

# DLT Nail

Dyna Locking Trochanteric Nail



## Product Information

Device Name

Dyna Locking Trochanteric Nail

Intended Use

Dyna Locking Trochanteric Nail is intended to be implanted into the long bones for alignment, stabilization and fixation of fractures caused by trauma or disease, the fixation of long bones that have been surgically prepared (osteotomy) for correction of deformity, and for arthrodesis.

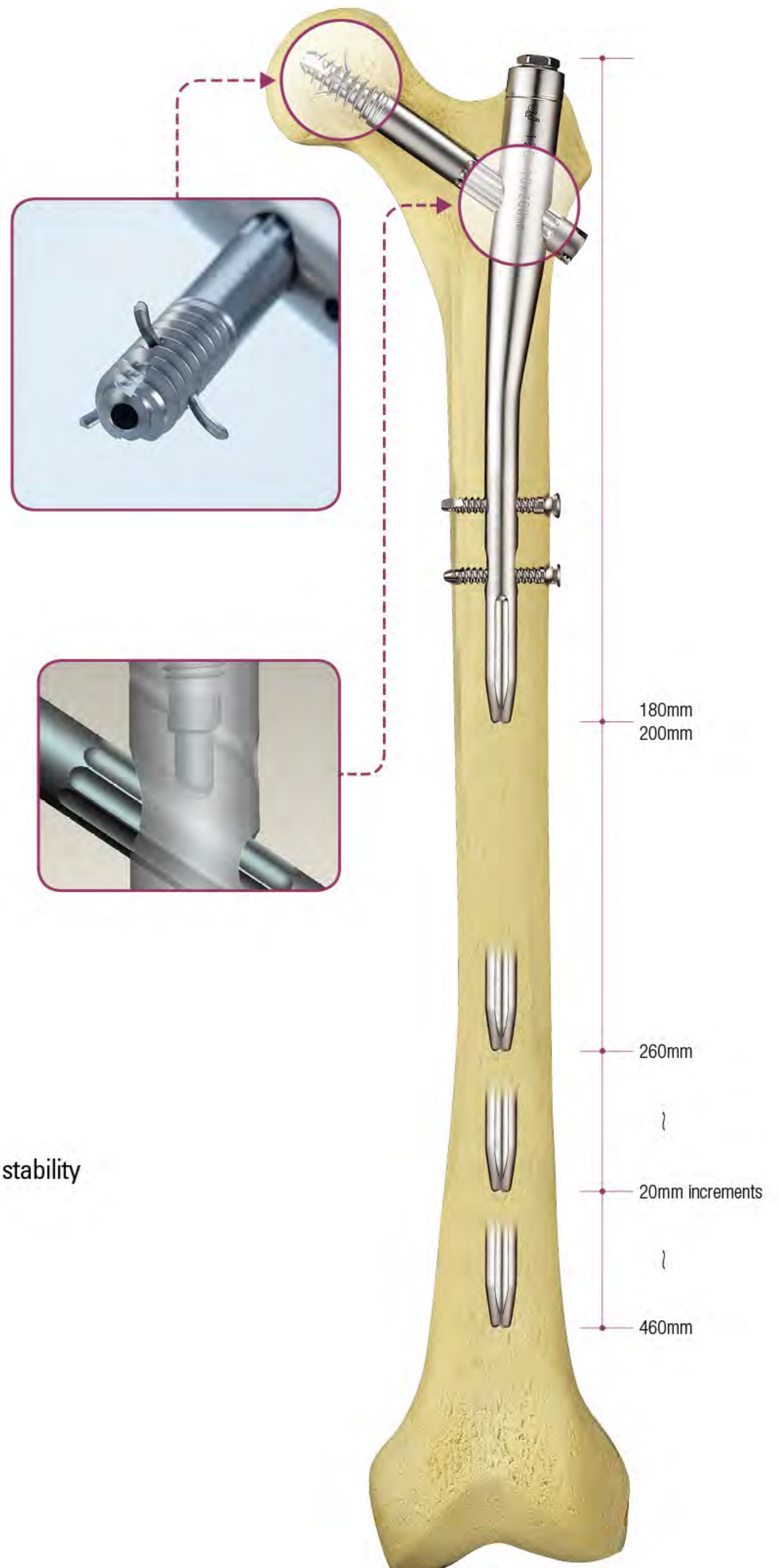


**U&J** CORPORATION

## System design feature

### ■ Technical specifications

- Material  
ASTM F136 type Ti6Al4V ELI
- Nail length  
Primary nail 200mm, Short nail 180mm  
Long nail 260~460mm in 20mm increments
- Nail diameter  
Proximal 16.5mm, Distal 10, 11, 12mm
- Proximal nail angle range  
120°, 125°, 130°
- Neck screw  
Diameter 11mm  
Length 70~125mm in 5mm increments
- Set screw  
Slidable type, Fixed type
- End cap  
0mm, +5mm
- Distal locking holes(round & oblong)  
For 5mm screws  
: Up to 5mm dynamization is possible



### ■ Special features of DLT Nail

- Wedge wing technology  
- Reduce cut out, better compression, better rotational stability
- Dual system : Slidable & Fixed type proximal locking
- Dynamic & static distal locking
- Anti rotation requiring small space
- Unique universal handle  
: Multi use for polyarticular and fixed type

# Production information

## Implants set

### ■ Nail size 120°

Diameter (mm)	Nail length (mm)												
	180	200	260	280	300	320	340	360	380	400	420	440	460
10	NG0818	NG0820	NG0826	NG0828	NG0830	NG0832	NG0834	NG0836	NG0838	NG0840	NG0842	NG0844	NG0846
11	NG0418	NG1118	NG0426	NG0428	NG0430	NG0432	NG0434	NG0436	NG0438	NG0440	NG0442	NG0444	NG0446
12	NG0518	NG1218	NG0526	NG0528	NG0530	NG0532	NG0534	NG0536	NG0538	NG0540	NG0542	NG0544	NG0546

