

SURGICAL TECHNIQUE  
INSTRUMENT SET FOR NAIL EXTRACTION



Instructions for use of the set for nail extraction – PL0236.

## Medical device description

### Indications:

THE SET IS DESIGNED FOR THE EXTRACTION OF MEDIN NAILS. IT IS ALSO POSSIBLE TO USE THE SET FOR EXTRACTION OF DAMAGED OR BROKEN NAILS. THE SET CONTAINS M6\_M8 EXTRACTORS THAT CAN BE USED TO EXTRACT THE NAILS FROM THE OTHER MANUFACTURERS. IT IS NECESSARY TO VERIFY COMPATIBILITY BEFORE USE. IT IS POSSIBLE TO USE THE SET 397 139 09 0650 FOR THE SCREW EXTRACTION WHEN HAVING PROBLEMS REMOVING THE SCREW FROM THE NAIL.

### The nail assortment for which the set is intended:

Nail type	Connection size
Intramedullary femoral nail	M8 × 1
Retrograde intramedullary femoral nail	M8 × 1
Reconstruction nail	M8 × 1
Lateral femoral nail	M8 × 1
Intramedullary tibial nail	M8 × 1
Tibiototalcaneal retrograde nail	M8 × 1
C-NAIL calcaneal nail	M6 × 1
Tibial nail	M6 × 1
Short humeral nail	M6 × 1
Long humeral nail	M6 × 1

## 1. SURGICAL TECHNIQUE

### 1. Extraction of an undamaged screw

#### Incision

– the surgeon will define the size of the incision. It should be large enough so that the screw to be extracted is clearly visible.

#### Cleaning of the internal hexagon

– the screw hexagon must be properly free of in-grown tissue. Proper cleaning is necessary for correct insertion of a screwdriver. (Fig. 1a)

#### Removal of the screw

– when releasing the screw ensure the screwdriver is in the screw axis and the screwdriver is fully placed in the screw head before extraction.

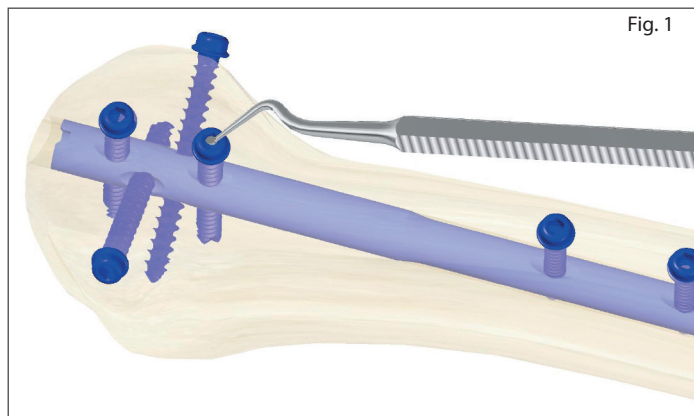


Fig. 1

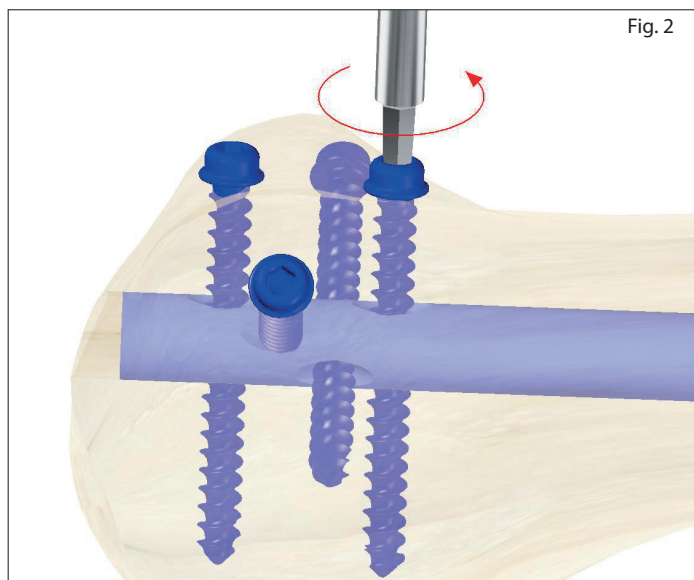


Fig. 2

## 2a. Extraction of the nail with an undamaged thread

a) Use the M6\_M8 adapter or the mallet axis for the nails with the internal thread M6.

