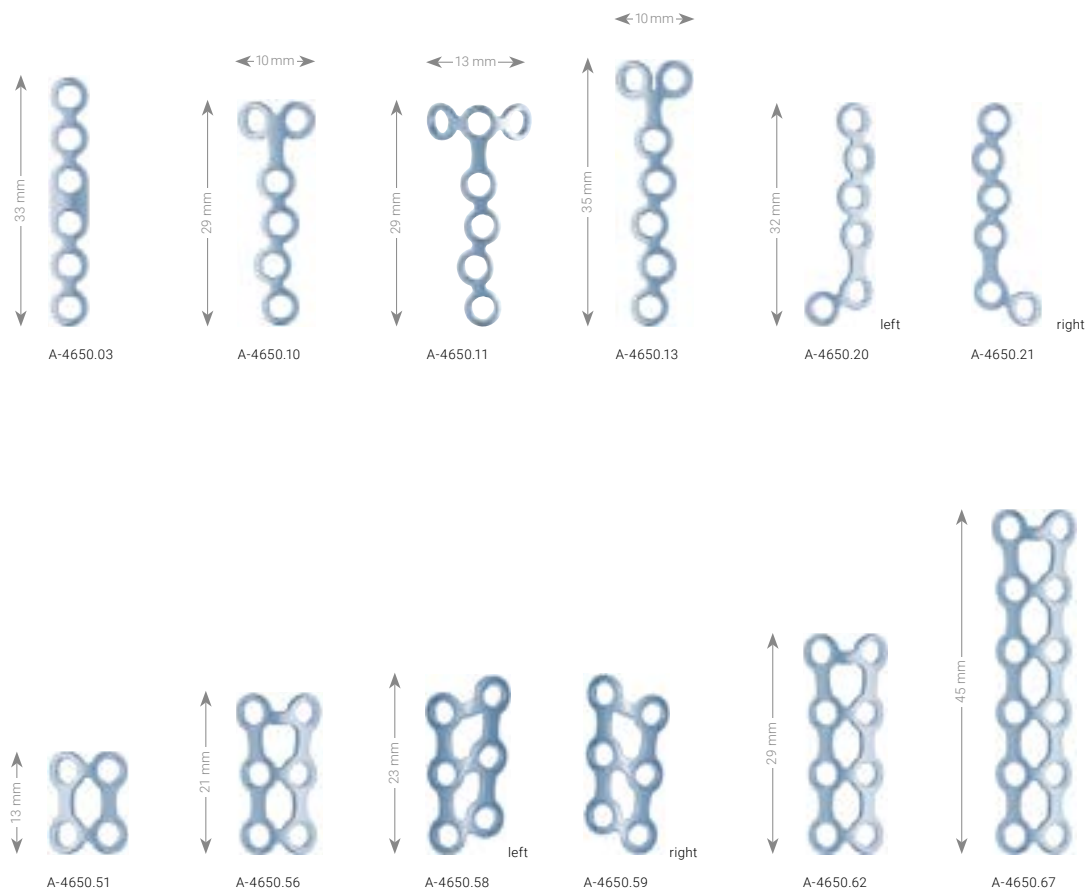
Material: Titanium (ASTM F67)  
Plate thickness: 1.0 mm



Art. No.	Description	Holes	Pieces / Pkg
A-4640.11	T, offset	11 (3 / 8)	1
A-4640.12	T, offset	12 (4 / 8)	1
A-4640.30	with pin left	6	1
A-4640.31	with pin right	6	1

