MAXXOS-Medical GmbH
Hintere Dorfstraße 2/1
78601 Mahlstetten
Germany

Phone +49 7429 910480
Mobile +49 1514 1807283
Mail info@maxxos-medical.com
www.maxxos-medical.com

© Copyright by MAXXOS-Medical GmbH · Mahlstetten · Germany
All rights reserved · Errors, misprints and changes reserved.
MM-MMM-0011EN
Rev.00.0

MAXXOS MEDICAL



P.A.C.E.

MIS Calcaneal Fracture Plate

Operation Manual



Precise.
Accurate.
Comprehensive.
Effective.



CONTENTS

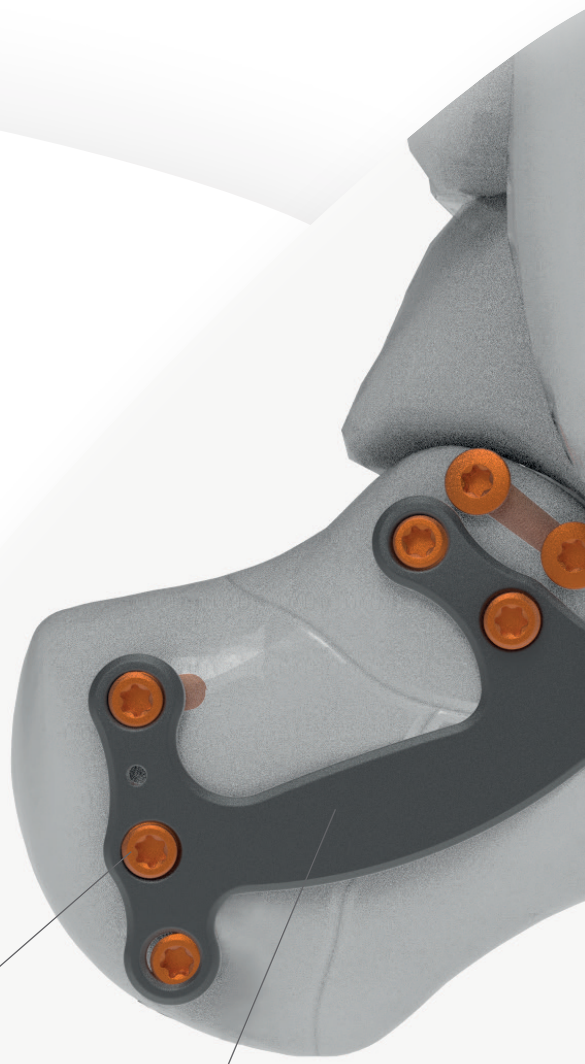
Product Features	/ 5 – 6
General Information	/ 8
Operation Manual	/ 9 – 13
Product Overview	/ 14 – 17
Cleaning Instructions	/ 18

WARNING

This Operation Manual alone does not provide sufficient background for direct use of the instrument and implant set. The usage of the system by a surgeon experienced in handling these implants and instruments is highly recommended for safe and effective use of this implant systems, the surgeon should be familiar with this recommened surgical technique for the device that has been choosen from the system. In every case, accepted surgical practice should be followed in postoperative care and the patient should be made aware about the operations and the allowed acitvities with these implants.

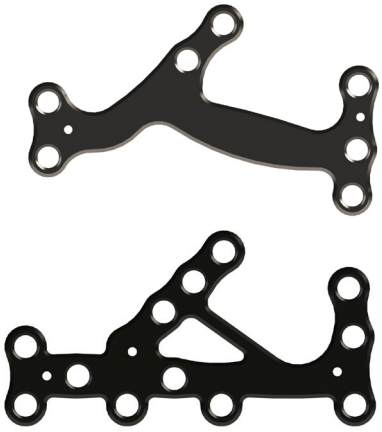
01
PRODUCT FEATURES

The MAXXOS-Medical P.A.C.E. Foot Plating Systems offers a wide range of different plates for fore-, mid- and hindfoot as well as fracture specific plates for ankle fractures. The system is one of the most comprehensive plating systems of anatomically contoured to address the treatment of osteotomies, fusion and fractures in the forefoot, midfoot and hindfoot.

