medartis

PRECISION IN FIXATION

SURGICAL TECHNIQUE

Ankle Trauma System 2.8 / 3.5

APTUS Ankle

Contents

For further information regarding the APTUS product line visit www.medartis.com

Introduction

Product Materials

Product	Material
Plates	Pure titanium, titanium alloy
Washers	Titanium alloy
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 Ankle Trauma System 2.8/3.5
The APTUS Ankle Trauma System 2.8/3.5 is indicated for fractures, osteotomies, malunions and non-unions of the distal tibia and fibula.

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
APTUS 2.8	Orange
APTUS 3.5	Green

Plates and Screws
Special implant plates and screws have their own color:

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:

2.8/3.5 TriLock Distal Tibia Plates
2.8 Cortical Screws, HexaDrive 7
2.8 TriLock Screws, HexaDrive 7
3.5 Cortical Screws, HexaDrive 15
3.5 TriLock Screws, HexaDrive 15

3.5 TriLock Distal Tibia T + L Plates
3.5 Cortical Screws, HexaDrive 15
3.5 TriLock Screws, HexaDrive 15

2.8/3.5 TriLock Distal Fibula Plates
2.8 Cortical Screws, HexaDrive 7
2.8 TriLock Screws, HexaDrive 7
3.5 Cortical Screws, HexaDrive 15
3.5 TriLock Screws, HexaDrive 15

2.8 TriLock Distal Fibula Plates
2.8 Cortical Screws, HexaDrive 7
2.8 TriLock Screws, HexaDrive 7

Symbols

HexaDrive

See Instructions for Use
www.medartis.com

System Overview

The plates of the APTUS Ankle Trauma System 2.8/3.5 are available in the following designs:

Distal Tibia Plates

2.8/3.5 TriLock Distal Tibia Plates Medial are available in eight lengths in left and right versions.
The long plates from 19 to 25 holes are only available sterile.

A-4954.17
17-hole, left

A-4954.15
15-hole, left

A-4954.13
13-hole, left

A-4954.11
11-hole, left

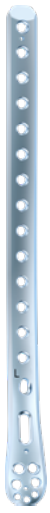
A-4954.12
11-hole, right

A-4954.14
13-hole, right

A-4954.16
15-hole, right

A-4954.18
17-hole, right

A-4954.25S
25-hole, left
sterile only



A-4954.23S
23-hole, left
sterile only

A-4954.21S
21-hole, left
sterile only

A-4954.19S
19-hole, left
sterile only

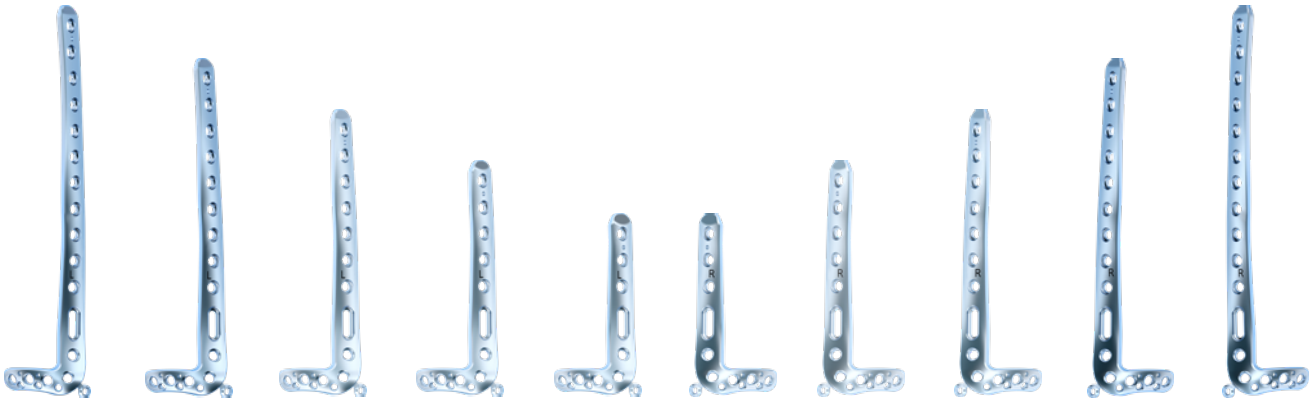
A-4954.20S
19-hole, right
sterile only

A-4954.22S
21-hole, right
sterile only

A-4954.24S
23-hole, right
sterile only

A-4954.26S
25-hole, right
sterile only

2.8/3.5 TriLock Distal Tibia Plates Anterolateral are available in five lengths in left and right versions.
The long plates with 19 and 21 holes are only available sterile.



A-4954.39S
21-hole, left
sterile only

A-4954.37S
19-hole, left
sterile only

A-4954.35
17-hole, left

A-4954.33
15-hole, left

A-4954.31
13-hole, left

A-4954.32
13-hole, right

A-4954.34
15-hole, right

A-4954.36
17-hole, right

A-4954.38S
19-hole, right
sterile only

A-4954.40S
21-hole, right
sterile only

3.5 TriLock Distal Tibia T and L Plates are available in one length. The L plates are available in a left and right version.

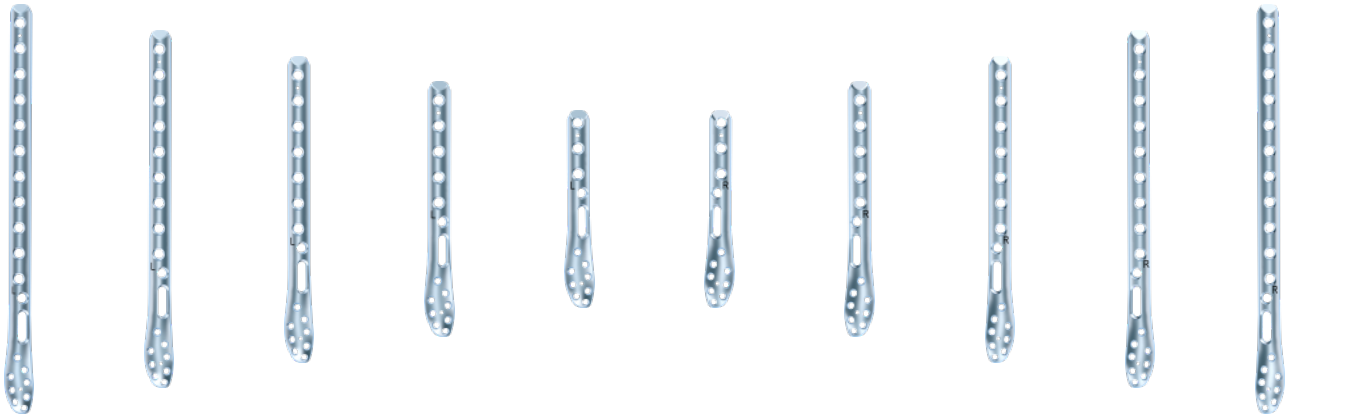
A-4954.103
3/3 hole, L, left

A-4954.101
3/3 hole, T

A-4954.102
3/3 hole, L, right

Distal Fibula Plates

2.8/3.5 TriLock Distal Fibula Plates Lateral are available in five lengths in left and right versions.
The long plates with 19 and 21 holes are only available sterile.



A-4954.09S
21-hole, left
sterile only

A-4954.07S
19-hole, left
sterile only

A-4954.05
17-hole, left

A-4954.03
15-hole, left

A-4954.01
13-hole, left

A-4954.00
13-hole, right

A-4954.02
15-hole, right

A-4954.04
17-hole, right

A-4954.06S
19-hole, right
sterile only

A-4954.08S
21-hole, right
sterile only

2.8/3.5 TriLock Distal Fibula Plates Lateral with Flap are available in two lengths in left and right versions.

A-4954.53
16-hole, left

A-4954.51
14-hole, left

A-4954.52
14-hole, right

A-4954.54
16-hole, right

2.8 TriLock Distal Fibula Plates, Straight, are available in five lengths.

A-4854.05
7-hole

A-4854.06
9-hole

A-4854.07
11-hole

A-4854.08
13-hole

A-4854.09
15-hole

2.8 TriLock Distal Fibula Plates are available in five lengths.

A-4854.00
3/6-hole

A-4854.01
3/8-hole

A-4854.02
3/10-hole

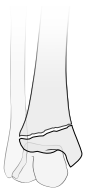
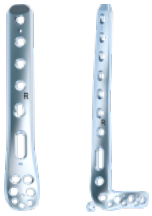
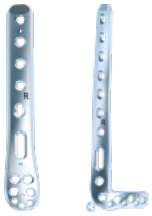
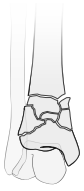
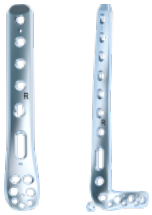
A-4854.03
3/12-hole

A-4854.04
3/14-hole

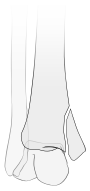
Treatment Concept

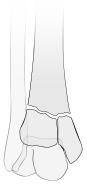
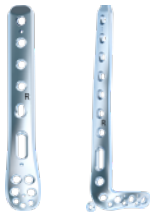
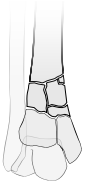
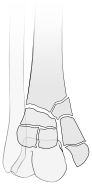
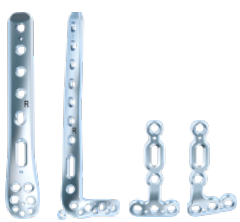
The table below lists typical clinical conditions which can be treated with the implants of the APTUS Ankle Trauma System 2.8/3.5.

Distal Tibia

<table>
<tr><th>AO/OTA Classification</th><th></th><th>Description</th><th>Screw Projection Options</th><th>Treatment Options</th></tr>
<tr><td>Extra-articular (43-A)</td><td> 
43-A1</td><td>Simple
Extra-articular
Metaphyseal</td><td rowspan="3">  </td><td>  </td></tr>
<tr><td rowspan="2">  </td><td> 
43-A2</td><td>Extra-articular
Metaphyseal
Wedge fracture</td><td>  </td></tr>
<tr><td> 
43-A3</td><td>Extra-articular
Metaphyseal
Multifragmentary
fracture</td><td>  </td></tr>
</table>

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.

AO/OTA Classification		Description	Screw Projection Options	Treatment Options
Partial articular (43-B)	 43-B1	Partial articular Split fractures Anterior or posterior Volkmann		
	 43-B2	Partial articular Split with depression Anterior or posterior Volkmann		
	 43-B3	Partial articular Multifragmentary depression Anterior or posterior Volkmann		

AO/OTA Classification		Description	Screw Projection Options	Treatment Options
Complete articular (43-C)	 43-C1	Complete articular Simple articular Simple metaphyseal		
	 43-C2	Complete articular Simple articular Multifragmentary metaphyseal		
	 43-C3	Complete articular Multifragmentary articular Multifragmentary metaphyseal		

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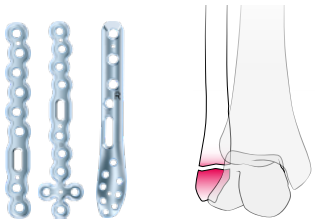
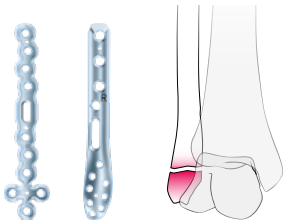
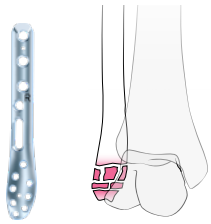
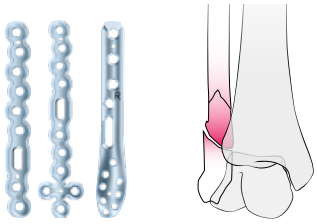
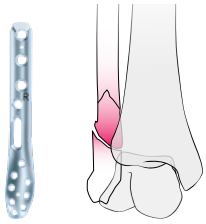
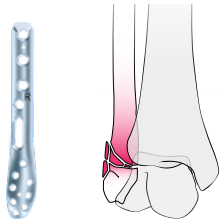
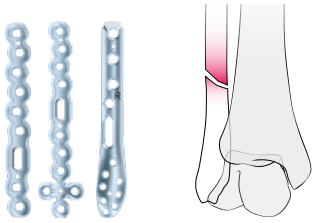
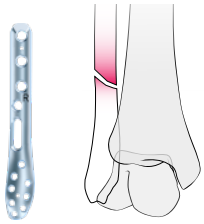
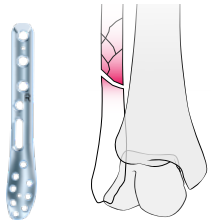
Distal Fibula

Weber A Infra-Syndesmotic 	2.8 Distal Fibula Straight 2.8 Distal Fibula 2.8/3.5 Distal Fibula Lateral **Good Bone** 	2.8 Distal Fibular 2.8/3.5 Distal Fibular Lateral **Osteoporotic Bone** 	2.8/3.5 Distal Fibular Lateral **Comminuted Fracture** 
Weber B Trans-Syndesmotic 	2.8 Distal Fibula Straight 2.8 Distal Fibula 2.8/3.5 Distal Fibula Lateral **Good Bone** 	2.8/3.5 Distal Fibular Lateral **Osteoporotic Bone** 	2.8/3.5 Distal Fibular Lateral **Comminuted Fracture** 
Weber C Supra-Syndesmotic 	2.8 Distal Fibula Straight 2.8 Distal Fibula 2.8/3.5 Distal Fibula Lateral **Good Bone** 	2.8/3.5 Distal Fibula Lateral **Osteoporotic Bone** 	2.8/3.5 Distal Fibular Lateral **Comminuted Fracture** 
Wagstaffe Fractures 			

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Instrument Application

General Instrument Application

Bending

If required, plates can be bent with the following plate bending pliers or bending irons.

Article No.	Description	For bending of
A-2047	2.0–2.8 Plate Bending Pliers with Pins	2.8 TriLock Distal Fibula Plates 2.8 TriLock Distal Fibula Plates Straight 2.8/3.5 TriLock Distal Fibula Plates Lateral with Flap 2.8/3.5 TriLock Distal Tibia Plates Anterolateral (Flap)
A-2940	3.5/4.0 Plate Bending Pliers	3.5 TriLock Distal Tibia Plates T and L
A-2092	Plate Bending Iron	All plates

Depending on the associated system size of the plate there are two different plate bending pliers:

Type 1
2.0–2.8 Plate Bending Pliers with Pins (A-2047)

A-2047
2.0–2.8 Plate Bending Pliers, with Pins

Type 2
3.5/4.0 Plate Bending Pliers (A-2940)

A-2940
3.5/4.0 Plate Bending Pliers

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

A-2092
Plate Bending Iron

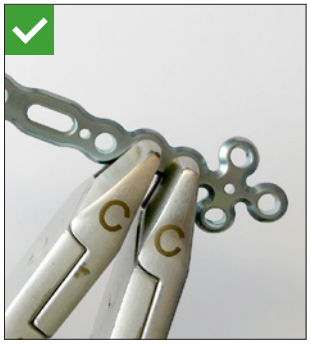
Plate bending pliers type 1
The plate bending pliers have two different pins to protect the locking holes of flat and curved plates during the bending process. The labeled side of the plate must always face up when inserting the plate into the bending pliers (A-2047).

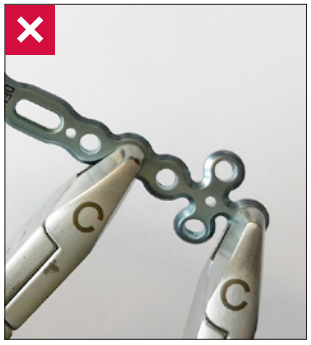
When bending the curved 2.8 TriLock Distal Fibula plates (A-4854.00–09), the letters "C – CURVED PLATE THIS SIDE UP" must be legible from above. This ensures that the plate holes are not damaged.

Plate bending pliers type 2
The labeled side of the plate must always face up when inserting the plate into the bending pliers (A-2940).

When bending the 3.5 TriLock Distal Tibia T and L plates (A-4954.101–103), the letters "UP" must be legible from above.

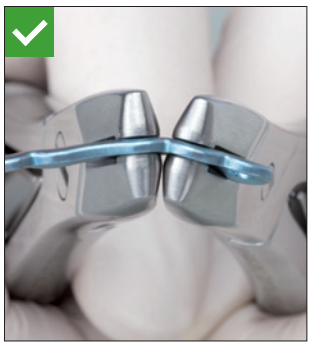
While bending, the plate must always be held at two adjacent holes to prevent contour deformation of the intermediate plate hole.





Warning
Do not bend the plate more than 30°. Bending the plate further may deform the plate holes and may cause the plate to break intra- or 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.



Bending of Flaps

2.8/3.5 TriLock Distal Fibula Plate Lateral with Flap
The flap on the 2.8/3.5 TriLock distal fibula plate lateral with flap can be bent using the 2.0–2.8 plate bending pliers with pins (A-2047) with the letters “C” legible from above.

