

medartis®

PRECISION IN FIXATION

PRODUCT INFORMATION

# Calcaneus System 3.5

APTUS®  
Foot

# Calcaneus System 3.5

## Multidirectional and angular stable treatment for calcaneus fractures and osteotomies

### The calcaneus fracture

The calcaneus fracture is a typical high-energy injury which results in a complex trauma and is commonly accompanied by other injuries. Approximately three quarters of calcaneus fractures are dislocated, intra-articular breaks. These generally exhibit a loss of calcaneal height resulting from a reduced tuber angle, as well as varus malalignment of the hindfoot with shortening and broadening of the contour of the heel. Complex function of the calcaneus and the stresses to which it is subjected further complicate treatment. Therefore, the calcaneus fracture is one of the most challenging lower extremity traumas to treat.

### Application

Fractures and osteotomies of the calcaneus



### Plate features

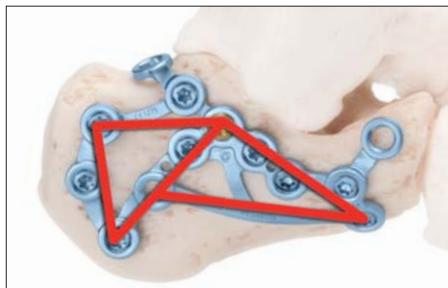
- TriLock – multidirectional ( $\pm 15^\circ$ ) and angular stable locking technology
- All plate holes are compatible with TriLock and cortical screws
- Grade 4 Titanium for improved strength
- Plates may be cut and bent for a wide range of applications



## Plate design

- Robust construction thanks to frame design

The double support of the exposed screw holes distributes stresses uniformly across the plate



- Screws are located in areas with the best bone quality

Using the plate to provide extensive coverage of the calcaneus makes it possible to anchor the screws in dense bone structures



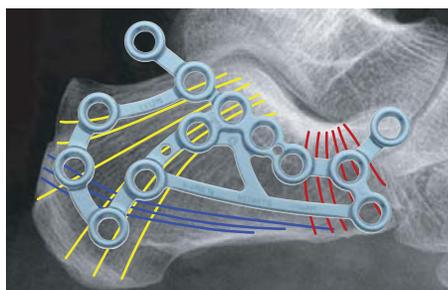
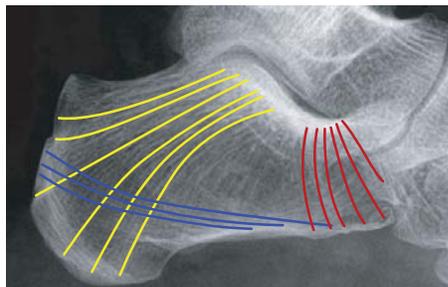
- Subtalar joint is provided with optimal support and access to the sustentaculum tali is improved

Up to 5 angular stable screws ensure that the reduced subtalar joint can be kept in the ideal alignment



- Allowing for the directions of force in the calcaneus ensures a high degree of stability

The trabecular alignment shows the direction of force in the calcaneus (Wolff's law). The alignment of the plate lugs, which is based on the direction of force, gives the plate a high degree of strength despite its low profile

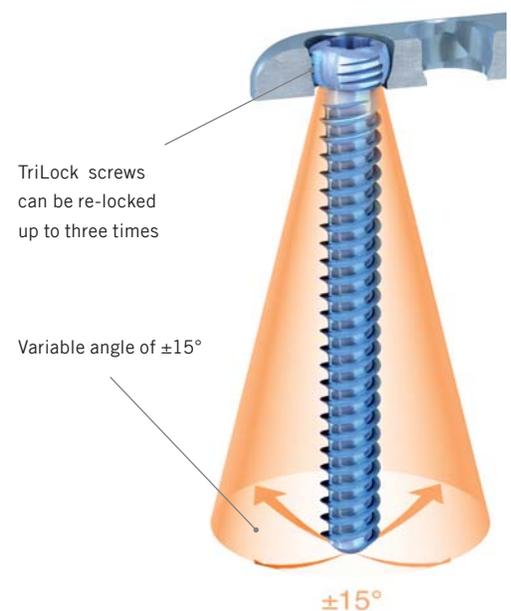
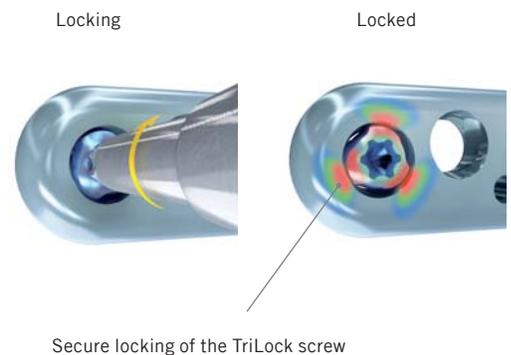