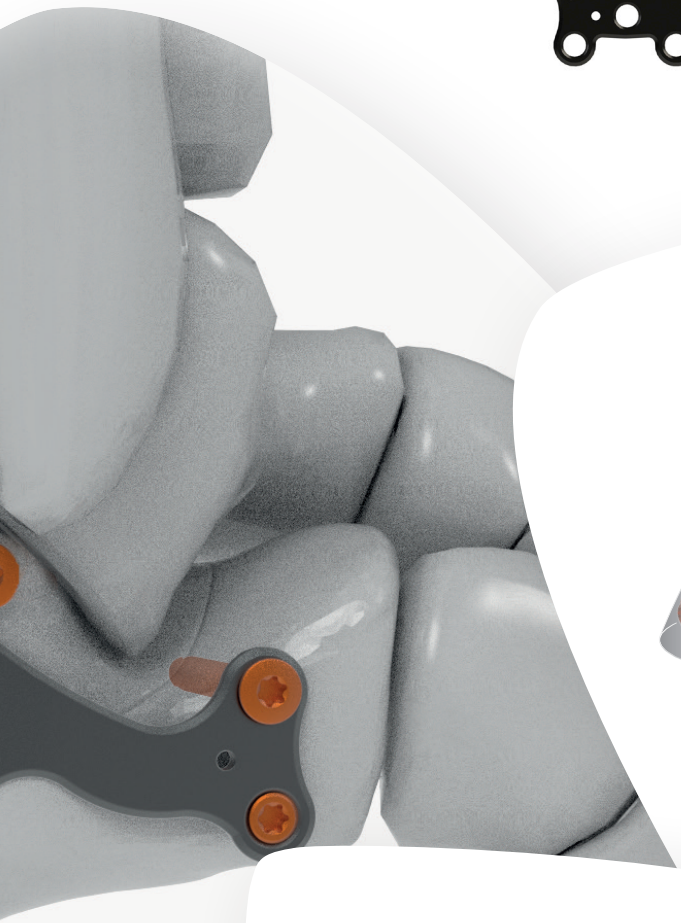


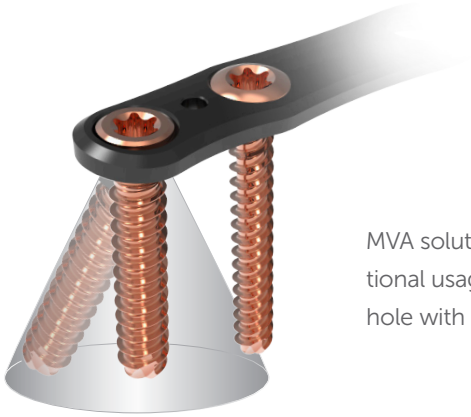
All plates are type II anodized, which makes the surface of the titanium about 15 % harder and reduces the risk of cold welding.

Special plate design for Minimal Invasive Calcaneal Fractures and Standard ORIF Calcaneus plates.



A special plate design to address the angle of Gissane and a plate design that protects the Structure at Risk the Peroneal Tenden and the Sural Nerve.





MVA solution allows the multidirectional usage of the screws in every hole with a total variability of 24°.



Colour coding systems allows an easy use of the instruments with the different plating systems. All instruments are colour coded with a ceramic mark related to the screw colour.



02
GENERAL INFORMATION

INDICATIONS

MAXXOS-Medical GmbH Osteosynthesis implants are used for fixation of fractures, fusions in case of osteoarthritis or corrective interventions in case of anatomical malalignments, osteotomies in case of malalignments and reconstructions of extremities. The use of MAXXOS-Medical GmbH Osteosynthesis implants for treating fractures, fusions, osteotomies and reconstructions of extremities requires the following, general indications:

- The patient is in a good condition
- Good neurovascular condition
- Sufficient skin cover
- Good bone substance for the implants
- Post-operative care is possible
- Patient is cooperative

CONTRAINDICATIONS

The P.A.C.E. Fracture and Fusion Plating system has no product specific limitation or contraindications. General contraindications are as follows:

- All concomitant diseases that can endanger / interfere with the fixation or the success of the surgery.
- Poor bone substance / structure which endangers or has a negative effect on the secure fixation of implants
- Serious muscular, neurological or vascular diseases that endanger or have a negative effect on the success of the procedure / surgery
- Patients with allergies susceptible to allergic shock / soft tissue reactions because of the material used in the implant
- Acute or chronic, local or systematic infections.
- Inflammations
- Smoking which can endanger the success of the procedure / surgery by delayed bone healing / wound healing.
- Physically or mentally unstable patient
- Option of conservative treatment
- Growing patient with open epiphyses
- Patient with high level of activity

03
OPERATION MANUAL

01. Incision
02. Fracture Reduction
03. Prepare Space for the Calcaneus Plate
04. Visualisation of the Posterior Facet Subtalar Joint
05. Preparation of the first and second hole, determine plate size
06. Insertion of the Calcaneus Plate
07. Screw hole preparation and insertion of the 3,5 mm Non-Locking screw (A)
08. Screw hole preparation, measuring and insertion of the 3,5 mm Non-Locking screw (B)
09. Completion Screw insertion
10. Exchange MVA Locking Screws for Non-Locking Screws
11. Wound closure
12. Plate position of the Standard ORIF Calcaneal Plate

