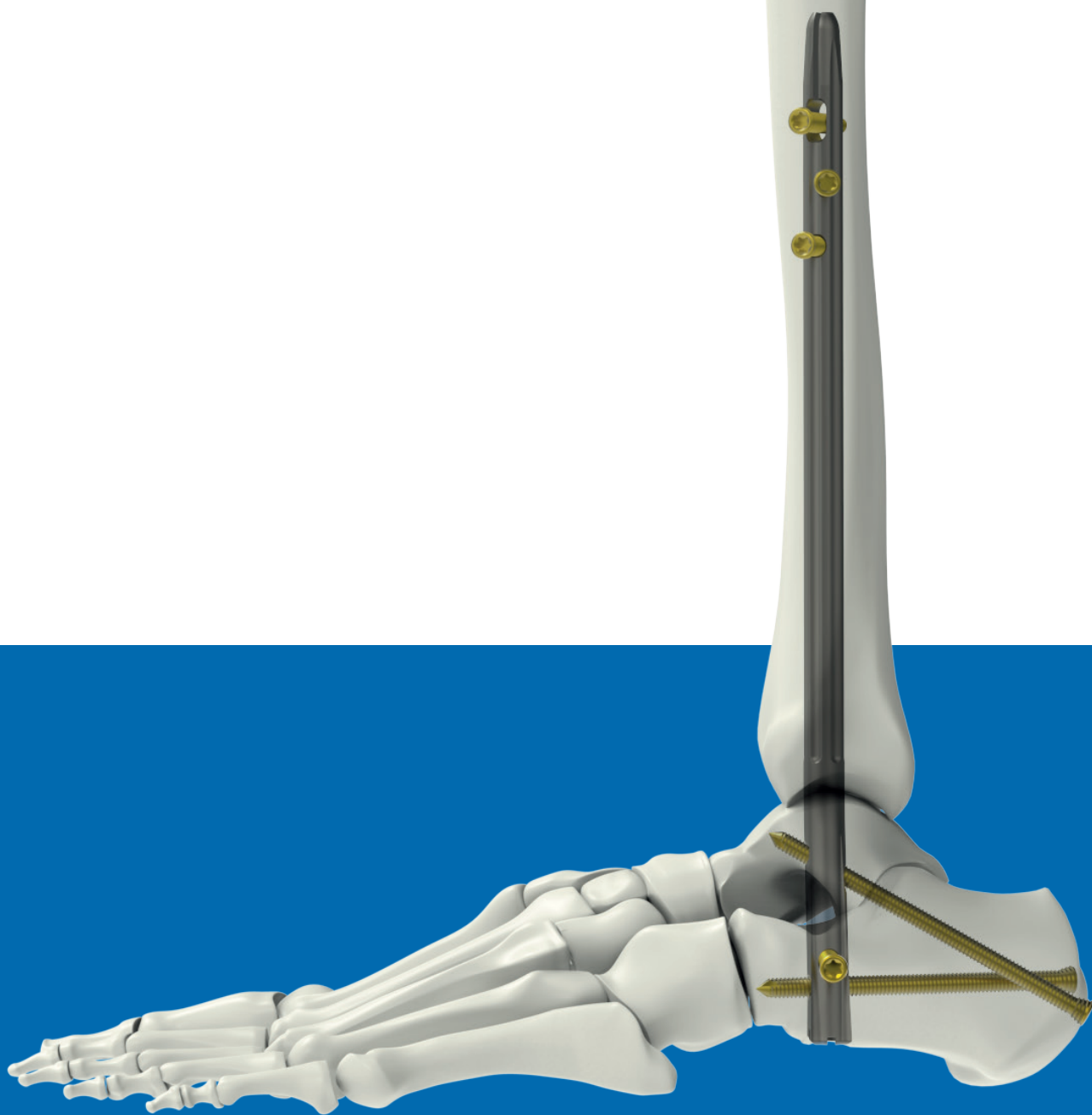
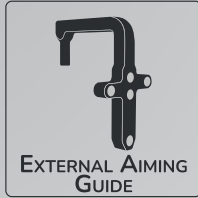


# retradesisnail



The **Retrodesis**<sup>®</sup> Nail is an intramedullary **RETRO**grade tibiototalcaneal arthro**DESIS** nail system developed for use when rigid fixation of the tibia talocalcaneal (TTC) region is required.



## Indications

- Degenerative and rheumatoid arthritis
- Charcot neuroarthropathy
- Rigid and degenerative ankle and hindfoot deformities
- Advanced instability of the ankle and hindfoot
- Defect pseudoarthrosis of the distal tibia
- Failed total ankle arthroplasty or revision of arthrodesis
- Geriatric or diabetic ankle fractures in selected patients