# Technology, Biomechanics and Screw Features

## Multidirectional and angular stable TriLock locking technology

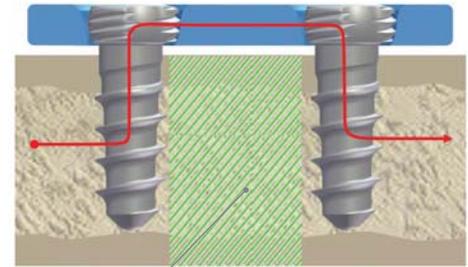
### Technology

- TriLock locking technology – secure, angular stable locking of the screw in the plate
  - Spherical three-point wedge-locking
  - Friction locking through radial bracing of the screw head in the plate - without additional tensioning components
- Screws can pivot freely by  $\pm 15^\circ$  in all directions for optimal positioning
- Intra-operative fine tuning capabilities
- TriLock screws can be re-locked in the same plate hole under individual angles up to three times
- Minimal screw head protrusion thanks to internal locking contour
- No cold welding between plate and screws



## Biomechanics

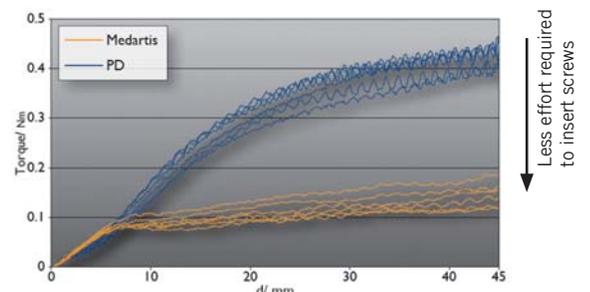
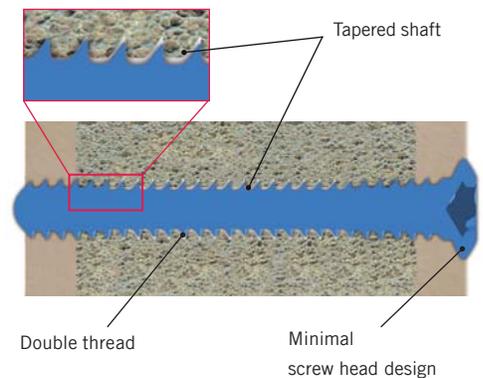
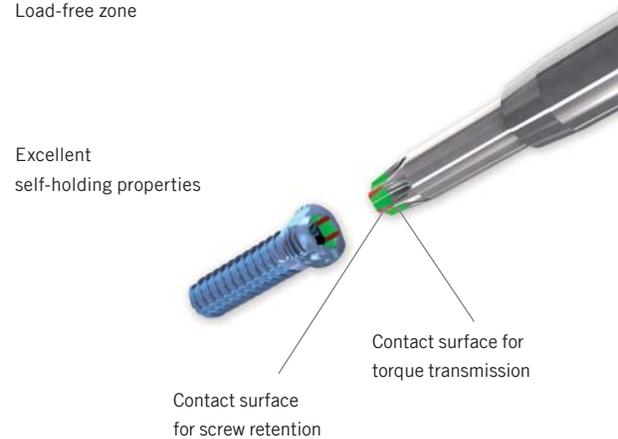
- Internal fixator principle
  - Stable plate – screw construct allows the bridging of unstable zones
  - Improved vascularization of the periosteum due to low contact of the plate