01 INCISION

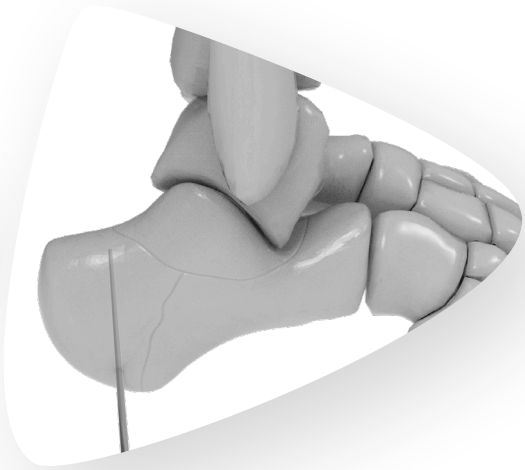


A longitudinal incision is made similar to a Kocher Sinus Tarsi incision, but 5 mm more plantar.

ATTENTION: The Peroneal tendons are identified and protected especially as the they run towards the plantar Calcaneocuboid joint. The Sinus Tarsi is exposed.

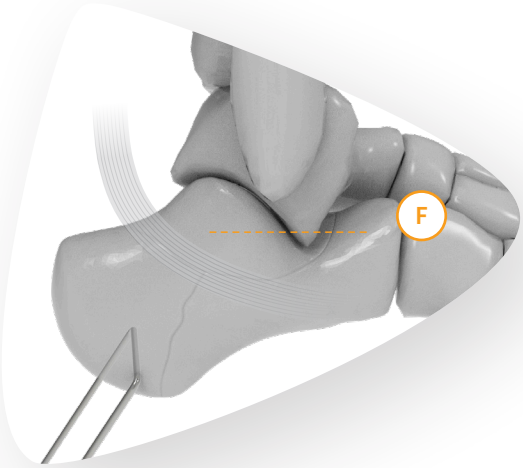
STRUCTURE AT RISK: Sural Nerve, Peroneal Tendons

02 FRACTURE REDUCTION:



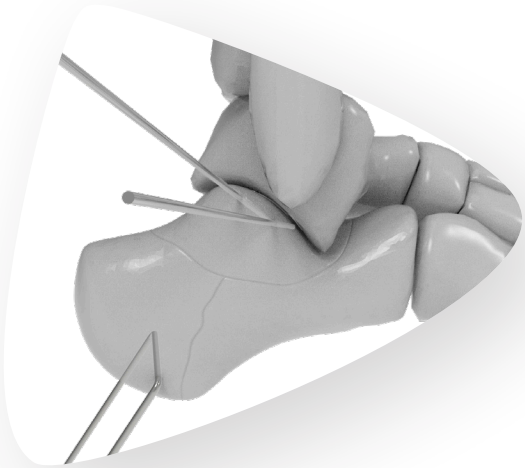
Insert long 1.8 mm Wire into the most plantar posterior aspect of the Calcaneal Tuberosity to control the Calcaneal Varus / Valgus reduction at point C **(A)**.
Bend the wire on both sides and connect to 2 Universal T-Handles **(B)**.

03 PREPARE SPACE FOR THE CALCANEUS PLATE



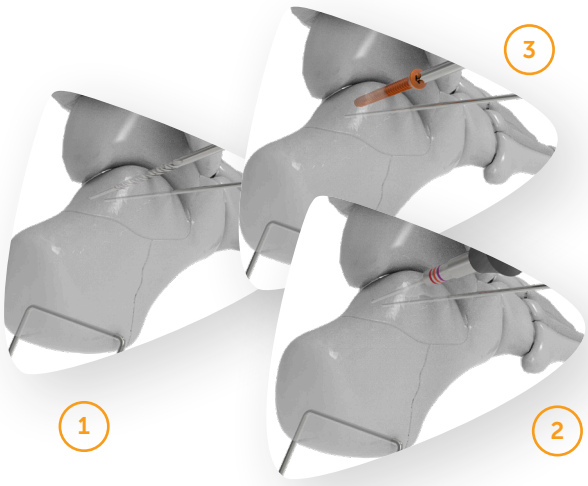
Through the Kocher incision, the peroneal tendons are dissected off the lateral wall fragment of the Calcaneus, the free space is dissected to the vertical Calcaneal Tuberosity incision. Careful dissection is needed to avoid damage to the peroneal tendons and to ensure adequate plate positioning especially around the Peroneal Groove.