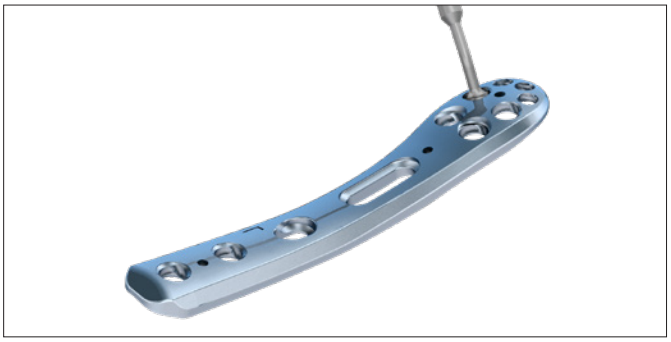
2.8/3.5 TriLock Distal Tibia Plates Anterolateral
The flap on the 2.8/3.5 TriLock distal tibia plates anterolateral can be bent using the 2.0–2.8 plate bending pliers with pins (A-2047) positioned in the flap with the letters “C” legible from above. Use the 3.5/4.0 plate bending pliers (A-2940) in the adjacent 3.5 hole with the letters “UP” legible from above.

Warning
The flaps can be bent once. Bending of the flaps in opposite directions may cause the flap to break intra- or postoperatively.

Plate Bending Iron
Using the closed slots in the plate bending iron (A-2092), the distal tibia plates, including T and L plates, and the distal fibula plates can be twisted or bent out of the plate plane.

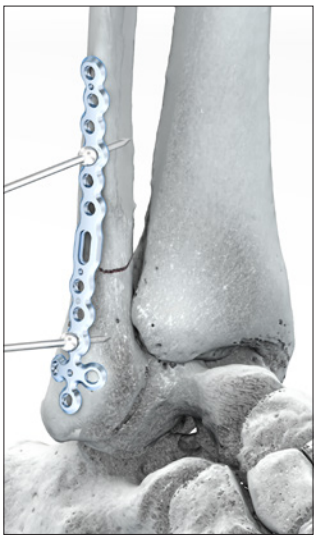
Plate Holding and Positioning

The TriLock ends of the 2.8/3.5 plate holding and positioning Instrument (A-2950) can be locked in the TriLock holes of the plate. The plate holding and positioning instrument facilitates positioning, moving and holding the implant on the bone or it can be used to insert the plate percutaneously after a tunnel for the plate has been prepared (see chapter MIPO Instrument for Tunnel Preparation). The plate holding and positioning instrument can be used with all TriLock 2.8 or 3.5 plate holes.



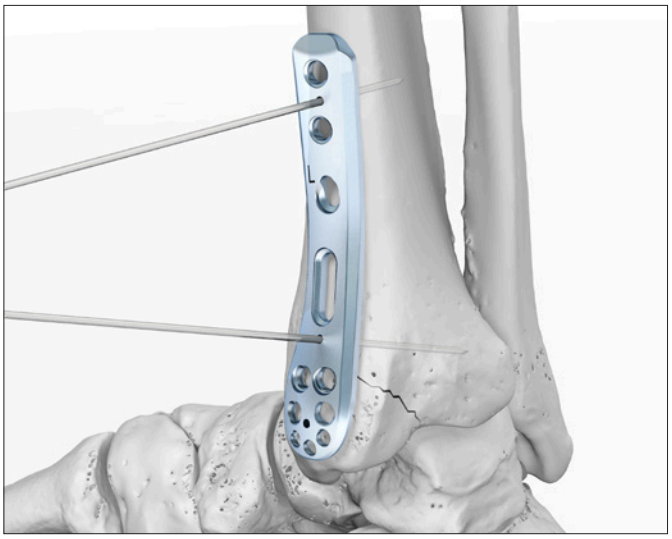
A-2950
2.8/3.5 Plate Holding and Positioning Instrument

Positioning the plate
Position the required plate on the bone. For optimal placement, position the plate so that the contour best matches the bone.



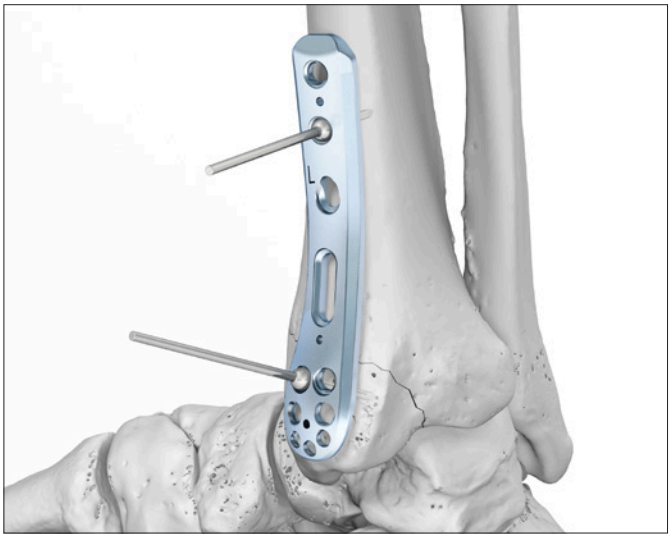
Provisional fixation using 1.6 mm K-wire
After reduction of the fracture, provisional fixation of the plates can be performed using 1.6 mm K-wires (A-5040.41, A-5042.41).

The K-wires can be inserted through the provided K-wire holes in the plates to either reposition fracture fragments against the plate or temporarily fix the plate to the bone.



Provisional fixation using 2.0 mm K-wires with olive
The 2.0 mm K-wires with olive (A-5045.61/1–64/1) can only be inserted through the screw holes in the plate.
Estimate the appropriate thread length needed for the plate and bone combination.
Insert the K-wire with olive into the screw hole and slow down the insertion once the olive comes in contact with the plate.

Caution
Overinsertion can lead to stripping of the bone threads and to loosening of the provisional fixation.



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
2.8	Orange
3.5	Green

There are different types of twist drills 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.

Hole Drilling for 2.8 screws

A-3832
Twist Drill Ø 2.35 mm, AO

Core hole drill with Ø 2.35 mm = One colored ring

A-3834
Twist Drill Ø 2.9 mm, AO

Gliding hole drill with Ø 2.9 mm = two colored rings

Hole Drilling for 3.5 screws
3.5 Cortical

A-3934
Twist Drill Ø 2.6 mm, AO

Core hole drill with Ø 2.6 mm = One colored ring

3.5 TriLock

A-3931
Twist Drill Ø 3.0 mm, AO

Core hole drill with Ø 3.0 mm = One colored ring

A-3933
Twist Drill Ø 3.6 mm

Gliding hole drill with Ø 3.6 mm = two colored rings

For 2.8 screws the twist drill must always be guided by the drill guide (A-2820) or the self-holding drill sleeve (A-2826).

A-2820
2.8 Drill Guide

A-2826
2.5/2.8 Drill Sleeve, Self-Holding

For 3.5 screws the twist drill must always be guided by the drill guide (A-2925, A-2927) or the self-holding drill sleeve (A-2921).

A-2925
3.5 Drill Guide, Cortical,
Drill ∅ 2.6/3.6 mm

A-2927
3.5 Drill Guide, TriLock, Drill ∅ 3.0 mm

A-2921
3.5 Drill Sleeve, Self-Holding

The double-ended drill guides (A-2820, A-2925) are used to perform the classic lag screw technique according to AO/ASIF.

Warning
The twist drill must always be guided by the drill guide (A-2820 for 2.8 screws or A-2925, A-2927 for 3.5 screws) or the self-holding drill sleeve (A-2826 for 2.8 screws or A-2921 for 3.5 screws). 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.

Alternatively, the self-holding drill sleeve (A-2826 for 2.8 screws and A-2921 for 3.5 screws) can be locked with a clockwise turn in the TriLock holes of the plate (no more than ±15°). It thus performs all the functions of a drill guide without the need to be held.

A-2826
2.5/2.8 Drill Sleeve, Self-Holding

A-2921
3.5 Drill Sleeve, Self-Holding

Warning

For TriLock plates ensure that the screw holes are predrilled with a pivoting angle of no more than ±15°. For this purpose, the drill guide features a limit stop of ±15°. A predrilled pivoting angle of >15° no longer allows the TriLock screws to correctly lock in the plate.

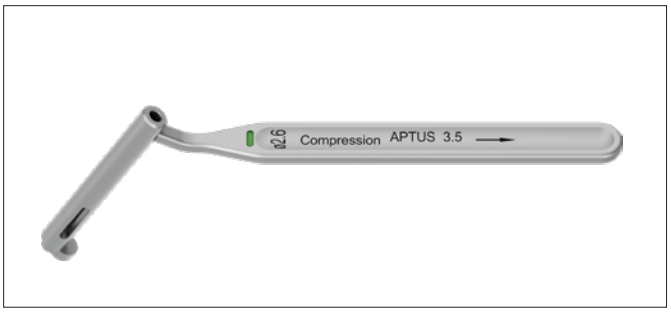
A-2927
3.5 Drill Guide, TriLock

Compression Drill Guide

The single-ended 3.5 drill guide for compression (A-2926) is used in the compression hole of the 2.8/3.5 TriLock distal tibia plate medial and provides compression up to 3 mm across the fracture or osteotomy site.

Warning

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



A-2926
3.5 Drill Guide, Compression

Assigning the Screw Length

The depth gauges (A-2836, A-2931) are used to assign the ideal screw length for use in monocortical or bicortical screw fixation.

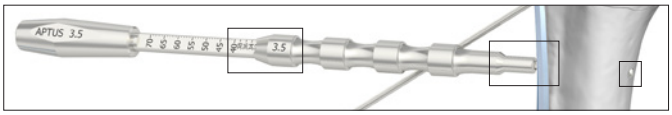
A-2931
3.5/4.0 Depth Gauge, 10–70 mm

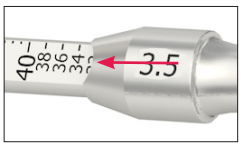
A-2836
2.8 Depth Gauge

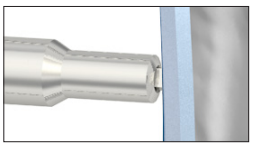
Warning
It is important to use the correct depth gauge for the corresponding screw diameter, which is indicated on the slider and handle of the depth gauge.

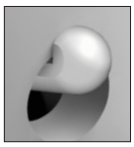
Retract the slider of the depth gauge.

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.





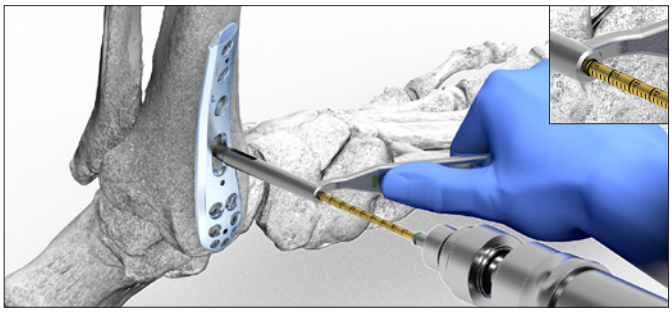




To assign the screw length, place the end of the slider onto the plate or directly onto the bone.
When using the lag screw technique, place the end of the slider directly onto the bone.

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

When inserting a 3.5 cortical screw, the screw length may also be assigned directly from the scale on the twist drill Ø 2.6 mm (A-3934) in combination with the drill guide (A-2925). The length is assigned from the end of the drill guide.



Screw Pick-Up

Both the 2.8 screwdriver blade (A-2013) and the 3.5 screwdriver blade (A-2911) feature the patented HexaDrive self-holding system.

A-2013
2.5/2.8 Screwdriver Blade, HD7, AO

A-2911
3.5/4.0 Screwdriver Blade, HD15, AO

2.8 screws

For 2.8 screws, attach only the orange color-coded 2.5/2.8 screwdriver blade (A-2013) to the cannulated handle with quick connector (A-2073).

A-2073
Cannulated Handle with Quick Connector, AO

3.5 screws

For 3.5 screws, attach only the green color-coded 3.5/4.0 screwdriver blade (A-2911) to either the handle with quick connector (A-2074) or the T-handle with quick connector (A-2075).

A-2074
Handle with Quick Connector, AO

A-2075
T-Handle with Quick Connector, AO

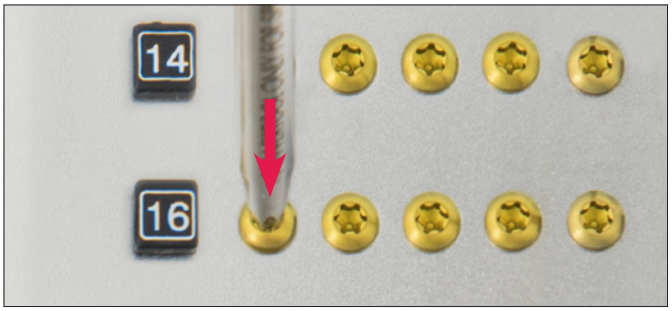
Warning

Do not use the orange color-coded 2.5/2.8 screwdriver blade (A-2013) with the large handle (A-2074) or with the T-handle (A-2075), as the high forces generated can damage the locking of the screw head in the plate hole.

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

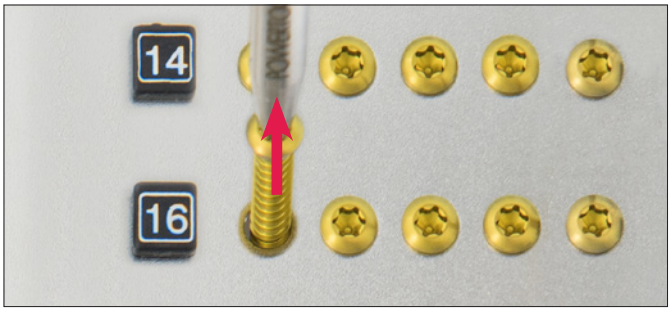
Notice

The screw will not hold without axial pressure.



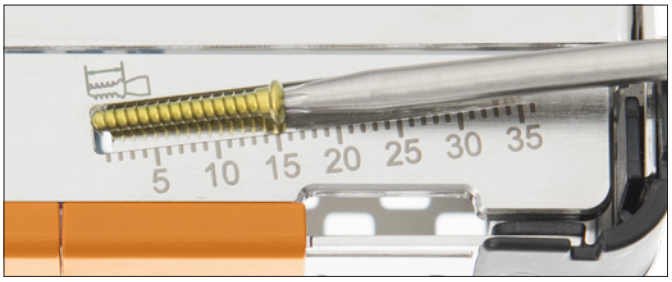
Caution

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.



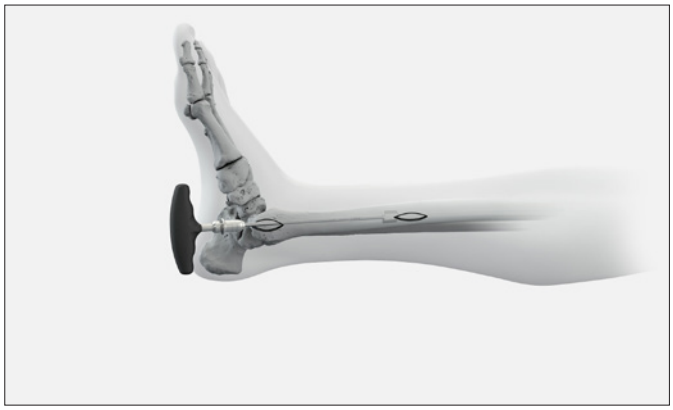
Specific Instrument Application

MIPO Instrument for Tunnel Preparation

In a percutaneous procedure of the tibia or fibula, the MIPO instrument for tunnel preparation (A-2051) can be used to prepare the path for the plate next to the periosteal tissue.

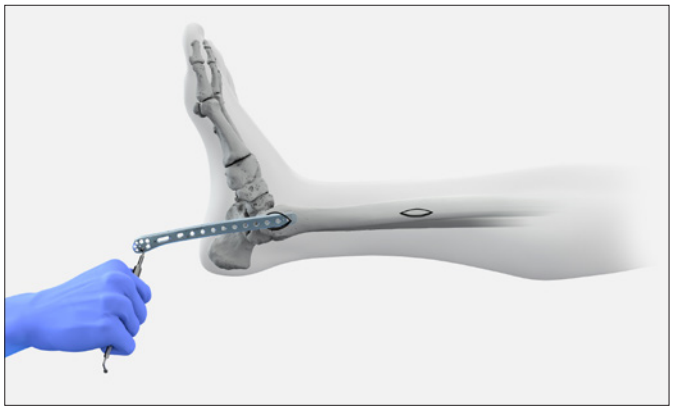
Attach the MIPO tunnel preparation instrument (A-2051) to either the handle with quick connector (A-2074) or to the T-handle with quick connector (A-2075)

Warning
It is important when using the MIPO tunnel preparation instrument that the surgeon is aware of the anatomical structures in the area where the instrument is to be used.



2.8/3.5 Plate Holding and Positioning Instrument

The TriLock end of the plate holding and positioning instrument (A-2950) can be locked in the TriLock contour of the plate. It facilitates positioning, moving and holding the implant on the bone and can be used with all TriLock plate holes. Choose the appropriate end of the instrument based on the size of the selected distal plate hole. Insert the tip of the instrument into the appropriate plate hole and pick up the plate.



Caution
For maximum holding it is recommended to select the largest TriLock hole for insertion of the 2.8/3.5 plate holding and positioning instrument.