Load-free zone

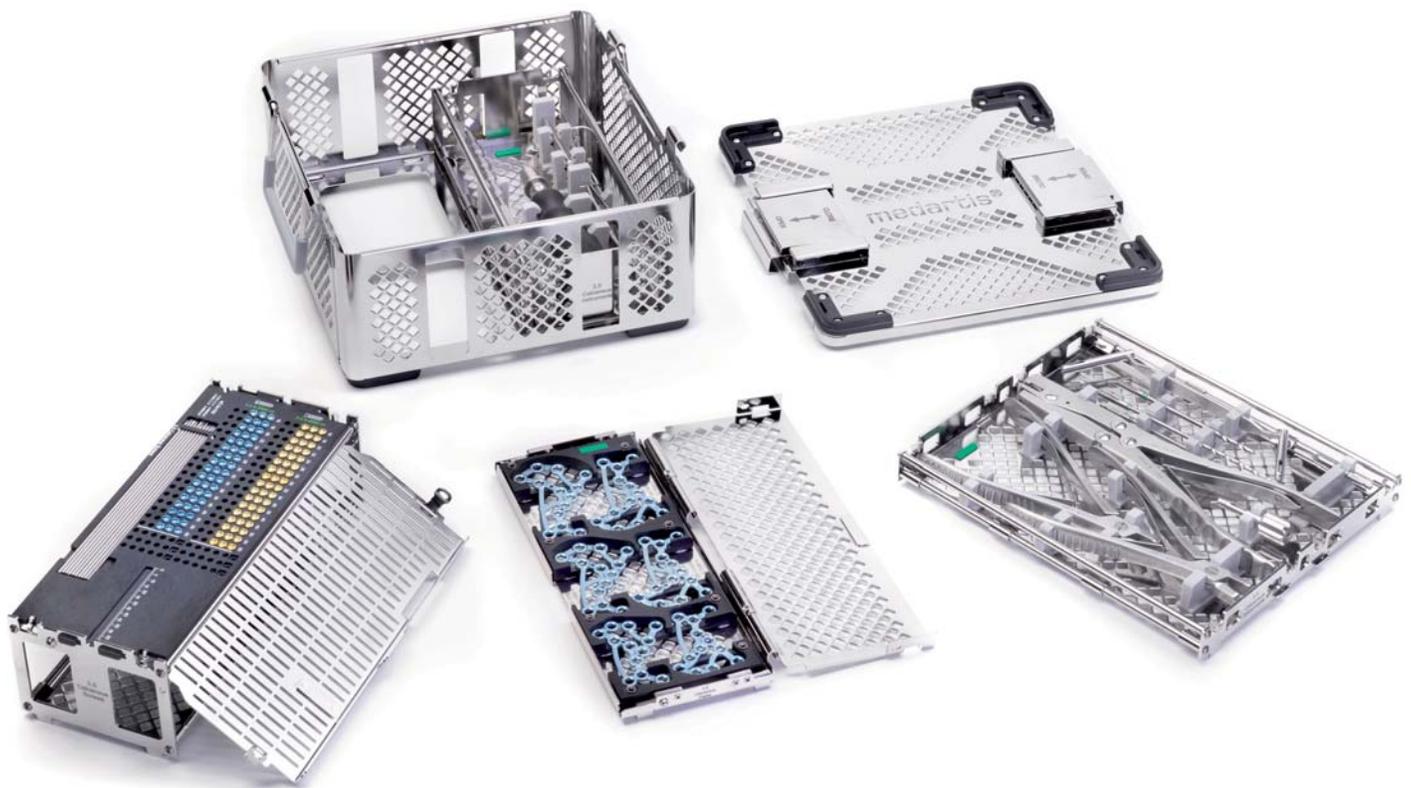
## Screw features

- HexaDrive screw head design
  - Secure connection between screw and screwdriver
  - Increased torque transmission
  - Optimal self-retaining mechanism
- Atraumatic tip prevents soft tissue irritation when inserting screws bicortically
- Tapered core diameter for increased torsional and tensile strength and use of TiAl6 V 4
- Double thread reduces screw insertion time
- Up to 50 % less effort required for screw insertion thanks to
  - High-precision, sharp thread
  - Tapered shaft