3 locking holes in the proximal part

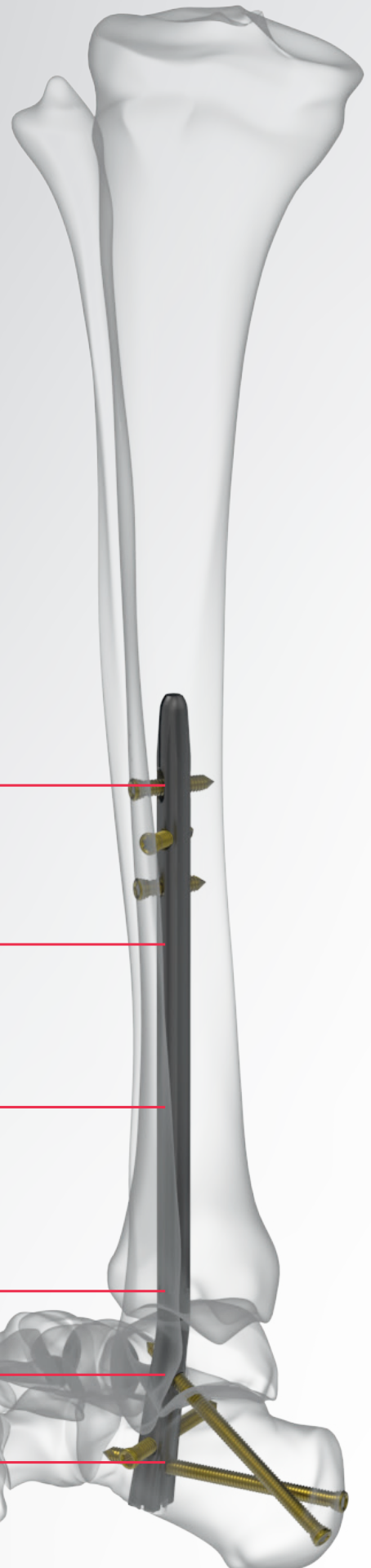
Solid Nail

Longitudinal groove structure (LC- Low Contact) design

12° Valgus angulation

2 Threaded locking holes in the distal part

Conical Wing-shaped distal tip design



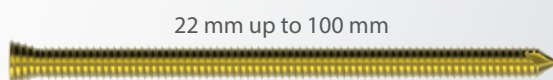
## Contraindications

- Extremity circulation problem
- Active systemic infection
- Local infection at the nail entry site
- Insufficient plantar fat pad
- Implant material sensitivity and allergy

## Features

- The RETRODESIS® Nail is applied intramedullary with the retrograde method.
- The nail has a 12° valgus angulation at 56 mm proximal in accordance with the physiological valgus of the hindfoot.
- In order to ensure the correct placement of the nail in the calcaneus-talus and tibia, the entrance preparations are made over the guide wire. However, the nail was produced in a solid structure without cannula to prevent implant breakage when subjected to intense axial load.
- The tibial side of the nail is designed in a longitudinal grooved structure (LC-Low Contact) so that the non-cannula structure of the nail does not create excessive rigidity in the contact areas with the tibial cortex.
- There are 4 wing-shaped projections on the distal of the nail, decreasing from the calcaneus to the talus. Wings (from calcaneus to talus) have a triangular pyramid structure below the base. These blades both provide rotational stability distally and compress the calcaneus proximally during insertion.
- Distal locking: In the distal part of the nail, there are a total of 3 locking screws, one from posterior to anterior (from calcaneus-cuboide), one from posteroinferior to anterosuperior (from calcaneus to talus), and one from lateral to medial (from sustentaculum tali). All three distal locking screws are locked into the grooves drilled in the nail. With the locking of the screws to the nail, it is aimed to increase the screw retention strength by acting as a block with the nails, especially in osteoporotic bones.
- Proximal locking: There are 2 anterior-posterior, 1 lateral-medial locking screws.
- There is a proximal slot in the nail that prevents the stress reaction in the proximal tibia.

### Locking Screws



## Dimensions

Nail body diameter options: 10 mm | 11 mm | 12 mm

Nail length options: 150 mm | 200 mm | 250 mm | 300\* mm | 350\* mm

\*optional

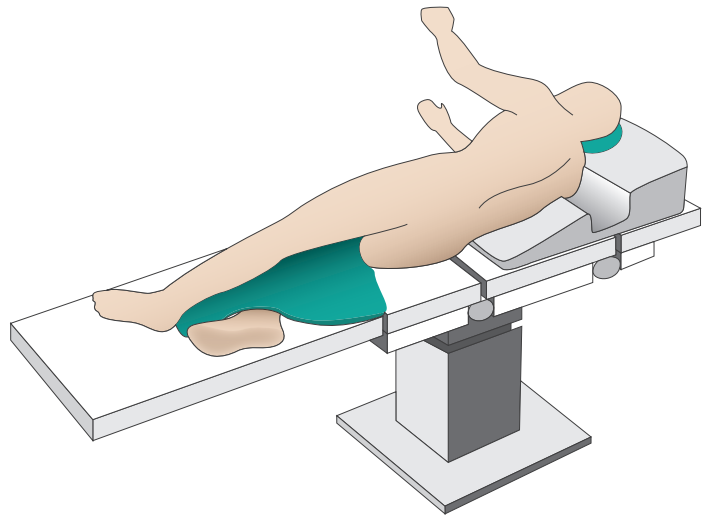


# Surgical Technique

## 1. Patient Position:

The patient is placed in the supine, prone or preferably lateral position.

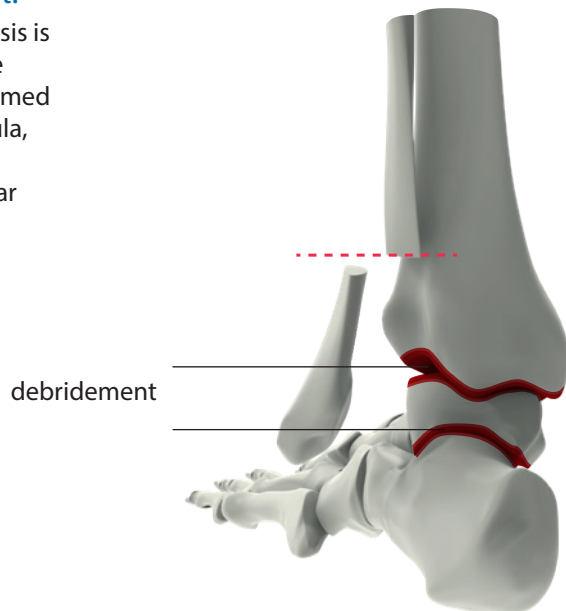
*It should be checked that a two-way view can be obtained up to the knee joint with C-Arm Fluoroscopy. A riser block can preferably be placed under the foot.*



## 2. Fibula Osteotomy, Tibiotalar Joint Debridement:

The most preferred surgical approach in TTC joint arthrodesis is the transfibular lateral approach. In this approach, after the lateral longitudinal skin incision, fibula osteotomy is performed approximately 6-7 cm proximal to the distal end of the fibula, and the fibula is lifted. In this way, articular cartilage debridement can be performed by reaching to the tibiotalar joint.