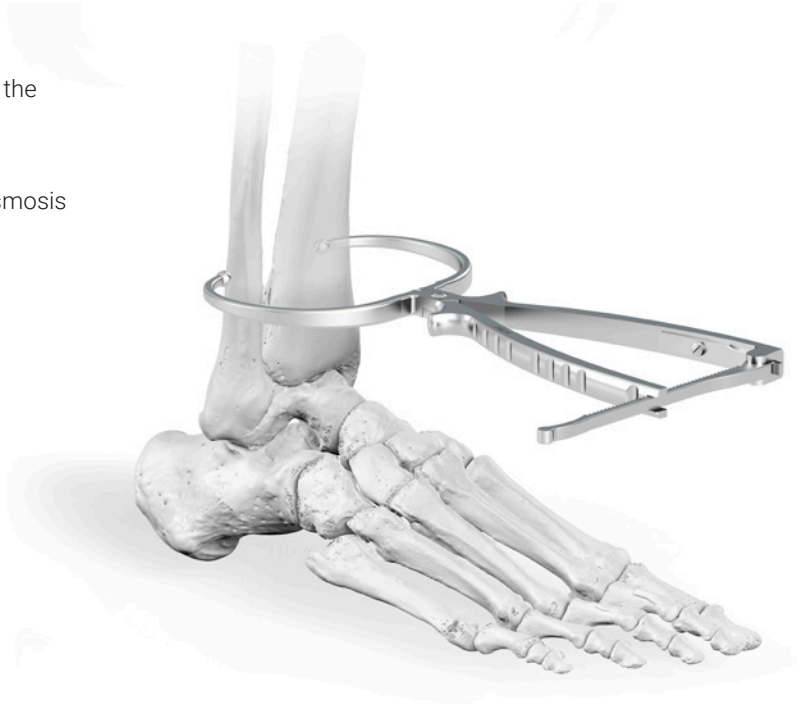
Slide the plate through the prepared tunnel space and along the bone. Always keep the plate in contact with the bone.

Notice
For MIPO insertion do not use excessive force to insert the plate, as this may cause the plate holding and positioning instrument to unlock from the plate hole or damage the tip of the plate holding and positioning instrument.

Large Reduction Forceps

Reduction of the syndesmosis can be achieved using the reduction forceps 230 mm (A-7041).

Use X-ray control to verify the reduction of the syndesmosis and to confirm that the joint is not overcompressed.



Drill Guide for Compression

Insert the 3.5 drill guide for compression (A-2926) into the 3.5 compression hole of the 2.8/3.5 medial distal tibia plate. The drill guide is used together with the twist drill ∅ 2.6 mm (A-3934) for 3.5 cortical screws.

Up to 3 mm of compression can be achieved through the compression hole.

Warning
The arrow on the drill guide indicates the direction of the compression and must always point towards the fracture/ osteotomy line.

Surgical Techniques

General Surgical Techniques

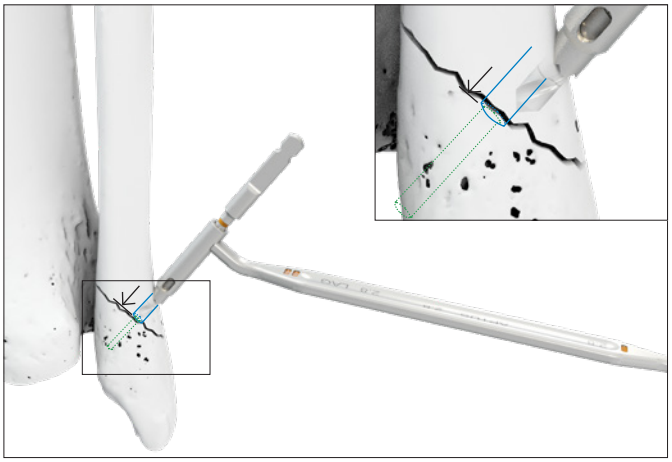
Lag Screw Technique

The drill guides for 2.8 cortical screws (A-2820) and 3.5 cortical screws (A-2925) are used to perform the classic lag screw technique according to AO/ASIF.

Warning
Incorrect application of the lag screw technique(s) may result in postoperative loss of reduction.

1. Drilling the gliding hole
Use the twist drills (A-3834 or A-3933) for gliding holes (two colored rings) of the required screw size in combination with the end of the drill guide labeled with "LAG". Drill at a right angle to the fracture line.

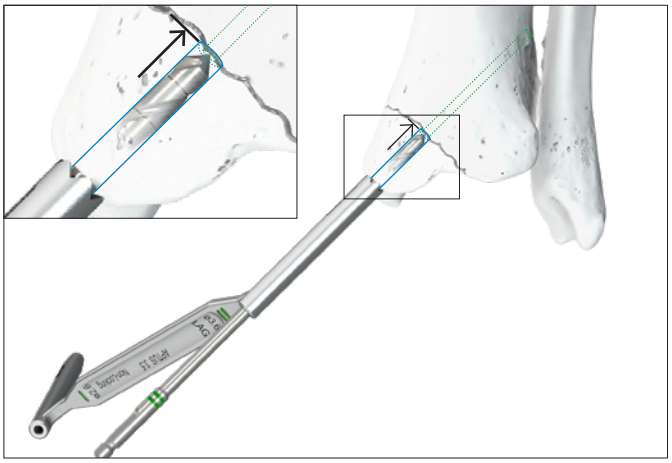
2.8 cortical screws: Twist Drill Ø 2.9 mm (A-3834)



2.8 cortical screws
Gliding hole

A-3834
Twist Drill Ø 2.9 mm = two colored rings

3.5 cortical screws: Twist Drill Ø 3.6 mm (A-3933)



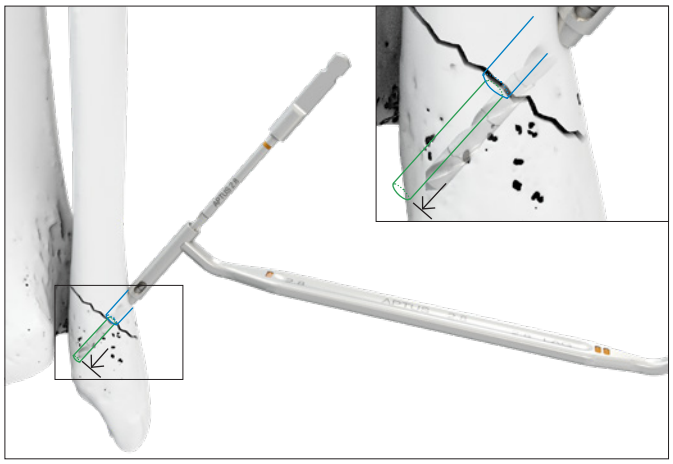
3.5 cortical screws
Gliding hole

A-3933
Twist Drill Ø 3.6 mm = two colored rings

2. Drilling the core hole

Place the end of the drill guide with one colored marking onto the drilled gliding hole and use the twist drills (A-3832 or A-3934) to drill the core holes (one colored ring) of the required screw size.

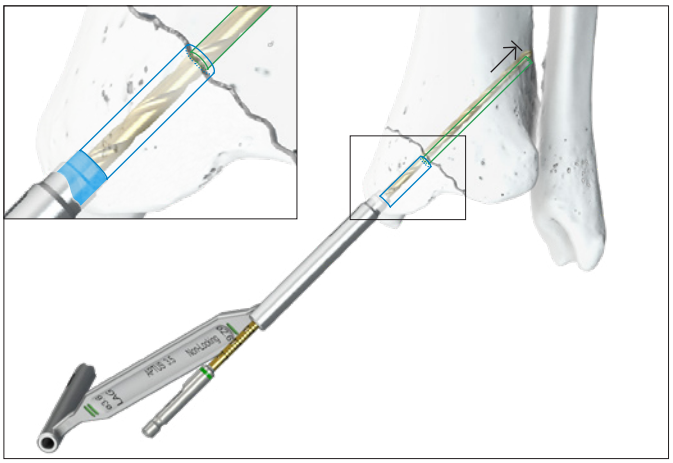
2.8 cortical screws: Twist Drill ∅ 2.35 mm, AO (A-3832)



2.8 cortical screws
Core hole

A-3832
Twist Drill ∅ 2.35 mm, AO

3.5 cortical screws: Twist Drill ∅ 2.6 mm, AO (A-3934)

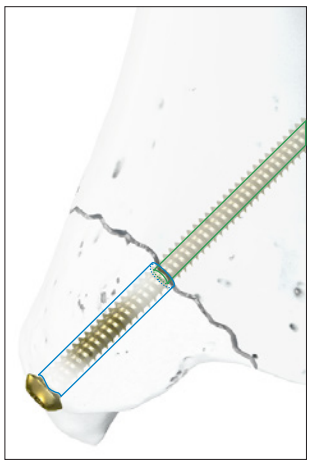


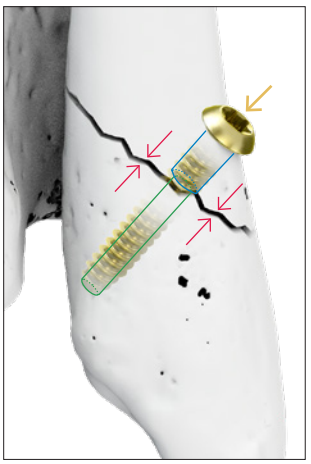
3.5 cortical screws
Core hole

A-3934
Twist Drill ∅ 2.6 mm, AO

Compressing the fracture

Compress the fracture with the corresponding cortical screw.





Specific Surgical Techniques

2.8/3.5 TriLock Distal Tibia Plates, Medial

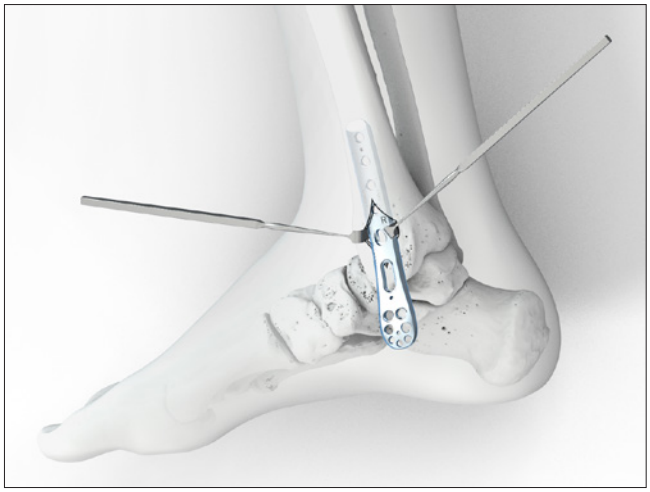
A-4954.11–18
A-4954.19S–26S (Sterile only)

Distal Tibial Fracture

Open procedure
Open the incision as required to expose the fracture site. Carefully push the plate under the soft tissue.

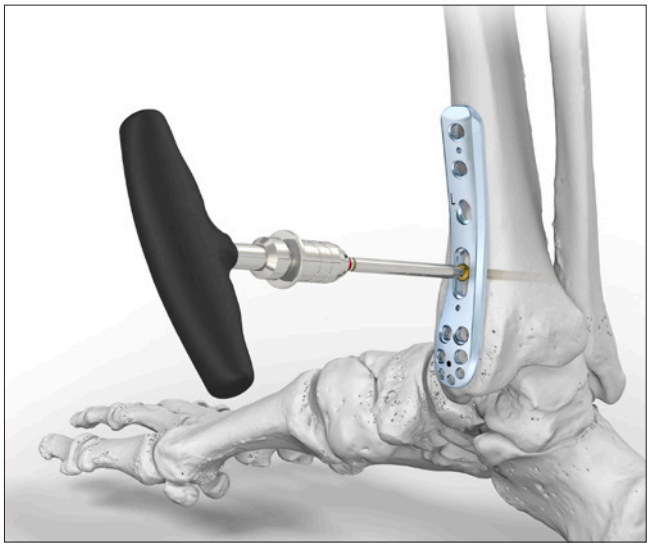
Percutaneous procedure
Insert the plate through the incision and carefully push the plate under the soft tissue in the tunnel which has been prepared with the MIPO instrument for tunnel preparation (A-2051). Ensure that the plate is in contact with the bone.

The plate can be inserted using the plate holding and positioning instrument (A-2950) (see chapter 2.8/3.5 Plate Holding and Positioning Instrument).



1. Temporary fixation
After reduction of the fracture, the plate can be temporarily fixed in the desired position using 1.6 mm K-wires (A-5040.41, A-5042.41) or 2.0 mm K-wires with olive (A-5045.61/1–64/1).

Caution
The 2.0 mm K-wires with olive can only be inserted into the screw holes of the plate.



2. Positioning the plate
If required, the plate can be brought to the bone by drilling a core hole in the center of the oblong hole using the drill guide (A-2925) and the twist drill ∅ 2.6 mm (A-3934, one colored ring).

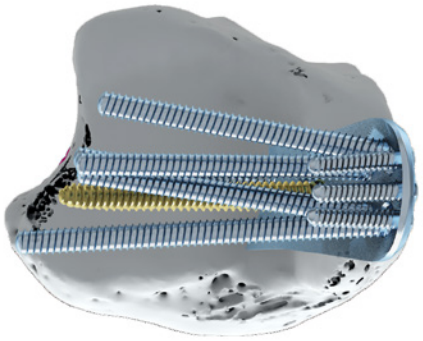
Assign the screw length using the 3.5/4.0 depth gauge (A-2931). Pick up a 3.5 cortical screw (A-5901.xx) of the determined length with the help of the screwdriver blade (A-2911) and the handle (A-2074 or A-2075) and insert it into the corresponding plate hole.

After positioning the plate, use X-ray control to verify the alignment on the bone. Make any adjustments before inserting the screws.

If the plate position needs to be adjusted: remove the K-wires, slightly loosen the cortical screw in the oblong hole, readjust the position of the plate and retighten the cortical screw.

3. Attaching the plate
Assess the fracture pattern and decide on the correct screw insertion sequence required. The choice of angular stable screws generally provides a higher stability of the construct, especially in case of a comminuted fracture or poor bone quality.

Insertion of distal screws
The distal section of the plate accepts three 2.8 cortical screws or 2.8 TriLock screws, which can facilitate the capture of the distal medial malleolus, and four 3.5 cortical or 3.5 TriLock screws.



Insertion of 3.5 cortical or 3.5 TriLock screws:
Drill through the 3.5 cortical or 3.5 TriLock screw holes of the plate using the 3.5 cortical drill guide (A-2925) with the twist drill ∅ 2.6 mm (A-3934) or the 3.5 TriLock drill guide (A-2927) or 3.5 self-holding drill sleeve (A-2921) and the twist drill ∅ 3.0 mm (A-3931).

Assign the screw length using the 3.5/4.0 depth gauge (A-2931).

Caution
The T-handle (A-2075) must always be used to lock 3.5 TriLock screws.

Insertion of 2.8 cortical or 2.8 TriLock screws:
Drill through the 2.8 cortical or 2.8 TriLock screw holes of the plate using the 2.8 drill guide (A-2820) or the 2.5/2.8 self-holding drill sleeve (A-2826) and the twist drill ∅ 2.35 mm (A-3832).

Assign the screw length using the 2.8 depth gauge (A-2836).

Warning
The cannulated handle with quick connector (A-2073) must always be used to lock 2.8 TriLock screws.

Caution
When drilling the holes for the distal screws, care must be taken that the drilling channels do not cross.

Insertion of proximal 3.5 screws
If compression is required to reduce a fracture, drill a core hole through the compression screw hole in the plate using the twist drill ∅ 2.6 mm (A-3934) and the 3.5 drill guide for compression (A-2926).

If a 3.5 cortical screw has already been inserted into the oblong hole, slightly loosen this screw before compression is performed.

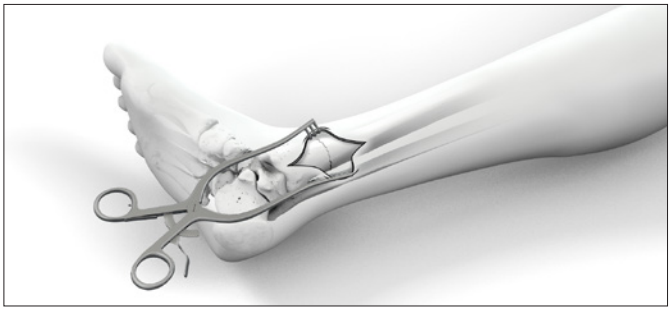
Assign the screw length using the 3.5/4.0 depth gauge (A-2931) and insert a 3.5 cortical screw to achieve compression.

4. Filling the remaining screw holes
Fill the remaining screw holes preferably with 2.8 or 3.5 TriLock screws (A-5850.xx or A-5950.xx) or with 2.8 or 3.5 cortical screws (A-5800.xx or A-5901.xx) as indicated by the type of fracture.

Warning
Make sure correct locking has been achieved (see chapter TriLock Locking Technology).

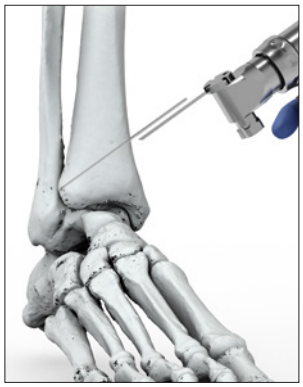
Supramalleolar Tibial Osteotomy

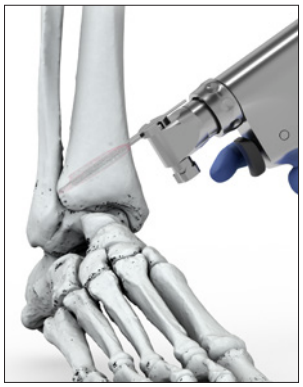
Open procedure
Open the incision with a medial distal tibial approach and protect the soft tissue with two Hohmann retractors (A-7017) or tissue retractors.



Place two 1.6 mm K-wires to simulate the wedge angle required and use image intensifier control to check alignment and angle of the K-wires.

