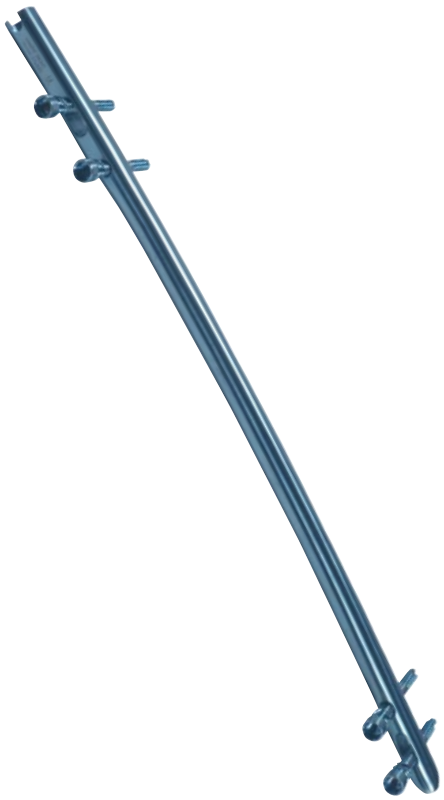
Operative technique



Dinamic T Femur

Intramedullary nail

INTERNAL fixation

nails

citieffe®

Essential moves in Trauma

This operative technique is intended for orthopaedic surgeons and describes the standard procedure suggested by the manufacturer. Surgeons should however decide on the best approach to be followed depending on their clinical judgment and the patient's needs.

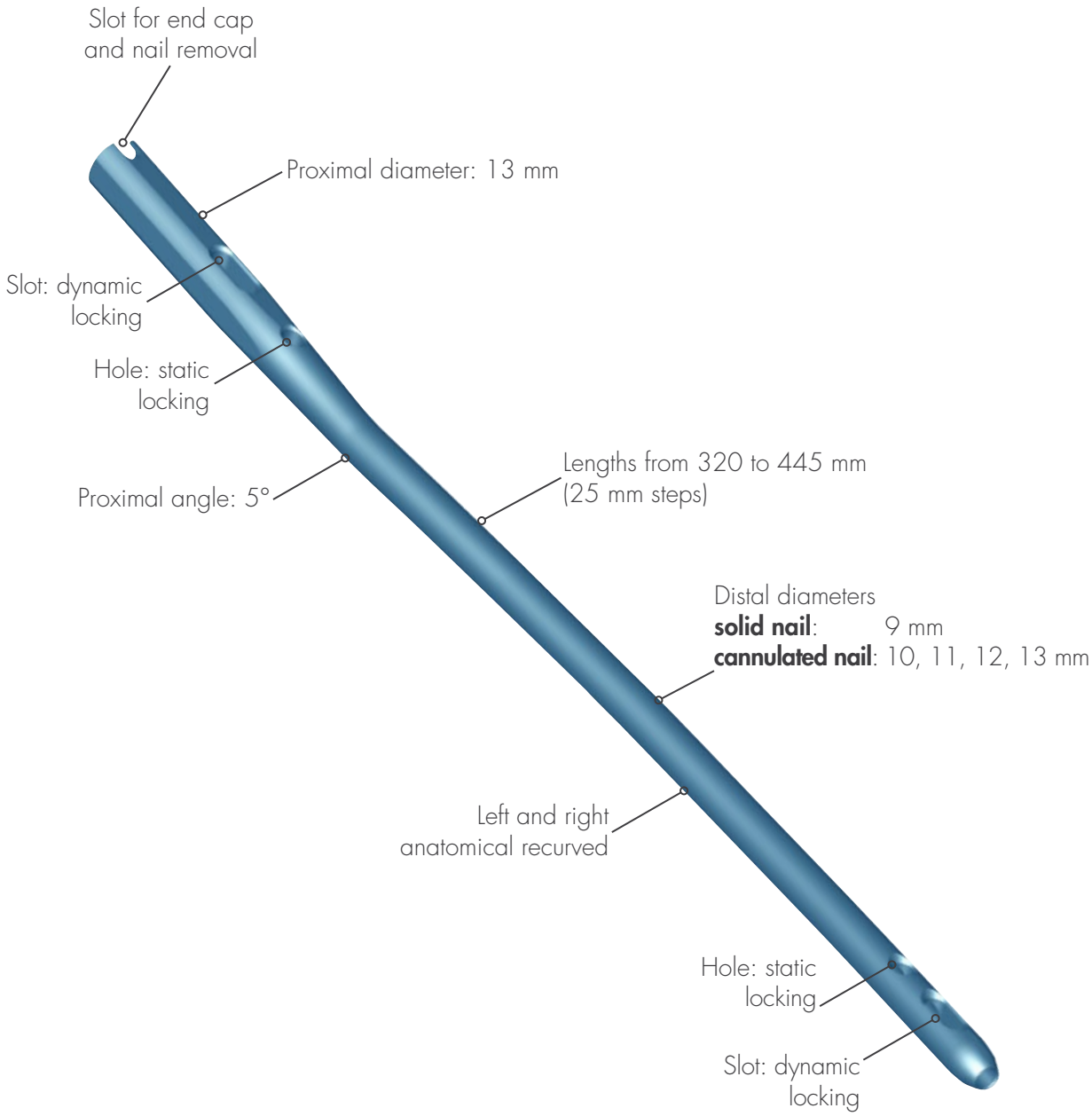
Before use please read the instruction booklet enclosed in the packaging.

Contents

citieffe®
Essential moves in Trauma

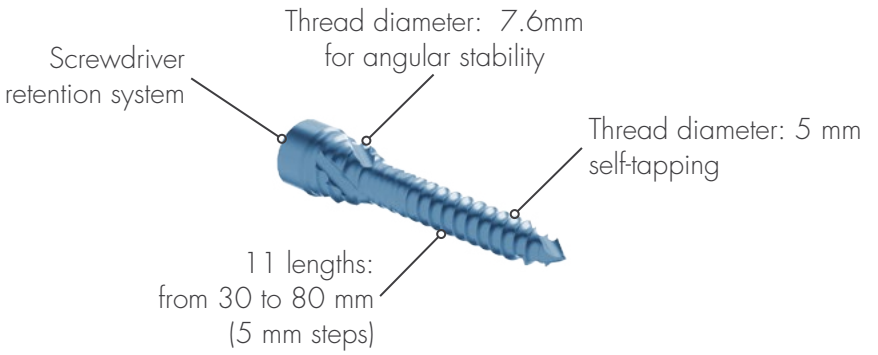
Product description

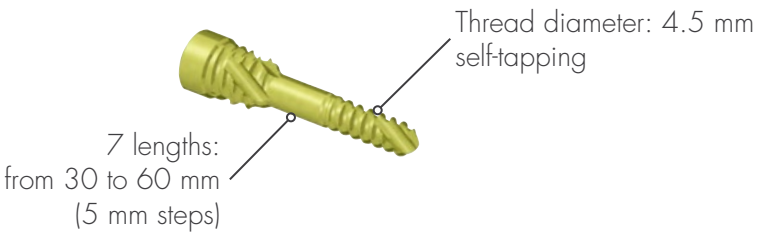
Nail
Indicated for the treatament of diaphyseal femur fractures



