

MEDIN
ORTHOPAEDIC
IMPLANTS



NAIL HUMERAL

STAINLESS STEEL TITANIUM

→ IMPLANT SYSTEM




Numerous locking options facilitate fixation even in the case of short bone fragments.

Holes in the proximal part of the nail are pointed in multiple planes, which allows a very stable fixation.

The shallow thread in the proximal holes of the nail allows a stable connection of the nail to the bone after insertion of 4 mm flat head locking screws.

The nail diameters allow nail insertion without pre-drilling or with only slight pre-drilling of the intramedullary cavity, which significantly reduces the risk of damage to the endosteal vascular supply.

Intramedullary humeral nail osteosynthesis meets the principles of AO. The nail osteosynthesis leads to relative stability at the fracture site, which heals indirectly through callus formation.



PERSISTENT
QUALITY OF OUR
IMPLANTS GRANTS
OSTEOSYNTHESES
WITH PERSISTENT
OUTCOMES

MEDIN IMPLANTS FOR PRECISE CARE

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A

BASIC INFORMATION

Implant system features	→ 04
Indications	→ 04
Caution	→ 04
Functional elements of the nail	→ 05

B

SURGICAL TECHNIQUE

Aiming device assembly	→ 06
01. Patient positioning	→ 06
02. Fracture reduction	→ 07
03. Surgical approach	→ 07
04. Opening of the medullary cavity	→ 08
05. Nail insertion	→ 08
06. Creating holes for screws	→ 09
07. Screw insertion	→ 10
08. Distal locking	→ 10
09. Closing nail with end cap	→ 12
10. Implant extraction	→ 12

C

IMPLANTS AND INSTRUMENTS

Humeral nails	→ 13
Locking screws	→ 16
End caps	→ 17
Instruments for humeral nails	→ 18

D

INSTRUMENTS DIAGRAM

Instruments diagram	→ 20
---------------------	------

E

CATALOGUE

Catalogue	→ 20
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SYMBOL LIST

 Caution

 Note

 Instruments

 X-ray check



IMPLANT SYSTEM FEATURES

- > Two material variants: Titaniumium alloy (ISO 5832-3) or stainless steel (ISO 5832-1).
- > Two nail variants: right and left.
- > Nail diameters: 7, 8 and 9 mm.
- > Nail lengths: 150, 190, 210, 230, 250 and 290 mm.
- > Four holes for locking the proximal end of the nail are arranged in multiple planes.
- > Five holes for locking the distal end of the nail are arranged in multiple planes (except for the 150 mm length variant).



INDICATIONS

- > The "humeral nail" system is indicated for treatment of stable or unstable fractures of the humeral head, pathological fractures, pseudarthroses and diaphyseal fractures of humerus.



CAUTION

1. This Surgical Technique Manual does not contain enough information necessary for immediate use of the implant.
Always get acquainted with all information provided by the manufacturer in this surgical technique, on the product label and in the instructions for use before using any MEDIN, a.s., product.
2. The use of this device is intended exclusively for physicians specialized in traumatology, orthopedy, and surgery, who went through the professional training for the device provided by MEDIN, a.s.

3. In addition to the nail itself, the implant system includes other implantable components and a set of instruments for insertion and extraction. A list of all accessories and instruments intended for use together with the nail is given in the corresponding section of this surgical technique. The compatibility of the individual implants and instruments of the system has been tested and verified. The use of the nail in combination with other implants or instruments is not allowed as this may result in damage to the implants or the patient. MEDIN, a.s., is not responsible for possible complications resulting from non-compliance with this instruction.
4. Intraoperative fluoroscopic checking with an X-ray intensifier is required.

i Note

Wherever the X-ray symbol ☸ is shown, perform the X-ray check as instructed.

5. Implants are supplied non-sterile and are intended to be sterilized before use. Instructions necessary for the preparation of the implants can be found in the Instructions for Use manual.
6. Before using the drill bits, always check the number of previous uses, the maximum number of which is set at 30. If this number is exceeded, do not use the drill bit, dispose of it or send it to the manufacturer for sharpening. Failing that creates a risk of prolonging the surgery or making it impossible to insert the screws.
7. Make sure the surface of the instruments is unimpaired, and that they are correctly set and functional. Do not use damaged instruments that have illegible markings, show signs of corrosion or have dull blades. Discard these instruments and do not use them any further. Your MEDIN, a.s. sales representative will provide you with further detailed instructions regarding functionality testing. Only the manufacturer is authorized to carry out service maintenance.

Locking the nail

in different planes allows good fixation even in the case of short bone fragments





FUNCTIONAL ELEMENTS OF THE NAILS

→ LOCKING SCREWS WITH FLAT HEAD

- > Locking of the proximal end of the nail is achieved by inserting two to locking screws with flat head 4 mm into the shallow threaded holes.

→ LOCKING SCREWS WITH FLAT HEAD, STRENGTHENED

- > Locking of the central part of the long nail and the distal part of the short nail is achieved by inserting one to three locking screws with flat head 3.5 mm.

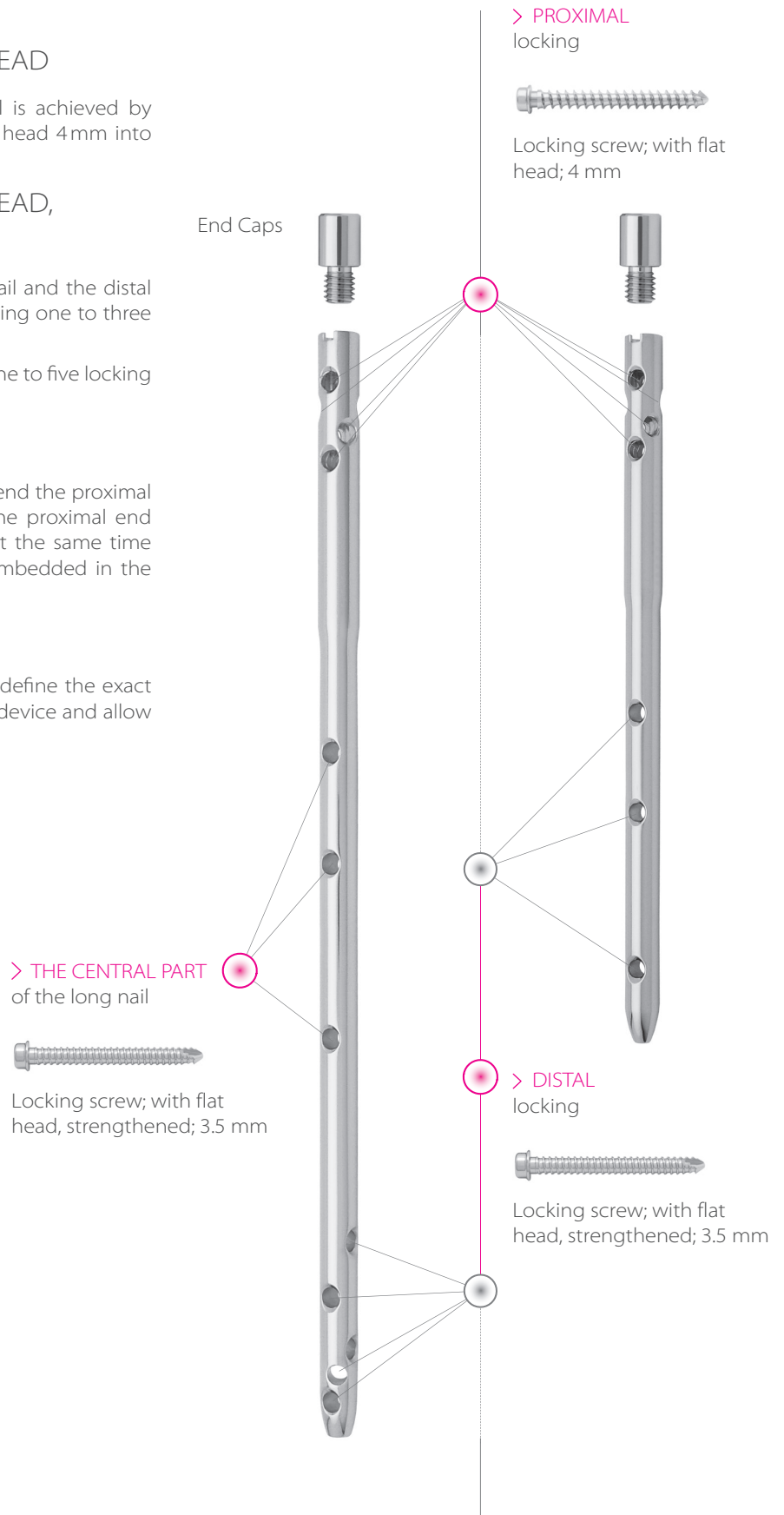
Distal end of the long nail is locked with one to five locking screws with flat head 3.5 mm.

→ END CAP

- > The end cap is designed to close and extend the proximal end of the nail. The end cap protects the proximal end of the nail against tissue ingrowth and at the same time extends the nail so that its end is not embedded in the bone.

→ GROOVES FOR AIMING DEVICE

- > Grooves on the proximal end of the nail define the exact position of the nail relative to the aiming device and allow easy connection to it.