04 VISUALISATION OF THE POSTERIOR FACET SUBTALAR JOINT



The post facet fracture is reduced and two 1.4 mm Guide K-Wires are inserted into the Subchrondral Space in the parallel plane of the Posterior Facet in the direction of the Sustentaculum Tali. Check position under Fluoroscopy.

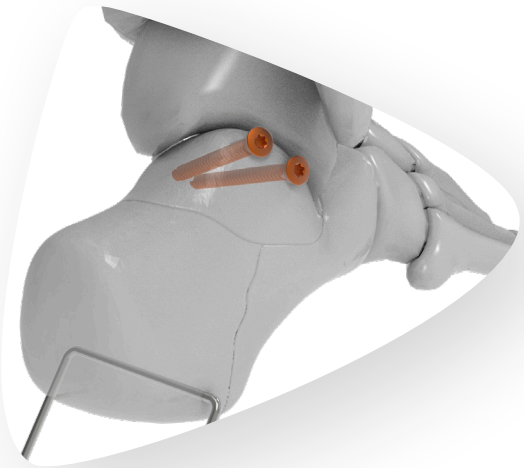
5A PREPARATION OF THE HOLE



Drill one K-Wire with a cannulated 2.7 mm Drill Bit **(1)**. Remove the Drill Bit and K-Wire and measure with the 3.0 / 3.5 mm Depth Gauge **(2)**. Insert a Non Locking 3.5 mm Screw of the measured length **(3)**.

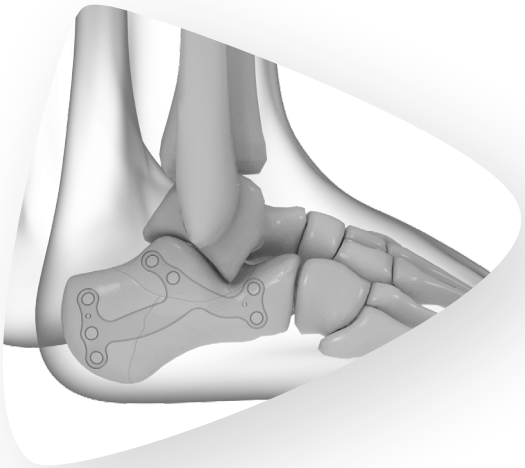
P.A.C.E. Screw Driver Blade ▸ P. 15
P.A.C.E. Depth Gauge ▸ P. 15
P.A.C.E. Non Locking Screw ▸ P. 14

5B PREPARATION OF THE SECOND SCREW HOLE



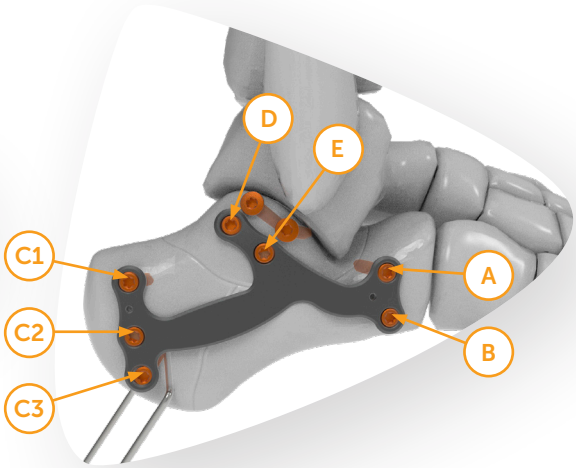
Repeat for the second K-Wire **(D)**. Check Fluoroscopy in the axial plane to ensure the screw tip does not penetrate the medial calcaneal wall to impinge on the FHL tendon. (S.A.R; FHL Tendon).

5C DETERMINE PLATE SIZE



Reduce the Calcaneal Tuberosity Fracture using the 1.8 mm Wire / Universal T-Handle acting as a stirrup. Measure the Plate size based on a Fluoroscopic check image.

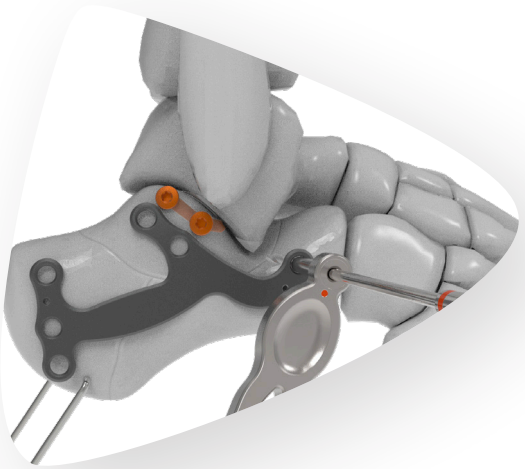
6 INSERTION OF THE CALCANEUS PLATE



Pass the Plate in the interval F from distal to using an Artery Clip. Pass the plate through the either incision and check positioning both visually and radiographically.