Perform the osteotomy with a saw blade along the K-wires. Take care not to break the lateral cortex at the apex of the distal part of the tibia so that it can be used as a hinge.





Osteotomy along K-wires

Open or close the osteotomy manually. In the case of a closed osteotomy, a compression forceps can also be used.

Opening of osteotomy with preservation of lateral cortex

1. Temporary fixation

After the creation of the medial distal tibial osteotomy, the plate can be temporarily fixed in the desired position using 1.6 mm K-wires (A-5040.41, A-5042.41) or 2.0 mm K-wires with olive (A-5045.61/1–64/1).

Caution

The 2.0 mm K-wires with olive can only be inserted into the screw holes of the plate.

2. Positioning the plate
After positioning the plate, use X-ray control to check the alignment on the bone. Make any adjustments before inserting screws.

3. Attaching the plate
Insertion of distal 3.5 TriLock screws:
In a supramalleolar osteotomy it is recommended to insert 3.5 TriLock screws in the distal section of the plate first.

Drill the 3.5 TriLock screw holes of the plate using the 3.5 TriLock drill guide (A-2927) or the 3.5 self-holding drill sleeve (A-2921) and the twist drill ∅ 3.0 mm (A-3931).

Assign the screw length using the 3.5/4.0 depth gauge (A-2931).

Caution
The T-handle (A-2075) must always be used to lock 3.5 TriLock screws.

Insertion of proximal 3.5 screws:
If compression is required to reduce the osteotomy, drill through the compression screw hole in the plate using the ∅ 2.6 mm twist drill (A-3934) and the 3.5 drill guide for compression (A-2926).

Assign the screw length using the 3.5/4.0 depth gauge (A-2931) and insert a 3.5 cortical screw to achieve compression.

4. Filling the remaining screw holes
Fill the remaining screw holes preferably with 3.5 TriLock screws (A-5950.xx).

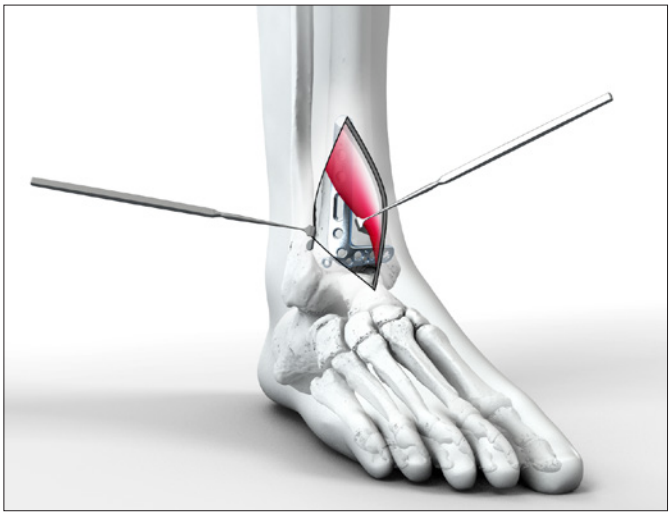
Warning
Make sure correct locking has been achieved (see chapter TriLock Locking Technology).

2.8/3.5 TriLock Distal Tibia Plates, Anterolateral

A-4954.31–36
A-4954.37S–40S (Sterile only)

Open procedure

Only an open incision is recommended with the 2.8/3.5 TriLock distal tibia plates anterolateral.
Open the incision as required to expose the fracture site.
Carefully push the plate under the soft tissue.



Open procedure with careful insertion of plate under soft tissue.

1. Temporary fixation

After reduction of the fracture and plate positioning, the plate can be temporarily fixed in the desired position using 1.6 mm K-wires (A-5040.41, A-5042.41) or 2.0 mm K-wires with olive (A-5045.61/1–64/1).

Caution

The 2.0 mm K-wires with olive (A-5045.61/1–64/1) can only be inserted into the screw holes of the plate.

If the flap is not in the correct position or flat on the bone, it can be bent using the 2.0–2.8 plate bending pliers with pins (A-2047). (See chapter Bending of Flaps)

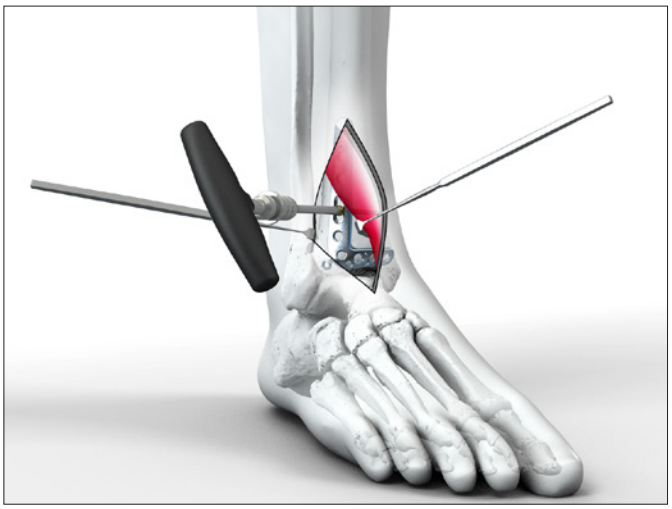
2. Positioning the plate

Drill a core hole in the center of the oblong hole using the drill guide (A-2925) and the twist drill Ø 2.6 mm (A-3934, one colored ring).

Assign the screw length using the 3.5/4.0 depth gauge (A-2931).

Pick up a 3.5 cortical screw (A-5901.xx) of the determined length using the screwdriver blade (A-2911) and handle (A-2074 or A-2075) and insert it into the corresponding hole.

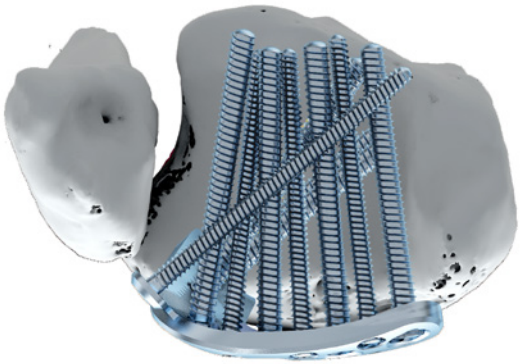
After positioning the plate, use X-ray control to check the alignment on the bone. Make any adjustments before inserting the screws.



If the plate position needs to be adjusted: remove the K-wires, slightly loosen the cortical screw in the oblong hole, readjust the position of the plate and retighten the cortical screw.

3. Attaching the plate
Asses the fracture pattern and decide on the correct screw insertion sequence required.
The choice of angular stable screws generally provides a higher stability of the construct, especially in case of a comminuted fracture or poor bone quality.

Insertion of distal screws
The distal section of the plate accepts four 2.8 cortical screws or 2.8 TriLock screws and four 3.5 cortical screws or 3.5 TriLock screws, which facilitate an intersecting scaffold (rafting) to support the distal articular surface.



Insertion of 3.5 cortical or 3.5 TriLock screws:
Drill through the 3.5 cortical or 3.5 TriLock screw holes of the plate using the 3.5 cortical drill guide (A-2925) with the twist drill ∅ 2.6 mm (A-3934) or the 3.5 TriLock drill guide (A-2927) or 3.5 self-holding drill sleeve (A-2921) and the twist drill ∅ 3.0 mm (A-3931).

Assign the screw length using the 3.5/4.0 depth gauge (A-2931).

Caution
The T-handle (A-2075) must always be used to lock 3.5 TriLock screws.

Insertion of 2.8 TriLock screws:
Drill through the 2.8 cortical or 2.8 TriLock screw holes of the plate using the 2.8 drill guide (A-2820) or the 2.5/2.8 self-holding drill sleeve (A-2826) and the twist drill ∅ 2.35 mm (A-3832).

Assign the screw length using the 2.8 depth gauge (A-2836).

Warning
The cannulated handle with quick connector (A-2073) must always be used to lock 2.8 TriLock screws.

Caution
When drilling the holes for the distal screws, care must be taken that the drilling channels do not cross.

Insertion of proximal 3.5 screws:
The proximal section of the plate accepts 3.5 cortical or 3.5 TriLock screws.

Insertion of 3.5 cortical or 3.5 TriLock screws
Drill through the 3.5 cortical or 3.5 TriLock screw holes of the plate using the 3.5 cortical drill guide (A-2925) with the twist drill ∅ 2.6 mm (A-3934) or the 3.5 TriLock drill guide (A-2927) or 3.5 self-holding drill sleeve (A-2921) and the twist drill ∅ 3.0 mm (A-3931).

Assign the screw length using the 3.5/4.0 depth gauge (A-2931).

4. Filling the remaining screw holes
Fill the remaining screw holes preferably with 2.8 or 3.5 TriLock screws (A-5850.xx or A-5950.xx) or 2.8 or 3.5 cortical screws (A-5800.xx or A-5901.xx) as indicated by the type of fracture.

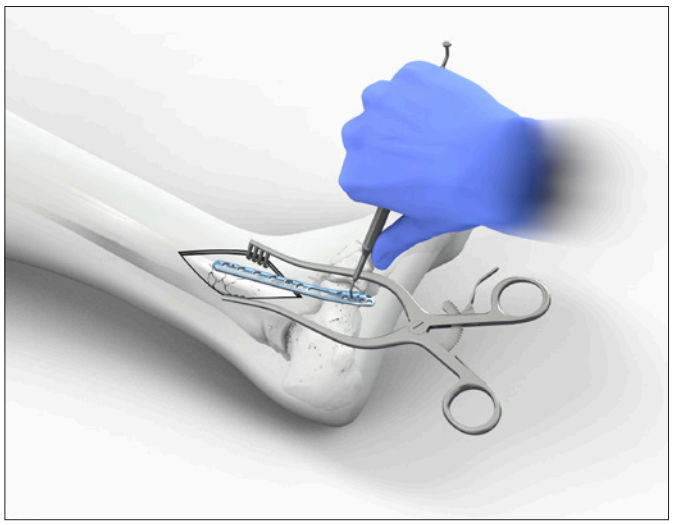
Warning
Make sure correct locking has been achieved (see chapter TriLock Locking Technology).

2.8/3.5 TriLock Distal Fibula Plates, Lateral

A-4954.00–05
A-4954.06S – 09S (Sterile only)

Distal Fibula Fracture

Open procedure
Open the incision as required to expose the fracture site. Carefully push the plate under the soft tissue.



Percutaneous procedure
Insert the plate through the incision and carefully push the plate under the soft tissue in the tunnel which has been prepared with the MIPO instrument for tunnel preparation (A-2051). Ensure that the plate is in contact with the bone.

The plate can be inserted using the plate holding and positioning instrument (A-2950) (see chapter 2.8/3.5 Plate Holding and Positioning Instrument).

1. Temporary fixation
After reduction of the fracture, the plate can be positioned and temporarily fixed in the desired position using 1.6 mm K-wires (A-5040.41, A-5042.41) or 2.0 mm K-wires with olive (A-5045.61/1–64/1).

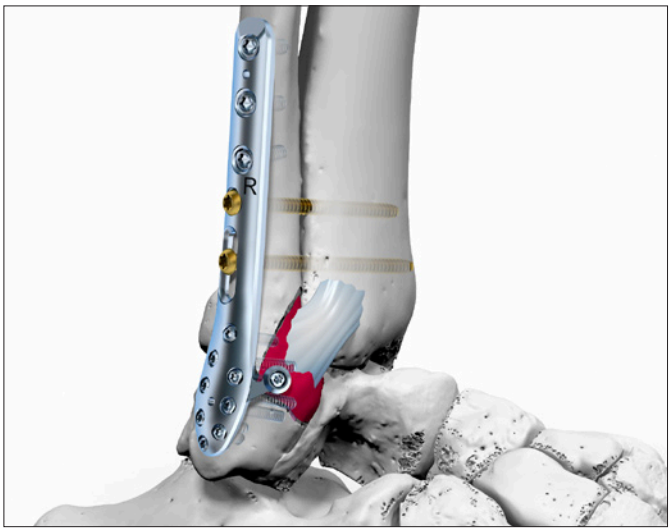
Caution
The 2.0 mm K-wires with olive (A-5045.61/1–64/1) can only be inserted into the screw holes of the plate.

2. Positioning the plate
After positioning the plate, use X-ray control to check the alignment on the bone. Make any adjustments before inserting the screws.

2.8/3.5 TriLock Distal Fibula Plates, Lateral with Flap

A-4954.51–54

If the flap is not in the correct position to treat the Wagstaffe fracture, or is not flat on the bone, it can be bent using the 2.0-2.8 plate bending pliers with pins (A-2047). (See chapter Bending of Flaps)



Anterior tibiofibular ligament
Flap with 2.8 TriLock screw holding the Wagstaffe fragment

3. Attaching the plate

Assess the fracture pattern and decide on the correct screw insertion sequence required.

The choice of angular stable screws generally provides a higher stability of the construct, especially in case of a comminuted fracture or poor bone quality.

Insertion of distal screws

The distal section of the plates with/without flap accept nine/eight 2.8 cortical or 2.8 TriLock screws respectively.

Insertion of 2.8 cortical or 2.8 TriLock screws:
Drill through the 2.8 cortical or 2.8 TriLock screw holes of the plate using the 2.8 drill guide (A-2820) or the 2.5/2.8 self-holding drill sleeve (A-2826) and the twist drill Ø 2.35 mm (A-3832).

Assign the screw length using the 2.8 depth gauge (A-2836).

Warning

The cannulated handle with quick connector (A-2073) must always be used to lock 2.8 TriLock screws.

Caution
When drilling the holes for the distal screws, care must be taken that the drilling channels do not cross.

Insertion of proximal 3.5 screws
The proximal section of the plates accepts 3.5 cortical or 3.5 TriLock screws.

Insertion of 3.5 cortical or 3.5 TriLock screws:
Drill through the 3.5 cortical or 3.5 TriLock screw holes of the plate using the 3.5 cortical drill guide (A-2925) with the twist drill ∅ 2.6 mm (A-3934) or the 3.5 TriLock drill guide (A-2927) or 3.5 self-holding drill sleeve (A-2921) and the twist drill ∅ 3.0 mm (A-3931).

Assign the screw length using the 3.5/4.0 depth gauge (A-2931).

Caution
The T-handle (A-2075) must always be used to lock 3.5 TriLock screws.

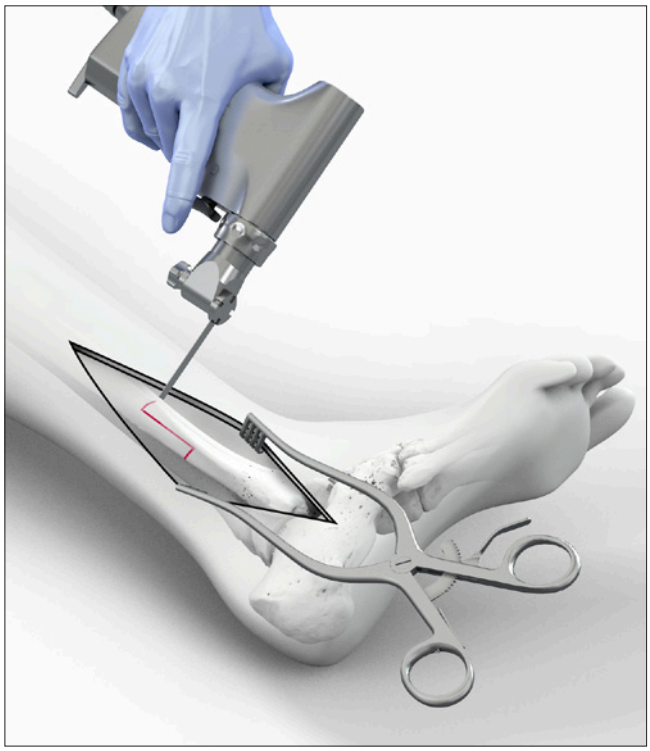
4. Filling the remaining screw holes
Fill the remaining screw holes preferably with 2.8 or 3.5 TriLock screws (A-5850.xx or A-5950.xx) or with 2.8 or 3.5 cortical screws (A-5800.xx or A-5901.xx) as indicated by the type of fracture.

Warning
Make sure correct locking has been achieved (see chapter TriLock Locking Technology).

Distal Fibula Osteotomy

Open procedure
Open with a lateral approach respecting any former incisions or wounds. Protect the soft tissue with two Hohmann retractors (A-7017) or tissue retractors.

The osteotomy of the fibula can be performed with an oblique or Z-shaped cut. Once the osteotomy has been performed, correct the length, rotation and abduction of the lateral malleolus as needed.



Oblique or Z shaped osteotomy can be performed

1. Temporary fixation
After performing a distal fibula osteotomy, the plate can be positioned and temporarily fixed using 1.6 mm K-wires (A-5040.41, A-5042.41) or 2.0 mm K-wires with olive (A-5045.61/1–64/1).

After provisional fixation, use X-ray control to check that the osteotomy has achieved the correct length, rotation or adduction of the fibula as required.

Caution
The 2.0 mm K-wires with olive (A-5045.61/1–64/1) can only be inserted into the screw holes of the plate.

2. Attaching the plate
In a distal fibula osteotomy, it is recommended to use angular stable screws both distally and proximally as they generally provide a higher stability of the construct, especially in the case of poor bone quality.