AIMING DEVICE ASSEMBLY

→ AIMING DEVICE ASSEMBLY

- Assembly of a basic aiming device for the nail regardless of which arm is operated on. The screw can be tightened manually or with a wrench rod [Fig. A].

→ ASSEMBLY OF AIMING DEVICE WITH SELECTED NAIL

- Assembly of the aiming device with the chosen nail. Depending on the orientation of the nail (left or right), attach the arms to the aiming device. They are marked for right and left nail. Screws are provided with a hole for tightening with a wrench rod [Fig. B].

→ AIMING DEVICE AND NAIL CHECK

- Insert the sleeves into the aiming device and check all the holes in the nail. It is recommended to use a guide sleeve and a trocar for checking [Fig. C].

→ INSTRUMENTS



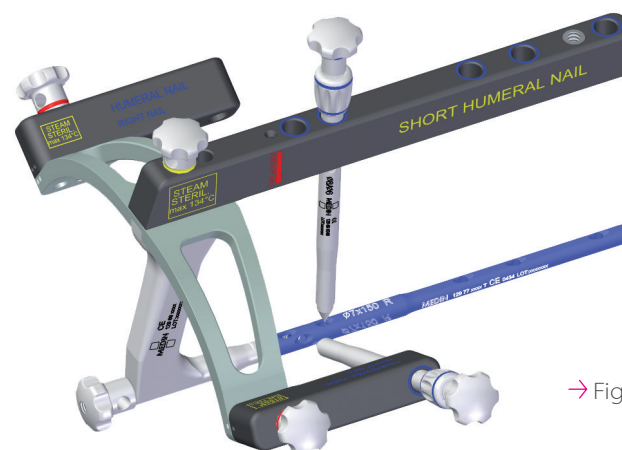
REF	Name
397 129 69 6320	Aiming device for nail; humeral
397 129 69 6100	Wrench rod; 4,5 × 150 mm
397 129 69 6300	Trocar; 6 × 120 mm
397 129 69 6340	Guide sleeve; 8/6 × 110 mm



→ Fig. A



→ Fig. B

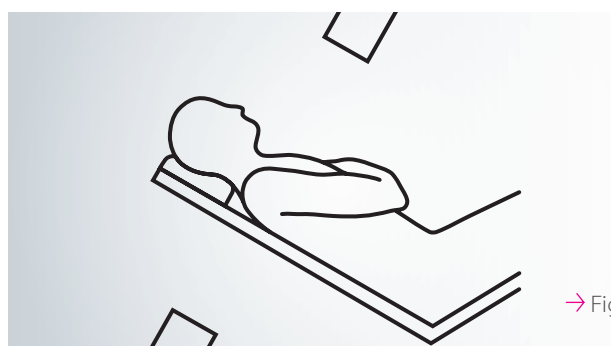


→ Fig. C

01

PATIENT POSITIONING

- The patient is on the operating table in a semi-sitting position. The arm of the operated side is supported, the head is turned to the side of the healthy arm.
- Another option is to place the patient supine, positioning the operated extremity outside the table area, with the possibility of free movement outside the operating table [Fig. 1.1].



→ Fig. 1.1

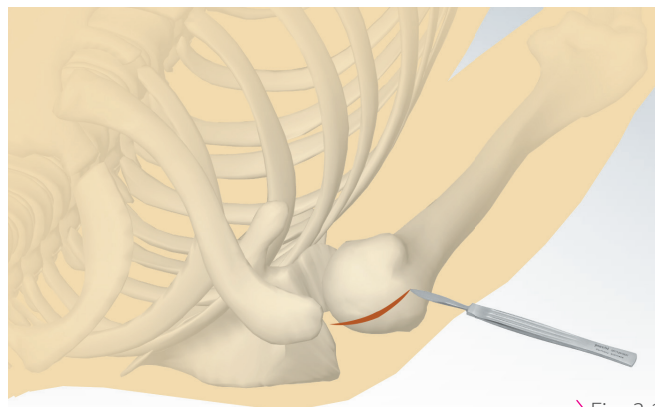
02

FRACTURE REDUCTION

- > The fracture is repositioned in both projections under an X-ray control. In case of a purely ligamentous rotator cuff tear, we suture it for later repair. The condition of the glenoid fossa, the surface and position of the humeral head, the dislocation of the humeral tuberosities and the position of the humeral diaphysis are examined by palpation. We perform reduction by inserting the elevator into the fracture line, manipulating the extremity, pulling stitches behind the tuberosities, and inserting auxiliary K-wires.

⚠ Caution

Adequate anatomical reduction of the individual fracture fragments must be performed prior to the insertion of the nail. This is absolutely essential for successful osteosynthesis.

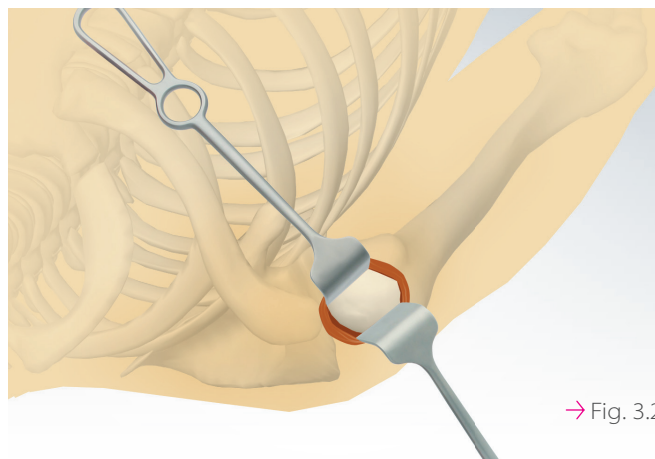


→ Fig. 3.1

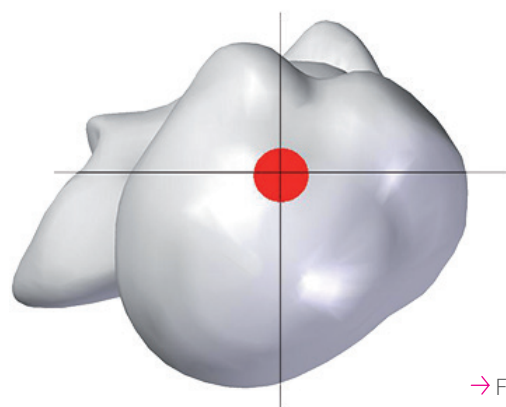
03

SURGICAL APPROACH

- > Several surgical approaches are available: Limited transdeltoid (recommended), minimally invasive and classical deltopectoral.
- > Limited transdeltoid approach: Entry point under visual check, protection of the long head of the biceps, revision (and reconstruction) of the rotator cuff, palpation revision of the shoulder joint, orientation about the position of the humeral head, vision of reduction, revision of the fracture line, palpation check of the nail insertion, reparation of humeral tuberosities (screws, rope over bitt), check of the nail penetration. All this improves the quality of osteosynthesis and reduces the level of exposure to X rays.
- > The incision is made in front of the AC joint, parallel to the peripheral end of the clavicle, and should not extend 4cm below the upper arm (risk of injury to the a. axillaris, necessary to take into account the length of the arm, the amount of soft tissue and anatomical variety) [Fig. 3.1]. After longitudinal separation of the fibres of the deltoid muscle, we reach the shoulder joint capsule [Fig. 3.2]. We cut the capsule longitudinally, usually evacuating the blood spurt and detecting the rotator cuff.
- > The entry point is located at the top of the humeral head [Fig. 3.3].
- > The nail should be "wedged" as tightly as possible in the medullary cavity of the bone. Therefore, the width of the medullary cavity at its narrowest point must be measured as accurately as possible and the diameter of the nail should correspond to this width.



→ Fig. 3.2



→ Fig. 3.3

04

OPENING OF THE MEDULLARY CAVITY

- Open the medullary cavity using a cutter and a 2.5 × 170 mm drill with stopper. First use the drill with stopper to find the entry point [Fig. 4.3], then put the 9 × 40 mm drill sleeve on the drill and further insert the 9/2.5 × 49 mm drill sleeve into it. Then drive the drill into the bone up to the stopper.
- Remove the drill sleeve and insert the cutter clamped in the drill to create the entry hole. Drill over the drill sleeve [Fig. 4.2]. The cutter is equipped with a scale that shows the depth of the bone removal. The minimum drilling depth is 15 mm. Deeper penetration is possible at the discretion and need of the surgeon. Most commonly, we drill as deep as we can until we reach the medullary cavity. The cutter can cut a hole up to 50 mm deep. There are two versions of the cutters. Cutter 9 × 120 mm for 9 mm nails and cutter 8 × 120 mm for 7 and 8 mm nails.
- After drilling the hole, remove the cutter with the sleeve and pull out the drill with stopper on which remnants of the drilled bone remain. A regular cylinder extruded from the cutter shows us a correct trepanation [Fig. 4.4].

⚠ Caution

The 9 mm cutter is marked with a black strip.

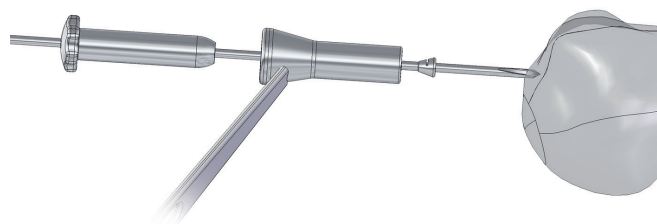
i Note

Alternatively, you can create the entry point using a perforator. It can be used in cases where the head of the humerus around the entry point is not damaged.