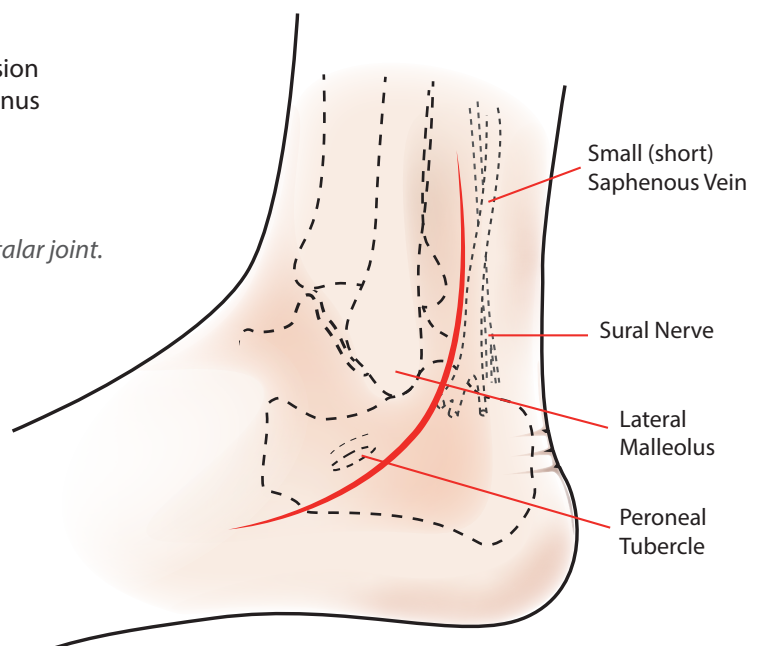
*The osteotomized fibula can be used as an autograft source.*



## 3. Subtalar Joint Debridement:

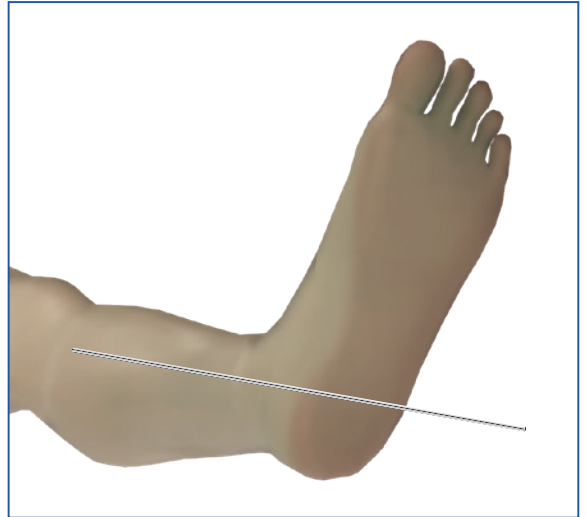
If Subtalar joint debridement is planned, the same incision is distally inclined to reach the subtalar joint over the sinus tarsi and cartilage debridement is achieved.

*An incision extended into the sinus tarsi to reach the subtalar joint.*



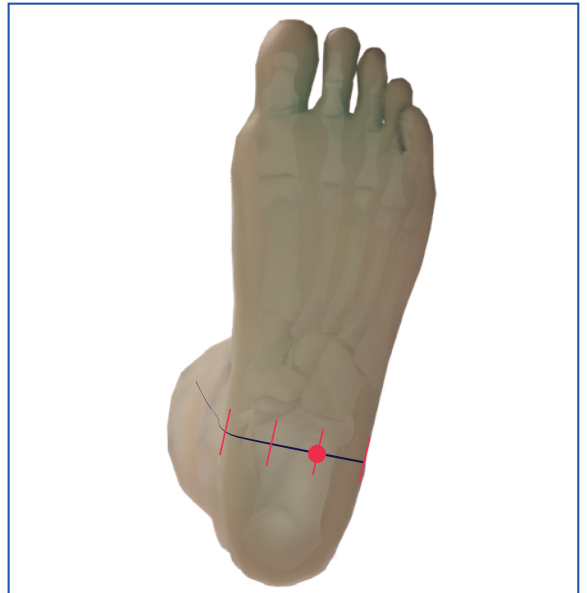
#### 4. Determining the nail entry location:

*A K-wire is placed lateral to the cruris, passing through the posterior facet of the calcaneus and running parallel to the tibial diaphysis.*



*In the meantime, a lateral fluoroscopy image is taken. The projection of the K wire on the medial-lateral line of the sole of the foot is marked with a marker pen.*

*Care should be taken to ensure that the entrance is at the junction of the medial-lateral extension 1/3 lateral and 1/3 midline.*