### ■ Nail size 125°

Diameter (mm)	Nail length (mm)												
	180	200	260	280	300	320	340	360	380	400	420	440	460
10	NG0918	NG1019	NG0926	NG0928	NG0930	NG0932	NG0934	NG0936	NG0938	NG0940	NG0942	NG0944	NG0946
11	NG0618	NG1119	NG0626	NG0628	NG0630	NG0632	NG0634	NG0636	NG0638	NG0640	NG0642	NG0644	NG0646
12	NG0718	NG1219	NG0726	NG0728	NG0730	NG0732	NG0734	NG0736	NG0738	NG0740	NG0742	NG0744	NG0746

### ■ Nail size 130°

Diameter (mm)	Nail length (mm)												
	180	200	260	280	300	320	340	360	380	400	420	440	460
10	NG1018	NG1020	NG1026	NG1028	NG1030	NG1032	NG1034	NG1036	NG1038	NG1040	NG1042	NG1044	NG1046
11	NG1116	NG1120	NG1126	NG1128	NG1130	NG1132	NG1134	NG1136	NG1138	NG1140	NG1142	NG1144	NG1146
12	NG1217	NG1220	NG1226	NG1228	NG1230	NG1232	NG1234	NG1236	NG1238	NG1240	NG1242	NG1244	NG1246

### ■ Neck screw

Length (mm)												
70	75	80	85	90	95	100	105	110	115	120	125	
NGA2070	NGA2075	NGA2080	NGA2085	NGA2090	NGA2095	NGA2100	NGA2105	NGA2110	NGA2115	NGA2120	NGA2125	

### ■ Locking screw Ø5

Length (mm)																
25.0	27.5	30.0	32.5	35.0	37.5	40.0	42.5	45.0	47.5	50.0	52.5	55.0	57.5	60.0	62.5	65.0
32061	32131	32062	32132	32063	32133	32064	32134	32065	32135	32066	32136	32067	32137	32068	32138	32069

### ■ Set screw

Fixed type	Slidable type
NG3010	NG3030

### ■ End cap

0mm	+5mm
NG3025	NG3020

## Instruments set

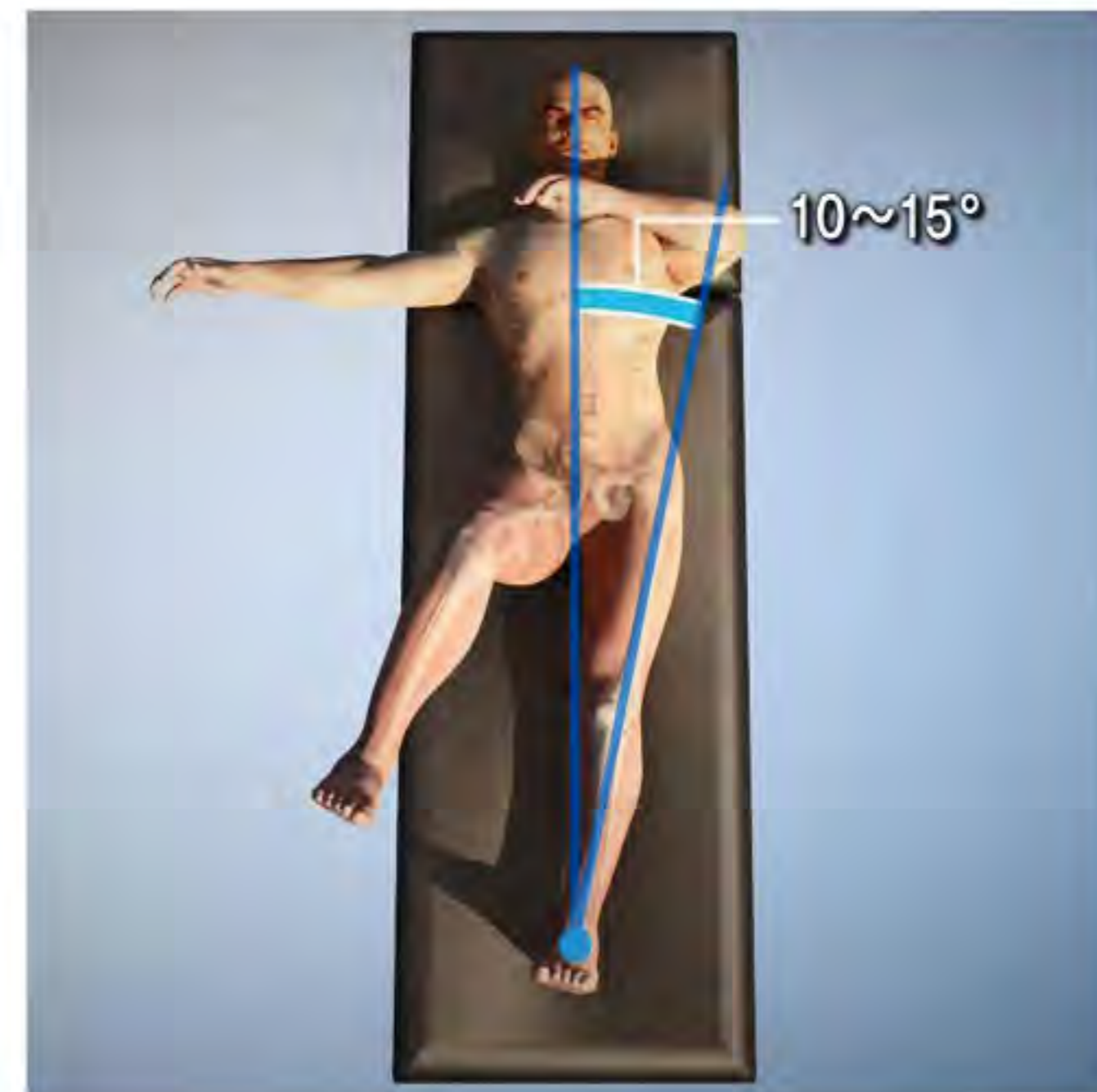
Part No.	Article	Part No.	Article	Part No.	Article
IN1007	Open wrench	NG0087	Targeting arm for 120° nail	NG0260	Drill sleeve for DLT
IN1010	Slide hammer	NG0088	Distal arm for dynamic	NG0270	Supine driver for DLT
IN1030	Start reamer 9.0mm	NG0089	Distal arm for static	NG0280	Flexible nail for cap driver
IN1031	Flexible reamer shaft (Small)	NG0090	Anti rotation guide sleeve	NG0290	Guide rod ball tip type B
IN1035	Flexible reamer shaft tip 9.5mm	NG0095	Anti rotation guide	NG0300	Drill bit-HA for free hand
IN1036	Flexible reamer shaft tip 10mm	NG0100	Protection sleeve for neck screw	NG0310	Drill bit for hudson adaptor
IN1037	Flexible reamer shaft tip 10.5mm	NG0110	Wire sleeve for neck screw	NG0320	Cannulated curved awl
IN1038	Flexible reamer shaft tip 11mm	NG0120	Trocar for neck screw	NG0330	Guide wire holder
IN1039	Flexible reamer shaft tip 11.5mm	NG0150	Wrench for neck screw	NGS1007	Specialty locking bolt
IN1040	Flexible reamer shaft tip 12mm	NG0155	Wrench holder for neck screw	NGS1024	Specialty longer guide wire
NGS1039	Specialty depth gauge	NG0160	Compressor for neck screw	NGS1025	Specialty universal wrench
IN1064	S-nail drill guide	NG0170	Stopper for neck screw	NGS1032	Radiolucent target device
IN1066	Trocar	NG0180	Wing pusher	NGS1033	Reamer for neck screw with HMTA
NGS1022	Specialty protection sleeve for nail	NG0190	Stylet	NGS1034	Reamer for nail with HMTA
NG0030	Trocar for nail	NG0200	Pin wrench	NGS1035	Specialty wire sleeve for nail
NG0045	Anti rotation guide wire	NG0210	Wing remover	NGS1036	Specialty depth gauge for neck screw
NG0085	Targeting arm for 130° nail	NG0220	Remove bolt for DLT	NGS1038	Specialty nail length gauge
NG0086	Targeting arm for 125° nail	NG0230	Nail cap driver		