## 2.0/2.3 TriLock Plates

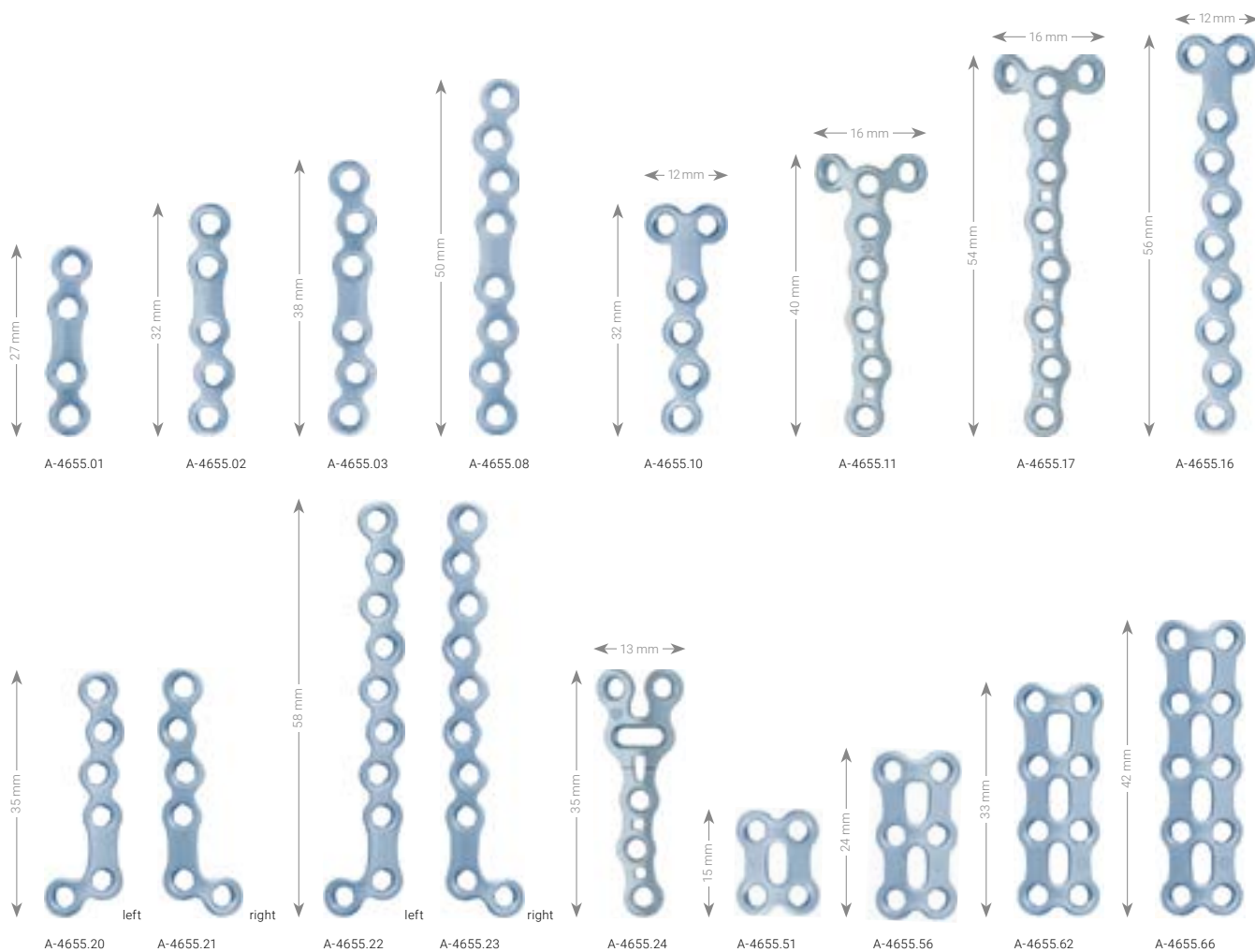
Material: Titanium (ASTM F67)  
Plate thickness: 1.0 mm



Art. No.	Description	Holes	Pieces / Pkg
A-4650.03	straight	6	1
A-4650.10	T	6 (2 / 4)	1
A-4650.11	T	7 (3 / 4)	1
A-4650.13	Y	7 (2 / 5)	1
A-4650.20	L left	6 (2 / 4)	1
A-4650.21	L right	6 (2 / 4)	1
A-4650.51	Grid, rectangular	4 (2 × 2)	1
A-4650.56	Grid, trapezoid	6 (3 × 2)	1
A-4650.58	Grid, trapezoid left	6 (3 × 2)	1
A-4650.59	Grid, trapezoid right	6 (3 × 2)	1
A-4650.62	Grid, trapezoid	8 (4 × 2)	1
A-4650.67	Grid, trapezoid	12 (6 × 2)	1