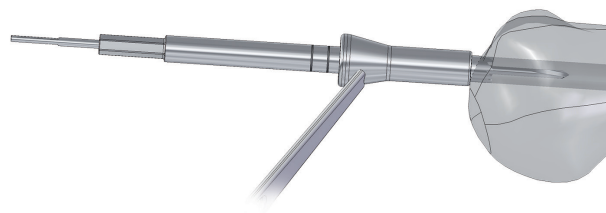
→ INSTRUMENTS



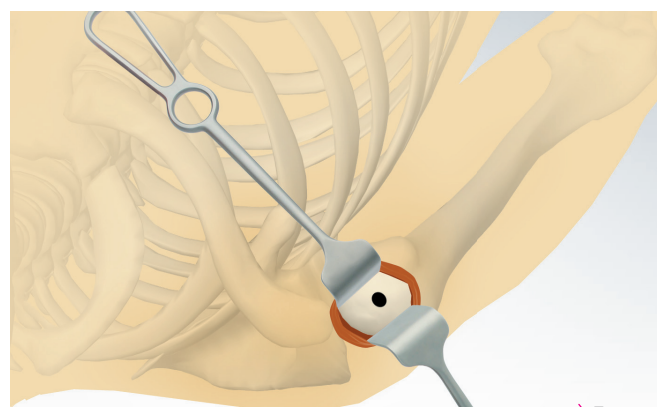
REF	Name
397 129 69 6090	Drill sleeve; 9 × 40 mm
397 129 69 6280	Drill sleeve; 9/2.5 × 49 mm
397 129 09 9950	Drill; with stopper 2.5 × 170 mm
397 129 79 9770	Cutter; 8 × 120 mm; hexagonal coupling
397 129 79 9775	Cutter; 9 × 120 mm; hexagonal coupling
397 129 69 1670	Perforator; D 9 mm, 73 mm



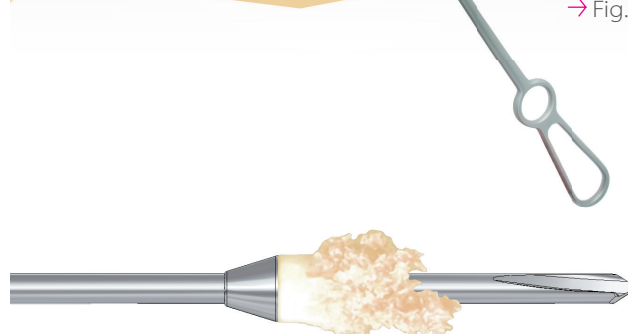
→ Fig. 4.1



→ Fig. 4.2



→ Fig. 4.3

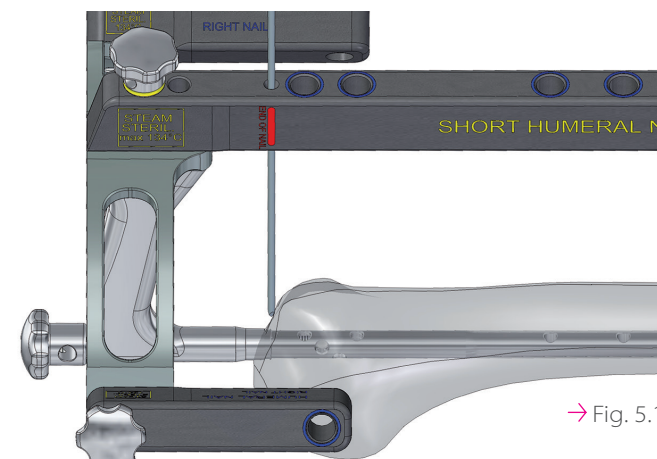


→ Fig. 4.4

05

NAIL INSERTION

- The nail is inserted manually as far into the bone cavity as possible. The nail must be fully inserted into the bone cavity. The insertion depth can be checked by X-ray; the aiming device has a groove that indicates the end of the nail. Alternatively, use the 2.0 × 160 mm K-wire inserted into the hole of the aiming device marked with a red groove on the arm and the text "end of nail" [Fig. 5.1].



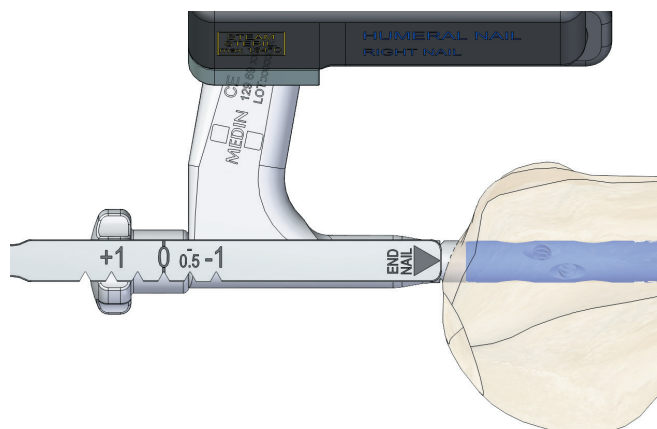
→ Fig. 5.1

- Another option for checking the depth of insertion is to use the ruler [Fig. 5.2]. The value of -0.5 means that the nail is inserted in the bone cavity at a depth of 5 mm. Check the insertion of the nail, especially when passing through the fracture line, with an X-ray intensifier.

→ INSTRUMENTS



REF	Name
397 129 69 6320	Aiming device for nail; humeral
397 129 69 8090	Ruler; 130 mm
397 129 09 3100	K-wire; 2.0×160 mm



→ Fig. 5.2

06

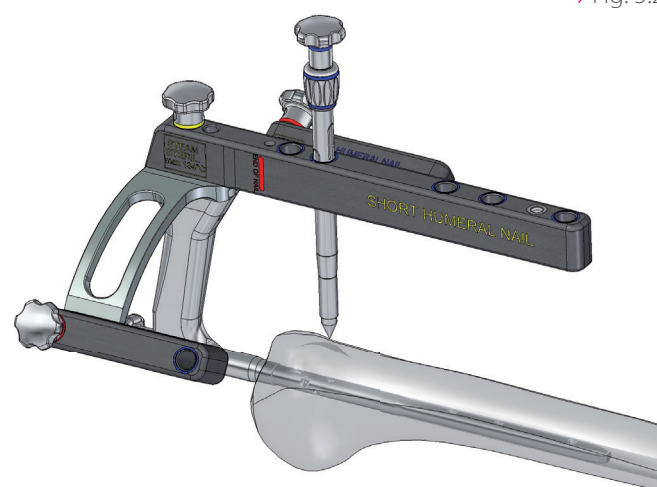
CREATING HOLES FOR SCREWS

- Insert the blue-marked sleeve (Guide Sleeve; 8/6×110 mm) together with the 6×120 mm trocar into the aiming device. Make an incision at the point of contact with the skin and guide the sleeve and trocar to the bone. By applying light pressure on the trocar, a dent is created in the bone for better guidance of the drill [Fig. 6.1].
- Then remove the trocar and insert the sleeve marked in blue and red (Drill Sleeve; 6/2.7×128 mm) or the sleeve marked in blue and green (Drill Sleeve; 6/2.9×128 mm). The surgeon determines the choice of drill [Fig. 6.2]. Through the above-mentioned sleeve, drill a hole in the bone. The drill is equipped with a scale to determine the required screw length [Fig. 6.3].

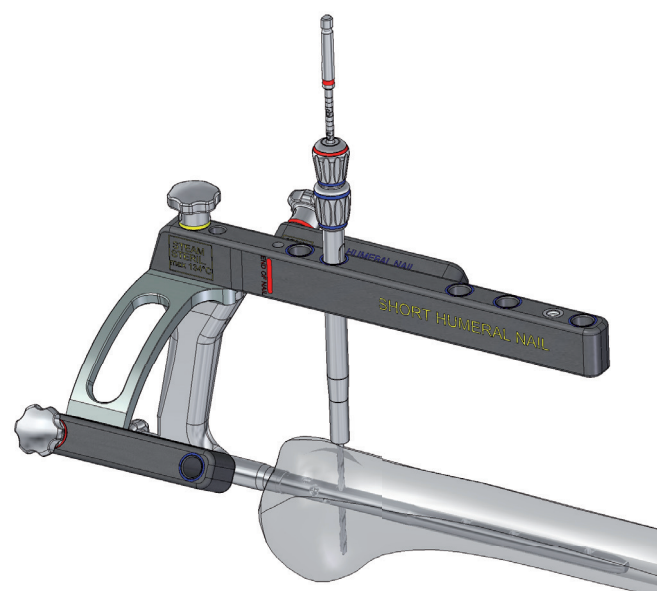
Product color coding



→ Fig. 6.2



→ Fig. 6.1



→ Fig. 6.3

→ INSTRUMENTS



REF	Name
397 129 69 6300	Trocar; 6×120 mm
397 129 69 6340	Guide sleeve; 8/6×110 mm
397 129 69 6350	Drill sleeve; 6/2.7×128 mm
397 129 69 7960	Drill sleeve; 6/2.9×128 mm
397 129 69 6291	Drill; 2.7×230 mm, AO coupling
397 129 69 7971	Drill; 2.9×230 mm, AO coupling

07

SCREW INSERTION

- > The required screw length can be measured with a depth gauge. The correct depth reading is shown in the figure [Fig. 7.1]. Put the screw of the measured length on the screwdriver and guide it through the sleeve into the bone. The screwdriver is equipped with a scale showing the length of the screw still to be screwed in [Fig. 7.2].
- > The recommended technique is the insertion of two 4mm locking screws in the frontal plane into the head, and subsequent fixation of the nail into the diaphysis. Finally, 4mm oblique flat head locking screws are inserted into the head after reduction of the greater tuberosities [Fig. 7.3]. Tuberosities can be fixed directly with 4mm locking screws (palpation control), or with non-resorbable sutures, or by a combination of both methods.