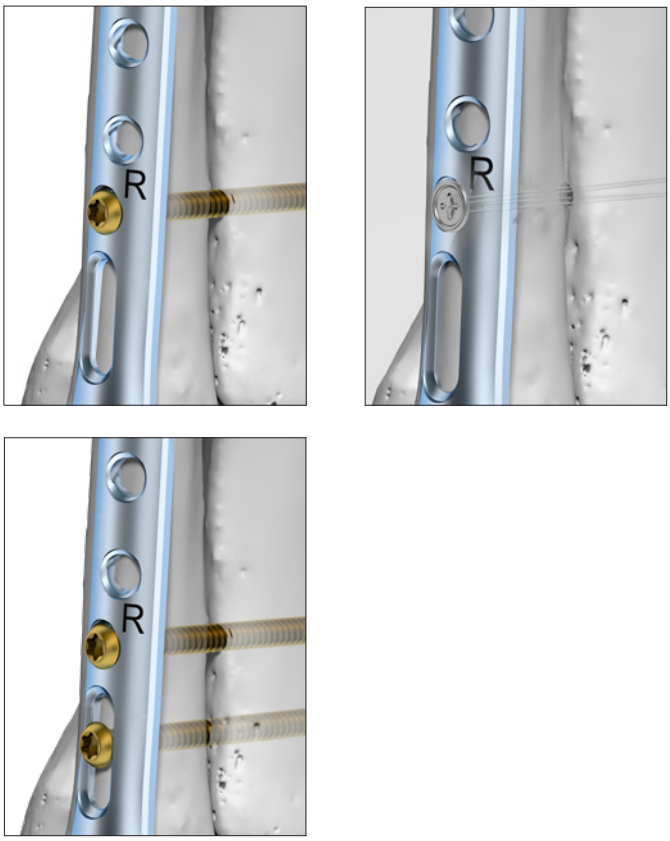
Syndesmotic Fixation

After fibular reconstruction is achieved, tibiofibular instability is determined and the decision whether or not to fix the syndesmosis is made. The decision can be made preoperatively using radiographs or intraoperatively through a series of syndesmotic stress tests.

Syndesmotic reduction is achieved using the reduction forceps (A-7041).

The 2.8/3.5 TriLock distal fibula plates lateral (A-4954.00–09S, A-4954.51–54) feature two options for syndesmotic fixation:

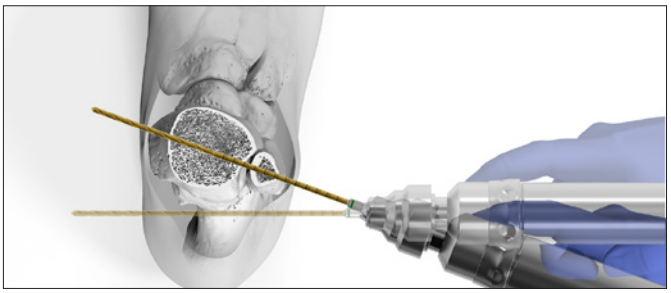
- Single syndesmotic hole with 20° angulation to allow for the proper drill angle of a syndesmotic screw or suture button implant.
- Oblong hole with 20° angulation to allow for the proper drill angle into the center of the distal tibia for one or two 3.5 cortical screws (A-5901.10/1–60/1).



Notice

Suture button implants cannot be used in the oblong hole and will fall through at certain angulations.

One or two 3.5 cortical screws (A-5901.xx) are placed through the fibula to the medial side of the tibia, achieving four points of cortical fixation. Due to the angulation of the syndesmotic holes, the screws run at an anterior trajectory and parallel to the ankle joint. These screws are placed with the intent of no compression (i. e. no lag screw technique is used).

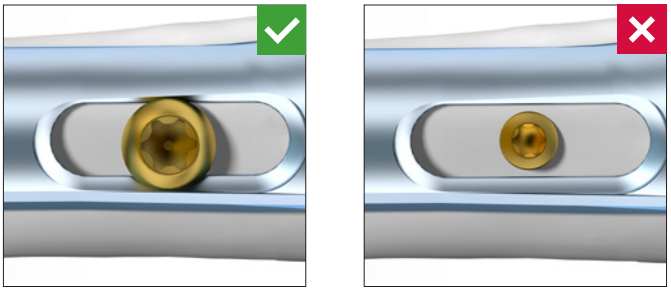


Notice

It is not recommended to use 2.8 cortical screws in the single or oblong syndesmotic hole as the screwhead diameter is too small and the screw will fall through the holes.

Proper level of syndesmotic screw

The first screw is placed approximately 1 cm proximal to the syndesmosis or 4 cm proximal to the ankle joint.

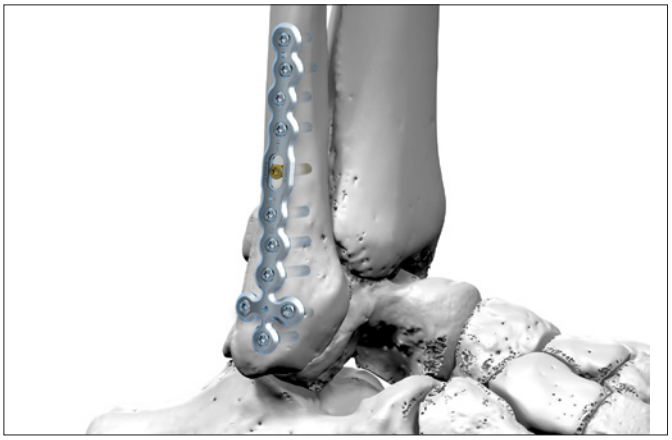


2.8 TriLock Distal Fibula Plates
A-4854.00–04

2.8 TriLock Distal Fibula Plates, Straight
A-4854.05–09

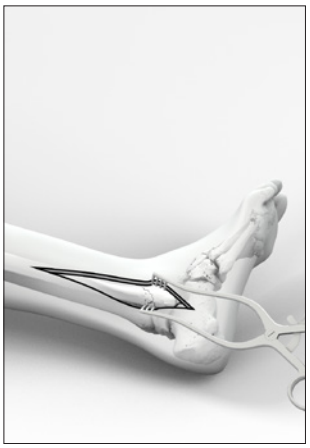
Open procedure

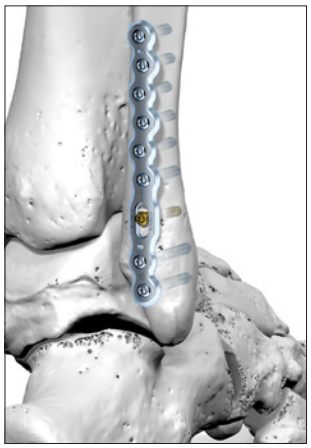
Open the incision as required to expose the fracture site. Carefully push the plate under the soft tissue.



Percutaneous procedure

Insert the plate through the incision and carefully push the plate under the soft tissue in the tunnel which has been prepared with the MIPO instrument for tunnel preparation (A-2051). Ensure that the plate is in contact with the bone.





Posterolateral fixation of fibula

1. Temporary fixation

After reduction of the fracture and restoration of the fibula length, the plate can be positioned and temporarily fixed in the desired position using 1.6 mm K-wires (A-5040.41, A-5042.41) or 2.0 mm K-wires with olive (A-5045.61/1–64/1).

Caution

The 2.0 mm K-wires with olive (A-5045.61/1–64/1) can only be inserted into the screw holes of the plate.

2. Positioning the plate
If required, the plate can be brought to the bone by drilling a core hole in the center of the oblong hole using the drill guide (A-2820) and the twist drill Ø 2.35 mm (A-3832, one colored ring). After positioning the plate, use X-ray control to check the alignment on the bone. Make any adjustments before inserting the screws.

If the plate position needs to be adjusted: remove the K-wires, slightly loosen the cortical screw in the oblong hole, readjust the position of the plate and retighten the cortical screw.

3. Attaching the plate
Assess the fracture pattern and decide on the correct screw insertion sequence required.

The choice of angular stable screws generally provides a higher stability of the construct, especially in case of a comminuted fracture or poor bone quality.

Insertion of 2.8 cortical or 2.8 TriLock screws
Drill through the 2.8 cortical or 2.8 TriLock screw holes of the plate using the 2.8 drill guide (A-2820) or the 2.5/2.8 self-holding drill sleeve (A-2826) and the twist drill Ø 2.35 mm (A-3832).

Assign the screw length using the 2.8 depth gauge (A-2836).

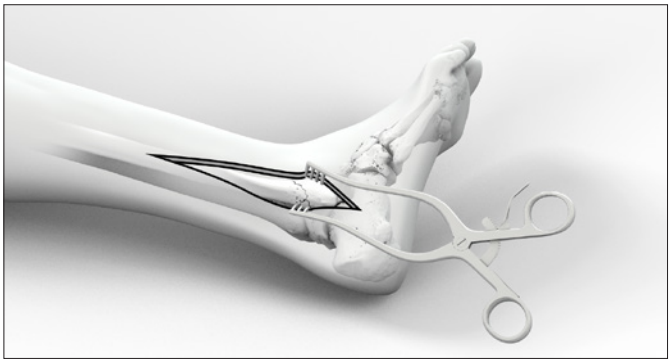
Warning
The cannulated handle with quick connector (A-2073) must always be used to lock 2.8 TriLock screws.

4. Filling the remaining screw holes
Fill the remaining screw holes with 2.8 TriLock screws (A-5850.xx) or 2.8 cortical screws (A-5800.xx) as indicated by the type of fracture.

Warning
Make sure correct locking has been achieved (see chapter TriLock Locking Technology).

3.5 Distal Tibia T and L Plates
A-4954.101–103

Open procedure
Open the incision as required to expose the fracture site. Carefully push the plate under the soft tissue.



1. Temporary fixation
After reduction of the fracture and plate positioning, the plates can be temporarily fixed in the desired position using 1.6 mm K-wires (A-5040.41, A-5042.41) or 2.0 mm K-wires with olive (A-5045.61/1–64/1).

Posterior fixation with T and L plates

Caution
The 2.0 mm K-wires with olive (A-5045.61/1– 64/1) can only be inserted into the screw holes of the plate.

2. Positioning the plate
If required, the plate can be brought to the bone by drilling a core hole in the center of the oblong hole using the drill guide (A-2925) and the twist drill ∅ 2.6 mm (A-3934, one colored ring). After positioning the plate, use X-ray control to check the alignment on the bone. Make any adjustments before inserting the screws.

If the plate position needs to be adjusted: remove the K-wires, slightly loosen the cortical screw in the oblong hole, readjust the position of the plate and retighten the cortical screw.

Anterior fixation with T and L plates

3. Attaching the plate
Assess the fracture pattern and decide on the correct screw insertion sequence required.

The choice of angular stable screws generally provides a higher stability of the construct, especially in case of a comminuted fracture or poor bone quality.

Insertion of 3.5 cortical or 3.5 TriLock screws
The distal screw hole trajectories are angled superiorly, with the intention to avoid the joint space.

Drill through the 3.5 cortical or 3.5 TriLock screw holes of the plate using the 3.5 cortical drill guide (A-2925) with the twist drill ∅ 2.6 mm (A-3934) or the 3.5 TriLock drill guide (A-2927) or 3.5 self-holding drill sleeve (A-2921) and the twist drill ∅ 3.0 mm (A-3931).

Assign the screw length using the 3.5/4.0 depth gauge (A-2931).

Caution
The T-handle (A-2075) must always be used to lock 3.5 TriLock screws.

4. Filling the remaining screw holes
Fill the remaining screw holes preferably with 2.8 or 3.5 TriLock screws (A-5850.xx or A-5950.xx) or with 2.8 or 3.5 cortical screws (A-5800.xx or A-5901.xx) as indicated by the type of fracture.

Warning
Make sure correct locking has been achieved (see chapter TriLock Locking Technology).

Explantation

Removal of Screws

Unlock all screws from the plate.
When all screws have been unlocked, remove them in a random order.

If the plate sticks to the bone, use a periosteal elevator to carefully lift and detach it from the bone.

Caution
When removing the screws, make sure that any bone ingrowth has been removed with the sharp hook (A-7009) from the screw head recess and that the screwdriver/screw head connection is aligned in an axial direction.

Only original APTUS instruments are recommended for the explantation of APTUS implants.

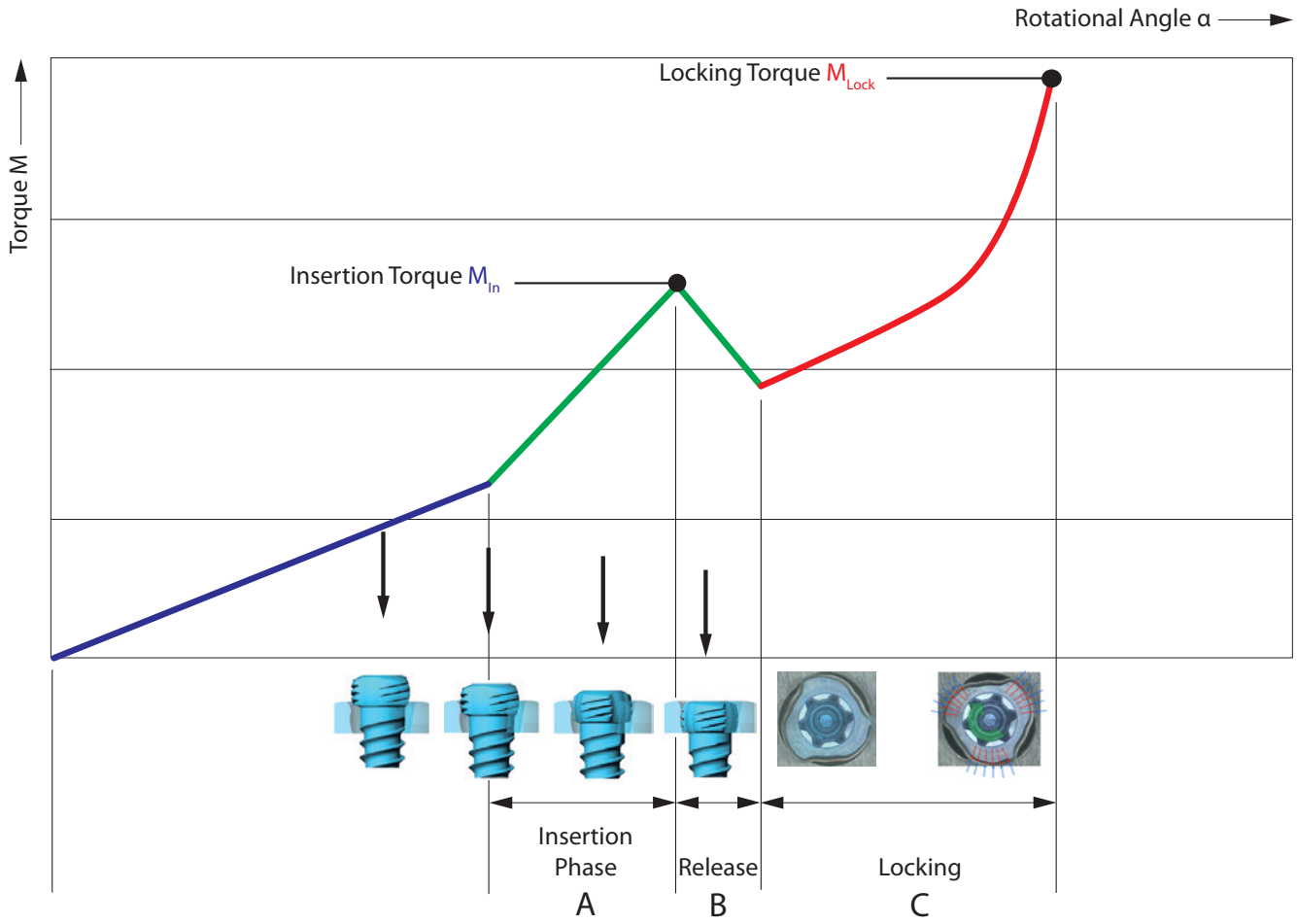
TriLock Locking Technology

Correct Application of the TriLock Locking Technology — 2.8 TriLock Screws

The screw is inserted through the plate hole into a pre-drilled 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 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.