## 2.0/2.3 TriLock Plates

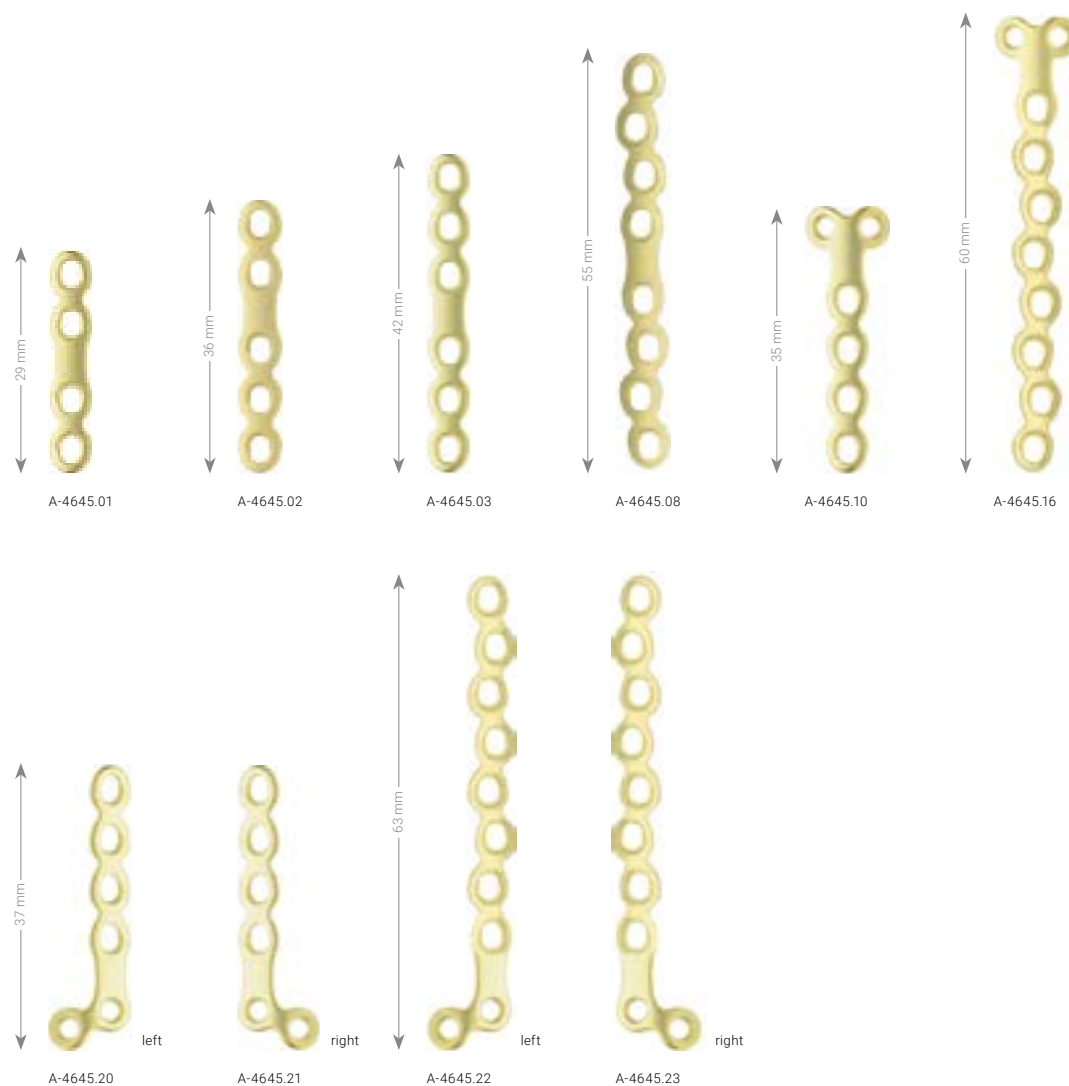
Material: Titanium (ASTM F67)  
Plate thickness: 1.3 mm