Product description

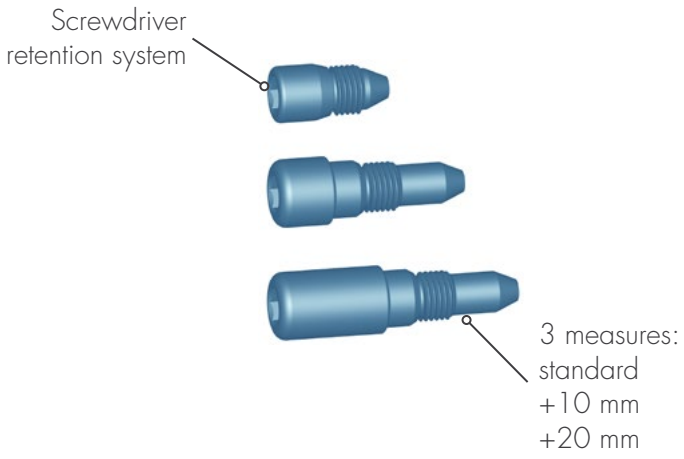
Cortical screw



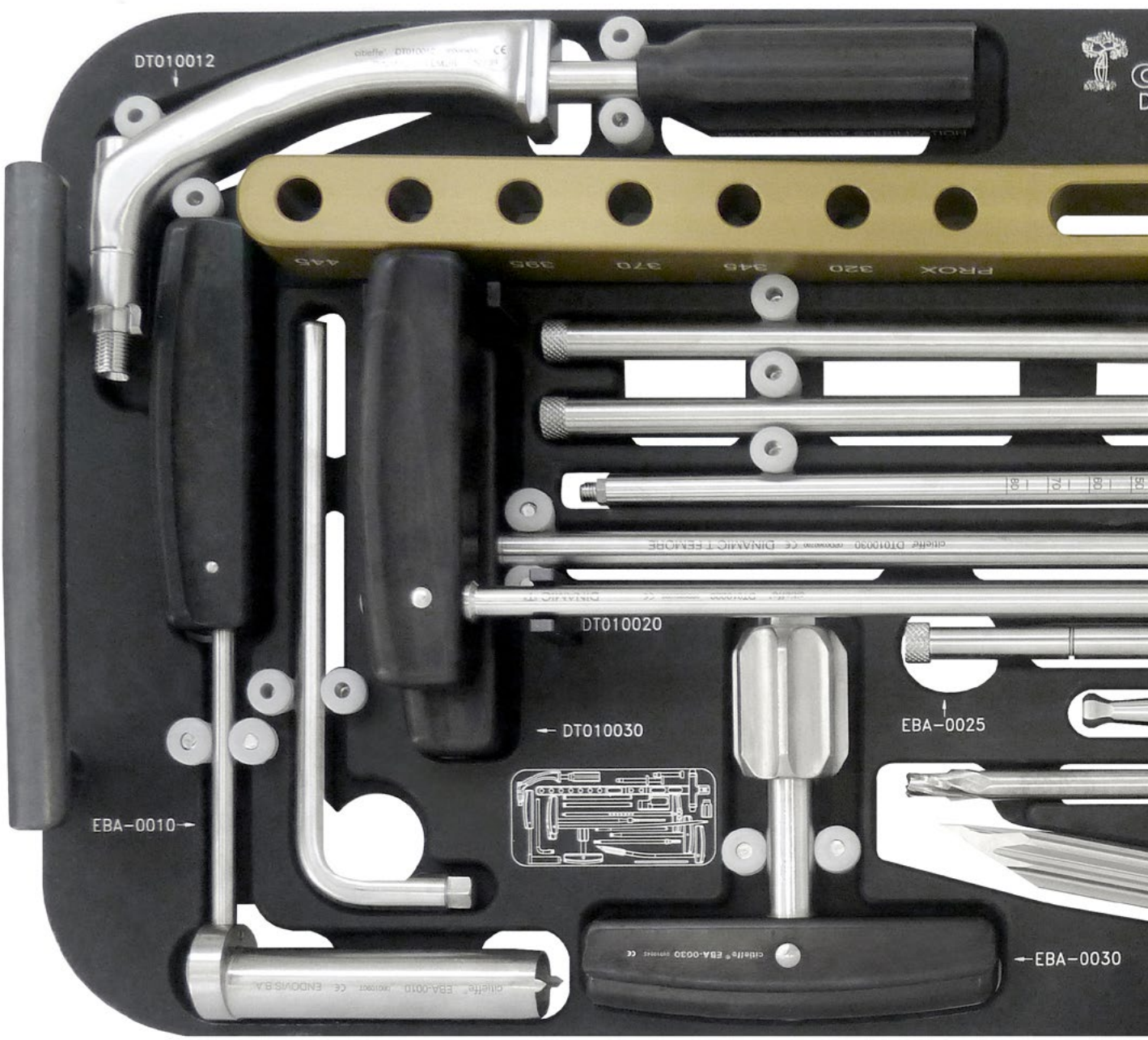


Only for solid nail distal holes

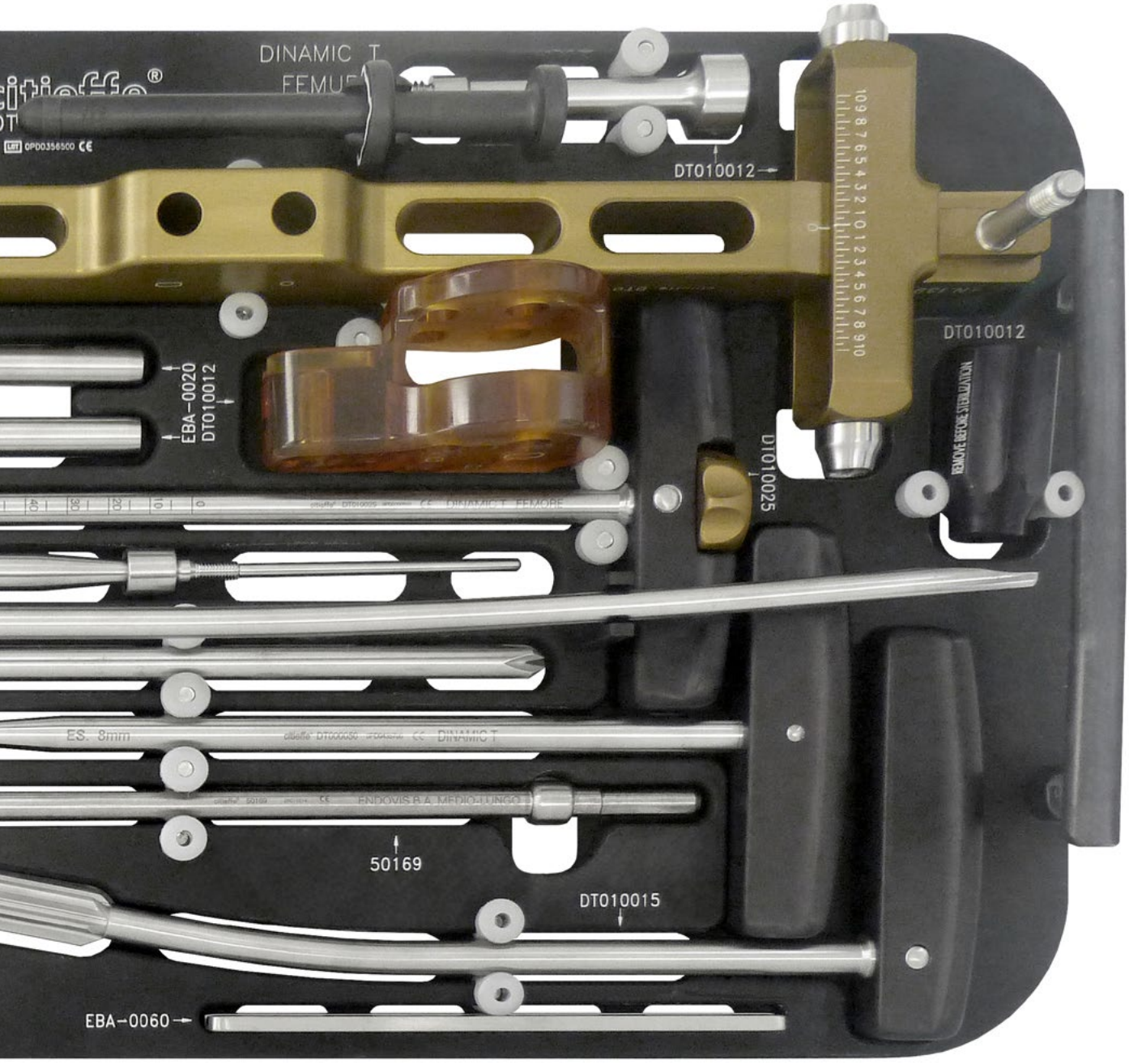
End cap



Instruments



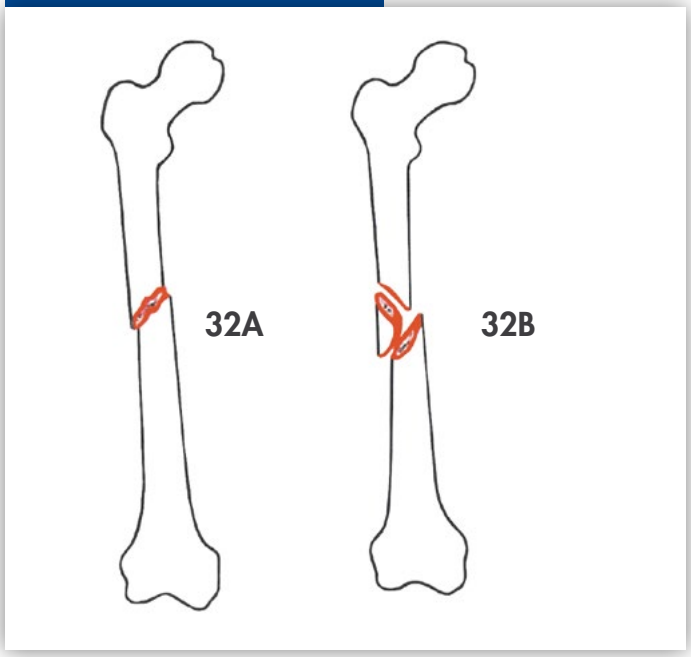
Code No.	Description	Q.ty
50169	Cannulated drill bit, ø6.5 mm	1
DT000040	Allen wrench, 8 mm	1
DT000050	Hexagonal T-wrench, 8 mm	1
DT010012	Dinamic T Femur centering guide	1
DT010015	Cannulated awl	1
DT010020	Fracture alignment guide wire exchange tool	1
DT010025	Hexagonal screwdriver	1



Code No.	Description	Q.ty
DT010030	Compaction device	1
EBA-0010	Tissue protection sleeve	1
EBA-0020	Cannula ø10 mm	2
EBA-0025	Trocar	1
EBA-0030	Chuck for ø2.5-3 mm guide wires	1
EBA-0060	Screw length ruler	1
DT011000	Dinamic T Femur instrument tray, empty	

Indications, patient positioning and incision

Figure 1

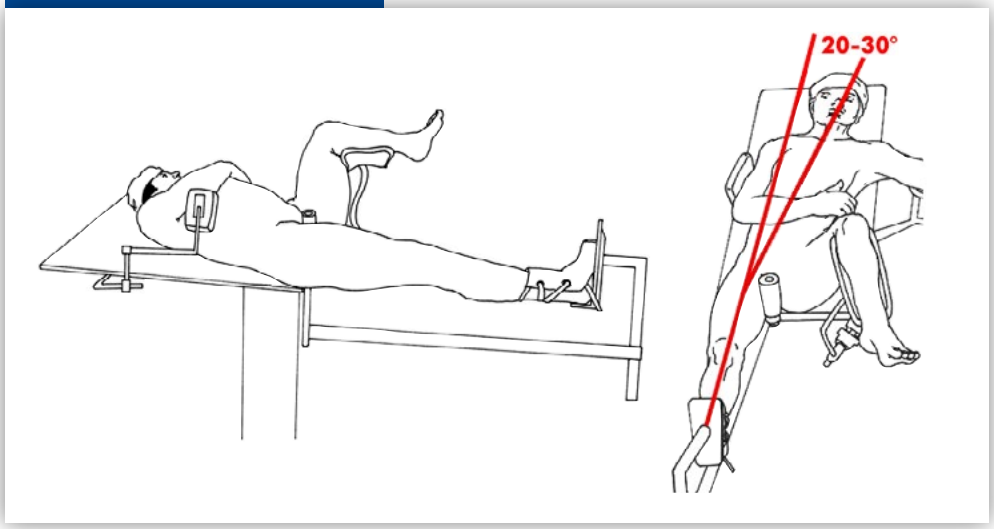


Indications

Treatment of simple and complex diaphyseal femoral fractures

Treatment of femoral diaphyseal non unions

Figure 2



Patient position