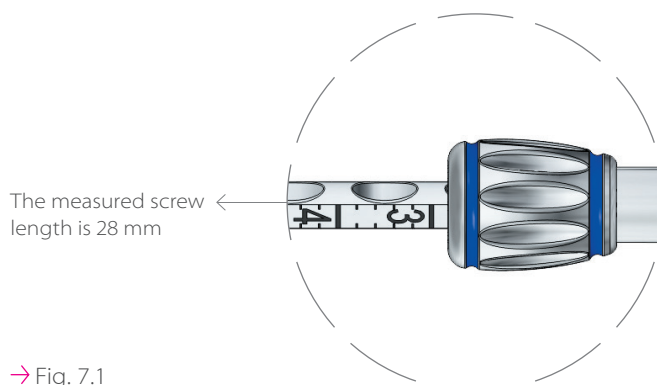
i Note

The locking screws with flat head 4mm are used for the holes in the humeral head, the locking screws with flat head 3.5 mm for the holes in the diaphysis.

→ INSTRUMENTS



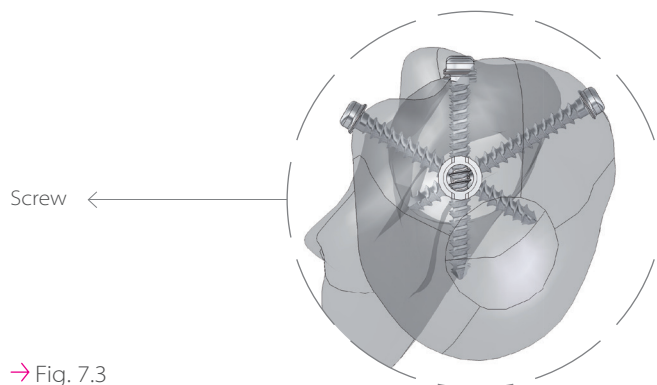
REF	Name
397 129 69 8080	Depth gauge; 2.4×70 mm
397 129 69 5231	Screwdriver; AO, hex, 2.5×160 mm, conical
397 129 68 1730	Locking screwdriver; AO, hex, 2.5×160 mm
BD23-110-AO	Handle AO; 30×151 mm



→ Fig. 7.1



→ Fig. 7.2



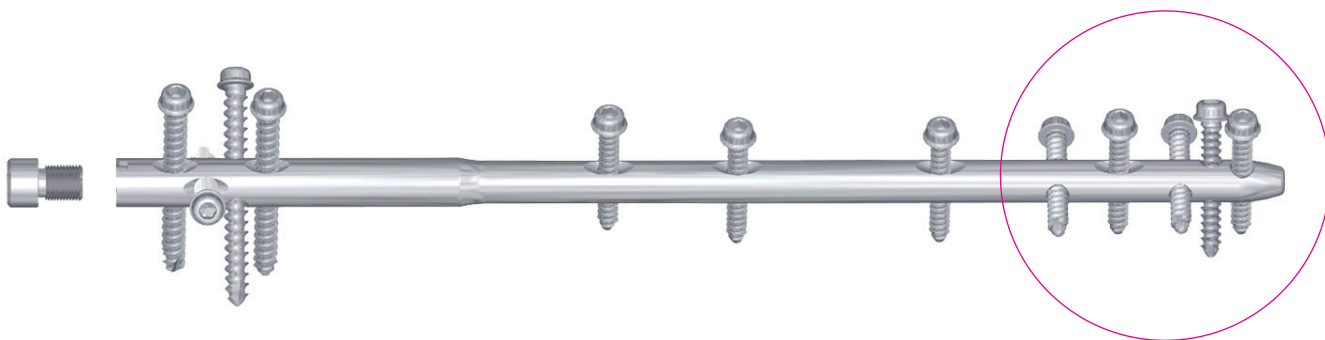
→ Fig. 7.3

08

DISTAL LOCKING

- > Long humeral nails (lengths 190mm to 290mm) can be locked in the distal part [Fig. 8.1] with locking screws with flat head 3.5mm for 7 and 8mm diameter nails. Locking in the distal part of the nail is performed by free hand technique under visual and X-ray control or with a distal aiming device.

→ Fig. 8.1



→ DISTAL LOCKING - DISTAL HUMERAL AIMING DEVICE

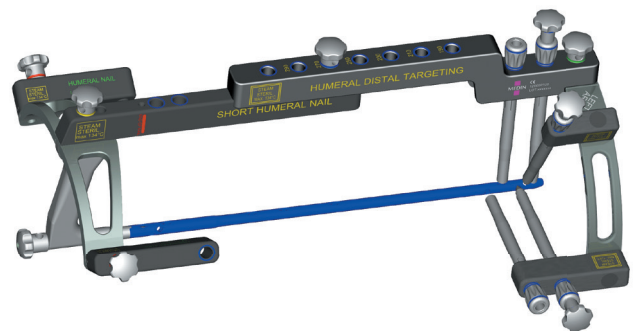
- > Fit the distal humeral aiming device onto the short humeral aiming device [Fig. 8.2]. It is important to test the functionality of the aiming device before inserting the nail into the bone [Fig. 8.3].
- > Insert the blue-marked sleeve (Guide Sleeve; 8/6×110 mm) into the aiming device. Insert the trocar into the sleeve and guide it to the bone. Applying a light pressure on the trocar creates a dent in the bone for better guidance of the drill. Then remove the trocar and insert the sleeve marked in blue and green (Drill Sleeve; 6/2.9×128 mm). Through the above-mentioned sleeve, drill a hole in the bone. The drill is equipped with a scale to determine the required screw length. You can also determine the length of the screw using a depth gauge [Fig. 8.4].



→ Fig. 8.2

→ FREE-HAND DISTAL LOCKING

- > Check the reduction, correct position of fragments and bone length. Adjust the X-ray intensifier so that the hole in the nail appears as a circle (the axis of the hole must be aligned with the axis of the X-rays). Determine the exact location of the incision and make a point incision using the scalpel [Fig. 8.5]. Aim the tip of the drill bit at the centre of the hole. At this point, drill through both cortices.



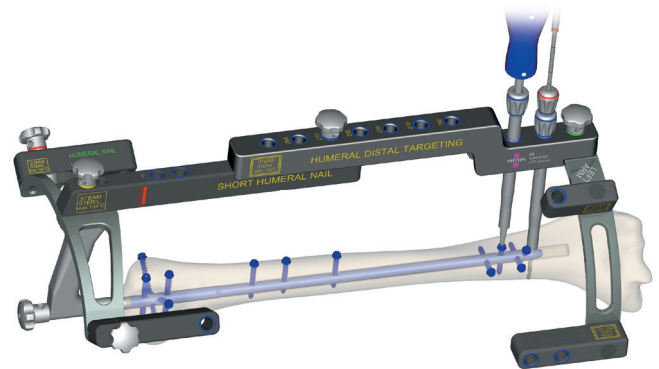
→ Fig. 8.3

⚠ Caution

In order to confirm the correct location and length of the screws, it is necessary to perform an image intensification control in multiple directions.

i Note

The procedure using a distal aiming device is more accurate and can reduce both the fluoroscopic time and the total time of the surgery.



→ Fig. 8.4

→ INSTRUMENTS



REF	Name
397 129 69 6300	Trocar; 6×120 mm
397 129 69 6340	Guide sleeve; 8/6×110 mm
397 129 69 7960	Drill sleeve; 6/2.9×128 mm
397 129 69 7971	Drill; 2.9×230 mm, AO coupling
397 129 69 8080	Depth gauge; 2.4×70 mm
397 129 68 1730	Locking screwdriver; AO, hex, 2.5×160 mm
BD23-110-AO	Handle AO; 30×151 mm
397 129 69 5231	Screwdriver; AO, hex, 2.5×160 mm, conical

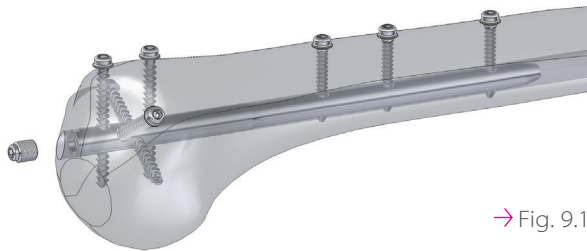


→ Fig. 8.5

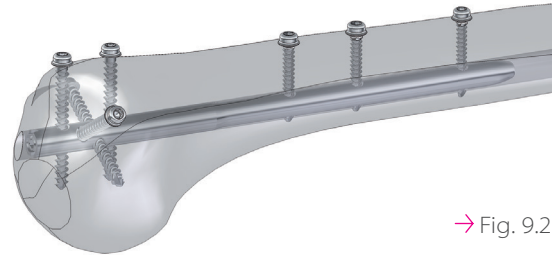
09

CLOSING NAIL WITH END CAPU

- After the nail has been locked in place with the screws, dismantle the aiming device and close the nail with an end cap of the required length [Fig. 9.1 a 9.2].