Art. No.	Description	Holes	Pieces / Pkg
A-4655.01	straight	4	1
A-4655.02	straight	5	1
A-4655.03	straight	6	1
A-4655.08	straight	8	1
A-4655.10	T	6 (2 / 4)	1
A-4655.11	T	8 (3 / 5)	1
A-4655.16	T	10 (2 / 8)	1
A-4655.17	T	10 (3 / 7)	1
A-4655.20	L left	6 (2 / 4)	1
A-4655.21	L right	6 (2 / 4)	1
A-4655.22	L left	10 (2 / 8)	1
A-4655.23	L right	10 (2 / 8)	1
A-4655.24	rotation	6 (3 / 3)	1
A-4655.51	Grid, rectangular	4 (2 × 2)	1
A-4655.56	Grid, trapezoid	6 (3 × 2)	1
A-4655.62	Grid, trapezoid	8 (4 × 2)	1
A-4655.66	Grid, trapezoid	10 (5 × 2)	1

## 2.0/2.3 MC (Metacarpal) Compression Plates

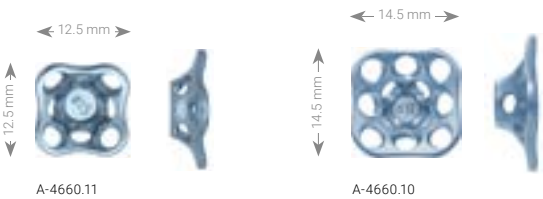
Material: Titanium (ASTM F67)  
Plate thickness: 1.3 mm



Art. No.	Description	Holes	Pieces / Pkg
A-4645.01	straight	4	1
A-4645.02	straight	5	1
A-4645.03	straight	6	1
A-4645.08	straight	8	1
A-4645.10	T	6 (2 / 4)	1
A-4645.16	T	10 (2 / 8)	1
A-4645.20	L left	6 (2 / 4)	1
A-4645.21	L right	6 (2 / 4)	1
A-4645.22	L left	10 (2 / 8)	1
A-4645.23	L right	10 (2 / 8)	1

2.0/2.3 TriLock Four Corner Fusion Plates

Material: Titanium (ASTM F67)  
Plate thickness : 1.4 mm



Art. No.	Description	Holes	Pieces / Pkg
A-4660.10		12 (4 + 8)	1
A-4660.11	small	8 (4 + 4)	1

2.0/2.3 TriLock STT Fusion Plate

Material: Titanium (ASTM F67)  
Plate thickness: 1.4 mm



Art. No.	Holes	Pieces / Pkg
A-4660.15	6 (3 + 3)	1

Twist Drills Ø 1.0 mm



Art. No.	System Size	Stop	Length	Shaft End	Pieces / Pkg
A-3110	1.2	20 mm	82 mm	Dental	1
A-3112	1.2	20 mm	52 mm	Dental	1
A-3120	1.2	20 mm	82 mm	Stryker J-Latch	1
A-3130	1.2	20 mm	76 mm	AO Quick Coupling	1

## Twist Drills Ø 1.2 mm (for Gliding Hole)



A-3111



A-3113



A-3121



A-3131

Art. No.	System Size	Stop	Length	Shaft End	Pieces / Pkg
A-3111	1.2	10 mm	72 mm	Dental	1
A-3113	1.2	10 mm	42 mm	Dental	1
A-3121	1.2	10 mm	72 mm	Stryker J-Latch	1
A-3131	1.2	10 mm	66 mm	AO Quick Coupling	1