P.A.C.E. Plate Implant ▸ P. 15

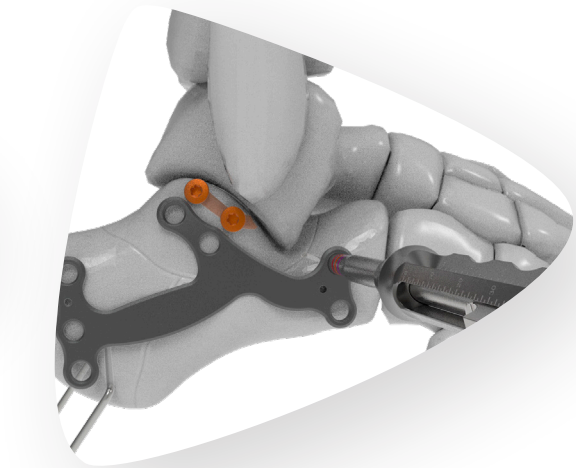
7A INSERTION OF THE 3,5 MM NON-LOCKING SCREW: SCREW HOLE PREPARATION



Insert a 3.5 mm non locking screw into predrilled Hole **(A)** to fix the position of the plate. In case of an Anterior Calcaneal process fracture, use Hole **(B).** Prepare the hole using the appropriate orange standard Drill Guide and the ø 2,5 mm colour coded Drill.

P.A.C.E. Standard Drill Guide ▸ P. 17

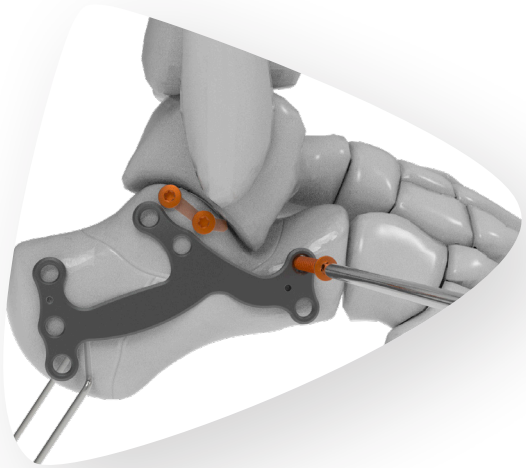
7B SCREW HOLE PREPARATION



Measuring the hole with the orange / yellow color coded Depth Gauge.

P.A.C.E. Depth Gauge ▸ P. 15

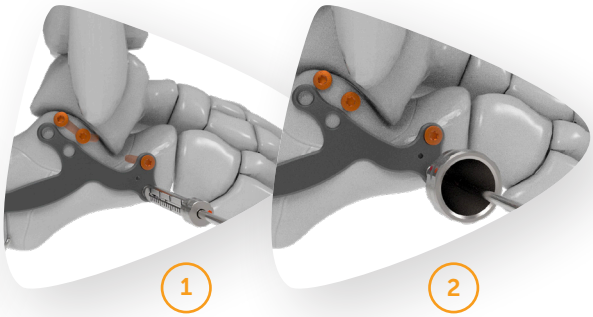
7C INSERTING THE 3,5 MM NON-LOCKING SCREW



Using the Handle and the orange / yellow color coded T10 Screw Driver Shaft inserting the desired Non Locking Screw into the bone.

P.A.C.E. Screw Driver Blade ▸ P. 15
P.A.C.E. Non Locking Screw ▸ P. 14

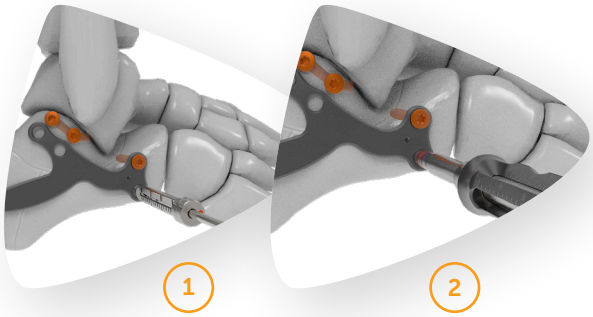
8A INSERTION MVA LOCKING SCREW IN HOLE B: HOLE PREPARATION



P.A.C.E. Drill Bit ▸ P. 16
P.A.C.E. Locking Drill Guide ▸ P. 16
P.A.C.E. MVA Drill Guide ▸ P. 16

Insert a 3.5mm Locking screw into Hole B, Care is taken for the Peroneal Tendons at this Hole. With the orange / yellow standard locking Drill Guide the hole for the 3.5 mm MVA Screw is prepared with the appropriate ø 2.5 mm Drill **(1)**. In case the screw needs to be guided in a variable multidirectional way the drill hole can be prepared with the appropriate orange / yellow MVA Drill Guide **(2)**.