The M6\_M8 adapter or the mallet axis is used for the nails:

Nail type	Connection size
C-NAIL calcaneal nail	M6 × 1
Humeral nail	M6 × 1
Short humeral nail	M6 × 1
Long humeral nail	M6 × 1

b) Use the extraction rod for the nails with the internal thread M8.

The internal thread is used for the nails:

Nail type	Connection size
Intramedullary femoral nail	M8 × 1
Retrograde intramedullary femoral nail	M8 × 1
Reconstruction nail	M8 × 1
Lateral femoral nail	M8 × 1
Intramedullary tibial nail	M8 × 1
Tibiototalcalcaneal retrograde nail	M8 × 1

**1. Screw the adaptor or the rod into the nail before the extraction of the last screw.** (Fig. 3)

This prevents the nail retraction deeper into the bone cavity. Subsequently screw the extraction rod with a mallet and handle and remove the last screw from the nail. Then extract the nail from the bone using light hits. (Fig. 4)



Fig. 3

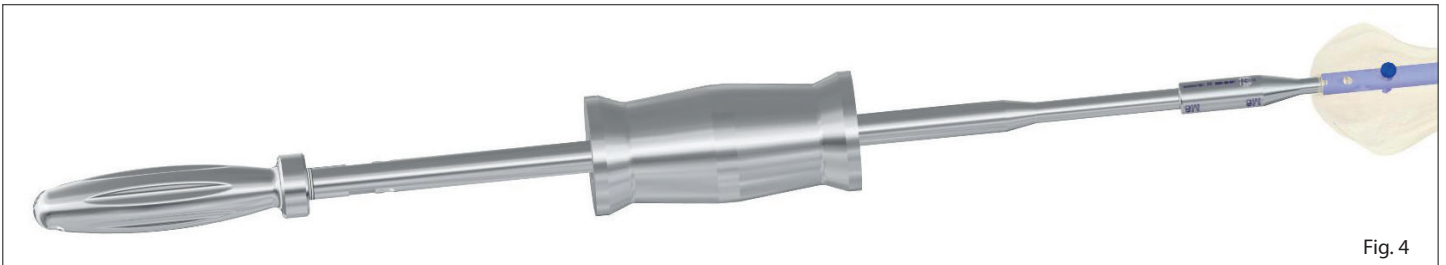


Fig. 4

**2. Screw the mallet axis into the nail before the extraction of the last screw.** (Fig. 5)

This prevents the nail retraction deeper into the bone cavity. Subsequently remove the last screw from the nail. Then extract the nail from the bone using the light hits with mallet into the mallet axis.