Position the patient with the affected limb in traction. The contralateral hip and knee are flexed to 90° to allow use of the image intensifier. The trunk is tilted 20-30° towards the contralateral limb. Check the fracture position and perform reduction manoeuvres as necessary.

Incision

The incision extends proximally 5 - 6 cm from the tip of the greater trochanter.

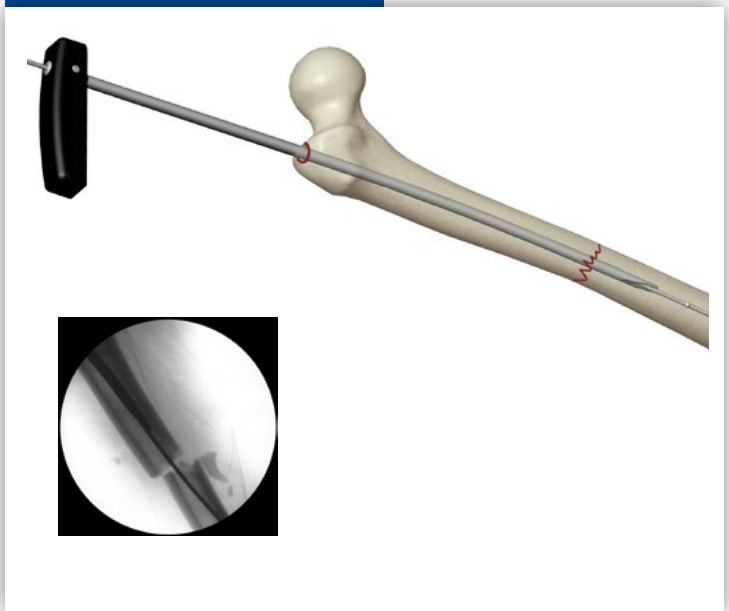
Proximal locking

Figure 3

Reaming

Insert the cannulated awl into the tissue protection sleeve and, under image intensifier control, push it down to the tip of the greater trochanter. Check the position in two planes and insert it with rotary movement into the medullary canal.
Mount the chuck on the 3øx750mm graduated guide wire with olive; insert the wire through the awl and across the fracture under image intensifier control.
Remove the awl and tissue protection sleeve.

Figure 4



Fracture reduction

The fracture alignment and guide wire exchange tool can be used if necessary to reduce and align the fracture to allow passage of the guide wire.
The femoral canal should be reamed to a diameter at least 1.5 mm larger than the diameter of the proposed nail. Power reaming should always be carried out over the olive-tipped guide wire using the tissue protection sleeve.