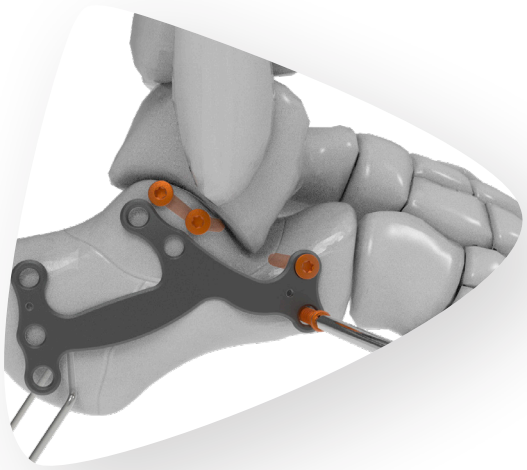
8B MEASURING



P.A.C.E. Locking Drill Guide ▸ P. 16
P.A.C.E. Drill Bit ▸ P. 16
P.A.C.E. Depth Gauge ▸ P. 15

Measuring the hole with the orange / yellow color coded Depth Gauge **(1)** or calculate the desired screw length over the calibrated window of the Locking Drill Guide and the mark on the Drill Bit **(2)**.

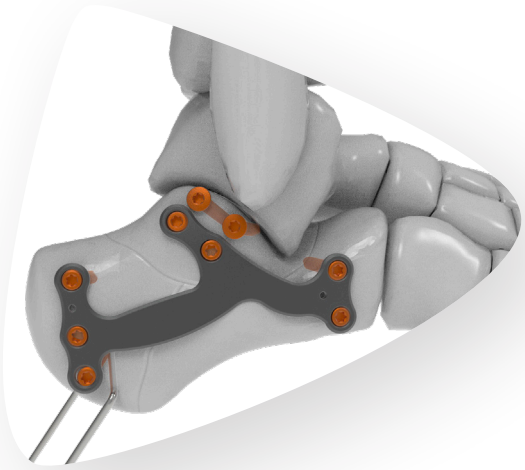
8C INSERTING THE Ø 3,5MM MVA LOCKING SCREW



Using the Handle and the orange / yellow color coded T10 Screw Driver Shaft inserting the desired MVA Locking Screw into the bone.

P.A.C.E. Screw Driver Blade ▸ P. 15

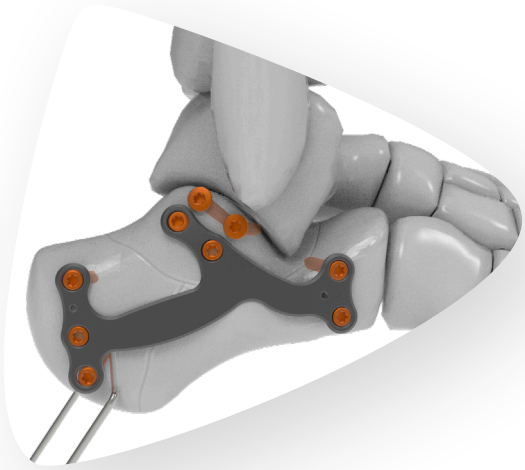
09 COMPLETION SCREW INSERTION



Reduce the Calcaneal Tuberosity into the neutral position with a 3.5 mm Non Locking Screw into any of the Holes **C1, C2, C3** depending on the fracture pattern. After insertion of the screws for the Calcaneal Tuberosity, insert 3.5 mm MVA Locking Screws into the remaining predrilled holes **(D & E)**.

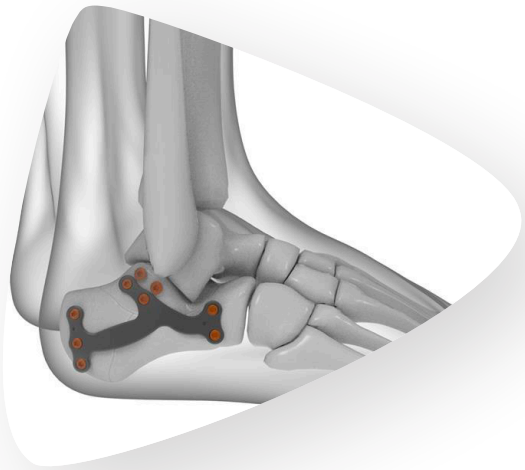
NOTE: when inserting a screw into Hole E, an interval between the Peroneus Brevis and Longus tendons is developed to gain access to this Hole.