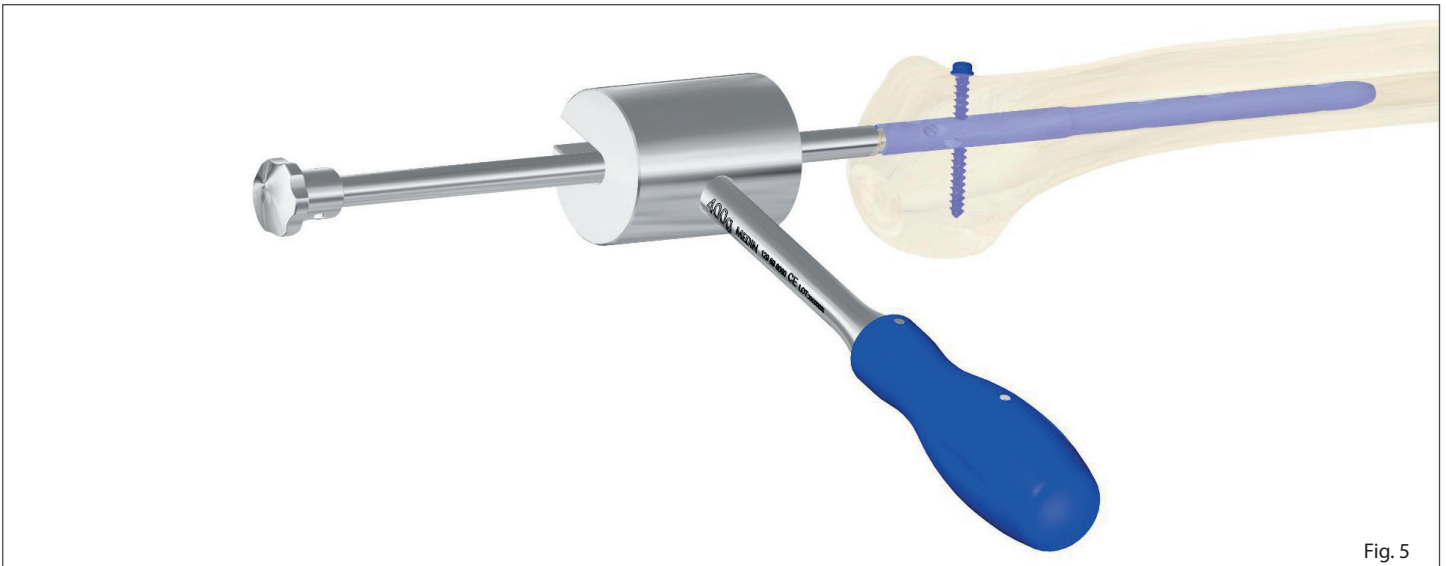


Fig. 5

## 2b. Extraction of the nail with a damaged thread using the M6\_M8 extractor

**Screw the extractor into the nail before the extraction of the last screw.** (Fig. 6)

The grooves on the function part also enable screwing into the damaged nail. Make sure that the extractor holds in the nail using the tension after screwing in. Subsequently screw the extraction rod with a mallet and handle and remove the last screw from the nail. Then extract the nail from the bone using the light hits. (Fig. 7)