REQUIRED INSTRUMENTS

DT010015
Cannulated awl

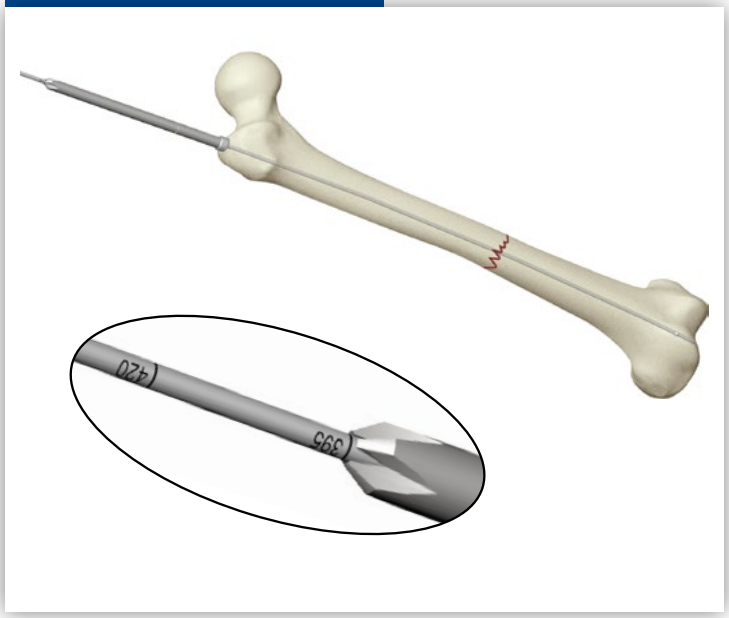
EBA-0010
Tissue protection sleeve

EBA-0030
Chuck for wires

DT010020
Fracture alignment tool

Proximal locking

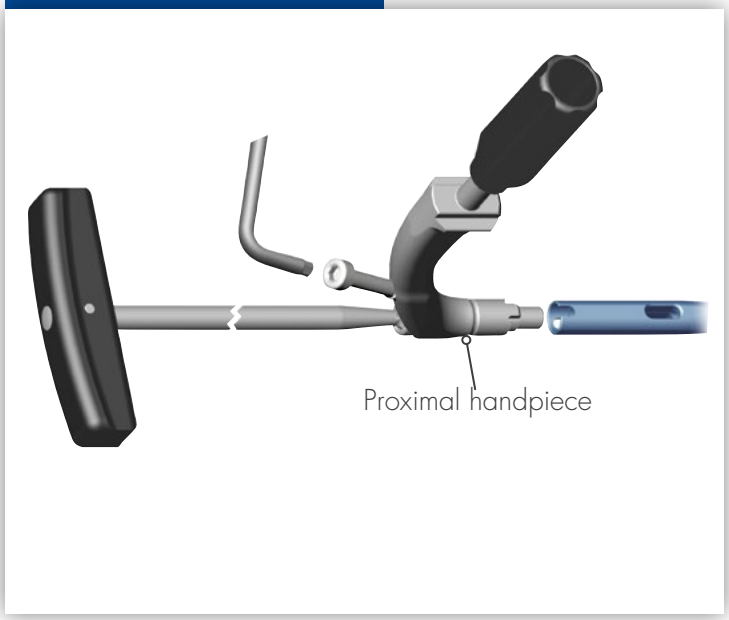
Figure 5



Nail measuring

To determine the length of the nail, check that the tip of the guide wire is at the level of the condyles and that the fracture is not distracted. Slide the trocar down over the guide wire to the tip of the greater trochanter, and read the correct nail length at the proximal end of the trocar.
If the reading is intermediate, it is advisable to use the shorter nail.
It is suggested to ream the canal 1.5 mm larger than the nail diameter.

Figure 6



Nail-guide assembly

Attach the handle to the nail by tightening the locking screw with the 8 mm hexagonal T-wrench.
Screw the striker pin into the dedicated hole on the handle and tighten it with an 8 mm Allen wrench.

REQUIRED INSTRUMENTS

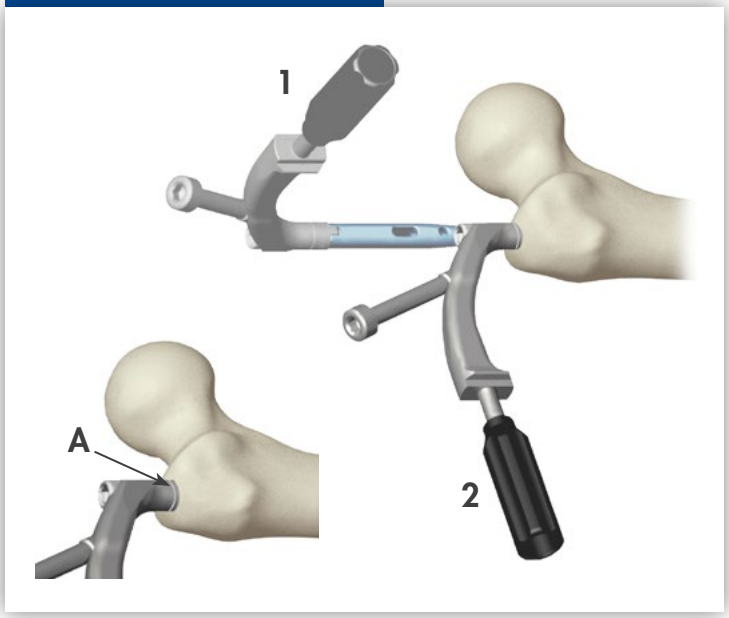
EBA-0025
Trocar

DT000050
Hexagonal-T wrench

DT000040
Allen wrench

Proximal locking

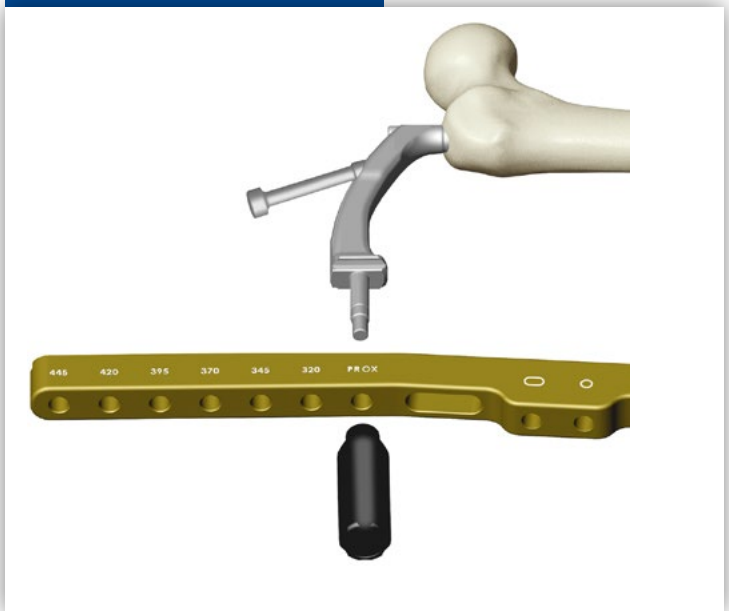
Figure 7



Nail insertion

Insert the nail over the guide wire, which is removed after the nail has passed the fracture.
During insertion, keep the handpiece and knob facing anteriorly in position 1 until resistance is felt from contact with the side wall of the femur; at this point, turn the handpiece laterally into position 2.
Light hammering is possible if necessary, but ONLY on the striker pin. The nail is inserted until the reference notch (A) on the handle is at the level of the apex of the greater trochanter.
Check that the locking screw is tight to ensure accuracy when inserting the locking screws.

Figure 8



Central guide assembly

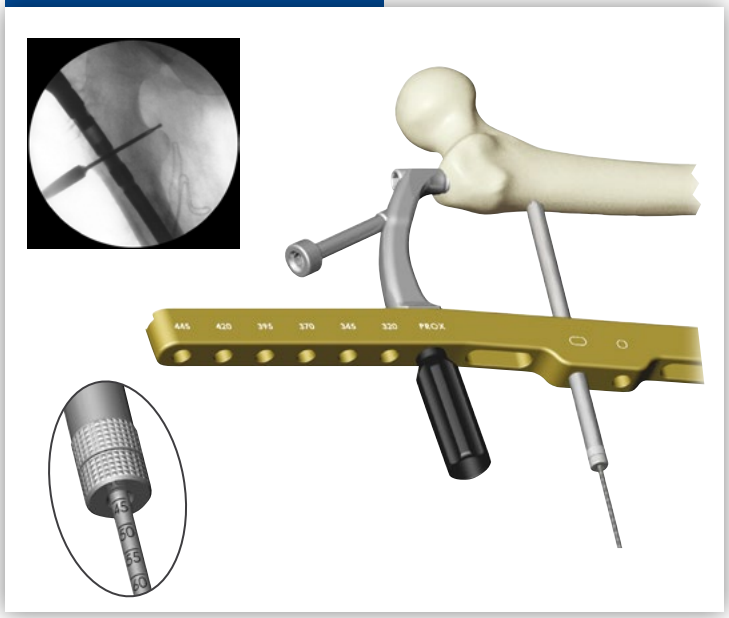
Remove the black knob from the handle and attach the central guide at the level of the hole marked PROX.
Retighten the knob.