# Storage in Perfection

- Modular concept
- Economic and compact system
- Easy to handle
- Intuitive storage for implants and instruments
- Improved cleaning and sterilization capabilities



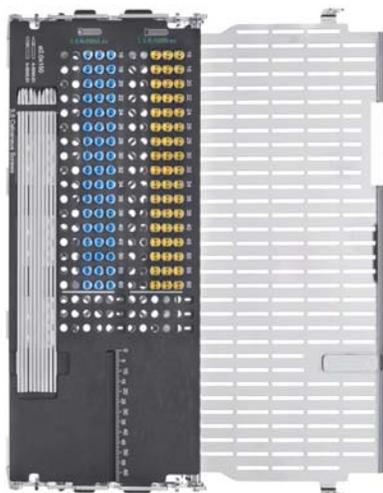
### Fully equipped 1/5 Plate Module

Art. No. A-6550



### Equipped 1/5 Screw Module

Art. No. A-6551



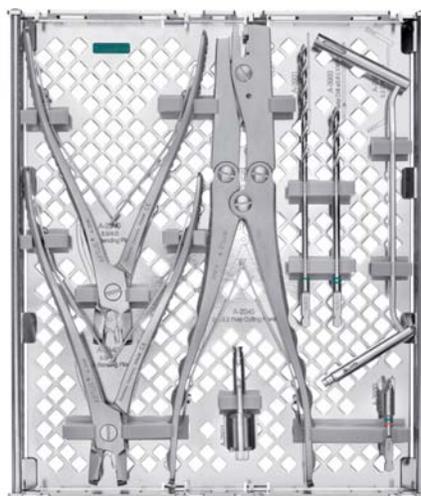
### Fully equipped 1/5 Instrument Module