10 EXCHANGE MVA LOCKING SCREWS FOR NON-LOCKING SCREWS



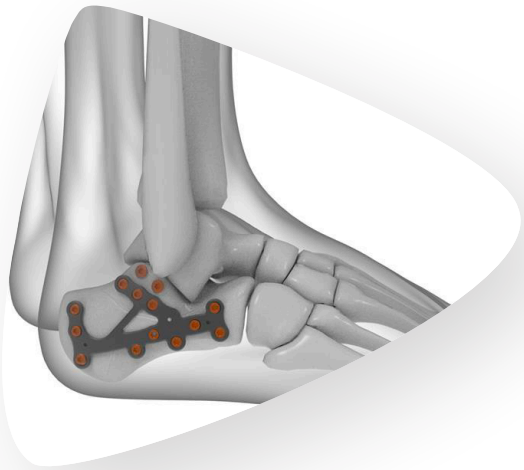
Exchange locking screws for the Non Locking Screws in Hole **A, C1** or **C2** or **C3** if required using the T10 orange / yellow Screw Driver Shaft.

11 WOUND CLOSURE



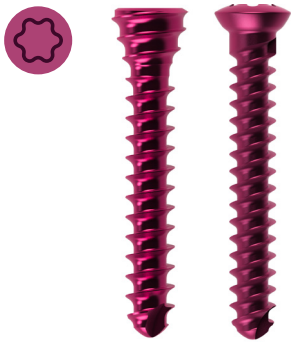
Layered Surgical Closure per Surgeons Preference.

12 PLATE POSITION OF THE STANDARD ORIF CALCANEAL PLATE



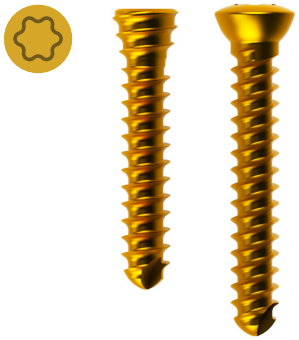
04
IMPLANTS · SCREWS

P.A.C.E.
3,0 MM CORTICAL SCREW



LENGTH	ARTICLE NO.	
	Locking Screw (MVA)	Non Locking Screw
10 mm	M113130-010	M112130-010
12 mm	M113130-012	M112130-012
14 mm	M113130-014	M112130-014
16 mm	M113130-016	M112130-016
18 mm	M113130-018	M112130-018
20 mm	M113130-020	M112130-020
22 mm	M113130-022	M112130-022
24 mm	M113130-024	M112130-024
26 mm	M113130-026	M112130-026
28 mm	M113130-028	M112130-028
30 mm	M113130-030	M112130-030

P.A.C.E.
3,5 MM CORTICAL SCREW



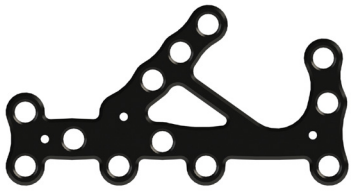
LENGTH	ARTICLE NO.	
	Locking Screw (MVA)	Non Locking Screw
10 mm	M113135-010	M112635-010
12 mm	M113135-012	M112635-012
14 mm	M113135-014	M112635-014
16 mm	M113135-016	M112635-016
18 mm	M113135-018	M112635-018
20 mm	M113135-020	M112635-020
22 mm	M113135-022	M112635-022
24 mm	M113135-024	M112635-024
26 mm	M113135-026	M112635-026
28 mm	M113135-028	M112635-028
30 mm	M113135-030	M112635-030
32 mm	M113135-032	M112635-032
34 mm	M113135-034	M112635-034
35 mm	M113135-035	M112635-035
36 mm	M113135-036	M112635-036
38 mm	M113135-038	M112635-038
40 mm	M113135-040	M112635-040
45 mm	M113135-045	M112635-045
50 mm	M113135-050	M112635-050

04
IMPLANTS · PLATES



P.A.C.E.
RLF CALCANEUS FRACTURE PLATE

INDICATION	DESCRIPTION	LENGTH	ARTICLE NO.	SCREW TYPE
▸ Calcaneus Fractures	short · left & right	59 mm	M211397-107	
	medium · left & right	69 mm	M211397-207	
	long · left & right	79 mm	M211397-307	



P.A.C.E.
STRAIGHT FRACTURE & FUSION PLATE

INDICATION	DESCRIPTION	LENGTH	ARTICLE NO.	SCREW TYPE
▸ Calcaneus Fractures	short · left & right	59 mm	M211397-113	
	medium · left & right	69 mm	M211397-213	
	long · left & right	79 mm	M211397-315	

04
INSTRUMENTS

P.A.C.E.
SCREW DRIVER BLADE



ARTICLE NO.	PLATING SYSTEM
MI41101-006	ø 2,0 mm / T6
MI41102-108	ø 2,5 / 2,8 mm / T8
MI41102-110	ø 3,0 / 3,5 mm / T10