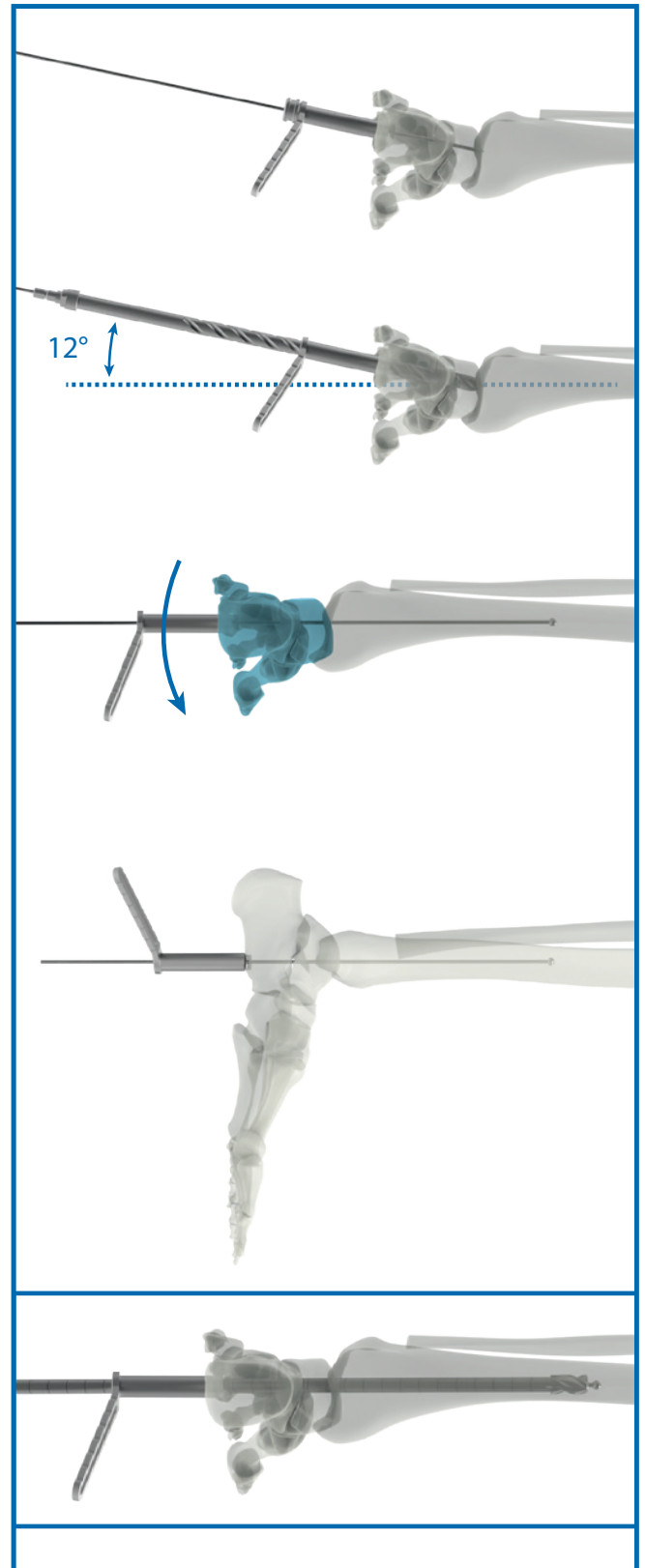


## 5. Guide wire delivery and drilling:

The wire is sent from the marked place to the posterior facet of the calcaneus and from there to the talus and tibia medulla under fluoroscopy control. Direction should be checked in the coronal and sagittal planes.

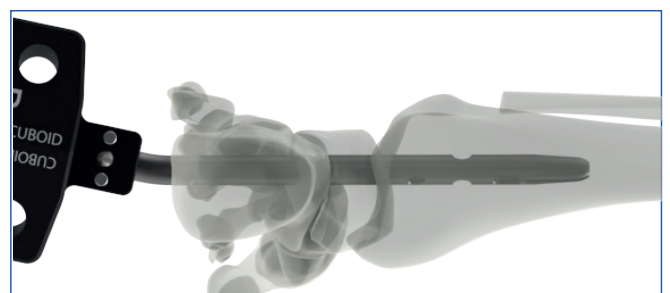


The intramedullary canal is opened with proper dimension ENTRY REAMER over the wire. The distal entrance of the nail is enlarged with the ENTRY REAMER.

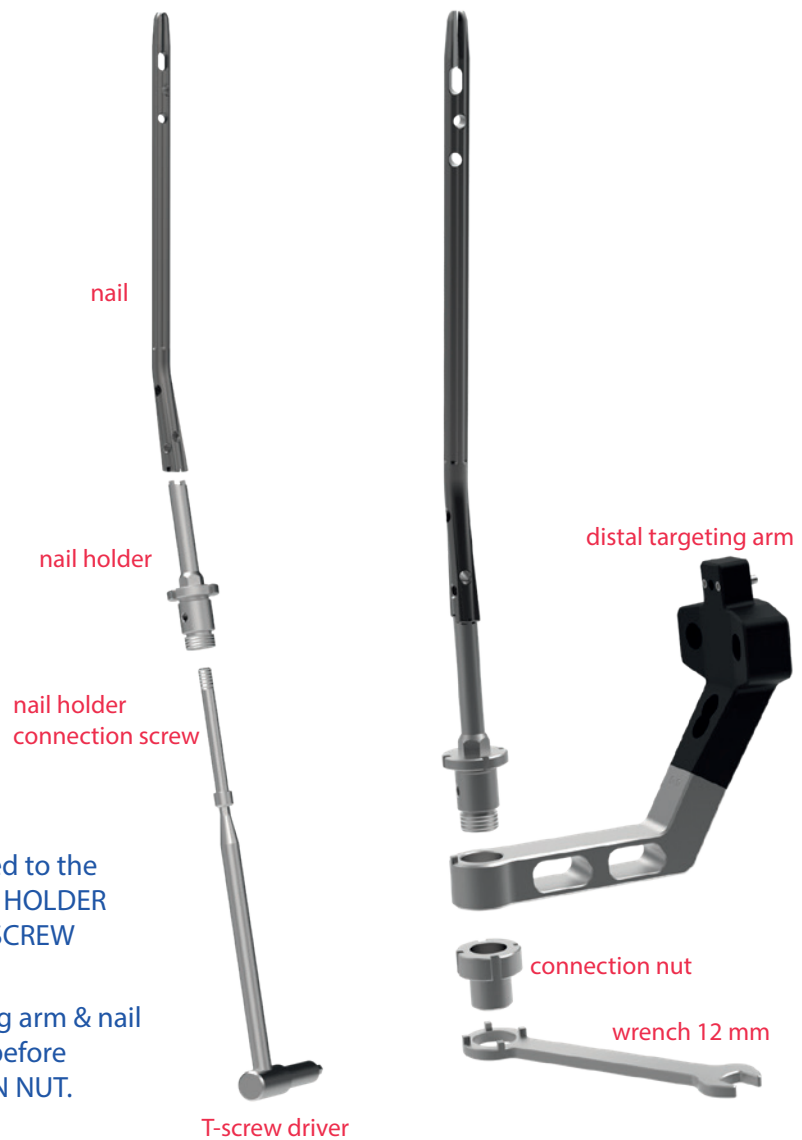


## 6. Advancement of the nail:

The guide wire is removed. The targeting device and the nail connection is achieved. RETRODESIS® nail is advanced from the calcaneus to the tibia under fluoroscopy control without a guide wire.