# Surgical Technique

## 1. Preparation

### STEP 1 Patient Positioning

Position patient supine on an extension table or radiolucent operating table, Position the C-arm if the image intensifier in such a way that it can visualize the proximal femur exactly in the lateral and AP planes. For unimpeded access to the medullary cavity, abduct the upper part of the body by about 10-15° to the contralateral side (or adduct the affected leg by 10-15°).

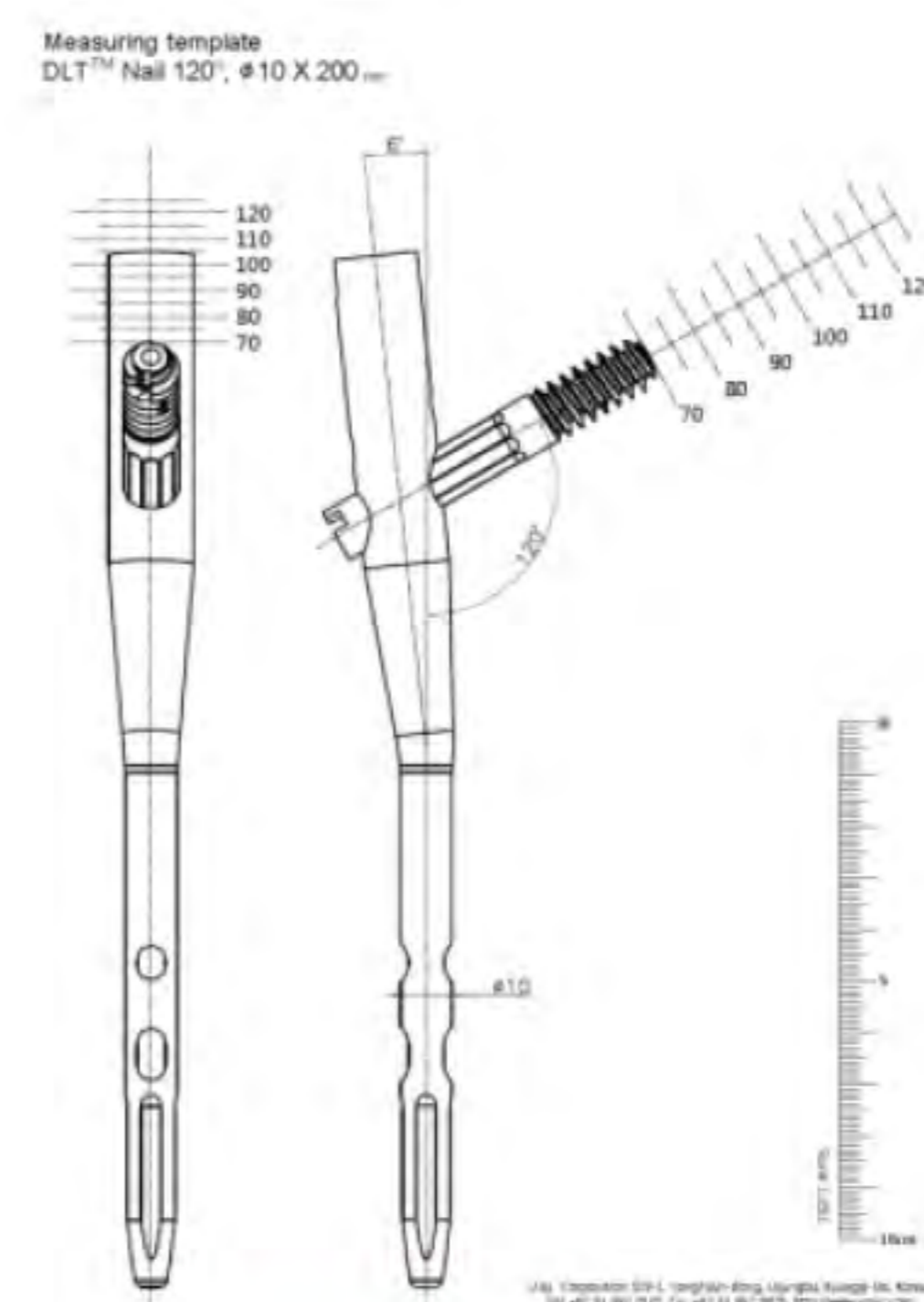


### STEP 2 Reduce Fracture

If possible, carry out closed reduction of the fracture under image intensifier control. If necessary, perform open reduction through small incision.

#### *Optional)*

X-ray templates are very helpful during pre-operative planning. Use the X-ray templates for short and long nails to select the correct implant and the optional nail angle.



*Optional)* Templates

### STEP 3 Incision

Palpate the greater trochanter. Make a 5cm incision approximately 5 to 8cm proximal from the tip of the greater trochanter. Make a parallel incision in the fasciae of the gluteus medius and split the gluteus in line with the fibers