## Twist Drills Ø 1.2 mm



A-3210



A-3212



A-3220



A-3230

Art. No.	System Size	Stop	Length	Shaft End	Pieces / Pkg
A-3210	1.5	25 mm	87 mm	Dental	1
A-3212	1.5	25 mm	57 mm	Dental	1
A-3220	1.5	25 mm	87 mm	Stryker J-Latch	1
A-3230	1.5	25 mm	81 mm	AO Quick Coupling	1

## Twist Drills Ø 1.6 mm (for Gliding Hole)



A-3211



A-3213



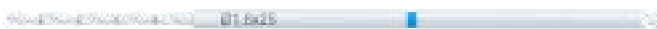
A-3221



A-3231

Art. No.	System Size	Stop	Length	Shaft End	Pieces / Pkg
A-3211	1.5	10 mm	72 mm	Dental	1
A-3213	1.5	10 mm	42 mm	Dental	1
A-3221	1.5	10 mm	72 mm	Stryker J-Latch	1
A-3231	1.5	10 mm	66 mm	AO Quick Coupling	1

## Twist Drills Ø 1.6 mm



A-3410



A-3412



A-3414



A-3420



A-3424



A-3430



A-3434

Art. No.	System Size	Stop	Length	Shaft End	Pieces / Pkg
A-3410	2.0	25 mm	87 mm	Dental	1
A-3412	2.0	25 mm	57 mm	Dental	1
A-3414	2.0	30 mm	92 mm	Dental	1
A-3420	2.0	25 mm	87 mm	Stryker J-Latch	1
A-3424	2.0	30 mm	92 mm	Stryker J-Latch	1
A-3430	2.0	25 mm	81 mm	AO Quick Coupling	1
A-3434	2.0	30 mm	86 mm	AO Quick Coupling	1



## Twist Drills Ø 2.1 mm (for Gliding Hole)



A-3411



A-3413



A-3421



A-3431

Art. No.	System Size	Stop	Length	Shaft End	Pieces / Pkg
A-3411	2.0	10 mm	72 mm	Dental	1
A-3413	2.0	10 mm	42 mm	Dental	1
A-3421	2.0	10 mm	72 mm	Stryker J-Latch	1
A-3431	2.0	10 mm	66 mm	AO Quick Coupling	1

## Twist Drills Ø 1.9 mm



A-3510



A-3512



A-3520



A-3530

Art. No.	System Size	Stop	Length	Shaft End	Pieces / Pkg
A-3510	2.3	35 mm	97 mm	Dental	1
A-3512	2.3	25 mm	57 mm	Dental	1
A-3520	2.3	35 mm	97 mm	Stryker J-Latch	1
A-3530	2.3	35 mm	91 mm	AO Quick Coupling	1

Twist Drills Ø 2.35 mm (for Gliding Hole)



A-3511



A-3513



A-3521



A-3531

Art. No.	System Size	Stop	Length	Shaft End	Pieces / Pkg
A-3511	2.3	10 mm	72 mm	Dental	1
A-3513	2.3	10 mm	42 mm	Dental	1
A-3521	2.3	10 mm	72 mm	Stryker J-Latch	1
A-3531	2.3	10 mm	66 mm	AO Quick Coupling	1

Countersinks (for Cortical Screws)



A-3310



A-3610

Art. No.	System Size	Ø	Length	Shaft End	Pieces / Pkg
A-3310	1.2 / 1.5	2.7 mm	37 mm	Dental	1
A-3610	2.0 / 2.3	3.5 mm	37 mm	Dental	1

## Reamers for TriLock Arthrodesis Plates



A-3635

for A-4660.15



A-3631

for A-4660.11



A-3630

for A-4660.10

Art. No.	System Size	Ø	Shaft End	Pieces / Pkg
A-3630	2.0 / 2.3	17 mm	AO Quick Coupling	1
A-3631	2.0 / 2.3	15 mm	AO Quick Coupling	1
A-3635	2.0 / 2.3	13 mm	AO Quick Coupling	1