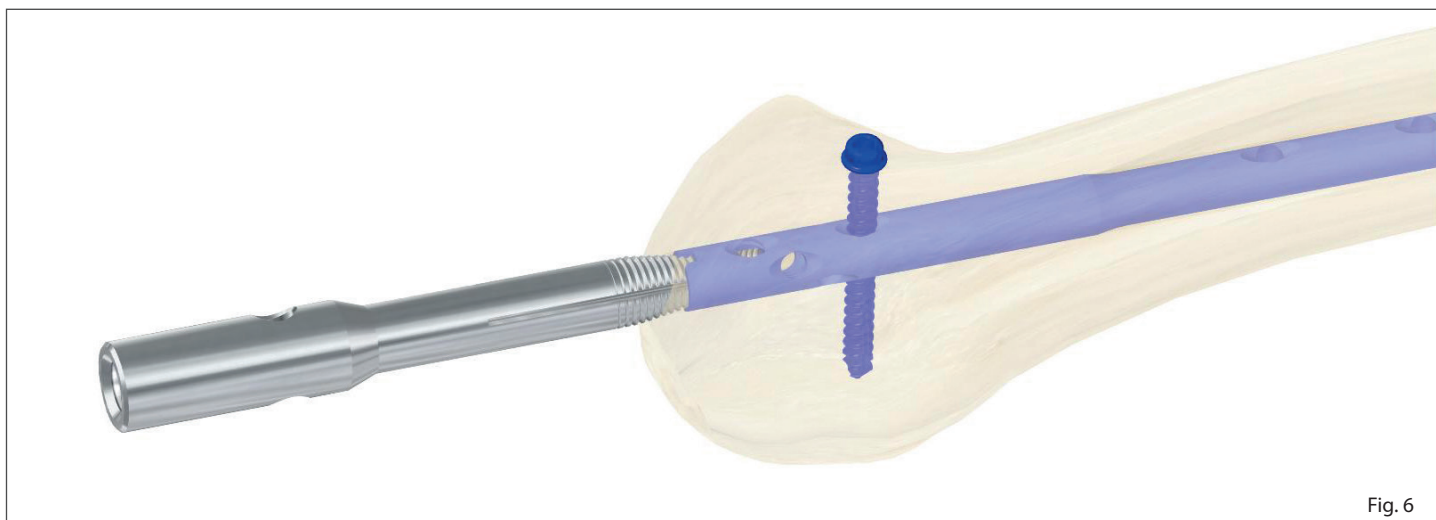


Fig. 6

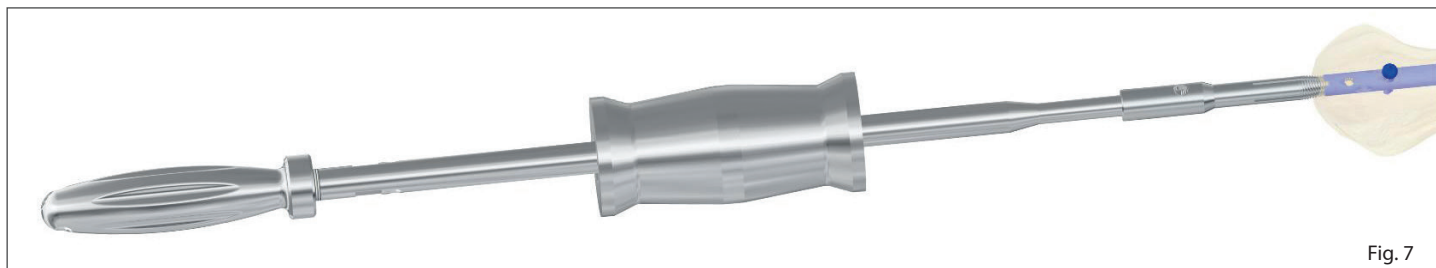


Fig. 7

## 3. Extraction of the nail from the femur neck at the reconstruction nail

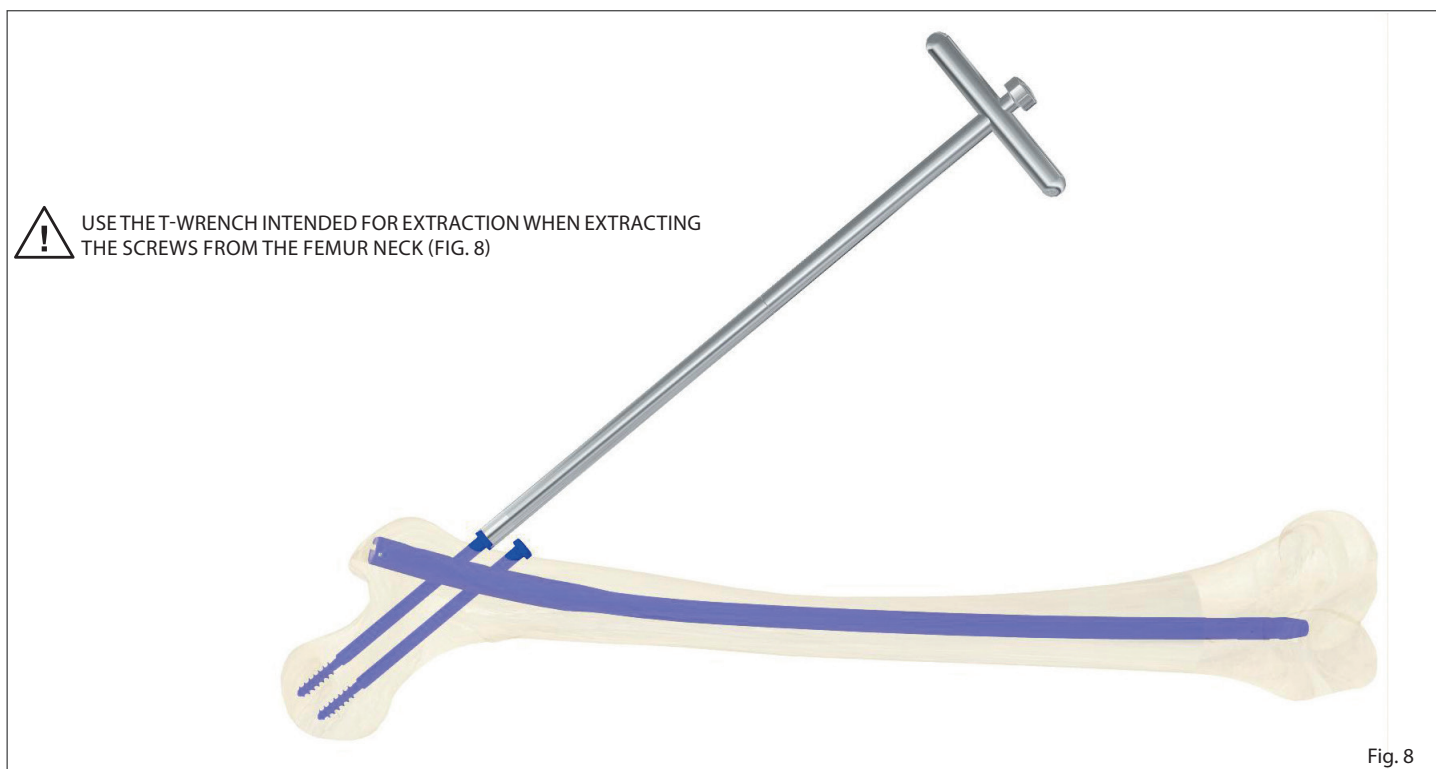


Fig. 8

#### 4a. Extraction of broken cannulated nail

There are two types of the extraction rods. (Fig. 9)

The longer ones for nails up to 500 mm of the length, the shorter ones for nails up to 250 mm. Connect the identified length of the rod with handle and introduce into the nail cavity. Then check using a light