## 2. Insertion of Trochantric Nail

### STEP 1 Determine Nail Insertion Point

In the AP view, the nail insertion point is normally found on the tip or slightly lateral to the greater trochanter in the curved extension of the medullary cavity.

The mediolateral angle of the implant amounts to 6°. This means that the Guide wire (NGS1024) must be inserted laterally at an angle of 6° to the shaft.



### STEP 2 Insertion of Guide wire (NGS1024)

Insert Wire sleeve for Nail (NGS1035) percutaneously through Protection sleeve for Nail (NGS1022). Trocar for Nail (NG0030) in Wire sleeve for Nail (NGS1035) indicates the groove in Trochanter. Then remove the Trocar for Nail(NG0030). Insertion Guide wire(NGS1024) through Wire sleeve for Nail(NGS1035).



### STEP 3 Opening the Femur

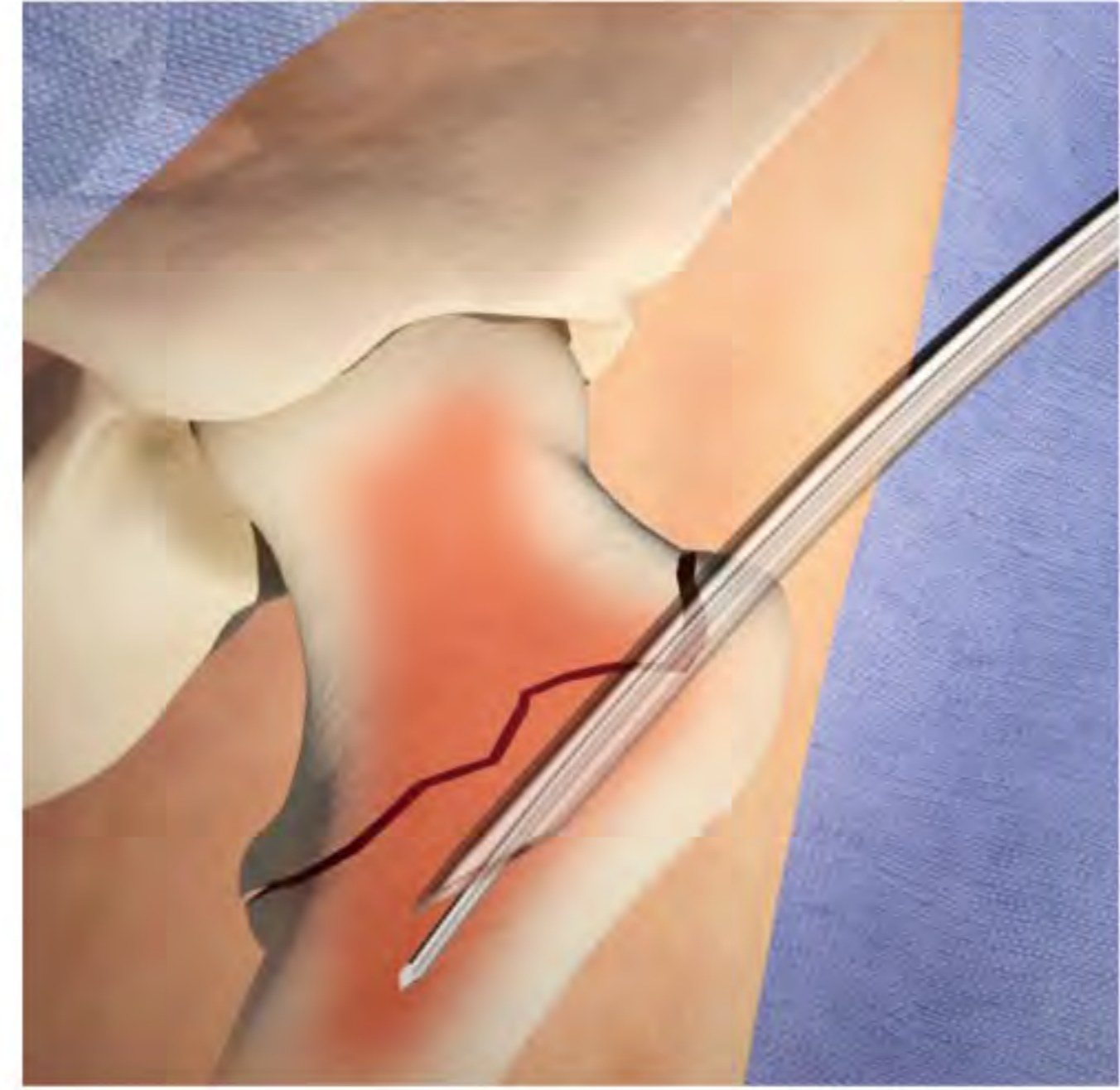
Guide the Reamer for Nail(NGS1034) over the Guide wire(NGS1024) through the Protection sleeve for Nail (NGS1022) and ream as far as the stop on the Protection sleeve for Nail(NGS1022) while checking on C-arm. Remove the Reamer for Nail(NGS1034) and Guide Wire(NGS1024).