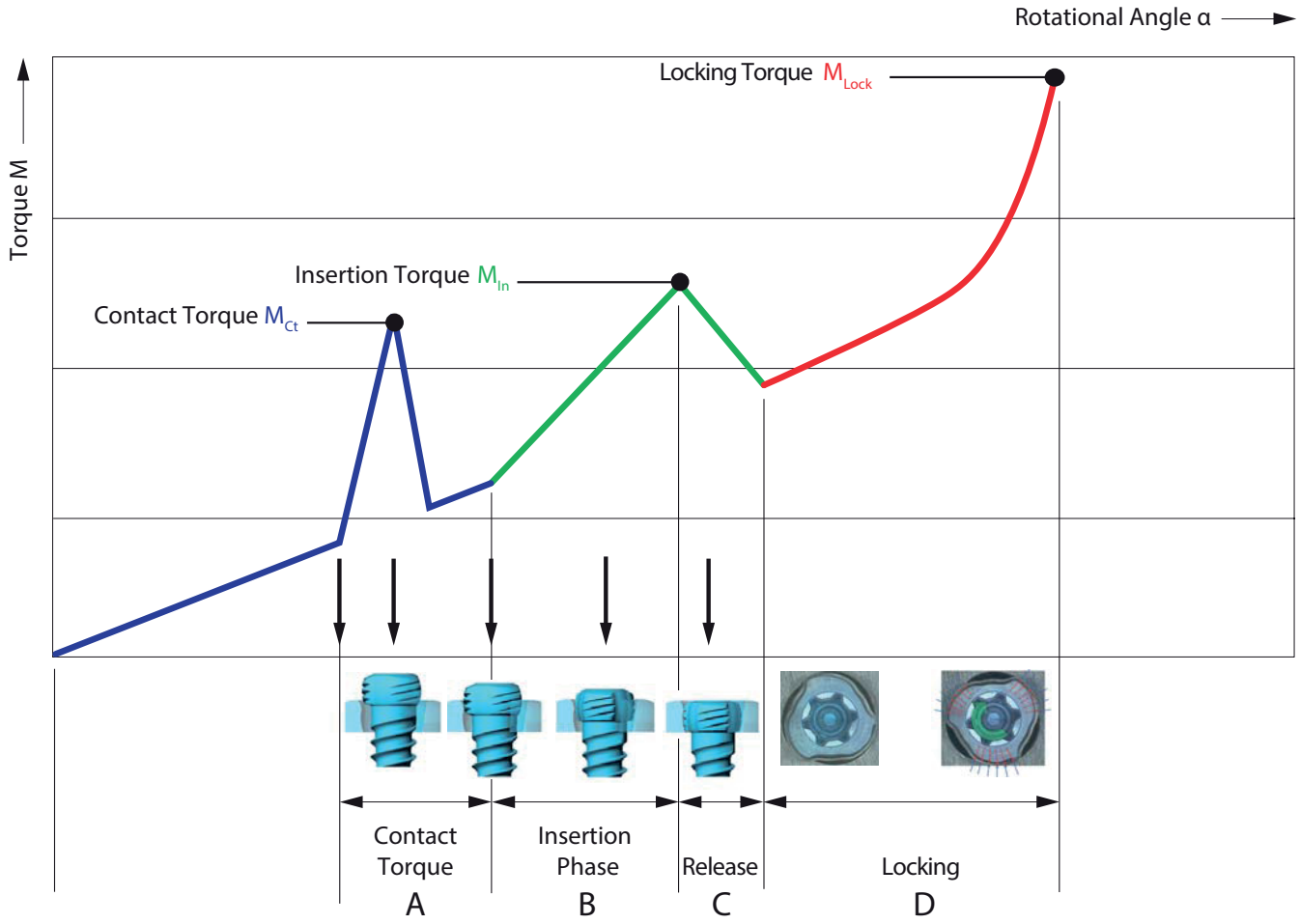


Correct Application of the TriLock Locking Technology — 3.5 TriLock Screws

The screw is inserted through the plate hole into the predrilled bone. A “contact torque” will be felt once the screw head makes contact with the plate surface; for the 3.5 TriLock screws this torque increase is easily perceived (section “A” in the diagram).

The torque then decreases before it starts increasing again during the “Insertion Phase”, as the screw head enters the locking hole (section “B” in the diagram). Once the screw head has entered the locking hole, a second decrease of torque occurs (section “C” in the diagram). Finally, the actual locking is initiated (section “D” in the diagram) as a friction connection is established between screw and plate when tightening firmly. The torque applied in section “D” is decisive for the quality of the locking.

In summary, two intermediate torque maxima have to be overcome before there is the final locking of the screw.



Correct Locking (± 15°) of the TriLock Screws in the Plate

Correct locking occurs only when the screw head has 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.

After having reached the locking torque (MLock), do not further tighten the screw, otherwise the locking function cannot be guaranteed anymore.

Correct: LOCKED

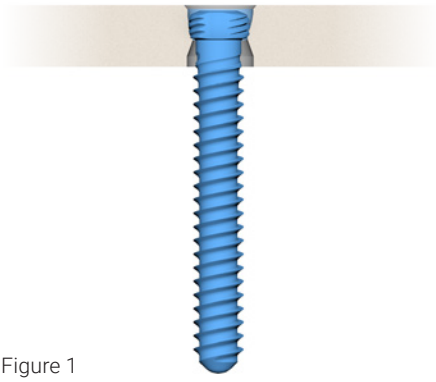


Figure 1

Incorrect: UNLOCKED

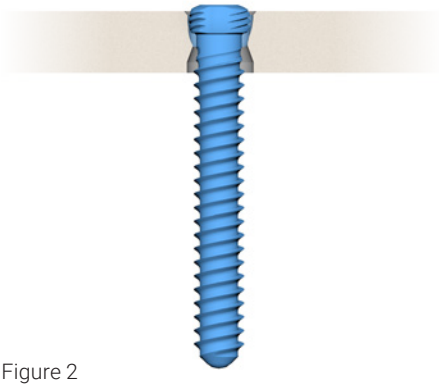


Figure 2

Correct: LOCKED

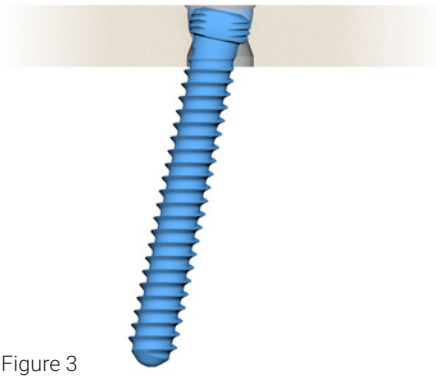


Figure 3

Incorrect: UNLOCKED

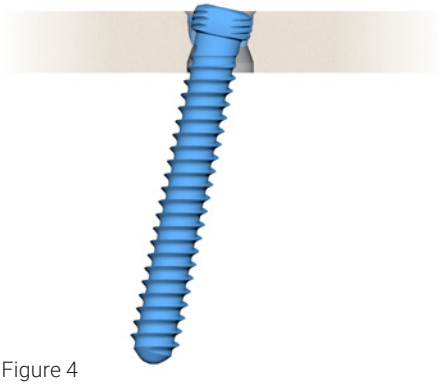


Figure 4

Implants and Instruments

2.8 Cortical Screws, HexaDrive 7

Material: Titanium alloy (ASTM F136)

Length	Art. No.	Pieces / Pkg	Art. No.	Pieces / Pkg
8 mm	A-5800.08/1	1	A-5800.08	5
10 mm	A-5800.10/1	1	A-5800.10	5
12 mm	A-5800.12/1	1	A-5800.12	5
14 mm	A-5800.14/1	1	A-5800.14	5
16 mm	A-5800.16/1	1	A-5800.16	5
18 mm	A-5800.18/1	1	A-5800.18	5
20 mm	A-5800.20/1	1	A-5800.20	5
22 mm	A-5800.22/1	1	A-5800.22	5
24 mm	A-5800.24/1	1	A-5800.24	5
26 mm	A-5800.26/1	1	A-5800.26	5
28 mm	A-5800.28/1	1	A-5800.28	5
30 mm	A-5800.30/1	1	A-5800.30	5
32 mm	A-5800.32/1	1	A-5800.32	5
34 mm	A-5800.34/1	1	A-5800.34	5
36 mm	A-5800.36/1	1	A-5800.36	5
38 mm	A-5800.38/1	1	A-5800.38	5
40 mm	A-5800.40/1	1	A-5800.40	5
45 mm	A-5800.45/1	1	A-5800.45	5
50 mm	A-5800.50/1	1	A-5800.50	5
55 mm	A-5800.55/1	1	A-5800.55	5
60 mm	A-5800.60/1	1	A-5800.60	5

2.5/2.8 Washer

Material: Titanium alloy (ASTM F136)

Description	Art. No.	Pieces / Pkg	Art. No.	Pieces / Pkg
Concave	A-4700.70/1	1	A-4700.70	5

2.8 TriLock Screws, HexaDrive 7

Material: Titanium alloy (ASTM F136)

Length	Art. No.	Pieces / Pkg	Art. No.	Pieces / Pkg
8 mm	A-5850.08/1	1	A-5850.08	5
10 mm	A-5850.10/1	1	A-5850.10	5
12 mm	A-5850.12/1	1	A-5850.12	5
14 mm	A-5850.14/1	1	A-5850.14	5
16 mm	A-5850.16/1	1	A-5850.16	5
18 mm	A-5850.18/1	1	A-5850.18	5
20 mm	A-5850.20/1	1	A-5850.20	5
22 mm	A-5850.22/1	1	A-5850.22	5
24 mm	A-5850.24/1	1	A-5850.24	5
26 mm	A-5850.26/1	1	A-5850.26	5
28 mm	A-5850.28/1	1	A-5850.28	5
30 mm	A-5850.30/1	1	A-5850.30	5
32 mm	A-5850.32/1	1	A-5850.32	5
34 mm	A-5850.34/1	1	A-5850.34	5
36 mm	A-5850.36/1	1	A-5850.36	5
38 mm	A-5850.38/1	1	A-5850.38	5
40 mm	A-5850.40/1	1	A-5850.40	5
45 mm	A-5850.45/1	1	A-5850.45	5
50 mm	A-5850.50/1	1	A-5850.50	5
55 mm	A-5850.55/1	1	A-5850.55	5
60 mm	A-5850.60/1	1	A-5850.60	5

3.5 Cortical Screws, HexaDrive 15

Material: Titanium alloy (ASTM F136)

Length	Art. No.	Pieces / Pkg
10 mm	A-5901.10/1	1
12 mm	A-5901.12/1	1
14 mm	A-5901.14/1	1
16 mm	A-5901.16/1	1
18 mm	A-5901.18/1	1
20 mm	A-5901.20/1	1
22 mm	A-5901.22/1	1
24 mm	A-5901.24/1	1
26 mm	A-5901.26/1	1
28 mm	A-5901.28/1	1
30 mm	A-5901.30/1	1
32 mm	A-5901.32/1	1
34 mm	A-5901.34/1	1
36 mm	A-5901.36/1	1
38 mm	A-5901.38/1	1
40 mm	A-5901.40/1	1
45 mm	A-5901.45/1	1
50 mm	A-5901.50/1	1
55 mm	A-5901.55/1	1
60 mm	A-5901.60/1	1

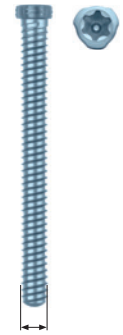
3.5 Washer

Material: Titanium alloy (ASTM F136)

Description	Art. No.	Pieces / Pkg	Art. No.	Pieces / Pkg
Concave	A-4900.70/1	1	A-4900.70	5

3.5 TriLock Screws, HexaDrive 15

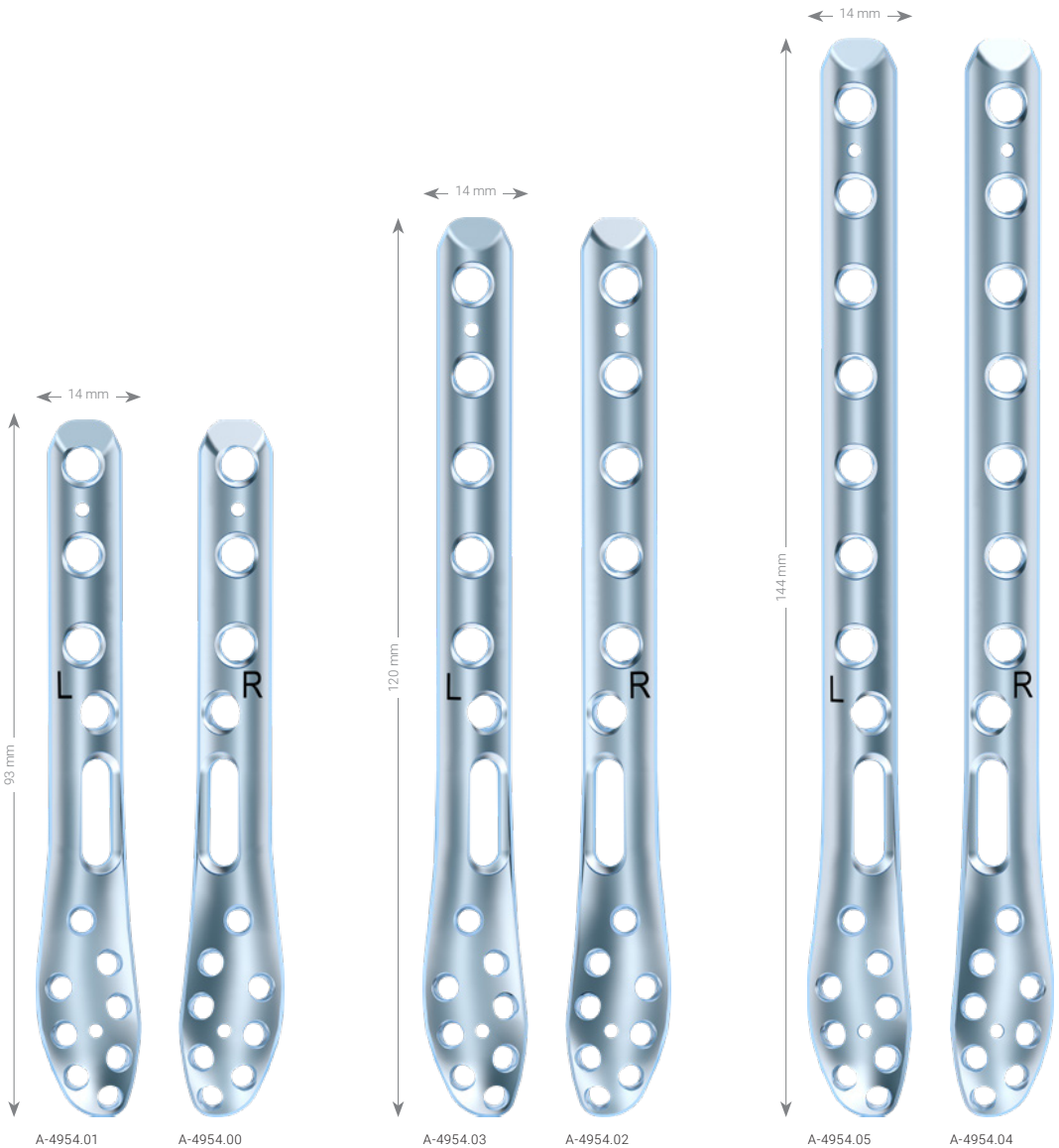
Material: Titanium alloy (ASTM F136)



Length	Art. No.	Pieces / Pkg
10 mm	A-5950.10/1	1
12 mm	A-5950.12/1	1
14 mm	A-5950.14/1	1
16 mm	A-5950.16/1	1
18 mm	A-5950.18/1	1
20 mm	A-5950.20/1	1
22 mm	A-5950.22/1	1
24 mm	A-5950.24/1	1
26 mm	A-5950.26/1	1
28 mm	A-5950.28/1	1
30 mm	A-5950.30/1	1
32 mm	A-5950.32/1	1
34 mm	A-5950.34/1	1
36 mm	A-5950.36/1	1
38 mm	A-5950.38/1	1
40 mm	A-5950.40/1	1
45 mm	A-5950.45/1	1
50 mm	A-5950.50/1	1
55 mm	A-5950.55/1	1
60 mm	A-5950.60/1	1

2.8/3.5 TriLock Distal Fibula Plates, Lateral

Material: Titanium alloy (ASTM F136)
Plate thickness: 2.5 mm

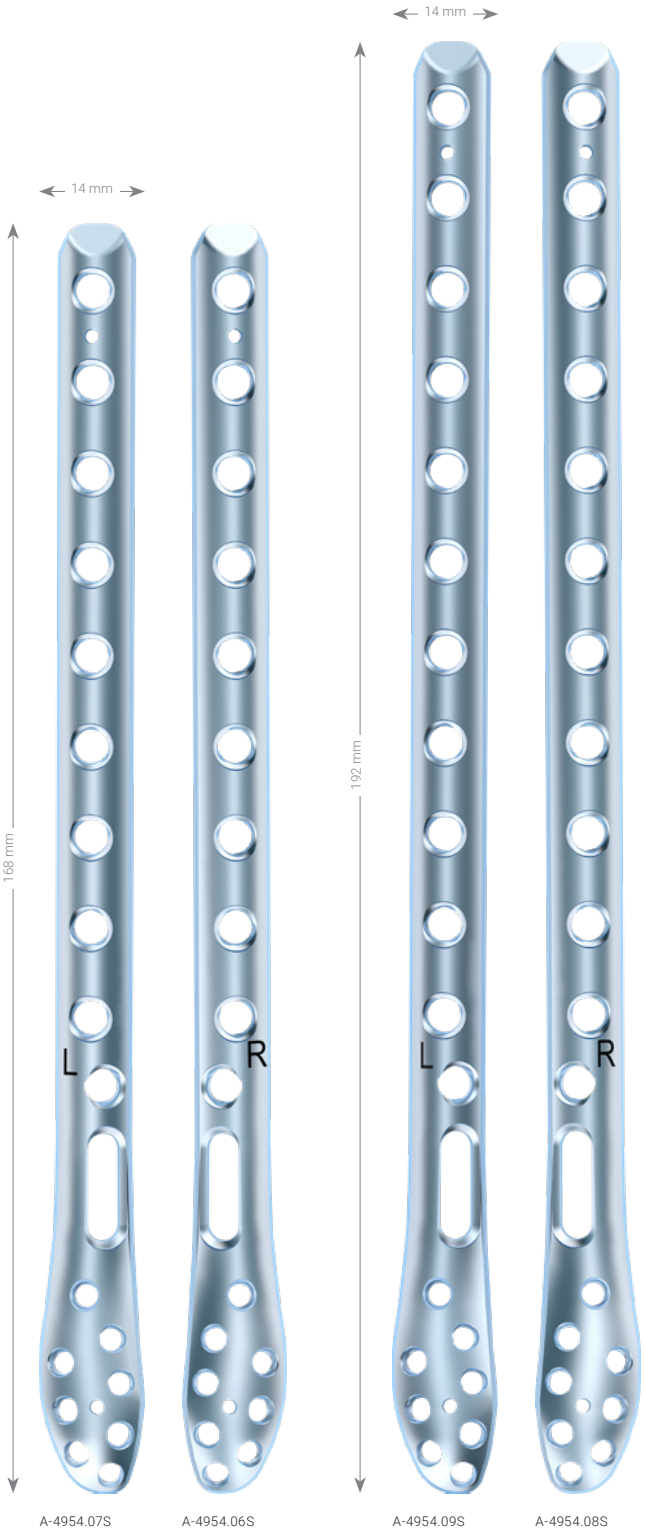


Art. No.	Description	Holes	Holes in Shaft	Pieces / Pkg
A-4954.00	right	13	5	1
A-4954.01	left	13	5	1
A-4954.02	right	15	7	1
A-4954.03	left	15	7	1
A-4954.04	right	17	9	1
A-4954.05	left	17	9	1