REQUIRED INSTRUMENTS

DT070012
Dinamic T Femur centering guide

Proximal locking

Figure 9



Proximal screw measuring

Introduce the cannula (with the trocar already inserted) in the most proximal hole of the guide (identified by the oval marker). Insert the graduated guide wire through the trocar using a motor driver, until the tip is 2 mm past the second cortex.
Check that the trocar is touching the bone and read the length of the screw to be implanted at the end of the trocar.

Figure 10

Cortical drilling

Remove the trocar, leaving the graduated wire in position, and drill the first cortex up to the stop using the 6.5 mm cannulated drill bit.
Remove the drill bit with the graduated wire.

NOTE *The cannula must be held in contact with the cortex.*

REQUIRED INSTRUMENTS

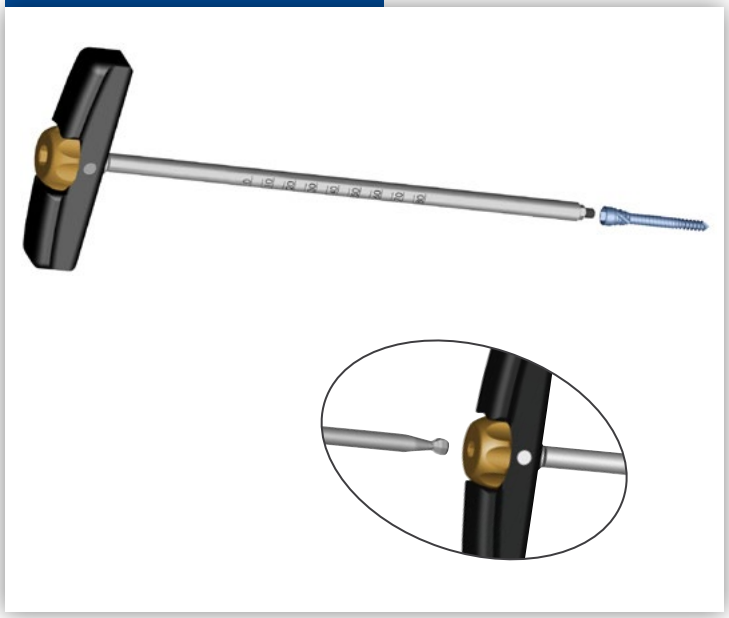
EBA-0020
Cannula

EBA-0025
Trocar

50169
Cannulated drill bit

Proximal locking

Figure 11



Screw insertion with the screwdriver

Fix a screw of the correct length to the screwdriver by turning the knob clockwise.
There is a recess on the screwdriver knob for the 8 mm hexagonal T-wrench, which may be required for **removal** after screw insertion.

Figure 12

Proximal screw insertion

Keeping the cannula touching the bone, insert the screw with the screwdriver, checking the graduated scale on the shaft.
Stop insertion when the "0" mark reaches the top of the cannula. Remove screwdriver and cannula.

Remove the black knob from the handle and attach the central guide at the level of the desired nail length.

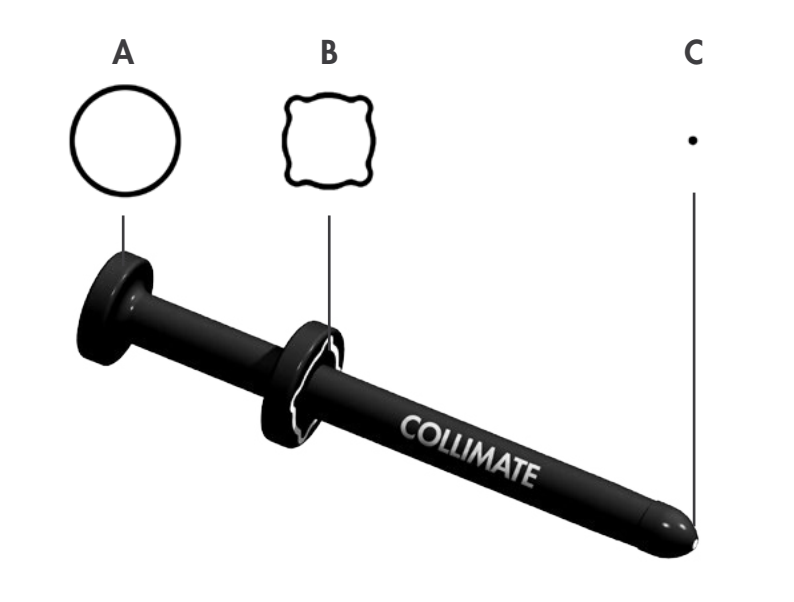
REQUIRED INSTRUMENTS

DT010025
Hexagonal screwdriver

DT000050
Hexagonal-T wrench

Distal locking

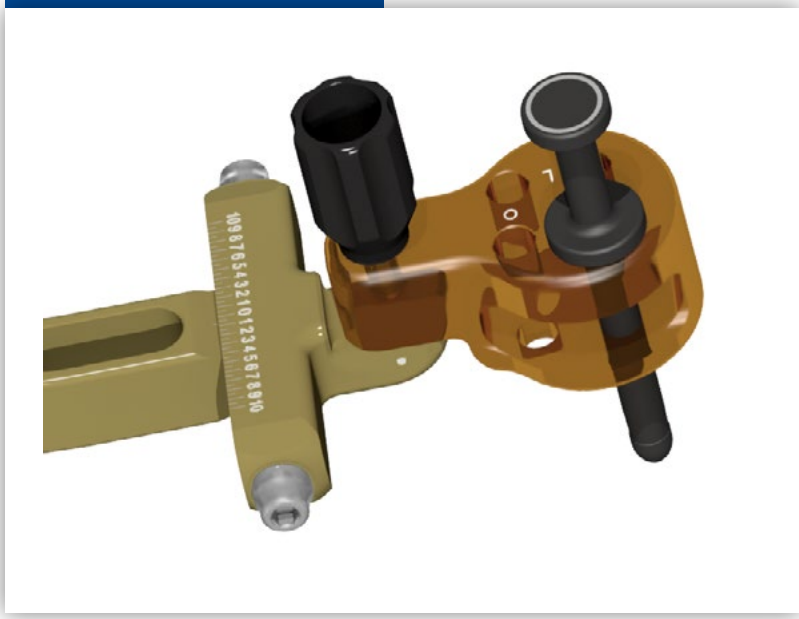
Figure 13



Collimate

The radiolucent Collimate has radio-opaque references (A, B and C) visible under the image intensifier.
The alignment of these three markers under image intensifier allows precise centering of the guide for insertion of the locking screw.