**Optional)**

The use of Cannulated curved awl (NG0320)

Flexible reamers are used to ream the shaft of the femur in stages starting from 9mm to 12mm diameter and increasing in 0.5mm increments.



**Optional)** Curved Awl

**STEP 4** Assembly of Target Device

Slide the Locking bolt(NGS1007) through the barrel in the Radiolucent target device(NGS1032) with selected Nail. Fully tighten the Locking Bolt with Universal Wrench(NGS1025) , so that it does not loosen during nail insertion.



**STEP 5** Insertion of Trochantric Nail

Carefully insert the nail manually as far as possible into the femoral opening. Slight twisting hand movements help insertion.

**Optional)**

If the manual insertion of the nail is difficult, it is helpful to assemble the Supine driver for DLT(NG0270) onto the target device(NGS1032) and gently impact the head of Supine driver using the Hammer.



### 3. Insertion of Neck screw

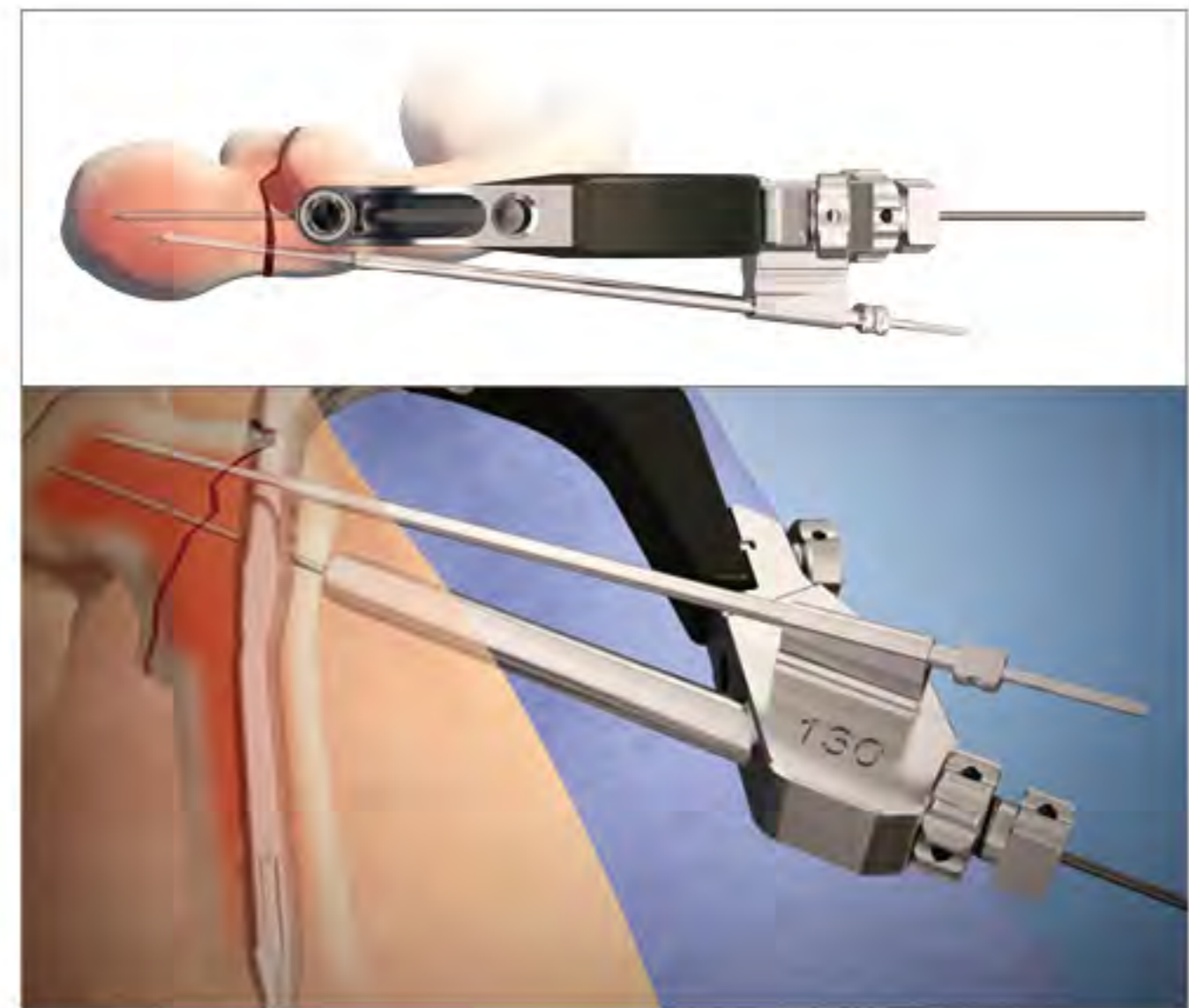
#### STEP 1 Insertion Guidewire for Neckscrew

Mount pre-determined target arm (120,125,130) onto Target Device. Insert Protection sleeve for Neck screw(NG0100) through Radiolucent target device(NGS1032). Then insert Wire sleeve(NG0110) in Protection sleeve for Neck screw(NG0100).