## Targeting Arm Mounting

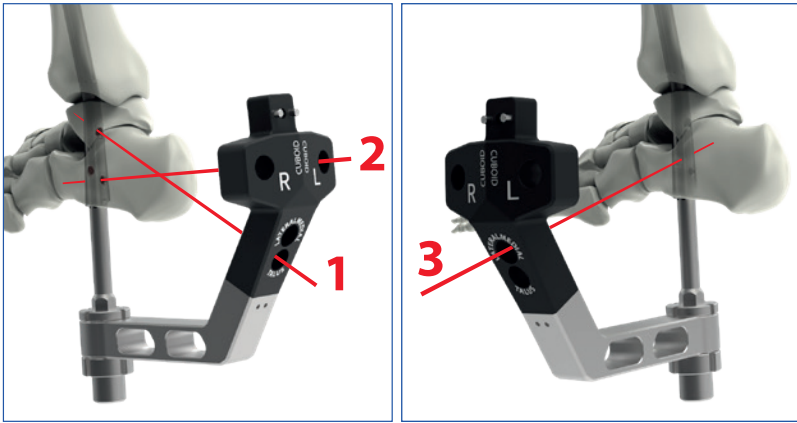


- The proper NAIL is connected to the NAIL HOLDER with the NAIL HOLDER CONNECTION SCREW via T-SCREW DRIVER 5.0 mm.
- The notches on the targeting arm & nail holder should be matched before tightening the CONNECTION NUT.

## Additional Insertion Knob - Hammer Using



## 7. Distal locking:



\*Talus & cuboid locking is performed while TARGETIG ARM is positioned in AP. For Lateralmedial locking TARGETING ARM must turn to ML position.

Distal locking screws should be drilled and screwed in the following order:

### Screw Locking Procedure

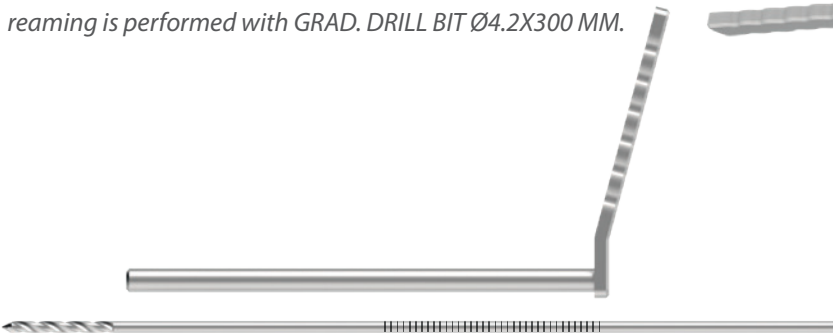
The SCREW SLEEVE should be placed in the hole marked 'Talus' on the targeting apparatus. For the distal locking screw directed from the calcaneus posterior tubercle to the subtalar joint and talus over the SCREW SLEEVE.



The TROCAR is used for the incision over the SCREW SLEEVE.



DRILL SLEEVE is attached to SCREW SLEEVE and reaming is performed with GRAD. DRILL BIT Ø4.2X300 MM.



Proper screw length is determined with the DEPTH GAUGE through the SCREW SLEEVE.



The Screw is fixed with SCREWDRIVER TIP T20X150MM via SCREWDRIVER HANDLE.





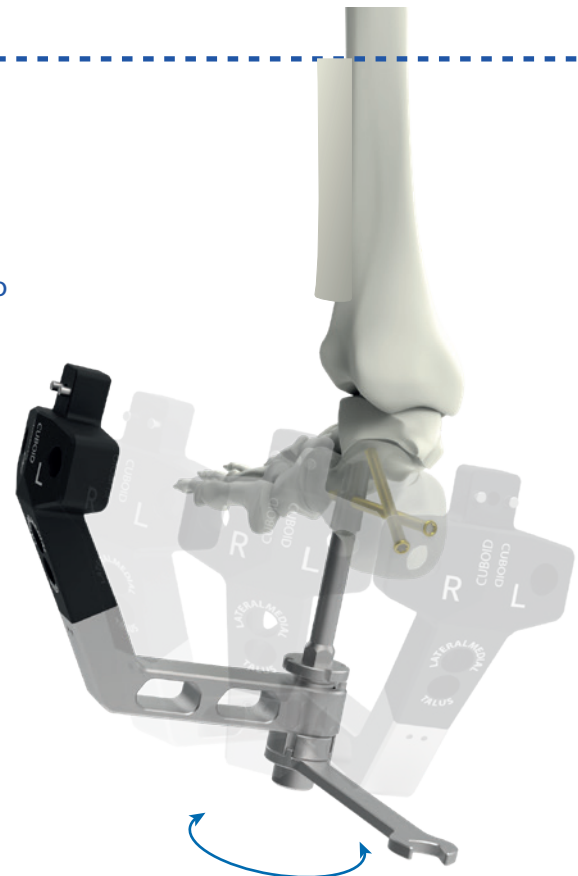
Then, the second distal screw is sent from the calcaneus to the cuboid. The hole that says 'Cuboid' should be used, attention should be paid to the side preference.

*While fixing of the second distal screw should follow the SCREW LOCKING PROCEDURE step by step.*



## Turning Guide for Lateralmedial Locking

- The CONNECTION NUT is loosened with WRENCH to rotate the TARGETING ARM AP direction to ML direction.
- The notches on the targeting arm & nail holder should be matched before tightening the Connection Nut.