Figure 14

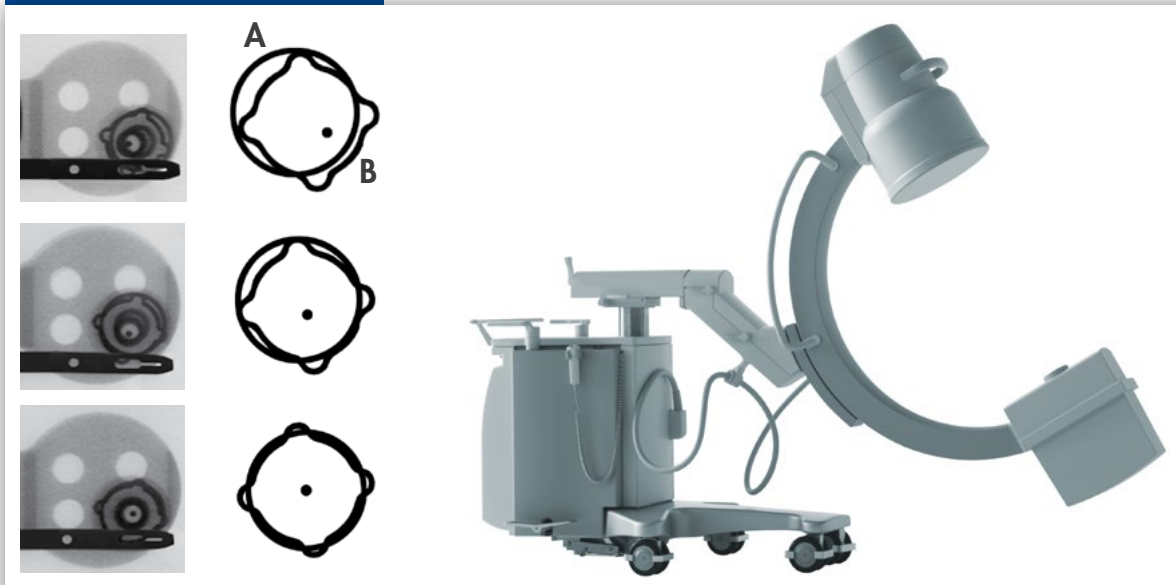


Collimate-guide assembly

Attach the distal block to the end of the central guide.
Insert the Collimate into the distal block in the hole adjacent to the type of locking required (static or dynamic, Right or Left).

Distal locking

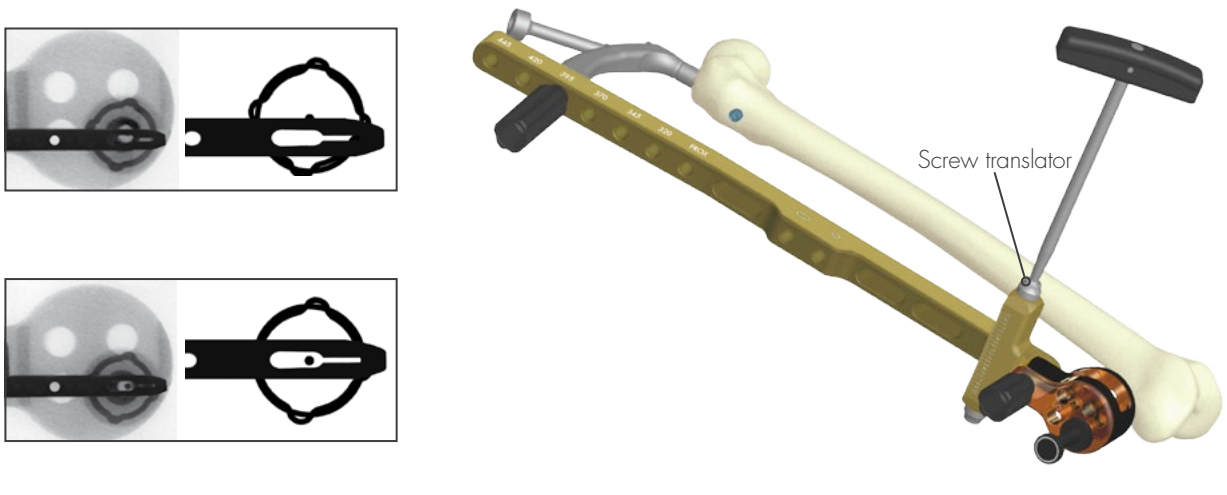
Figure 15



Centering under image intensifier

Check under image intensifiier the position of the two radio-opaque references **A** and **B** of the Collimate. With small movements of the image intensifier obtain an image with the two references completelyn overlappoing. In this position reference **C** should be in the center.

Figure 16

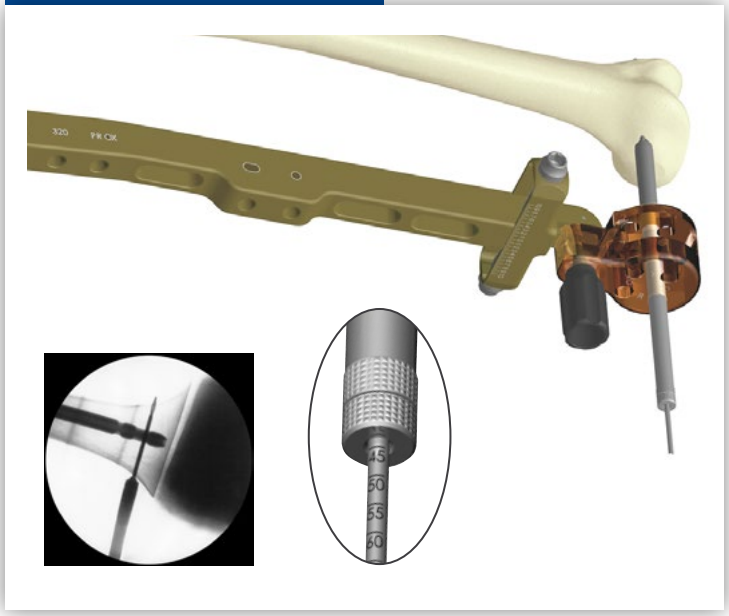


Centering with the translator

To obtain the alignment of the guide with the axis of the locking holes, rotate the screw of translator until reference **C** is in the centre of the nail slot.

Distal locking

Figure 17

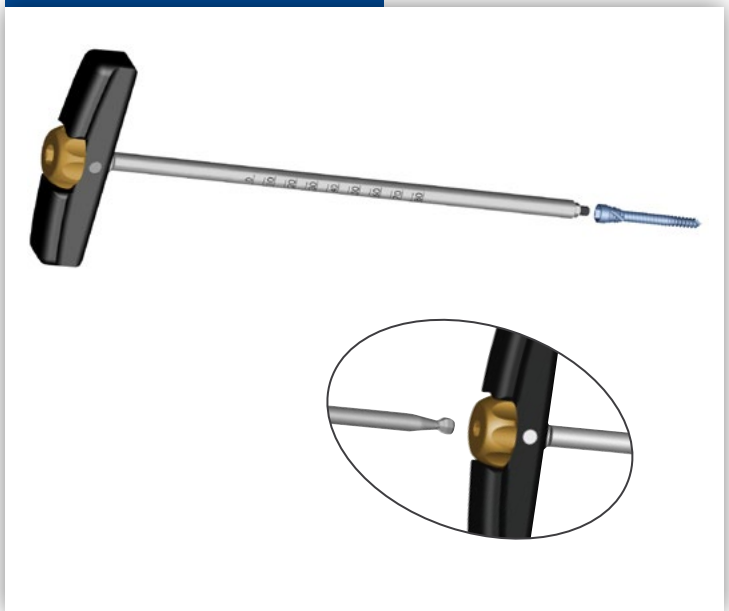


Distal screw measuring

Introduce the cannula (with the trocar already inserted) in the most proximal hole of the guide (identified by the oval marker). Insert the graduated guide wire through the trocar using a motor driver, until the tip is 2 mm past the second cortex.
Check that the trocar is touching the bone and read the length of the screw to be implanted at the end of the trocar.
Remove the trocar, leaving the graduated wire in position, and drill the first cortex up to the stop using the 6.5 mm cannulated drill bit.
Then remove the drill bit with the graduated wire.

NOTE *The cannula must be held in contact with the cortex.*

Figure 18



Screw insertion with the screwdriver

Fix a screw of the correct length to the screwdriver by turning the knob clockwise.There is a recess on the screwdriver knob for the 8 mm hexagonal T-wrench, which may be required for **removal** after screw insertion.