#### *Optional)*

Insert Guide wire(NGS1024) through Guide wire sleeve for Neck screw(NG0110). And Insert Anti rotation guide sleeve(NG0090) and Anti rotation Guide wire(NG0045) sequentially. The use of Anti rotation Guide wire(NG0045) will limit rotation of femoral head during reaming process



#### STEP 2 Measuring Neckscrew Size

Use the Depth gauge for neck screw (NGS1036) to measure the screw length. The depth gauge subtracts 5mm from the length of the inserted wire. Set the depth for the Neckscrew reamer (NGS1033) and stopper (NG0170) to this depth.

Position the stopper (NG0170) on Neckscrew reamer(NGS1033). Adjust stopper which can move up and down. Set just below the measured size.



### STEP 3 Reaming for Neckscrew

Guide the Reamer for neck screw(NGS1033) over the Guide wire(NGS1024), Protection sleeve for Neck screw(NG0100) and ream as far as the stop. Check on the image intensifier while drilling to monitor the depth of the drill near the subchondral bone.



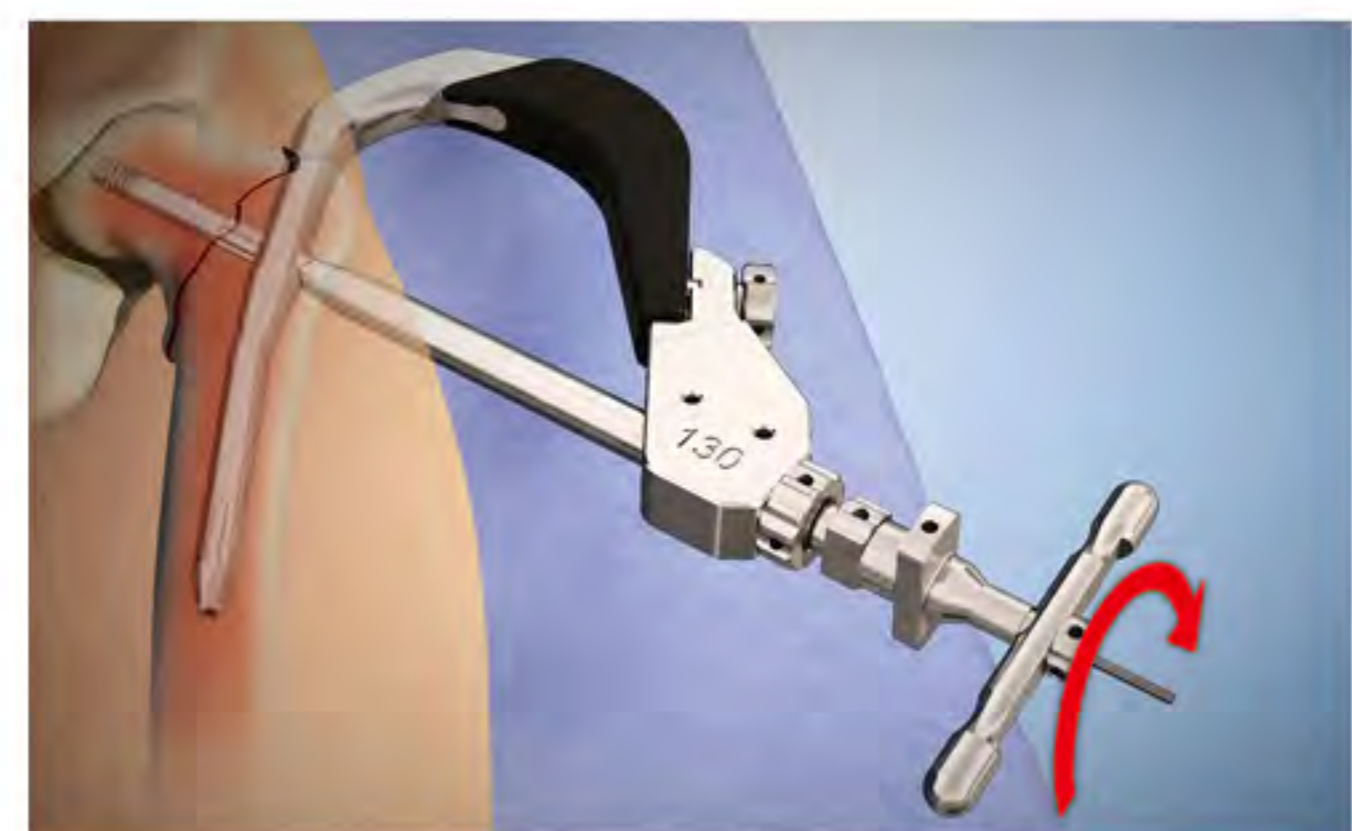
### STEP 4 Necksscrew Assembly

Assemble the Wrench for Neck screw (NG0150) for Neck screw.



### STEP 5 Insertion of Neckscrew and Wing open

Insert the Neck screw over Guide wire(NGS1024).  
Insert Wing Pusher(NG0180) through Wrench Holder for Neck Screw(NG0155), Turn clockwise to deploy wedge wings. Continue finger tight until stop.