P.A.C.E.
DEPTH GAUGE



ARTICLE NO.	PLATING SYSTEM
MI51101-040	ø 2,0 / 2,5 / 2,8 mm / 40 mm
MI51101-050	ø 3,0 / 3,5 / 4,0 mm / 50 mm
MI51101-060	ø 3,0 / 3,5 / 4,0 mm / 60 mm

P.A.C.E.
BENDING AND POSITIONING INSTRUMENT



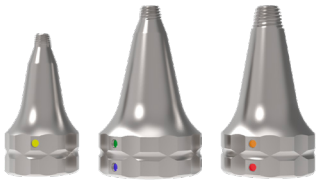
ARTICLE NO.	PLATING SYSTEM
MI71000-020	ø 2,0 mm
MI71000-028	ø 2,5 / 2,8 mm
MI71000-040	ø 3,0 / 3,5 mm

P.A.C.E.
DRILL WITH / WITHOUT SCALE



ARTICLE NO.	PLATING SYSTEM
MI11115-115	ø 2,0 mm / 115 mm
MI11117-115	ø 2,5 mm / 115 mm
MI11120-115	ø 2,8 mm / 115 mm
MI11120-1151	ø 3,0 mm / 115 mm
MI11125-125	ø 3,5 mm / 125 mm
MI11125-150	ø 3,5 mm / 150 mm
MI11130-125	ø 4,0 mm / 125 mm
MI11130-150	ø 4,0 mm / 150 mm

P.A.C.E.
MVA DRILL GUIDE



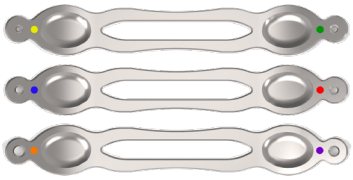
ARTICLE NO.	PLATING SYSTEM
MI05101-020	ø 2,0 mm
MI05101-028	ø 2,5 / 2,8 mm
MI05101-030	ø 3,0 / 3,5 mm

P.A.C.E.
LOCKING DRILL GUIDE WITH / WITHOUT WINDOW



ARTICLE NO.	PLATING SYSTEM
MI03101-020	ø 2,0 / 1,5 mm Drill with window
MI03101-025	ø 2,5 / 1,7 mm Drill with window
MI03101-028	ø 2,8 / 2,0 mm Drill with window
MI03101-030	ø 3,0 / 2,0 mm Drill with window
MI03101-035	ø 3,5 / 2,5 mm Drill with window
MI03101-036	ø 3,5 / 2,5 mm Drill without window
MI03101-040	ø 4,0 / 3,0 mm Drill without window

P.A.C.E.
DOUBLE DRILL GUIDE



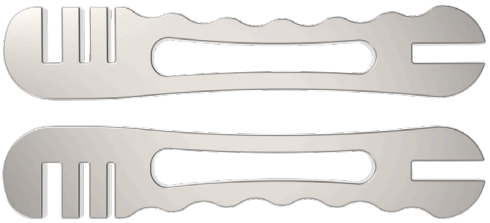
ARTICLE NO.	PLATING SYSTEM
MI01201-015	ø 2,0 / 2,5 mm / ø 1,5 / ø 1,7 mm
MI01201-020	ø 2,8 / 3,0 mm / ø 2,8 / ø 3,0 mm
MI01201-030	ø 3,5 / 4,0 mm / ø 3,5 / ø 4,0 mm

P.A.C.E.
K-WIRES WITH OLIVE



ARTICLE NO.	VERSION
M321110-150	ø 1,0 mm / 150 mm
M321112-150	ø 1,2mm / 150 mm
M321112-1501	ø 1,2 mm / 150 mm / long
M321114-150	ø 1,4 mm / 150 mm
M321116-150	ø 1,6 mm / 150 mm

P.A.C.E.
BENDING IRON



ARTICLE NO.	VERSION
MI71001-000	Left
MI71001-001	Right

P.A.C.E.
HANDLES, AO



ARTICLE NO.	VERSION
MI42101-001	AO / QC small
MI42101-002	AO / QC medium
MI42102-001	AO / QC small, cannulated

P.A.C.E.
HOHMANN RETRACTOR



ARTICLE NO.	VERSION
MI71101-006	6 mm
MI71101-008	8 mm

05
CLEANING INSTRUCTIONS

ATTENTION FOR CLEANING DEPTH GAUGE:

The Depth Gauge needs to be disassambled complete into the three single parts (Outer Sleeve / Inner Sleeve and Measuring Needle) for cleaning. It is recommended to clean them first manually before putting them disassambled into the washing tray.