→ Fig. 9.1



→ Fig. 9.2

10

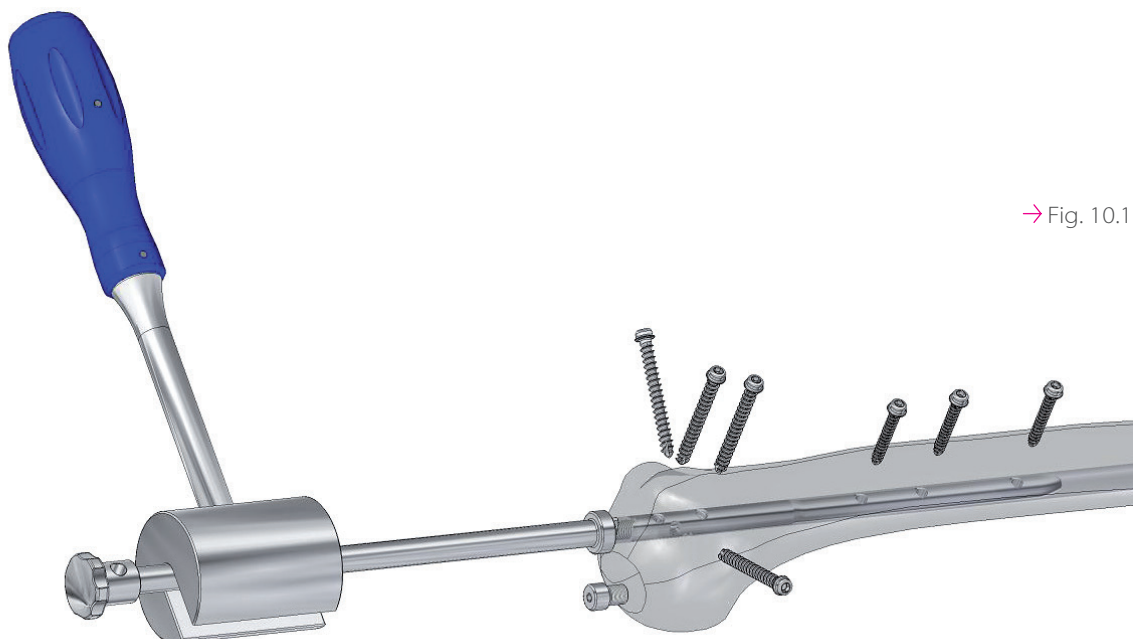
IMPLANT EXTRACTION

- If an end cap was used, it is removed first. After removing the end cap, the hammer guide is inserted into the nail, along which the hammer for implants is guided. If the nail is inserted deeper into the bone cavity, it is possible to first screw the aiming device screw into the nail and then the hammer guide into it. Once the last screw has been removed from the nail, the nail can be extracted from the bone cavity by light hammer blows [Fig. 10.1].

→ INSTRUMENTS

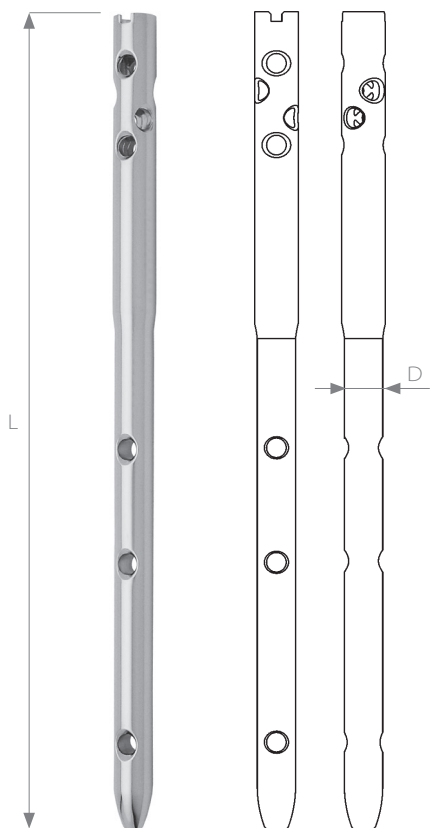


REF	Name
397 129 69 6050	Hammer guide; M6-D8×195 mm
397 129 69 6060	Hammer for implants; universal, 400 g



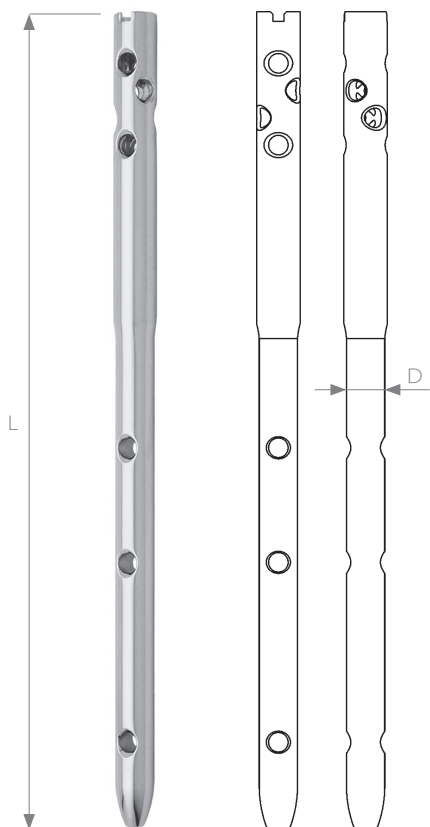
→ Fig. 10.1

→ SHORT HUMERAL NAIL



Short humeral nail; right

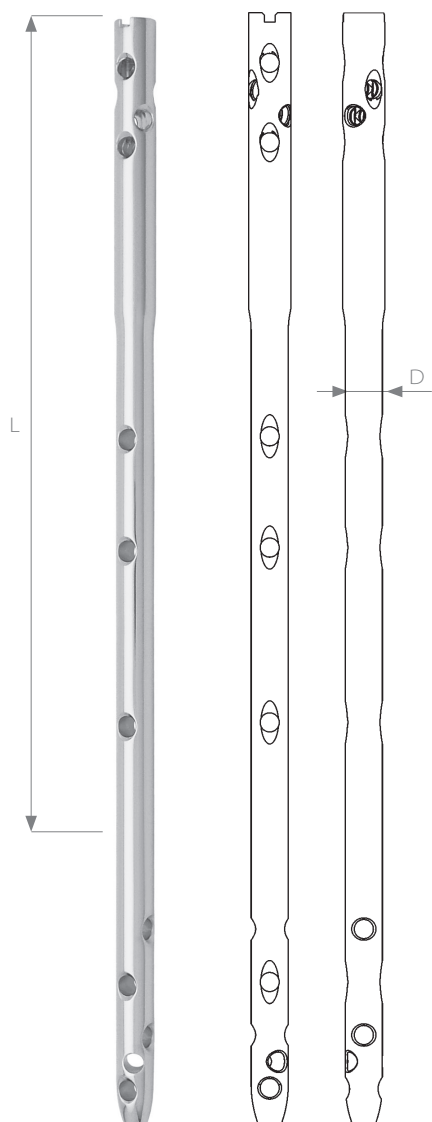
REF		L [mm]	D [mm]
Steel	Titanium		
397 129 77 8680	397 129 77 8683	150	7
397 129 77 8690	397 129 77 8693	150	8
397 129 78 6050	397 129 78 6053	150	9



Short humeral nail; left

REF		L [mm]	D [mm]
Steel	Titanium		
397 129 77 9500	397 129 77 9503	150	7
397 129 77 9510	397 129 77 9513	150	8
397 129 78 6060	397 129 78 6063	150	9

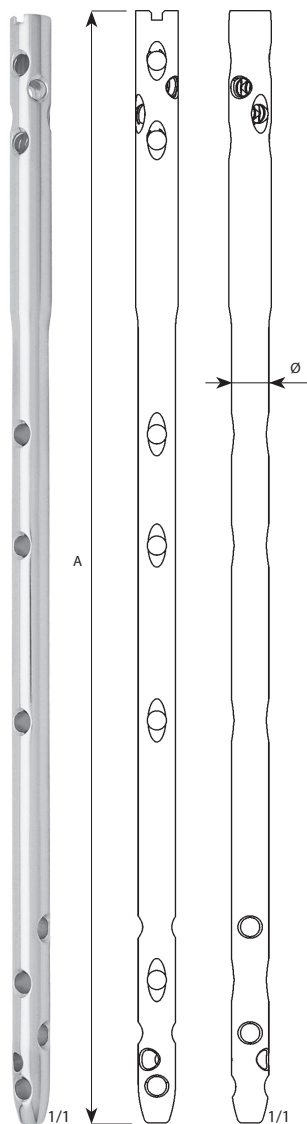
→ LONG HUMERAL NAIL



Long humeral nail; right

REF		L [mm]	D [mm]
Steel	Titanium		
397 129 77 9640	397 129 77 9643	190	7
397 129 77 9650	397 129 77 9653	210	7
397 129 77 9660	397 129 77 9663	230	7
397 129 77 9670	397 129 77 9673	250	7
397 129 77 9680	397 129 77 9683	270	7
397 129 77 9690	397 129 77 9693	290	7
397 129 77 9760	397 129 77 9763	190	8
397 129 77 9770	397 129 77 9773	210	8
397 129 77 9780	397 129 77 9783	230	8
397 129 77 9790	397 129 77 9793	250	8
397 129 77 9800	397 129 77 9803	270	8
397 129 77 9810	397 129 77 9813	290	8