Art. No. A-6552



### Fully equipped 2/5 Instrument Module

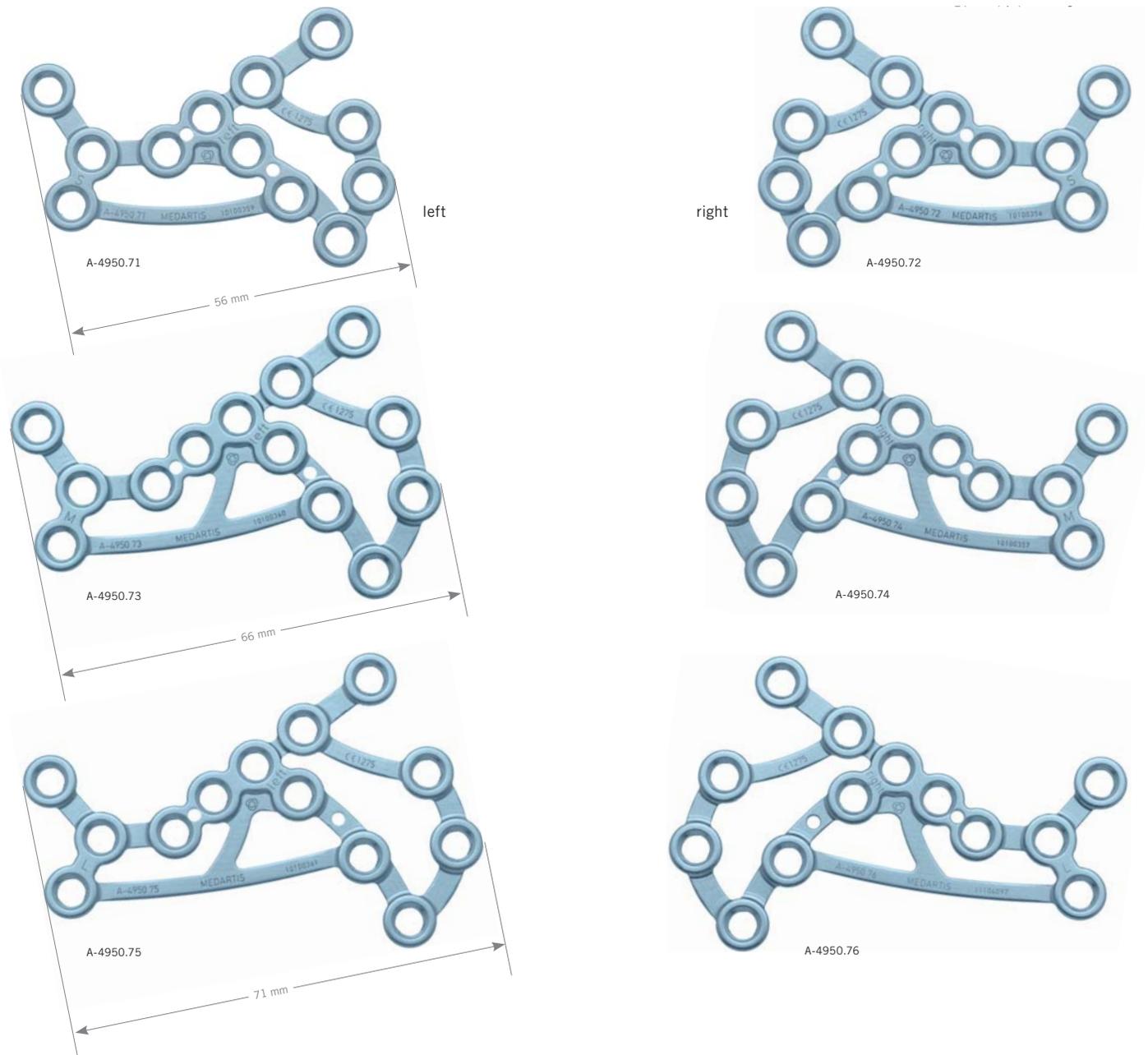
Art. No. A-6553



# Ordering Information

## 3.5 TriLock Calcaneus Plates

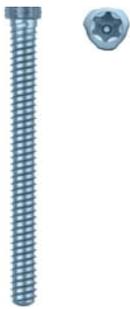
Material: Titanium (ASTM F67)



Art. No.	Description	Holes	Piece/Pkg
A-4950.71	left, small	12	1
A-4950.72	right, small	12	1
A-4950.73	left, medium	13	1
A-4950.74	right, medium	13	1
A-4950.75	left, large	13	1
A-4950.76	right, large	13	1

### 3.5 TriLock Screws, HexaDrive 15

Material: Titanium (ASTM F136)



Length	Art. No.	Piece/Pkg
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

### 3.5 Cortical Screws, HexaDrive 15

Material: Titanium (ASTM F136)



Length	Art. No.	Piece/Pkg
16 mm	A-5900.16/1	1
18 mm	A-5900.18/1	1
20 mm	A-5900.20/1	1
22 mm	A-5900.22/1	1
24 mm	A-5900.24/1	1
26 mm	A-5900.26/1	1
28 mm	A-5900.28/1	1
30 mm	A-5900.30/1	1
32 mm	A-5900.32/1	1
34 mm	A-5900.34/1	1
36 mm	A-5900.36/1	1
38 mm	A-5900.38/1	1
40 mm	A-5900.40/1	1
45 mm	A-5900.45/1	1
50 mm	A-5900.50/1	1
55 mm	A-5900.55/1	1
60 mm	A-5900.60/1	1

Twist Drills for Screws Ø 3.5 mm



A-3931



A-3933

Art. No.	Ø Twist Drill	Stop	Length	Drill Shaft End	Piece/Pkg
A-3931	3.0	70 mm	150 mm	AO Quick Coupling	1
A-3933	3.6	30 mm	126 mm	AO Quick Coupling	1