tension if the hook is stuck at the end of the nail. Subsequently place the mallet and extract the nail from the bone cavity using light hits (Fig. 10a, 10b). Try to extract both parts of the nail at once.

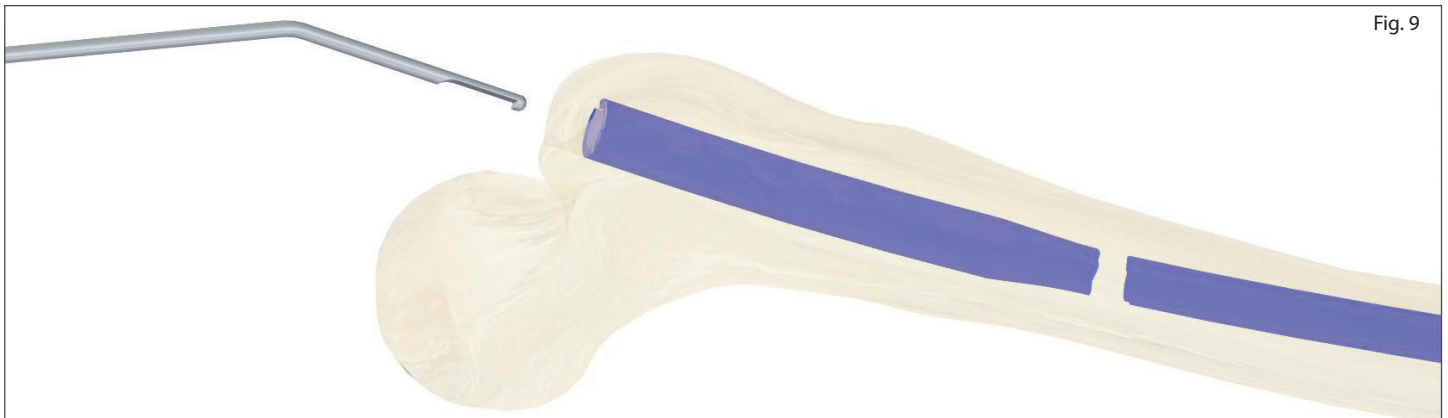


Fig. 9

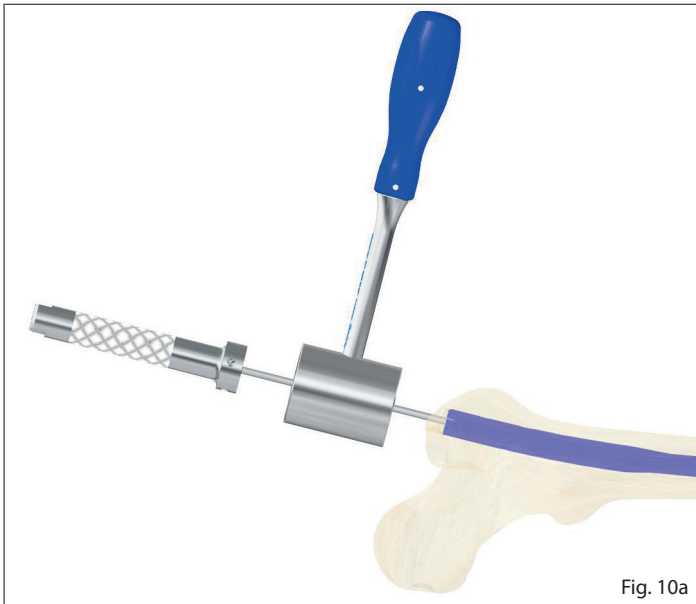


Fig. 10a



Fig. 10b

#### 4b. Extraction of broken cannulated nail

If it is not possible to extract both parts of the nail at once, extract a proximal part using the extraction rod or M6\_M8 extractor first, see previous chapters.