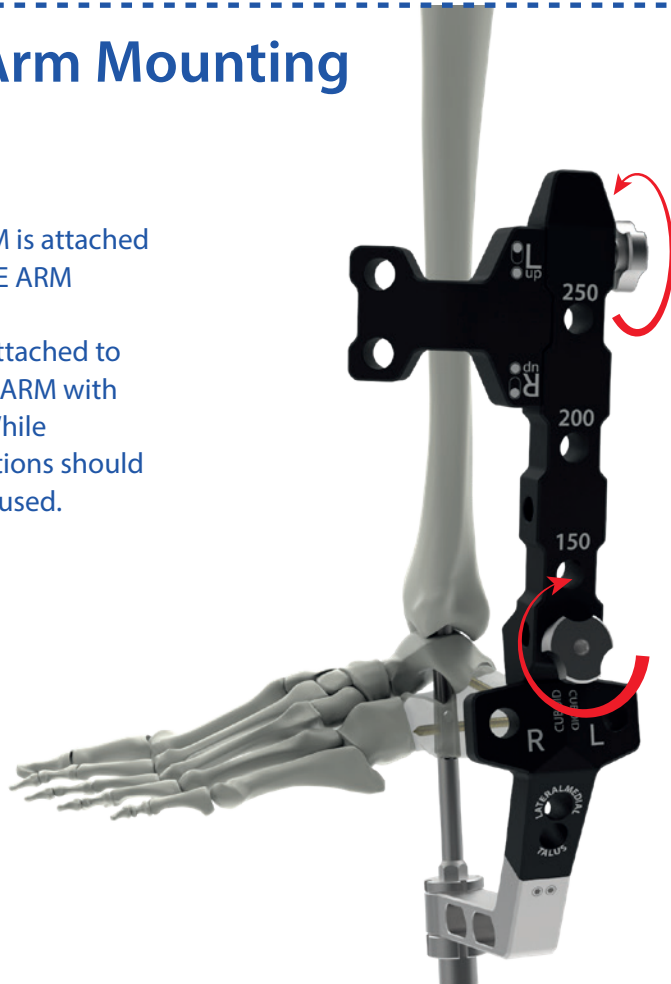
Rotational stability is increased by placing the last distal screw on the calcaneus in a different direction from lateral to medial. Before sending this screw, the targeting arm must be rotated 90°.

*Carving and screwing is performed by placing the sleeve in the hole written "Lateralmedial"*



## Proximal Targeting Arm Mounting

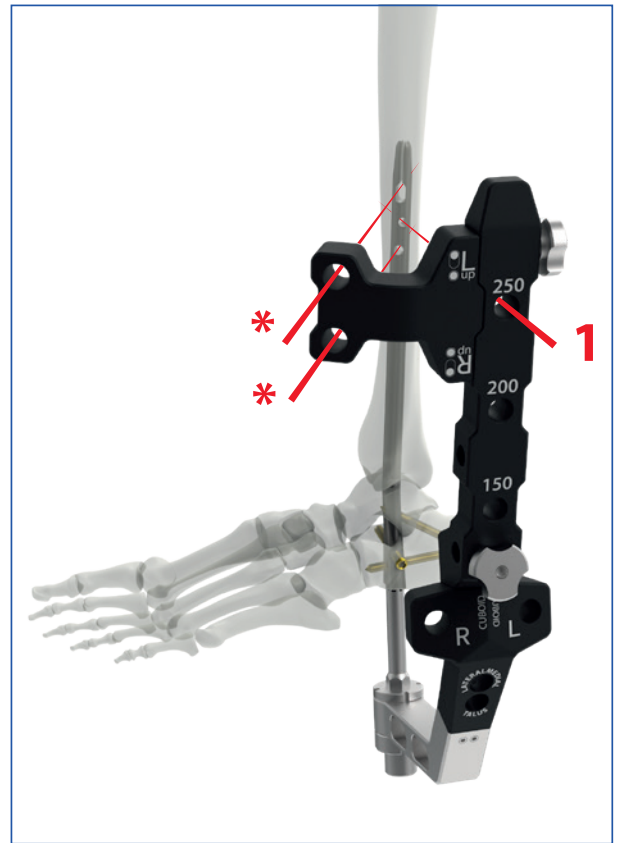
- INSERTION HANDLE EXTENSION ARM is attached to the TARGETING ARM with HANDLE ARM CONNECTION BOLT.
- PROXIMAL TARGETING ARM is also attached to the INSERTION HANDLE EXTENSION ARM with HANDLE ARM CONNECTION BOLT. While attaching, side marks and length options should be chosen correctly for which nail is used.



### 8. Proximal Locking:

The PROXIMAL TARGETING ARM should be used for proximal screw fixation. Drilling should be done according to the length of the nail (150 - 200 - 250 mm). Optionally, one or two screws can be used. The most proximal screw is for dynamic fixation and the other for static fixation on Proximal Targeting Arm.

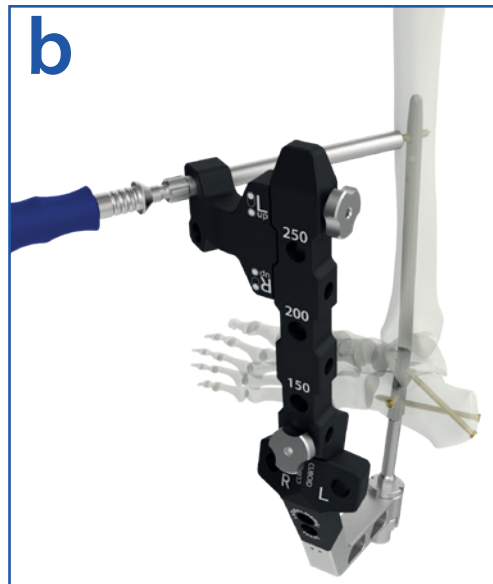
To fix the proximal screws, the SCREW LOCKING PROCEDURE should be followed step by step for each screw.