3.5 Countersink for Cortical Screws



Art. No.	System Size	Ø	Length	Drill Shaft End	Piece/Pkg
A-3930	3.5/4.0	4 mm	45 mm	AO Quick Coupling	1

3.5 Drill Guide, Self-Holding



Art. No.	System Size	Length	Piece/Pkg
A-2921	3.5	50 mm	1

3.5 Drill Guide



Art. No.	System Size	Description	Length	Piece/Pkg
A-2920	3.5	for lag screws	171 mm	1

### 3.5/4.0 Depth Gauge



Art. No.	System Size	Length	Piece/Pkg
A-2930	3.5/4.0	210 mm	1

### Handle with Quick Connector



Art. No.	Length	for Shaft End	Piece/Pkg
A-2074	160 mm	AO Quick Coupling	1

### Screwdriver Blade



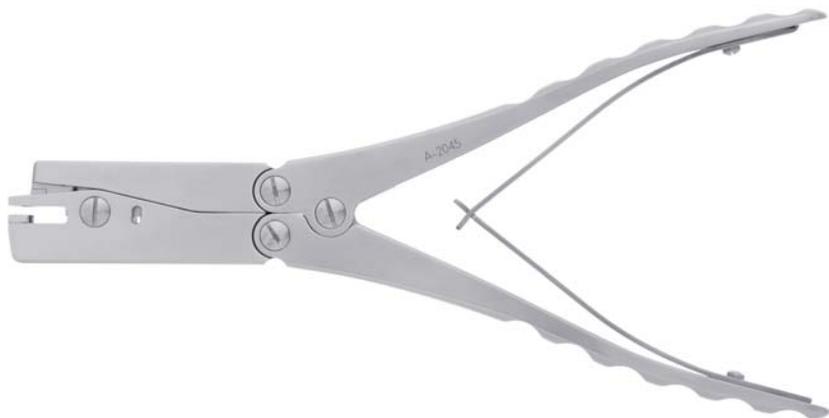
Art. No.	System Size	Description	Length	Shaft End	Piece/Pkg
A-2911	3.5/4.0	HD15	80 mm	AO Quick Coupling	1

### K-Wires, Stainless Steel



Art. No.	Ø	Description	Length	Piece/Pkg
A-5040.61	2.0 mm	trocar	150 mm	10
A-5042.61	2.0 mm	lancet	150 mm	10

Plate Cutting Pliers



Art. No.	System Size	Length	Piece/Pkg
A-2045	2.0 - 3.5	218 mm	1

Plate Bending Pliers



Art. No.	System Size	Length	Piece/Pkg
A-2940	3.5/4.0	158 mm	1

Plate Holding Forceps



Art. No.	System Size	Length	Piece/Pkg
A-2050	2.0 - 3.5	122 mm	1

### Case



Art. No.	Description	Dimension	Piece/Pkg
A-6506	2/5 Case	effective height 96 mm	1

### Lid for Case

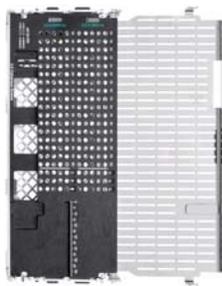


Art. No.	Description	Piece/Pkg
A-6500	for 2/5 Case	1

### Modules for Calcaneus System 3.5



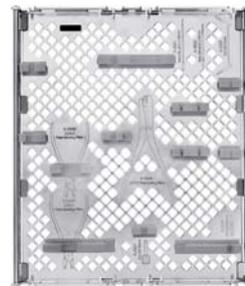
A-6550



A-6551



A-6552

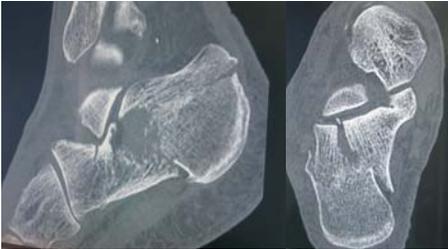


A-6553

Art. No.	Description	Dimension	Piece/Pkg
A-6550	Plate Modul Calcaneus 3.5	1/5 x 12 mm	1
A-6551	Screw Modul Calcaneus 3.5	1/5 x 72 mm	1
A-6552	Instrument Modul Calcaneus 3.5	1/5 x 60 mm	1
A-6553	Instrument Modul Calcaneus 3.5	2/5 x 24 mm	1