Re-drill the hole using the flexible cutter at least 2 mm bigger than the extracted nail after the extraction of the proximal part (Fig. 11a) and subsequently use the extraction rod with the hook to extract a distal part of the nail (Fig. 11b, 11c). The enlargement of the bone diameter prevents the broken nail from being stuck in the bone cavity.



Fig. 11a



Fig. 11b



Fig. 11c

4c. Extraction of broken nail

If it is not possible to extract both parts of the nail at once, extract a proximal part using the extraction rod or M6\_M8 extractor first, see previous chapters. Re-drill the hole using a flexible cutter at least 2 mm bigger than the extracted nail after the extraction of the proximal part and use the punching rod if it is not possible to extract a distal part of the nail using the extraction rod with the hook. Create a hole in the bone under the nail using a cutter or gouge. Then free the nail in the bone using the punching rod. Subsequently try again to extract the nail using the extraction rod. If the extraction fails repeat a whole procedure again.



ONLY THE PUNCHING ROD IS USED FOR THE EXTRACTION OF THE FULL NAILS.

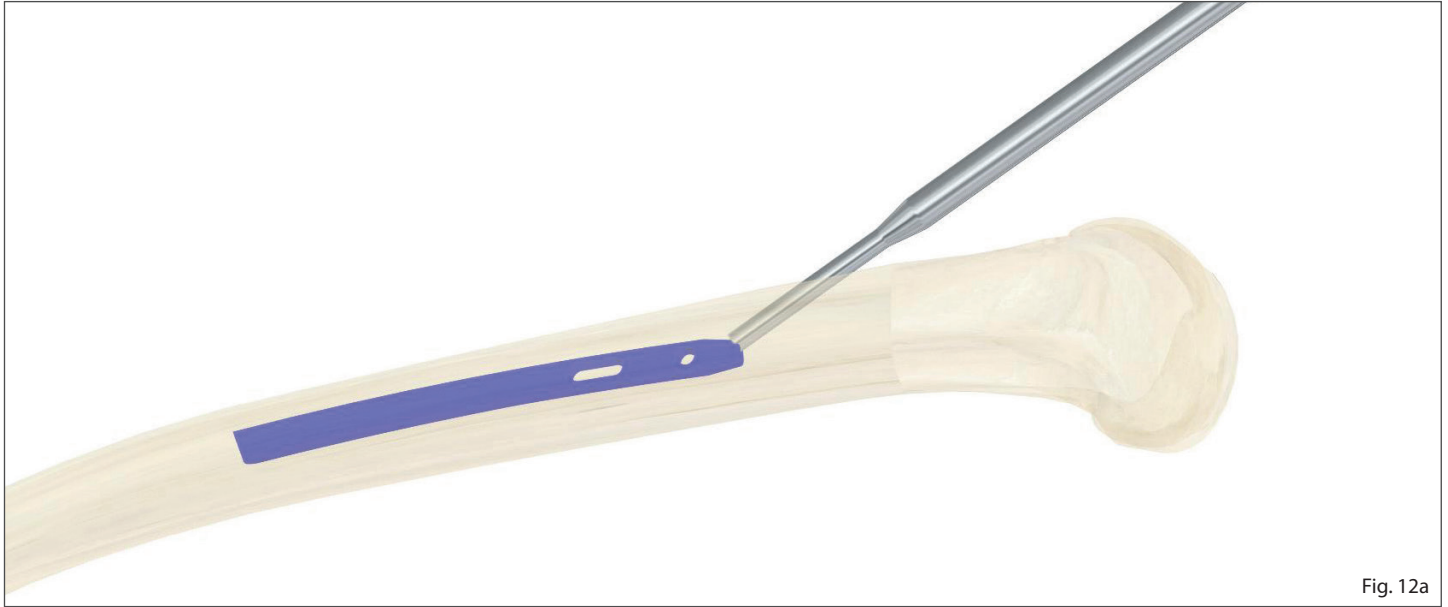


Fig. 12a

It is possible to punch out the nail in the opposite direction in some cases. Create a hole for the nail extraction first. Then create a hole in the bone over the nail to enable the insertion of the punching rod and extract the nail using the light hits.