Scale 1:1

2.8/3.5 TriLock Distal Fibula Plates, Lateral

Material: Titanium alloy (ASTM F136)
Plate thickness: 2.5 mm

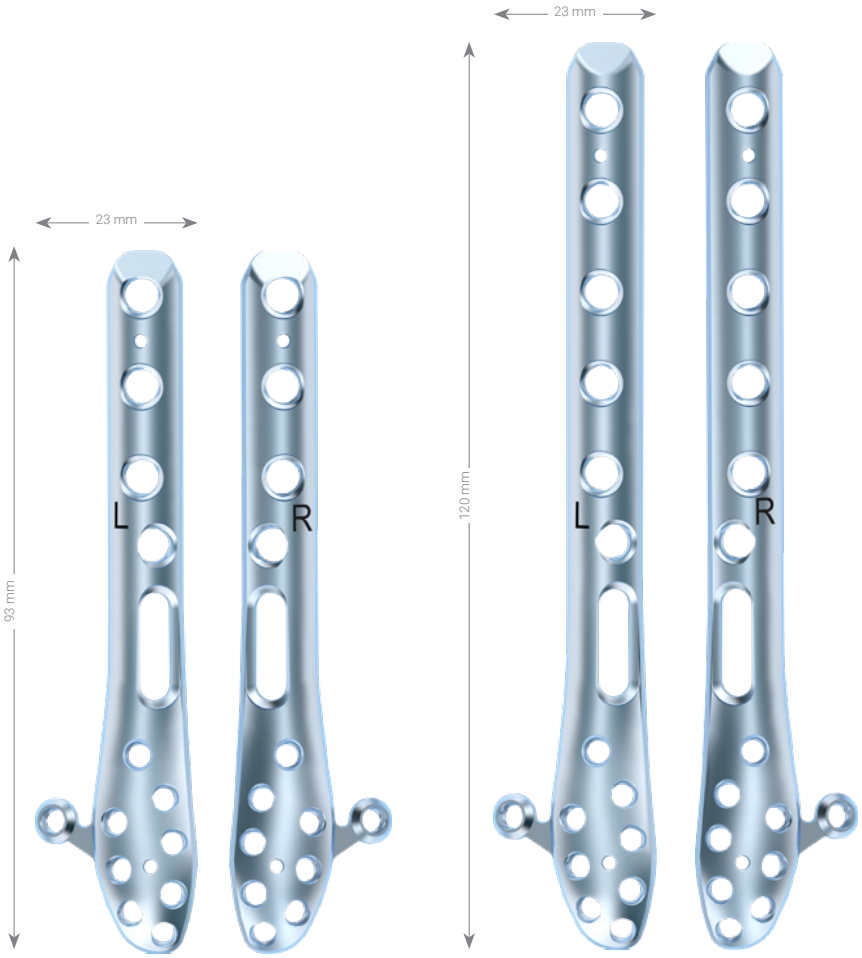


Art. No.		Description	Holes	Holes in Shaft	Pieces / Pkg
A-4954.06S	STERILE	right	19	11	1
A-4954.07S	STERILE	left	19	11	1
A-4954.08S	STERILE	right	21	13	1
A-4954.09S	STERILE	left	21	13	1

Scale 1:1

2.8/3.5 TriLock Distal Fibula Plates, Lateral with Flap

Material: Titanium alloy (ASTM F136)
Plate thickness: 2.5 mm



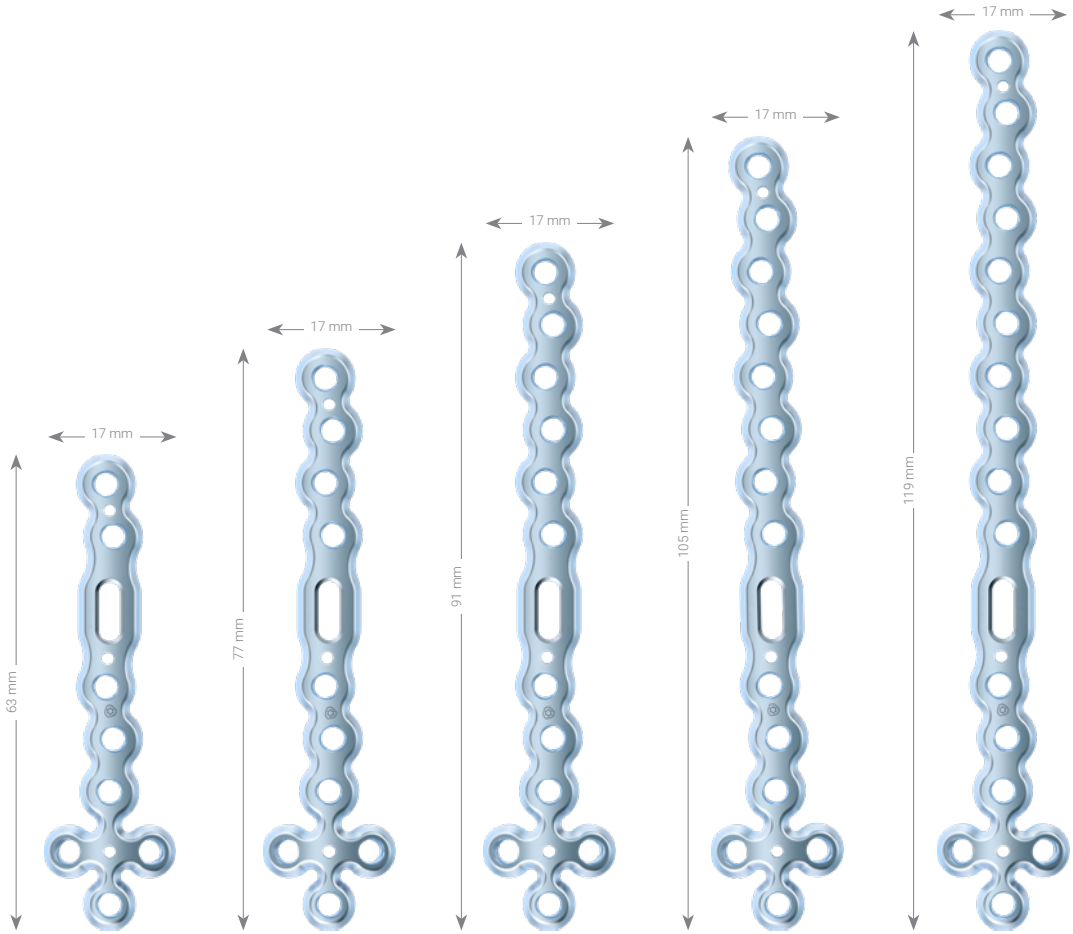
A-4954.51 A-4954.52 A-4954.53 A-4954.54

Art. No.	Description	Holes	Holes in Shaft	Pieces / Pkg
A-4954.51	left	14	5	1
A-4954.52	right	14	5	1
A-4954.53	left	16	7	1
A-4954.54	right	16	7	1

Scale 1:1

2.8 TriLock Distal Fibula Plates

Material: Titanium (ASTM F67)
Plate thickness: 1.6 mm

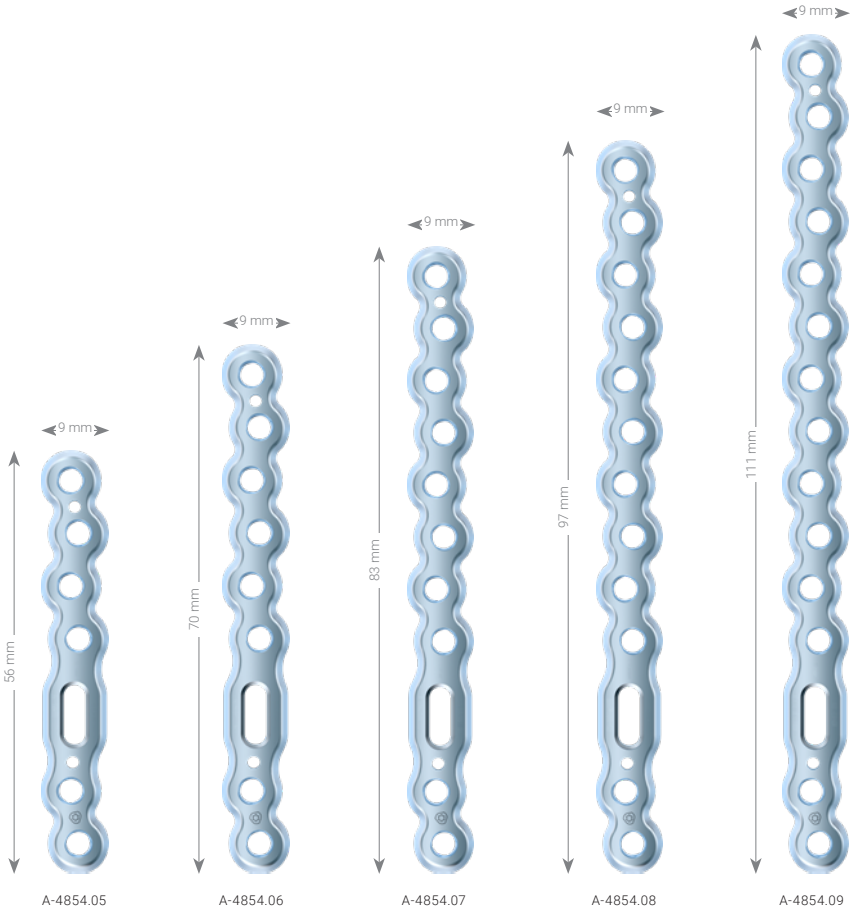


Art. No.	Holes	Pieces / Pkg
A-4854.00	9 (3/6)	1
A-4854.01	11 (3/8)	1
A-4854.02	13 (3/10)	1
A-4854.03	15 (3/12)	1
A-4854.04	17 (3/14)	1

Scale 1:1

2.8 TriLock Distal Fibula Plates, Straight

Material: Titanium (ASTM F67)
Plate thickness: 1.6 mm

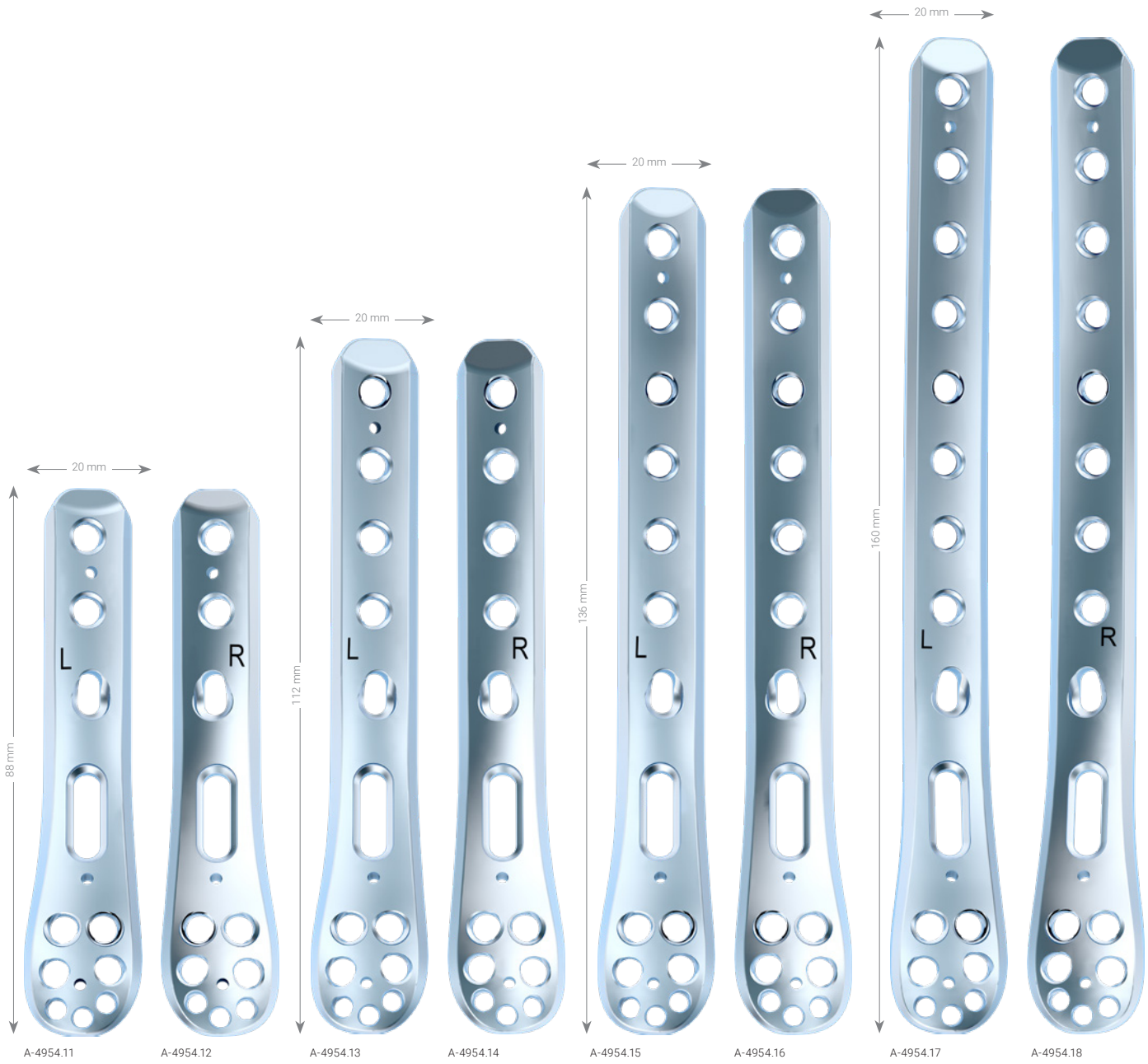


Art. No.	Holes	Pieces / Pkg
A-4854.05	7	1
A-4854.06	9	1
A-4854.07	11	1
A-4854.08	13	1
A-4854.09	15	1

Scale 1:1

2.8/3.5 TriLock Distal Tibia Plates, Medial

Material: Titanium alloy (ASTM F136)
Plate thickness: 3.3 mm

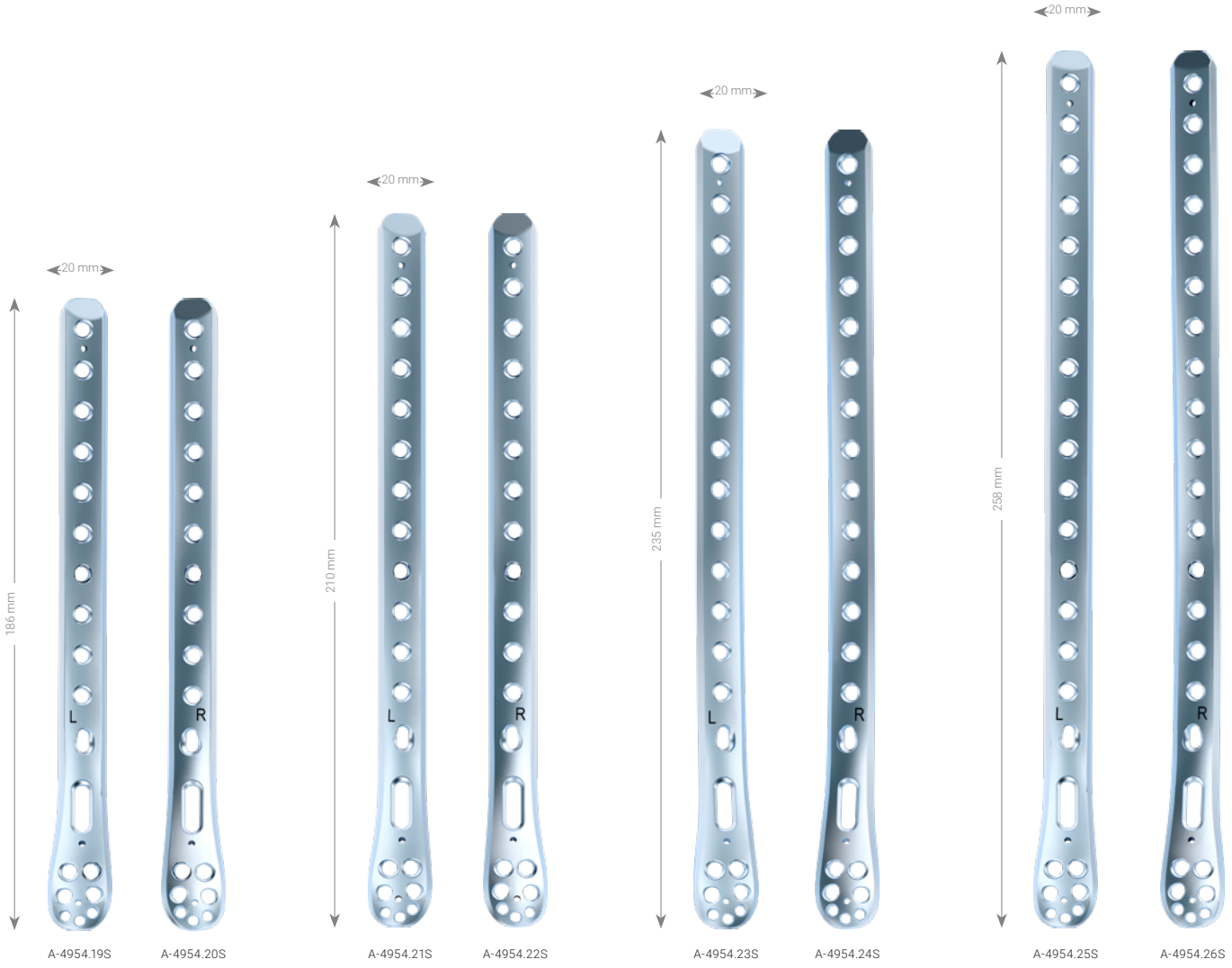


Art. No.	Description	Holes	Holes in Shaft	Pieces / Pkg
A-4954.11	left	11	4	1
A-4954.12	right	11	4	1
A-4954.13	left	13	6	1
A-4954.14	right	13	6	1
A-4954.15	left	15	8	1
A-4954.16	right	15	8	1
A-4954.17	left	17	10	1
A-4954.18	right	17	10	1