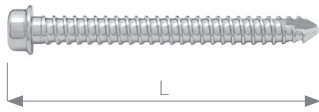
→ LONG HUMERAL NAIL



Long humeral nail; left

REF		L [mm]	D [mm]
Steel	Titanium		
397 129 77 9700	397 129 77 9703	190	7
397 129 77 9710	397 129 77 9713	210	7
397 129 77 9720	397 129 77 9723	230	7
397 129 77 9730	397 129 77 9733	250	7
397 129 77 9740	397 129 77 9743	270	7
397 129 77 9750	397 129 77 9753	290	7
397 129 77 9820	397 129 77 9823	190	8
397 129 77 9830	397 129 77 9833	210	8
397 129 77 9840	397 129 77 9843	230	8
397 129 77 9850	397 129 77 9853	250	8
397 129 77 9860	397 129 77 9863	270	8
397 129 77 9870	397 129 77 9873	290	8

→ LOCKING SCREWS

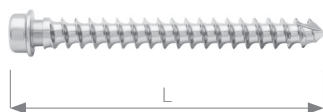


Locking screw; with flat head, strengthened, 3,5×L mm

Technical data	Diameter [mm]
Drill	2.9
Screwdriver	Ø 2.5

REF		L [mm]
Steel	Titanium	
397 129 78 5841	397 129 78 5844	20
397 129 78 5851	397 129 78 5854	22
397 129 78 5861	397 129 78 5864	24
397 129 78 5871	397 129 78 5874	26
397 129 78 5881	397 129 78 5884	28
397 129 78 5891	397 129 78 5894	30
397 129 78 5901	397 129 78 5904	32
397 129 78 5911	397 129 78 5914	34
397 129 78 5921	397 129 78 5924	36
397 129 78 5931	397 129 78 5934	38
397 129 78 5941	397 129 78 5944	40
397 129 78 5951	397 129 78 5954	42
397 129 78 5961	397 129 78 5964	44
397 129 78 5971	397 129 78 5974	46
397 129 78 5981	397 129 78 5984	48
397 129 78 5991	397 129 78 5994	50
397 129 78 6001	397 129 78 6004	55
397 129 78 6011	397 129 78 6014	60
397 129 78 6021	397 129 78 6024	65
397 129 78 6031	397 129 78 6034	70

→ LOCKING SCREWS

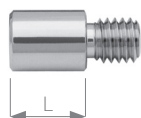


Technical data	Diameter [mm]
Drill	2.7
Screwdriver	⌀ 2.5

Locking screw; with flat head, 4×L mm

REF		L [mm]
Steel	Titanium	
397 129 78 5371	397 129 78 5374	14
397 129 78 5381	397 129 78 5384	16
397 129 78 5391	397 129 78 5394	18
397 129 78 5401	397 129 78 5404	20
397 129 78 5411	397 129 78 5414	22
397 129 78 5421	397 129 78 5424	24
397 129 78 5431	397 129 78 5434	26
397 129 78 5441	397 129 78 5444	28
397 129 78 5451	397 129 78 5454	30
397 129 78 5461	397 129 78 5464	32
397 129 78 5471	397 129 78 5474	34
397 129 78 5481	397 129 78 5484	36
397 129 78 5491	397 129 78 5494	38
397 129 78 5501	397 129 78 5504	40
397 129 78 5511	397 129 78 5514	42
397 129 78 5521	397 129 78 5524	44
397 129 78 5531	397 129 78 5534	46
397 129 78 5541	397 129 78 5544	48
397 129 78 5551	397 129 78 5554	50
397 129 78 5561	397 129 78 5564	55
397 129 78 5571	397 129 78 5574	60

→ END CAPS

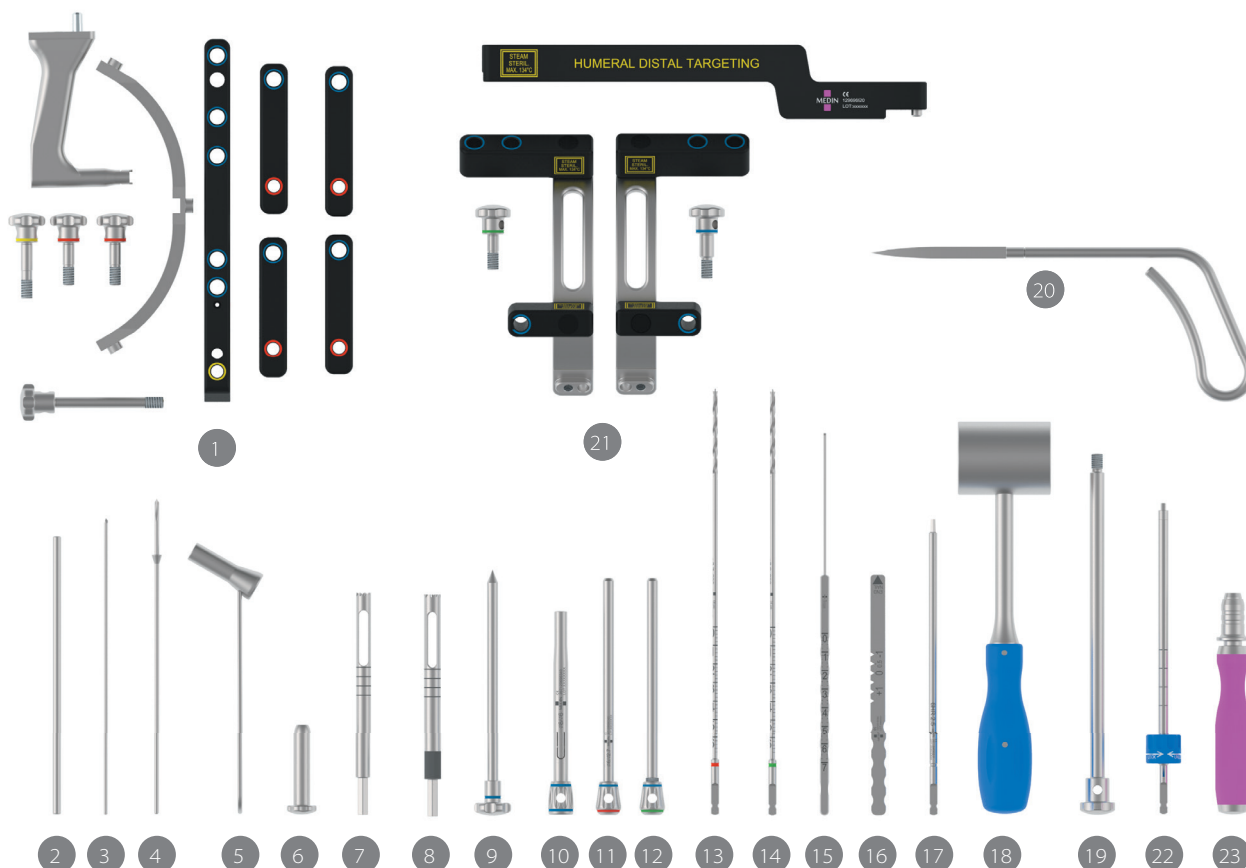


Technical data	Diameter [mm]
Screwdriver	⌀ 2.5

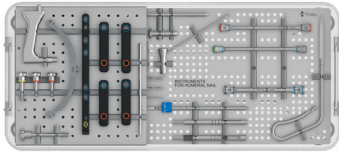
End Cap; L×M6 mm, hex 2.5

REF		L [mm]
Steel	Titanium	
397 129 77 2210	397 129 77 2213	0
397 129 77 2220	397 129 77 2223	5
397 129 77 2230	397 129 77 2233	10
397 129 78 8880	397 129 78 8883	15
397 129 78 8890	397 129 78 8893	20