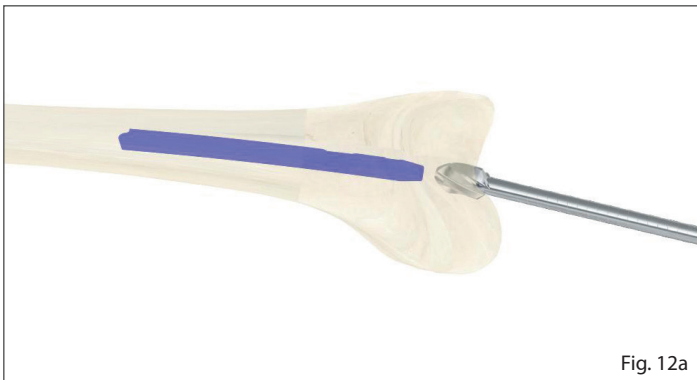


Fig. 12a

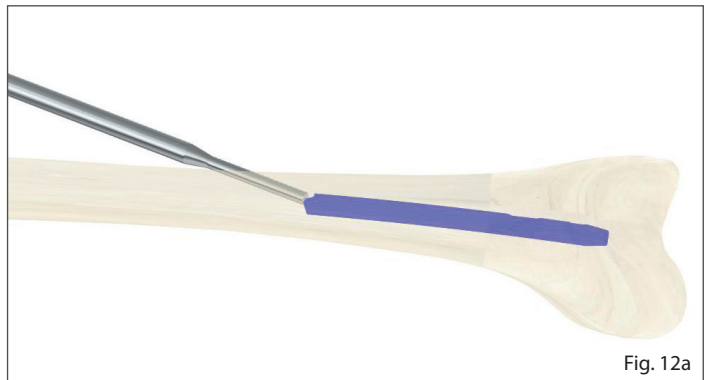
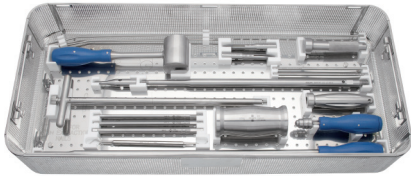


Fig. 12a





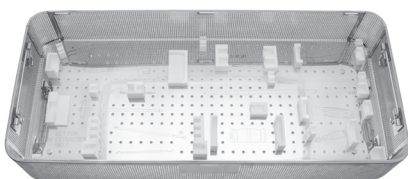
**139 09 0660** Set for nail extraction  
540 × 240 × 90 mm  
including instruments



**129 69 7855**

set

			pcs
1	<b>129 69 1590</b>	T-Wrench	1
2	<b>129 69 1610</b>	Extraction bar 350 mm	1
3	<b>129 69 5131</b>	Handle	1
4	<b>129 69 5231</b>	Screwdriver hexagonal 2.5×160 mm	2
5	<b>129 69 5251</b>	Screwdriver hexagonal 3.5×160 mm	2
6	<b>129 69 5273</b>	Screwdriver hexagonal 5×160 mm	2
7	<b>129 69 6050</b>	Mallet axis	1
8	<b>129 69 6060</b>	Mallet 400 g	1
9	<b>129 69 6100</b>	Wrench rod	2
10	<b>129 69 7820</b>	Connecting piece M6_M8 mm	1
11	<b>129 69 7830</b>	Extractor M6_M8 mm	2
12	<b>129 69 7840</b>	Punching rod	1
13	<b>129 99 1012</b>	Extractor of broken cannulated nails	1
14	<b>148 51 0100</b>	Excavator double-faced 1.5 mm; 17.0 cm	1
15	<b>P3400351</b>	Weight 1000 g	1
16	<b>P3403565</b>	Handle	1



**129 69 7850** Sieve for instruments for nail extraction  
540 × 240 × 90 mm  
excluding instruments

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