#### *Optional)*

Compression

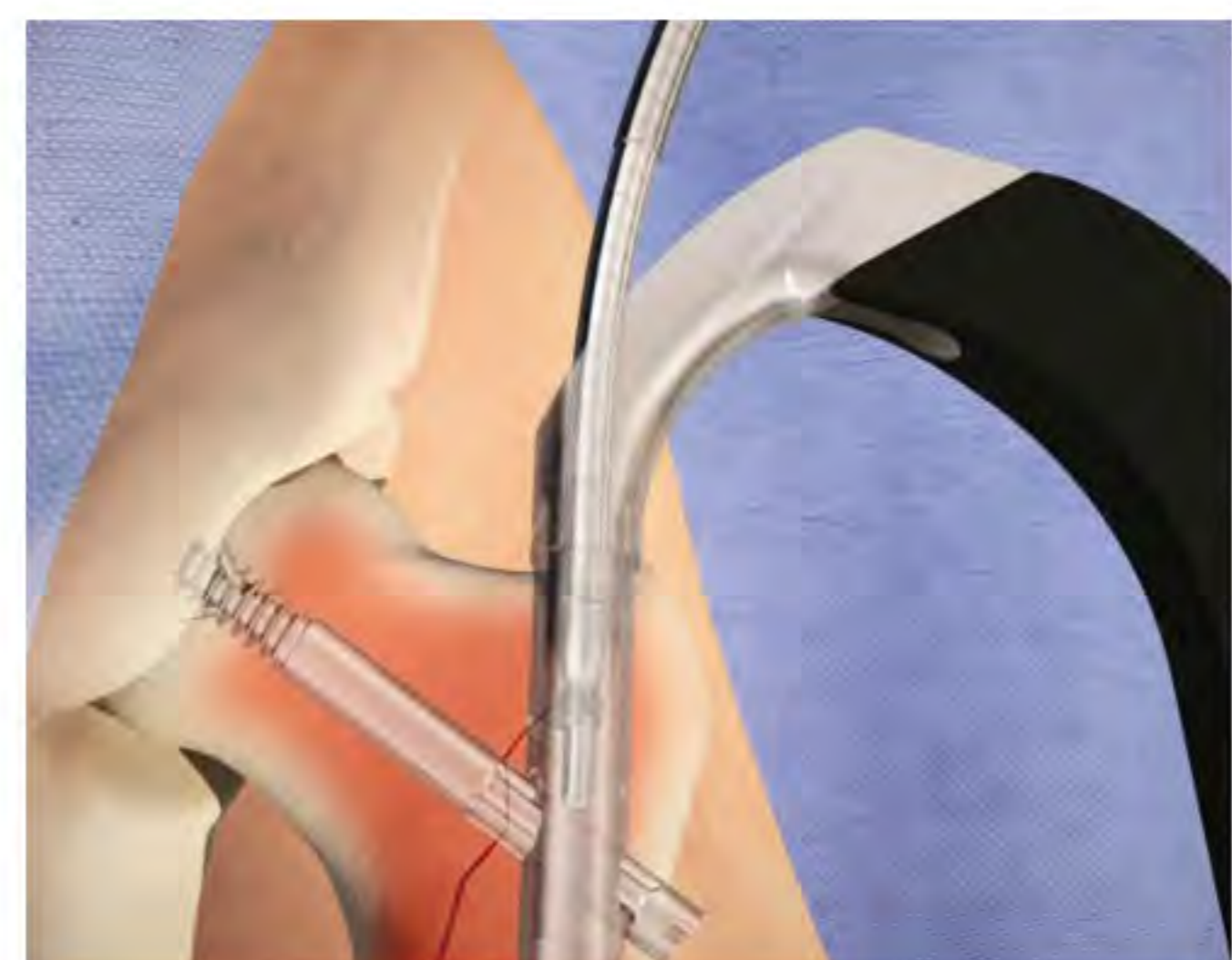
Compression can be achieved by turning Compressor (NG0160) clockwise.



**Optional) Compression**

### STEP 6 Insertion of Set screw

Align the Set screw with Flexible set screw driver (NG0280) through Targeting device(NGS1032). Flexible set screw driver(NG0280) completely into the Nail and then back off 1/4 turn.  
Alternatively, if no sliding is desired, do not back off set screw.