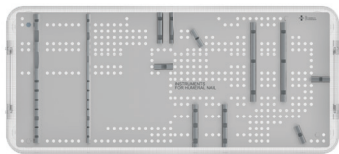
→ INSTRUMENTS FOR HUMERAL NAILS



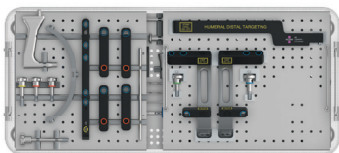
397 139 09 0630 Set of instruments for humeral nails				1
No.	REF	Name		pcs
1	397 129 69 6320	Aiming device for nail; humeral		1
2	397 129 69 6100	Wrench rod; 4.5×150 mm		1
3	397 129 09 3100	K-wire; 2.0×160 mm		2
4	397 129 09 9950	Drill; with stopper 2.5×170 mm		1
5	397 129 69 6090	Drill sleeve; 9×40 mm		1
6	397 129 69 6280	Drill sleeve; 9/2.5×49 mm		1
7	397 129 79 9770	Cutter; 8×120 mm; hexagonal coupling		1
8	397 129 79 9775	Cutter; 9×120 mm; hexagonal coupling		1
9	397 129 69 6300	Trocar; 6×120 mm		1
10	397 129 69 6340	Guide sleeve; 8/6×110 mm		2
11	397 129 69 6350	Drill sleeve; 6/2.7×128 mm		2
12	397 129 69 7960	Drill sleeve; 6/2.9×128 mm		2
13	397 129 69 6291	Drill; 2.7×230 mm, AO coupling		2
14	397 129 69 7971	Drill; 2.9×230 mm, AO coupling		2
15	397 129 69 8080	Depth gauge; 2.4×70 mm		1
16	397 129 69 8090	Ruler; 130 mm		1
17	397 129 69 5231	Screwdriver; AO, hex, 2.5×160 mm, conical		1
18	397 129 69 6060	Hammer for implants; universal, 400 g		1
19	397 129 69 6050	Hammer guide; M6-D8×195 mm		1
20	397 129 69 1670	Perforator; D 9 mm, 73 mm		1
21	397 129 69 6920	Aiming device for nail; humeral, distal aiming		1
22	397 129 68 1730	Locking screwdriver; AO, hex, 2.5×160 mm		1
23	BD23-110-AO	Handle AO; 30×151 mm		1



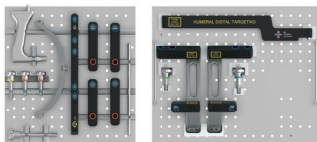
	REF	Name	pcs
	397 139 09 0300	Basket with instruments for humeral nails – 540 x 240 x 70 mm	1



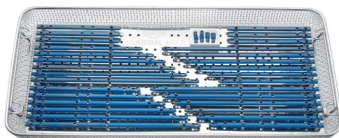
	REF	Name	pcs
	397 129 69 6010	Basket for instruments for humeral nails – 540 x 240 x 70 mm	1



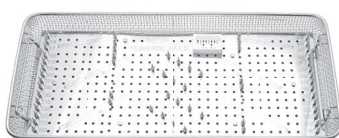
	REF	Name	pcs
	397 139 09 0630	Basket with instruments for humeral nails with distal – 540 x 240 x 70 mm	1



	REF	Name	pcs
	397 139 09 0620	Tray for humeral nails - distal aiming – 540 x 240 x 70 mm	1



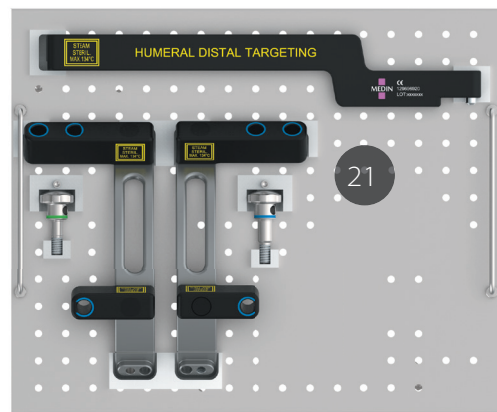
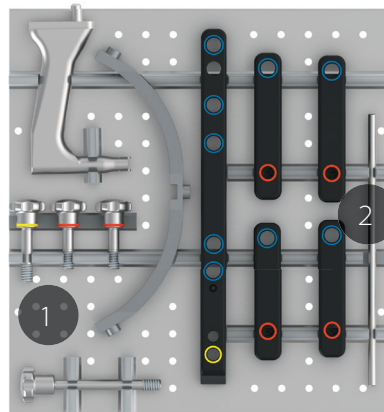
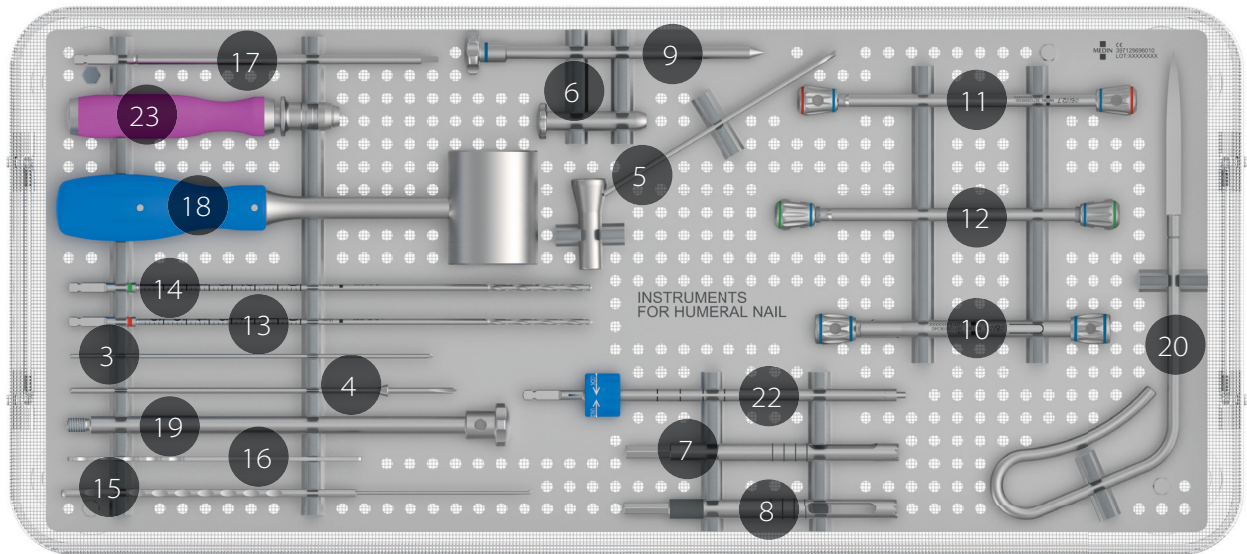
	REF	Name	pcs
	397 139 09 0310	Basket for humeral nails - stainless steel	1
	397 139 09 0313	Basket for humeral nails - Titanium – including implants – 540 x 240 x 50 mm	1



	REF	Name	pcs
	397 129 69 6020	Basket for humeral nails – without implants – 540 x 240 x 50 mm	1

→ INSTRUMENTS DIAGRAM

SÍTO 1



→ INSTRUMENTS

No.	Name
1	Aiming device for nail; humeral
2	Wrench rod; 4.5 x 150 mm
3	K-wire; 2.0 x 160 mm
4	Drill; with stopper 2.5 x 170 mm
5	Drill sleeve; 9 x 40 mm
6	Drill sleeve; 9/2.5 x 49 mm
7	Cutter; 8 x 120 mm; hexagonal coupling
8	Cutter; 9 x 120 mm; hexagonal coupling
9	Trocar; 6 x 120 mm
10	Guide sleeve; 8/6 x 110 mm
11	Drill sleeve; 6/2.7 x 128 mm
12	Drill sleeve; 6/2.9 x 128 mm
13	Drill; 2.7 x 230 mm, AO coupling
14	Drill; 2.9 x 230 mm, AO coupling
15	Depth gauge; 2.4 x 70 mm
16	Ruler; 130 mm
17	Screwdriver; AO, hex, 2.5 x 160 mm, conical
18	Hammer for implants; universal, 400 g
19	Hammer guide; M6-D8 x 195 mm
20	Perforator; D 9 mm, 73 mm
21	Aiming device for nail; humeral, distal aiming
22	Locking screwdriver; AO, hex, 2.5 x 160 mm
23	Handle AO; 30 x 151 mm

> Humeral Nail

REF	UDI-DI	Variant
397 129 77 9700	8591712228490	long, 7×190 mm, left
397 129 77 9640	8591712228421	long, 7×190 mm, right
397 129 77 9710	8591712228506	long, 7×210 mm, left
397 129 77 9650	8591712227820	long, 7×210 mm, right
397 129 77 9720	8591712228513	long, 7×230 mm, left
397 129 77 9660	8591712228445	long, 7×230 mm, right
397 129 77 9730	8591712228520	long, 7×250 mm, left
397 129 77 9670	8591712228452	long, 7×250 mm, right
397 129 77 9740	8591712228537	long, 7×270 mm, left
397 129 77 9680	8591712228025	long, 7×270 mm, right
397 129 77 9750	85917122266171	long, 7×290 mm, left
397 129 77 9690	8591712228476	long, 7×290 mm, right
397 129 77 9500	8591712218422	short, 7×150 mm, left
397 129 77 8680	8591712215186	short, 7×150 mm, right
397 129 77 9820	8591712228636	long, 8×190 mm, left
397 129 77 9760	8591712228568	long, 8×190 mm, right
397 129 77 9830	8591712228643	long, 8×210 mm, left
397 129 77 9770	8591712228261	long, 8×210 mm, right
397 129 77 9840	8591712228650	long, 8×230 mm, left
397 129 77 9780	8591712228254	long, 8×230 mm, right
397 129 77 9850	8591712228667	long, 8×250 mm, left
397 129 77 9790	8591712228100	long, 8×250 mm, right
397 129 77 9860	8591712227752	long, 8×270 mm, left
397 129 77 9800	8591712227998	long, 8×270 mm, right
397 129 77 9870	8591712227905	long, 8×290 mm, left
397 129 77 9810	8591712228629	long, 8×290 mm, right
397 129 77 9510	8591712218439	short, 8×150 mm, left
397 129 77 8690	8591712215209	short, 8×150 mm, right
397 129 78 6060	8591712242281	short, 9×150 mm, left
397 129 78 6050	8591712242274	short, 9×150 mm, right