# Clinical Examples

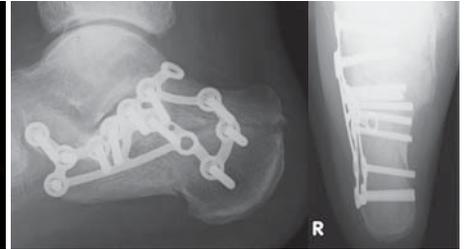
## Case 1 – Fracture: Sanders type II A



Preoperative coronal and sagittal CT

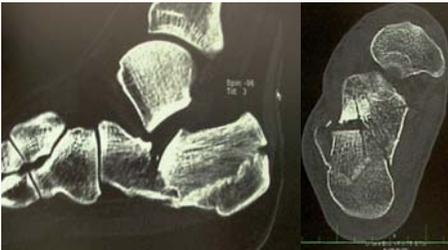


Plate placement



Postoperative x-ray at 10 weeks

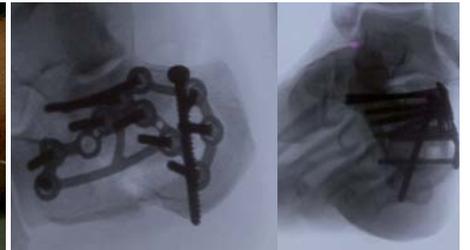
## Case 2 – “Tongue type” multiple fragment fracture



Preoperative coronal and sagittal CT



Intraoperative view  
(Patient in abdominal position)



Postoperative X-ray

## Case 3 – B3 fracture



Preoperative X-ray



Plate placement



Postoperative X-ray

### Case 4 – Sanders type I



Preoperative coronal CT



Plate placement

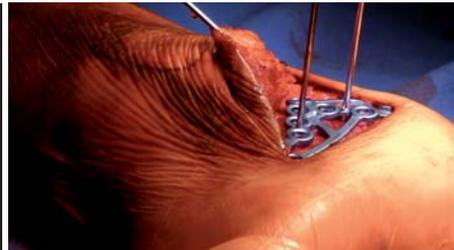


Postoperative x-ray

### Case 5a – Calcaneus fracture with a Zwipp score of 9



Preoperative sagittal CT

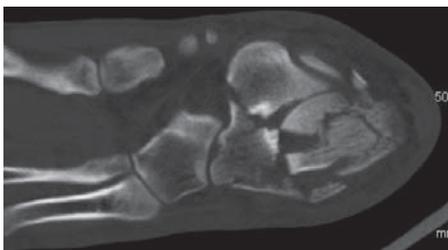


Temporary fixation of the plate with K-wires

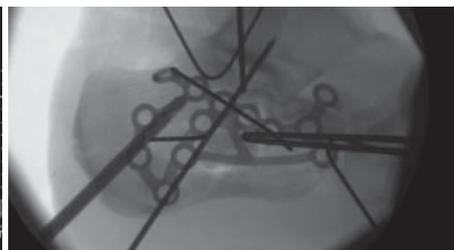


Postoperative X-ray (three screws in the sustentaculum tali)

### Case 5b – Calcaneus fracture with a Zwipp score of 7



Preoperative transverse CT



Intraoperative x-ray showing the temporary fixation of the plate with K-wires



Postoperative X-ray

Clinical cases by kind permission of:  
 Dr. B. Hüttenmoser, Switzerland | Dr. R. Kratter, Switzerland | Dr. M. Eppel, Austria | Dr. M. Tanner, Germany | Dr. M. Forray, Germany

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