Lateralmedial direction proximal locking screw



Lateralmedial Oblique dynamic locking screw

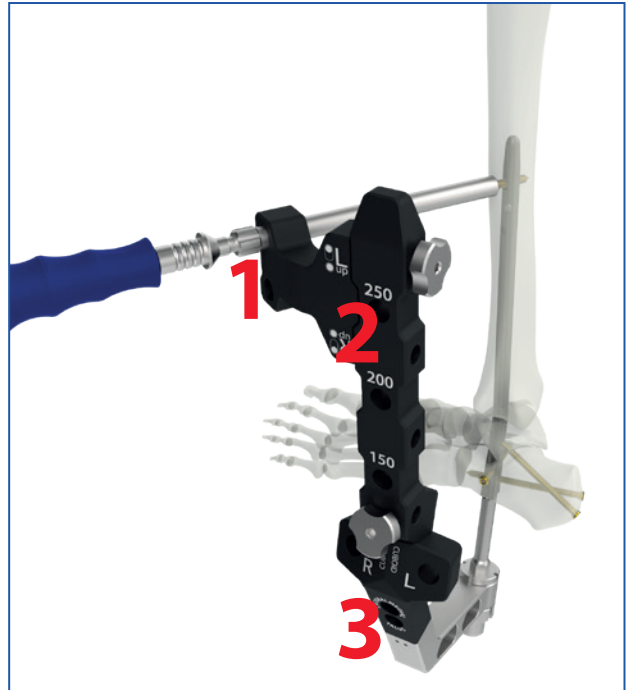


Lateralmedial Oblique static locking screw



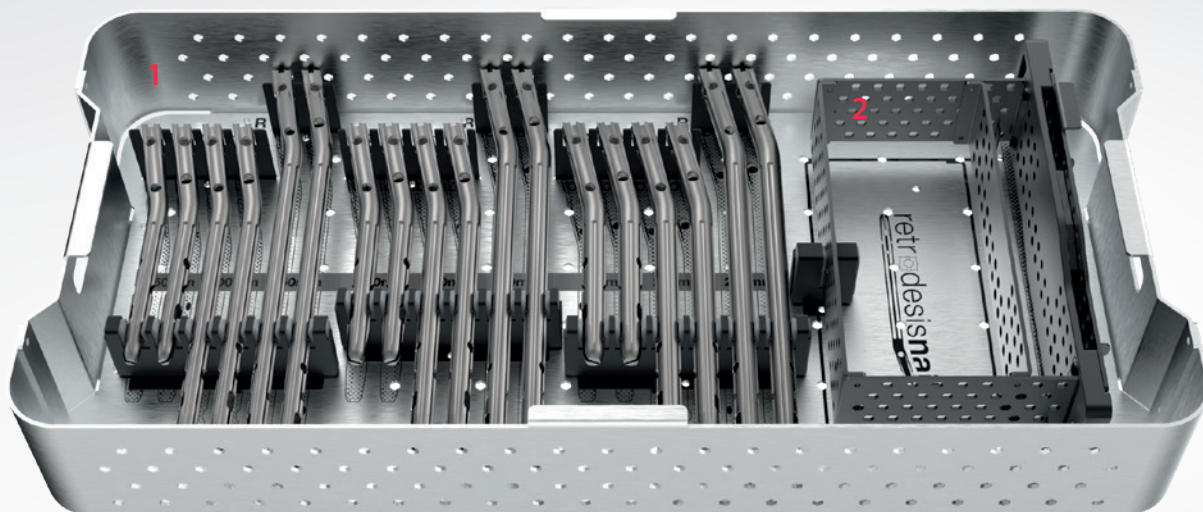
# Retrodesis Nail Extracting

- INSERTION HANDLE EXTENSION ARM is attached to the TARGETING ARM with HANDLE ARM CONNECTION BOLT.
- PROXIMAL TARGETING ARM is also attached to the INSERTION HANDLE EXTENSION ARM with HANDLE ARM CONNECTION BOLT. While attaching, side marks and length options should be chosen correctly for which nail is used.





	code	ubb	description	qty
1	00000818200	8680858461769	RETRODESIS NAIL SCREW BOX	1
	80825015010	8680858438631	RETRODESIS NAIL R 10X150 MM	1
	80825020010	8680858438655	RETRODESIS NAIL R 10X200 MM	1
	81825025010	8680858454730	RETRODESIS NAIL R 10X250 MM	1
	81825015011	8680858454792	RETRODESIS NAIL R 11X150 MM	1
	80825020011	8680858438679	RETRODESIS NAIL R 11X200 MM	1
	80825025011	8680858438693	RETRODESIS NAIL R 11X250 MM	1
	81825015012	8680858454877	RETRODESIS NAIL R 12X150 MM	1
	80825020012	8680858438716	RETRODESIS NAIL R 12X200 MM	1
	81825025012	8680858454914	RETRODESIS NAIL R 12X250 MM	1
	80826015010	8680858438648	RETRODESIS NAIL L 10X150 MM	1
	80826020010	8680858438662	RETRODESIS NAIL L 10X200 MM	1
	81826025010	8680858454778	RETRODESIS NAIL L 10X250 MM	1
	81826015011	8680858454808	RETRODESIS NAIL L 11X150 MM	1
	80826020011	8680858438686	RETRODESIS NAIL L 11X200 MM	1
	80826025011	8680858438709	RETRODESIS NAIL L 11X250 MM	1
	81826015012	8680858454884	RETRODESIS NAIL L 12X150 MM	1
	80826020012	8680858438723	RETRODESIS NAIL L 12X200 MM	1
	81826025012	8680858454921	RETRODESIS NAIL L 12X250 MM	1
2	20827222050	8680858462384	CONICAL NAIL LOCK. SCREW T20 TI 5X22 MM	2
	20827242050	8680858462391	CONICAL NAIL LOCK. SCREW T20 TI 5X24 MM	2
	20827262050	8680858462407	CONICAL NAIL LOCK. SCREW T20 TI 5X26 MM	2
	20827282050	8680858462414	CONICAL NAIL LOCK. SCREW T20 TI 5X28 MM	2
	20827302050	8680858462421	CONICAL NAIL LOCK. SCREW T20 TI 5X30 MM	2
	20827322050	8680858462438	CONICAL NAIL LOCK. SCREW T20 TI 5X32 MM	2
	20827342050	8680858462445	CONICAL NAIL LOCK. SCREW T20 TI 5X34 MM	2
	20827362050	8680858462452	CONICAL NAIL LOCK. SCREW T20 TI 5X36 MM	2
	20827382050	8680858462469	CONICAL NAIL LOCK. SCREW T20 TI 5X38 MM	2
	20827402050	8680858462476	CONICAL NAIL LOCK. SCREW T20 TI 5X40 MM	2
	20827452050	8680858462483	CONICAL NAIL LOCK. SCREW T20 TI 5X45 MM	2
	20827502050	8680858462490	CONICAL NAIL LOCK. SCREW T20 TI 5X50 MM	2
	20827552050	8680858462506	CONICAL NAIL LOCK. SCREW T20 TI 5X55 MM	2
	20827602050	8680858462513	CONICAL NAIL LOCK. SCREW T20 TI 5X60 MM	2
	20827652050	8680858462520	CONICAL NAIL LOCK. SCREW T20 TI 5X65 MM	2
	20827702050	8680858462537	CONICAL NAIL LOCK. SCREW T20 TI 5X70 MM	2
	20827752050	8680858462544	CONICAL NAIL LOCK. SCREW T20 TI 5X75 MM	2
	20827802050	8680858462551	CONICAL NAIL LOCK. SCREW T20 TI 5X80 MM	2
	20827852050	8680858462568	CONICAL NAIL LOCK. SCREW T20 TI 5X85 MM	2
	20827902050	8680858462575	CONICAL NAIL LOCK. SCREW T20 TI 5X90 MM	2
	20827952050	8680858462582	CONICAL NAIL LOCK. SCREW T20 TI 5X95 MM	2
	20827002050	8680858462599	CONICAL NAIL LOCK. SCREW T20 TI 5X100 MM	2
	00000204100	8699931011173	RETRODESIS 1. DESIGN TRAY	1