> Humeral Nail Ti

REF	UDI-DI	Variant
397 129 77 9503	8591712218453	short, 7×150 mm, left
397 129 77 8683	8591712215193	short, 7×150 mm, right
397 129 77 9703	8591712228223	long, 7×190 mm, left
397 129 77 9643	8591712228438	long, 7×190 mm, right
397 129 77 9713	8591712227844	long, 7×210 mm, left
397 129 77 9653	8591712227837	long, 7×210 mm, right
397 129 77 9723	8591712227776	long, 7×230 mm, left
397 129 77 9663	8591712227257	long, 7×230 mm, right
397 129 77 9733	8591712227783	long, 7×250 mm, left
397 129 77 9673	8591712228469	long, 7×250 mm, right
397 129 77 9743	8591712229350	long, 7×270 mm, left
397 129 77 9683	8591712227738	long, 7×270 mm, right
397 129 77 9753	8591712228551	long, 7×290 mm, left
397 129 77 9693	8591712228483	long, 7×290 mm, right
397 129 77 9513	8591712218446	short, 8×150 mm, left
397 129 77 8693	8591712215216	short, 8×150 mm, right
397 129 77 9823	8591712227721	long, 8×190 mm, left
397 129 77 9763	8591712228575	long, 8×190 mm, right
397 129 77 9833	8591712227806	long, 8×210 mm, left
397 129 77 9773	8591712228582	long, 8×210 mm, right
397 129 77 9843	8591712228193	long, 8×230 mm, left
397 129 77 9783	8591712228599	long, 8×230 mm, right
397 129 77 9853	8591712227790	long, 8×250 mm, left
397 129 77 9793	8591712228605	long, 8×250 mm, right
397 129 77 9863	8591712228674	long, 8×270 mm, left
397 129 77 9803	8591712228612	long, 8×270 mm, right
397 129 77 9873	8591712228681	long, 8×290 mm, left
397 129 77 9813	8591712227745	long, 8×290 mm, right
397 129 78 6063	8591712242304	short, 9×150 mm, left
397 129 78 6053	8591712242298	short, 9×150 mm, right

➤ Locking screw with flat head

REF	UDI-DI	Variant
397 129 78 5371	8591712263385	4×14 mm
397 129 78 5381	8591712263729	4×16 mm
397 129 78 5391	8591712263705	4×18 mm
397 129 78 5401	8591712245671	4×20 mm
397 129 78 5411	8591712263712	4×22 mm
397 129 78 5421	8591712249105	4×24 mm
397 129 78 5431	8591712248993	4×26 mm
397 129 78 5441	8591712245664	4×28 mm
397 129 78 5451	8591712249082	4×30 mm
397 129 78 5461	8591712248979	4×32 mm
397 129 78 5471	8591712248900	4×34 mm
397 129 78 5481	8591712249075	4×36 mm
397 129 78 5491	8591712249099	4×38 mm
397 129 78 5501	8591712248962	4×40 mm
397 129 78 5511	8591712249112	4×42 mm
397 129 78 5521	8591712245701	4×44 mm
397 129 78 5531	8591712245695	4×46 mm
397 129 78 5541	8591712249204	4×48 mm
397 129 78 5551	8591712248986	4×50 mm
397 129 78 5561	8591712249129	4×55 mm
397 129 78 5571	8591712248894	4×60 mm
397 129 78 5841	8591712234316	strengthened, 3,5×20 mm
397 129 78 5851	8591712234279	strengthened, 3,5×22 mm
397 129 78 5861	8591712234323	strengthened, 3,5×24 mm
397 129 78 5871	8591712234286	strengthened, 3,5×26 mm
397 129 78 5881	8591712234330	strengthened, 3,5×28 mm
397 129 78 5891	8591712234309	strengthened, 3,5×30 mm
397 129 78 5901	8591712234347	strengthened, 3,5×32 mm
397 129 78 5911	8591712234354	strengthened, 3,5×34 mm
397 129 78 5921	8591712234361	strengthened, 3,5×36 mm
397 129 78 5931	8591712234378	strengthened, 3,5×38 mm
397 129 78 5941	8591712234385	strengthened, 3,5×40 mm
397 129 78 5951	8591712234392	strengthened, 3,5×42 mm
397 129 78 5961	8591712234408	strengthened, 3,5×44 mm
397 129 78 5971	8591712234293	strengthened, 3,5×46 mm
397 129 78 5981	8591712234415	strengthened, 3,5×48 mm
397 129 78 5991	8591712234422	strengthened, 3,5×50 mm
397 129 78 6001	8591712234439	strengthened, 3,5×55 mm
397 129 78 6011	8591712234446	strengthened, 3,5×60 mm
397 129 78 6021	8591712234453	strengthened, 3,5×65 mm
397 129 78 6031	8591712234460	strengthened, 3,5×70 mm

➤ End cap

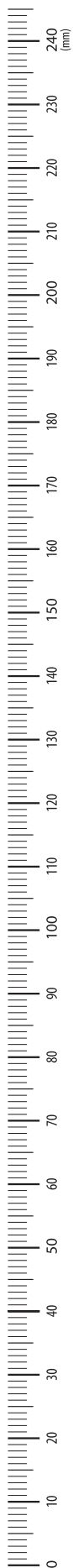
397 129 77 2210	8591712029691	L0×M6 mm, 6HR 2.5
397 129 77 2220	8591712106156	D8×L5×M6 mm, 6HR 2.5
397 129 77 2230	8591712106163	D8×L10×M6 mm, 6HR 2.5
397 129 78 8880	8591712240140	D8×L15×M6 mm, 6HR 2.5
397 129 78 8890	8591712240157	D8×L20×M6 mm, 6HR 2.5

➤ Locking screw with flat head Ti

REF	UDI-DI	Variant
397 129 78 5374	8591712263965	4×14 mm
397 129 78 5384	8591712263996	4×16 mm
397 129 78 5394	8591712267055	4×18 mm
397 129 78 5404	8591712249143	4×20 mm
397 129 78 5414	8591712249174	4×22 mm
397 129 78 5424	8591712249150	4×24 mm
397 129 78 5434	8591712249181	4×26 mm
397 129 78 5444	8591712249198	4×28 mm
397 129 78 5454	8591712238178	4×30 mm
397 129 78 5464	8591712238215	4×32 mm
397 129 78 5474	8591712238222	4×34 mm
397 129 78 5484	8591712238208	4×36 mm
397 129 78 5494	8591712238239	4×38 mm
397 129 78 5504	8591712238246	4×40 mm
397 129 78 5514	8591712238192	4×42 mm
397 129 78 5524	8591712238253	4×44 mm
397 129 78 5534	8591712238185	4×46 mm
397 129 78 5544	8591712238260	4×48 mm
397 129 78 5554	8591712238277	4×50 mm
397 129 78 5564	8591712249211	4×55 mm
397 129 78 5574	8591712249662	4×60 mm
397 129 78 5844	8591712239625	strengthened, 3,5×20 mm
397 129 78 5854	8591712267062	strengthened, 3,5×22 mm
397 129 78 5864	8591712239632	strengthened, 3,5×24 mm
397 129 78 5874	8591712239649	strengthened, 3,5×26 mm
397 129 78 5884	8591712239656	strengthened, 3,5×28 mm
397 129 78 5894	8591712239663	strengthened, 3,5×30 mm
397 129 78 5904	8591712239670	strengthened, 3,5×32 mm
397 129 78 5914	8591712239687	strengthened, 3,5×34 mm
397 129 78 5924	8591712239694	strengthened, 3,5×36 mm
397 129 78 5934	8591712239700	strengthened, 3,5×38 mm
397 129 78 5944	8591712239717	strengthened, 3,5×40 mm
397 129 78 5954	8591712239724	strengthened, 3,5×42 mm
397 129 78 5964	8591712239731	strengthened, 3,5×44 mm
397 129 78 5974	8591712239748	strengthened, 3,5×46 mm
397 129 78 5984	8591712239755	strengthened, 3,5×48 mm
397 129 78 5994	8591712239762	strengthened, 3,5×50 mm
397 129 78 6004	8591712239779	strengthened, 3,5×55 mm
397 129 78 6014	8591712239786	strengthened, 3,5×60 mm
397 129 78 6024	8591712239793	strengthened, 3,5×65 mm
397 129 78 6034	8591712239809	strengthened, 3,5×70 mm

➤ End cap Ti

397 129 77 2213	8591712146619	L0×M6 mm, 6HR 2.5
397 129 77 2223	8591712146336	D8×L5×M6 mm, 6HR 2.5
397 129 77 2233	8591712146343	D8×L10×M6 mm, 6HR 2.5
397 129 78 8883	8591712240447	D8×L15×M6 mm, 6HR 2.5
397 129 78 8893	8591712240430	D8×L20×M6 mm, 6HR 2.5



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