## K-Wires, Stainless Steel



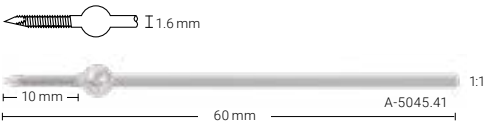
A-5040.41



A-5042.41

Art. No.	Ø	Description	Length	Pieces / Pkg
A-5040.21	1.2 mm	trocar	150 mm	10
A-5040.41	1.6 mm	trocar	150 mm	10
A-5042.21	1.2 mm	lancet	150 mm	10
A-5042.41	1.6 mm	lancet	150 mm	10

Olive K-Wire, Stainless Steel



Length	Thread Length	Ø	Art. No.	Pieces / Pkg
60 mm	10 mm	1.6 mm	A-5045.41/1	1

Drill Guides



A-2020



A-2024



A-2021



A-2025



A-2022



A-2620



A-2023

Art. No.	System Size	Description	Length	Pieces / Pkg
A-2020	2.0/2.3	centric, excentric	149 mm	1
A-2021	2.0/2.3, 2.8		147 mm	1
A-2022	2.0/2.3, 2.8	for lag screws	150 mm	1
A-2023	1.5	for lag screws	139 mm	1
A-2024	2.0	for lag screws	139 mm	1
A-2025	1.2/1.5	centric, excentric	144 mm	1
A-2620	2.0/2.3	for core and gliding hole	150 mm	1

## Depth Gauges



A-2030



A-2031



A-2032

Art. No.	System Size	Length	Pieces / Pkg
A-2030	1.2 – 2.3	151 mm	1
A-2031	2.0 – 2.8	189 mm	1
A-2032	2.0 / 2.3	151 mm	1

## Screwdrivers, Self-Holding



A-2310

HD4



A-2610

HD6

Art. No.	System Size	Interface	Length	Pieces / Pkg
A-2310	1.2/1.5	HD4	138 mm	1
A-2610	2.0/2.3	HD6	153 mm	1

## Handles with Quick Connector



A-2071



A-2073

Art. No.	System Size	for Shaft End	Description	Length	Pieces / Pkg
A-2071		Dental		107 mm	1
A-2073	1.2 – 3.0	AO Quick Coupling	cannulated, with twist cap	124 mm	1

Screwdriver Blades, Self-Holding



Art. No.	System Size	Interface	Length	Shaft End	Pieces / Pkg
A-2311	1.2/1.5	HD4	60 mm	AO Quick Coupling	1
A-2611	2.0/2.3	HD6	75 mm	AO Quick Coupling	1

Plate and Screw Holding Forceps



Art. No.	Description	Length	Pieces / Pkg
A-2060	angled	148 mm	1

Plate Holding and Positioning Instruments



Art. No.	System Size	Length	Pieces / Pkg
A-2350	1.2 / 1.5	190 mm	1
A-2650	2.0 / 2.3	190 mm	1

## Plate Cutting Pliers



Art. No.	System Size	Length	Pieces / Pkg
A-2046	1.2 – 2.8	207 mm	1

## Plate Bending Pliers



Art. No.	System Size	Description	Length	Pieces / Pkg
A-2040	1.2 – 2.3	with Vario pin	119 mm	1

## Plate and Bone Holding Forceps



Art. No.	Length	Pieces / Pkg
A-7002	130 mm	1

Bone Holding Forceps



Art. No.	Length	Pieces / Pkg
A-7012	140 mm	1

Reduction Forceps



A-7001



A-7010

Art. No.	Description	Length	Pieces / Pkg
A-7001	"Apart"	130 mm	1
A-7010		90 mm	1



## Bone Elevator Mini-Hohmann



Art. No.	Width	Length	Pieces / Pkg
A-7005	6 mm	160 mm	1

## Periosteal Elevator



Art. No.	Width	Length	Pieces / Pkg
A-7011	3 mm	185 mm	1

## Hook



Art. No.	Description	Length	Pieces / Pkg
A-7009	"Tönnis"	150 mm	1

## Wound Retractor Mini-Langenbeck



Art. No.	Description	Length	Pieces / Pkg
A-7013	20 × 6 mm	156 mm	1

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