	code	ubb	description	qty
3	08082010010	8680858461936	RETRODESIS NAIL ENTRY REAMER 10 MM LONG	1
	08082010011	8680858461950	RETRODESIS NAIL ENTRY REAMER 11 MM LONG	1
	08082010012	8680858461974	RETRODESIS NAIL ENTRY REAMER 12 MM LONG	1
4	08082030010	8680858461943	RETRODESIS NAIL ENTRY REAMER 10 MM SHORT	1
	08082030011	8680858461967	RETRODESIS NAIL ENTRY REAMER 11 MM SHORT	1
	08082030012	8680858461981	RETRODESIS NAIL ENTRY REAMER 12 MM SHORT	1
5	08082000010	8680858461998	RETRODESIS NAIL ENTRY REAMER SLEEVE 10 MM	1
	08082000011	8680858462001	RETRODESIS NAIL ENTRY REAMER SLEEVE 11 MM	1
	08082000012	8680858462018	RETRODESIS NAIL ENTRY REAMER SLEEVE 12 MM	1
6	08082234110	8680858462025	RETRODESIS NAIL K-WIRE GUIDE 10 MM	1
	08082234111	8680858462032	RETRODESIS NAIL K-WIRE GUIDE 11 MM	1
	08082234112	8680858462049	RETRODESIS NAIL K-WIRE GUIDE 12 MM	1
7	01193002009	8699931028126	BONE HAMMER - MEDIUM	1
8	08082010003	8680858461806	RETRODESIS NAIL EXTRACTOR	1
9	23410340125	8699931026344	KIRSCHNER WIRE TROCAR POINT 2.5X340 MM	3
	23410250125	8698673453227	KIRSCHNER WIRE TROCAR POINT 2.5X250 MM	3
	04551008460	8680858408313	K-WIRE TUBE Ø10XØ8X460 MM	1
	04551000260	8699931030693	K-WIRE TUBE Ø10XØ8X260 MM	1
	00000204200	8699931011166	RETRODESIS 2. DESIGN TRAY	1
	00554273150	8680858444076	CONTAINER AL 554X273X150 MM	1

	code	ubb	description	qty
10	08082200000	8680858461875	RETRODESIS DISTAL TARGETING ARM	1
11	08082100000	8680858461844	RETRODESIS PROX. TARGETING ARM	1
12	08082010002	8680858461790	RETRODESIS NAIL CONNECTION NUT	1
13	08082010000	8680858461776	RETRODESIS NAIL HOLDER	1
14	08082010001	8680858461783	RETRODESIS NAIL HOLDER CONNECTION SCREW	1
15	08082010004	8680858461813	RETRODESIS NAIL INSERTION KNOB	1
16	08082300000	8680858461868	RETRODESIS INSERTION HANDLE EXTENSION ARM	1
17	08082400000	8680858461851	RETRODESIS HANDLE ARM CONNECTION BOLT	2
18	04051000005	8699931011210	T-SCREW DRIVER Ø 5 MM	1
19	08082000120	8680858461820	RETRODESIS WRENCH 12MM	1
20	08082010006	8680858461899	RETRODESIS TROCAR	1
21	08082010042	8680858461905	RETRODESIS DRILL SLEEVE 4.2 MM	1
22	08082010005	8680858461882	RETRODESIS SCREW SLEEVE	2
23	01210830042	8680858461912	GRAD.DRILL BIT Ø4.2X300 MM (RETRODESIS)	2
24	08082050001	8680858461837	RETRODESIS DEPTH GAUGE	1
25	02010250150	8680858461929	SCREW DRIVER TIP T20 X 150 MM	2
26	02010101002	8698673493308	SCREWDRIVER HANDLE LARGE	1
	00000204300	8699931011159	RETRODESIS 3. DESIGN TRAY	1

	code	ubb	description	qty
27	08300000025	8699931021738	GUIDE WIRE PUSHER	1
28	03455003000	8699931032567	HINTERMANN DISTRATOR	1
29	08050000105	8699931017113	FLEXIBLE REAMER Ø 10.5	1
	08050000016	8698673497221	FLEXIBLE REAMER Ø 11	1
	08050000115	8699931017120	FLEXIBLE REAMER Ø 11.5	1
	08050000017	8698673497238	FLEXIBLE REAMER Ø 12	1
	08050000125	8699931017137	FLEXIBLE REAMER Ø 12.5	1
	08050000020	8698673438460	FLEXIBLE REAMER Ø 13	1
	00000204400	8699931020786	RETRODESIS 4. DESIGN TRAY	1
	00554273150	8680858444076	CONTAINER AL 554X273X150 MM	1