REQUIRED INSTRUMENTS

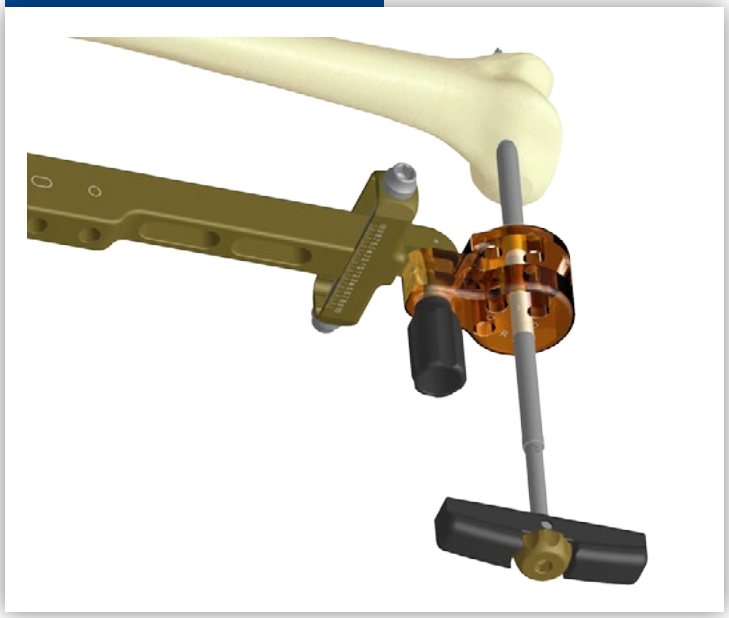
EBA-0020
Cannula

EBA-0025
Trocar

DT010025
Hexagonal screwdriver

Distal locking

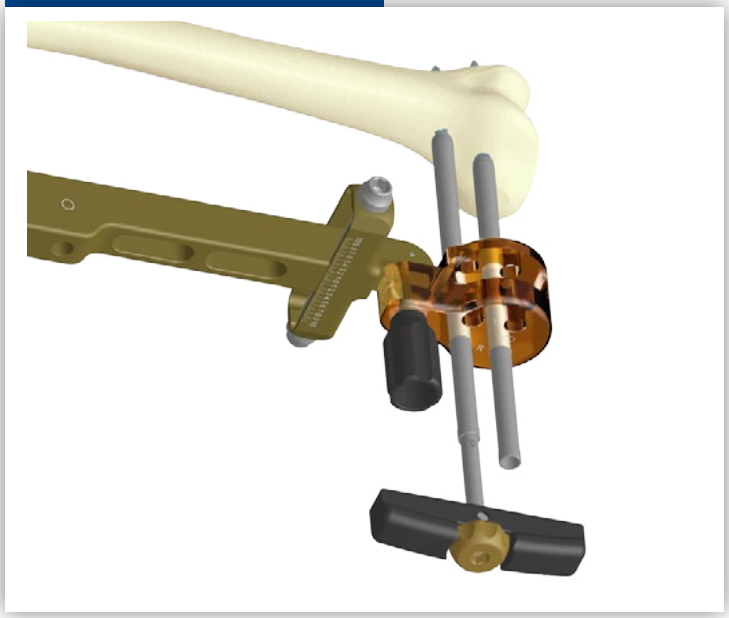
Figure 19



First distal screw insertion

Keeping the cannula touching the bone, insert the screw with the screwdriver, checking the graduated scale on the shaft.
Stop insertion when the "0" mark reaches the top of the cannula.
Remove screwdriver and cannula.

Figure 20



Second distal screw insertion

To insert the second distal screw, repeat the operations described leaving the cannula in place over the head of the first screw, so as to keep the guide movements to a minimum and eliminate any alignment errors.

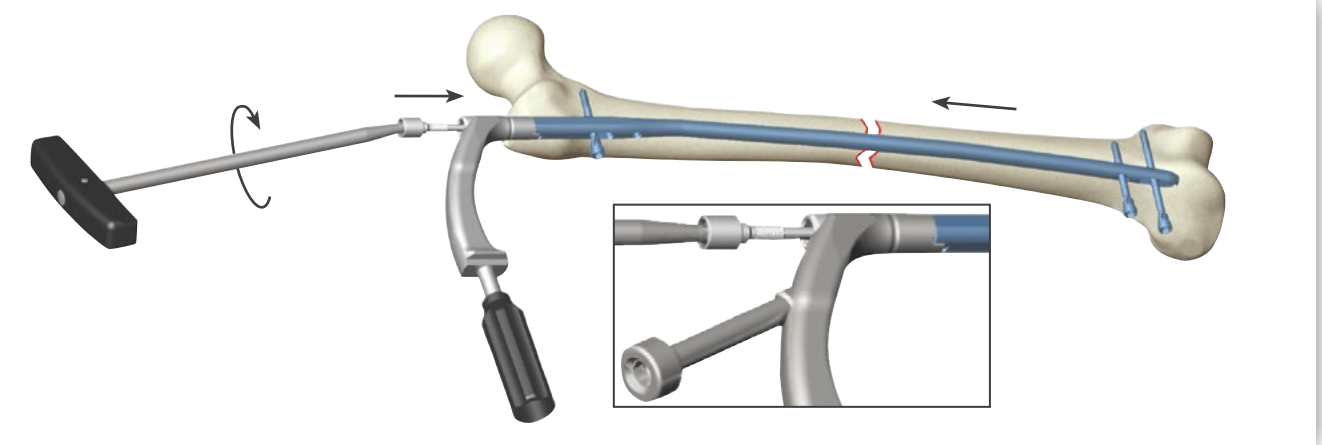
REQUIRED INSTRUMENTS

EBA-0020
Cannula

DT010025
Hexagonal screwdriver

Compaction

Figure 21

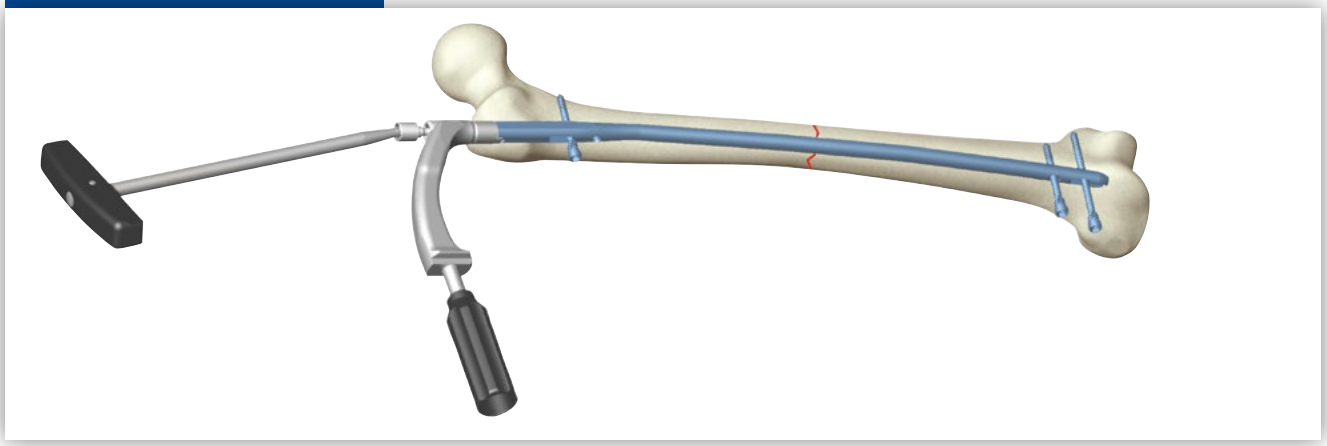


Intra-operative compaction

When distal locking is complete, the surgeon can decide whether to perform intra-operative fracture compaction. Remove the guide bar by unscrewing the knob and also the striker pin. Insert the compaction device into the cannulation of the nail locking screw.
Perform compaction by turning the instrument clockwise. Check progress under image intensification.