Scale 1:1

2.8/3.5 TriLock Distal Tibia Plates, Medial

Material: Titanium alloy (ASTM F136)
Plate thickness: 3.3 mm

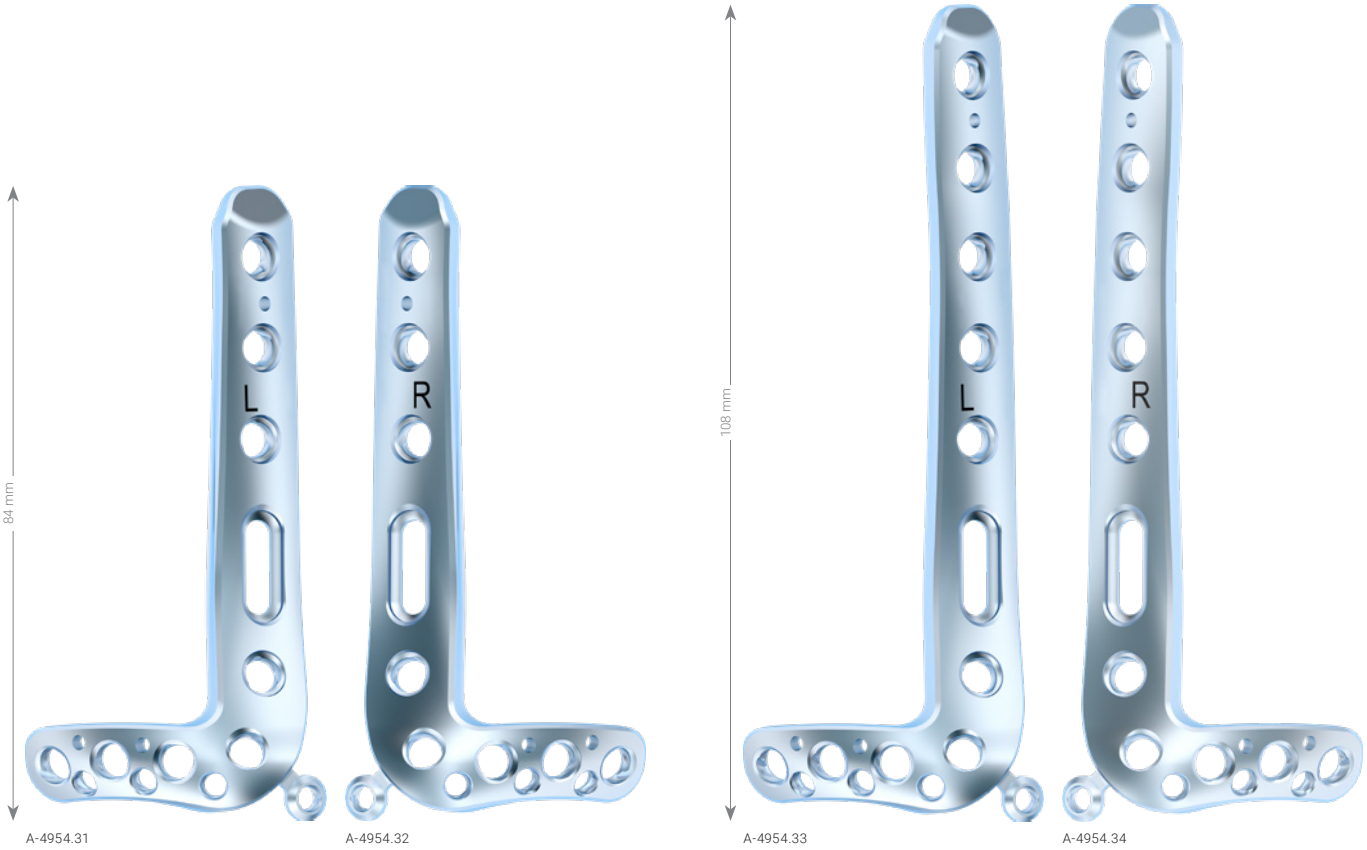


Art. No.		Description	Holes	Holes in Shaft	Pieces / Pkg
A-4954.19S	STERILE	left	19	12	1
A-4954.20S	STERILE	right	19	12	1
A-4954.21S	STERILE	left	21	14	1
A-4954.22S	STERILE	right	21	14	1
A-4954.23S	STERILE	left	23	16	1
A-4954.24S	STERILE	right	23	16	1
A-4954.25S	STERILE	left	25	18	1
A-4954.26S	STERILE	right	25	18	1

Scale 1:2

2.8/3.5 TriLock Distal Tibia Plates, Anterolateral

Material: Titanium alloy (ASTM F136)
Plate thickness: 3.0 mm

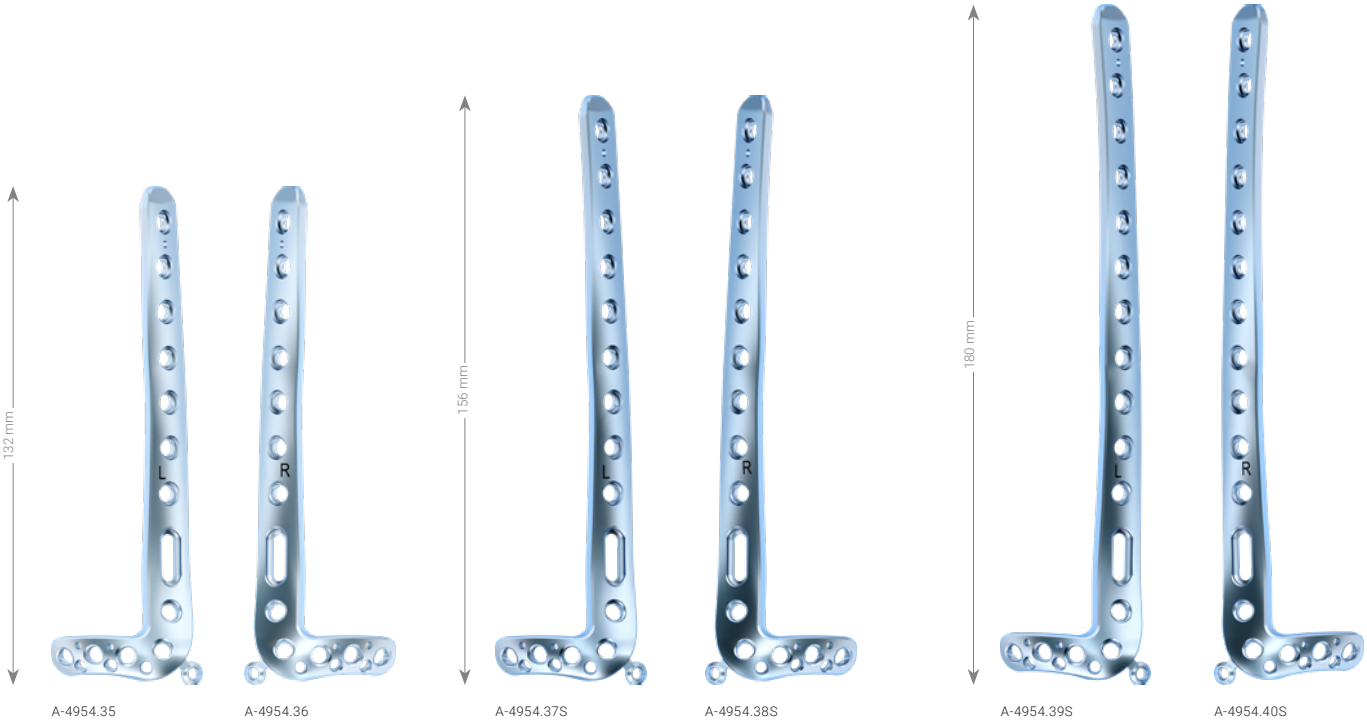


A-4954.31 A-4954.32 A-4954.33 A-4954.34

Art. No.	Description	Holes	Holes in Shaft	Pieces / Pkg
A-4954.31	left	13	5	1
A-4954.32	right	13	5	1
A-4954.33	left	15	7	1
A-4954.34	right	15	7	1

2.8/3.5 TriLock Distal Tibia Plates, Anterolateral

Material: Titanium alloy (ASTM F136)
Plate thickness: 3.0 mm



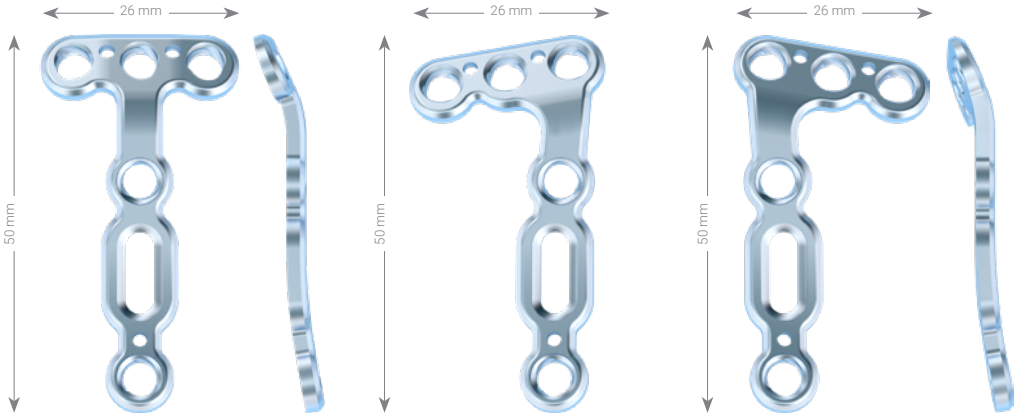
A-4954.35 A-4954.36 A-4954.37S A-4954.38S A-4954.39S A-4954.40S

Art. No.	STERILE	Description	Holes	Holes in Shaft	Pieces / Pkg
A-4954.35		left	17	9	1
A-4954.36		right	17	9	1
	A-4954.37S	left	19	11	1
	A-4954.38S	right	19	11	1
	A-4954.39S	left	21	13	1
	A-4954.40S	right	21	13	1

Scale 1:2

3.5 TriLock Distal Tibia Plates

Material: Titanium (ASTM F67)
Plate thickness: 2.5 mm



A-4954.101 A-4954.103 A-4954.102

Art. No.	Description	Holes	Pieces / Pkg
A-4954.101	T	6 (3/3)	1
A-4954.102	L right	6 (3/3)	1
A-4954.103	L left	6 (3/3)	1

Scale 1:1

Twist Drill Ø 2.35 mm

Art. No.	System Size	Stop	Length	Shaft End	Pieces/Pkg
A-3832	2.8	50 mm	101 mm	AO Quick Coupling	1

Twist Drill Ø 2.9 mm (for Gliding Hole)

Art. No.	System Size	Stop	Length	Shaft End	Pieces / Pkg
A-3834	2.8	10 mm	61 mm	AO Quick Coupling	1

Twist Drill Ø 2.6 mm

Art. No.	System Size	Stop	Length	Shaft End	Pieces / Pkg
A-3934	3.5	70 mm	150 mm	AO Quick Coupling	1

Twist Drill Ø 3.0 mm

Art. No.	System Size	Stop	Length	Shaft End	Pieces / Pkg
A-3931	3.5	70 mm	150 mm	AO Quick Coupling	1

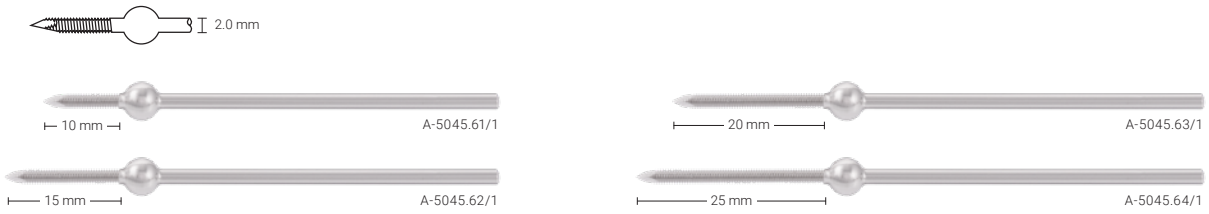
Twist Drill Ø 3.6 mm (for Gliding Hole)

Art. No.	System Size	Stop	Length	Shaft End	Pieces / Pkg
A-3933	3.5	30 mm	126 mm	AO Quick Coupling	1

K-Wires, Stainless Steel

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

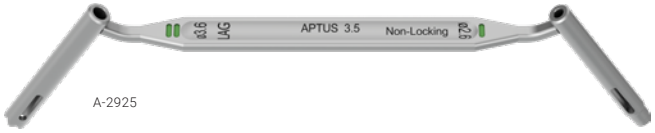
Olive K-Wires, Stainless Steel



Art. No.	Ø	Thread Length	Length	Pieces / Pkg
A-5045.61/1	2.0 mm	10 mm	60 mm	1
A-5045.62/1	2.0 mm	15 mm	65 mm	1
A-5045.63/1	2.0 mm	20 mm	70 mm	1
A-5045.64/1	2.0 mm	25 mm	75 mm	1

Drill Guides

A-2820



A-2925

A-2926

A-2927

Art. No.	System Size	Description	Length	Pieces / Pkg
A-2820	2.8	for core and gliding hole	146 mm	1
A-2925	3.5	cortical for twist drill Ø 2.6/3.6 mm	171 mm	1
A-2926	3.5	compression	126 mm	1
A-2927	3.5	TriLock for twist drill Ø 3.0 mm	126 mm	1

Drill Sleeves

1:1

A-2826

1:1

A-2921

Art. No.	System Size	Description	Length	Pieces / Pkg
A-2826	2.5/2.8	self-holding	34 mm	1
A-2921	3.5	self-holding	50 mm	1

Depth Gauges

A-2836

A-2931

Art. No.	System Size	Description	Length	Pieces / Pkg
A-2836	2.8		220 mm	1
A-2931	3.5	10–70 mm	211 mm	1

Scale 1:2

Handles with Quick Connector

A-2073

A-2074

A-2075

Art. No.	System Size	Description	For Shaft End	Length	Pieces / Pkg
A-2073	2.8	with twist cap	AO Quick Coupling	124 mm	1
A-2074	3.5		AO Quick Coupling	145 mm	1
A-2075	3.5	T-handle	AO Quick Coupling	81 mm	1

Screwdriver Blades, Self-Holding

1:1

A-2013 HD7

1:1

A-2911 HD15

Art. No.	System Size	Interface	For Shaft End	Length	Pieces / Pkg
A-2013	2.5/2.8	HD7	AO Quick Coupling	75 mm	1
A-2911	3.5/4.0	HD15	AO Quick Coupling	80 mm	1

Plate Holding and Positioning Instrument

Art. No.	System Size	Length	Pieces / Pkg
A-2950	2.8/3.5	178 mm	1

Plate Bending Pliers

A-2047

A-2940

Art. No.	System Size	Description	Length	Pieces / Pkg
A-2047	2.0–2.8	with pins	158 mm	1
A-2940	3.5/4.0		158 mm	1

Plate Bending Iron

Art. No.	System Size	Length	Pieces / Pkg
A-2092	2.8/3.5	192 mm	1

Reduction Forceps

A-7014

A-7041

Art. No.	Length	Pieces / Pkg
A-7014	205 mm	1
A-7041	230 mm	1

MIPO Instrument for Tunnel Preparation

Art. No.	System Size	Length	Pieces / Pkg
A-2051	2.8/3.5	200 mm	1

Periosteal Elevator

Art. No.	Description	Width	Length	Pieces / Pkg
A-7016	round edges	6 mm	190 mm	1

Hook

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

Wound Retractor Langenbeck

Art. No.	Description	Length	Pieces / Pkg
A-7018	44 x 10 mm	210 mm	1

Bone Elevator Hohmann

Art. No.	Width	Length	Pieces / Pkg
A-7017	8 mm	220 mm	1

Scale 1:2

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