NOTE *If the device reaches the end of its travel, stop rotation to prevent jamming the compaction mechanism.*

Figure 22



Intra-operative compaction

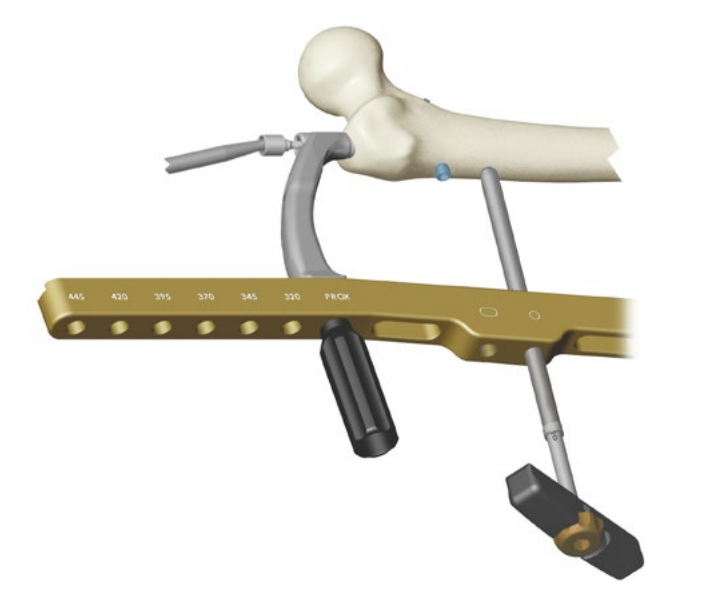
This figure shows complete fracture compaction.

REQUIRED INSTRUMENTS

DT010030
Compaction device

End cap insertion

Figure 23



Proximal static locking

After compaction, complete static locking by inserting the second proximal screw. Reposition the central guide in the hole labelled "PROX", introduce the cannula and trocar in the distal hole of the guide (identified by the round marker) and repeat the operations described above for choice of screw length and insertion. When the operation has been completed, remove the guide.
NOTE Remove the compaction device only after insertion of the second proximal screw so as not to lose the compaction achieved.

Figure 24

End cap insertion

Complete the fixation by inserting the end cap, which will make it easier to remove the nail if necessary. Choose an end cap length to leave the top of the end cap level with the bone surface, depending on the depth of nail insertion. As with the diaphyseal screws, the cap is fixed to the screwdriver to facilitate insertion.

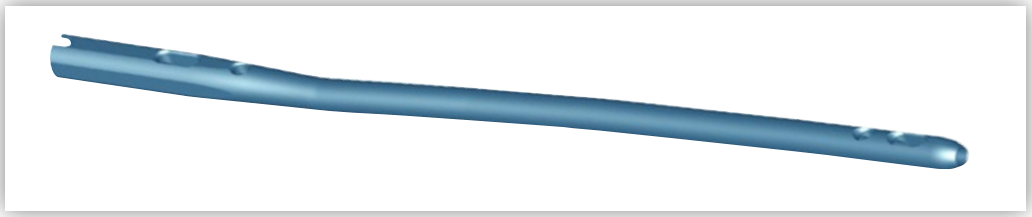
REQUIRED INSTRUMENTS

EBA-0020
Cannula

DT010025
Hexagonal screwdriver

Ordering information

STERILE



RIGHT Dinamic T Femur nail

LEFT Dinamic T Femur nail

solid nail ø9 mm *
* on request

Code No.	L. mm
DT109320	320
DT109345	345
DT109370	370
DT109395	395

Code No.	L. mm
DT209320	320
DT209345	345
DT209370	370
DT209395	395

ø10 mm

Code No.	L. mm
DT110320	320
DT110345	345
DT110370	370
DT110395	395
DT110420	420
DT110445	445

Code No.	L. mm
DT210320	320
DT210345	345
DT210370	370
DT210395	395
DT210420	420
DT210445	445

ø11 mm

Code No.	L. mm
DT111320	320
DT111345	345
DT111370	370
DT111395	395
DT111420	420
DT111445	445

Code No.	L. mm
DT211320	320
DT211345	345
DT211370	370
DT211395	395
DT211420	420
DT211445	445

ø12 mm

Code No.	L. mm
DT112320	320
DT112345	345
DT112370	370
DT112395	395
DT112420	420
DT112445	445

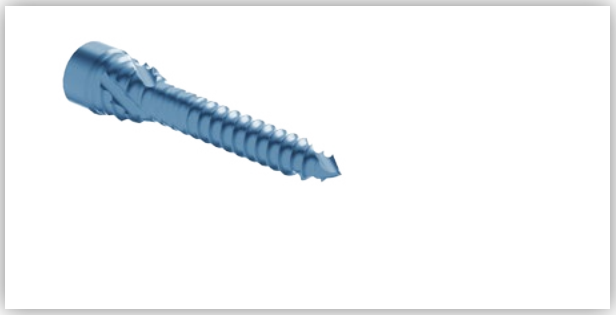
Code No.	L. mm
DT212320	320
DT212345	345
DT212370	370
DT212395	395
DT212420	420
DT212445	445

ø13 mm *On request

All nails are supplied in sterile package with n° 1 ø3 mm L. 350 mm guide wire with helicoidal tip

Ordering information

STERILE



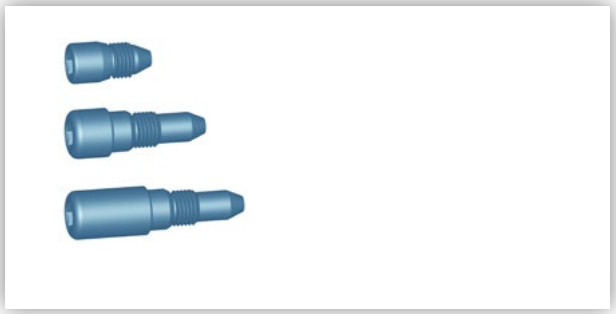
ø5 mm cortical screw, self-tapping

Code No.	Length
EBA-3030	30 mm
EBA-3035	35 mm
EBA-3040	40 mm
EBA-3045	45 mm
EBA-3050	50 mm
EBA-3055	55 mm
EBA-3060	60 mm
EBA-3065	65 mm
EBA-3070	70 mm
EBA-3075	75 mm
EBA-3080	80 mm

ø4.5 mm cortical screw, self-tapping *

Code No.	Length
DT245030	30 mm
DT245035	35 mm
DT245040	40 mm
DT245045	45 mm
DT245050	50 mm
DT245055	55 mm
DT245060	60 mm

* Only for ø9 mm nail distal holes



End cap

Code No.	Length
DT100005	standard
DT100010	10 mm
DT100020	20 mm

Ordering information

NOT STERILE

Code No.	Description
50169	Cannulated drill bit, ø6.5 mm
DT000040	Allen wrench, 8 mm
DT000050	Hexagonal T-wrench, 8 mm
DT010005	Graduated guide wire with olive, ø3x750 mm
DT010012	Dinamic T Femur centering guide
DT010015	Cannulated awl
DT010020	Fracture alignment guide wire exchange tool
DT010025	Hexagonal screwdriver
DT010030	Compaction device
EBA-0010	Tissue protection sleeve
EBA-0020	Cannula ø10 mm (2 pieces)
EBA-0025	Trocar
EBA-0030	Chuck for 2.5-ø3 mm guide wires
DT010300	Dinamic T Femur box screws, empty
DT011000	Dinamic T Femur instruments tray, empty
TK87170-2F-BL	580x270x110 mm sterilization box, empty

Dinamic T Femur

Intramedullary nail

citieffe®
Essential moves in Trauma

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info@citieffe.com - www.citieffe.com