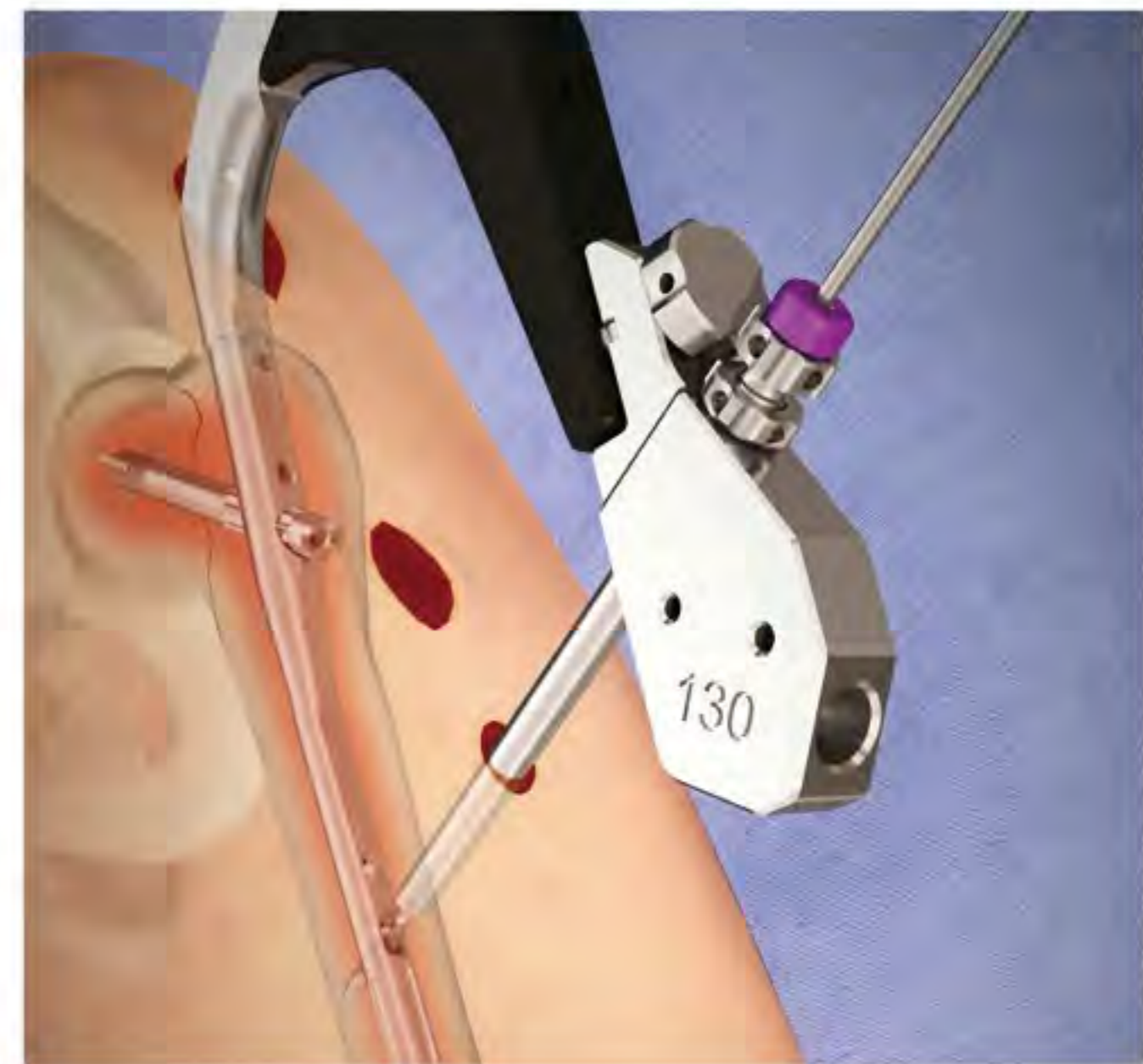




## 4. Insertion of Locking screw

### STEP 1 Drill hole for Distal locking screw

Distal locking is usually performed with a single locking bolt. For static interlocking use the cranial locking hole only for static interlocking, and the caudal locking hole for dynamic interlocking. Subtrochanteric fractures may be double-locked. Postoperative removal of the static locking bolt allows secondary dynamization.



### STEP 2 Make a stab incision and insert the Drill sleeve for DLT

Remove the Trocar(IN1066) and drill through both cortices using Drill bit 4.0(NG0310). Read off the length of the required locking bolt directly from the drill marking. For alternative measuring, remove drill and use the Depth gauge(NG1039)



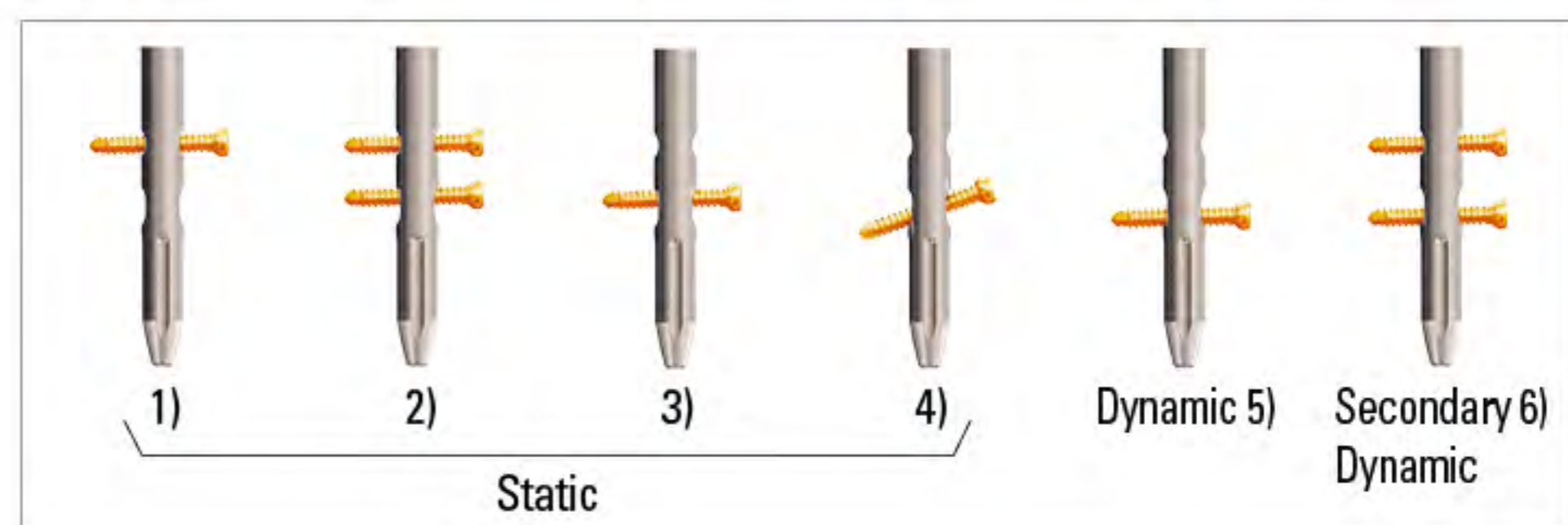
### STEP 3 Insertion of locking screw

Insertion of locking screw through Drill sleeve for DLT(NG0260) using the Set screw driver(NG0230).



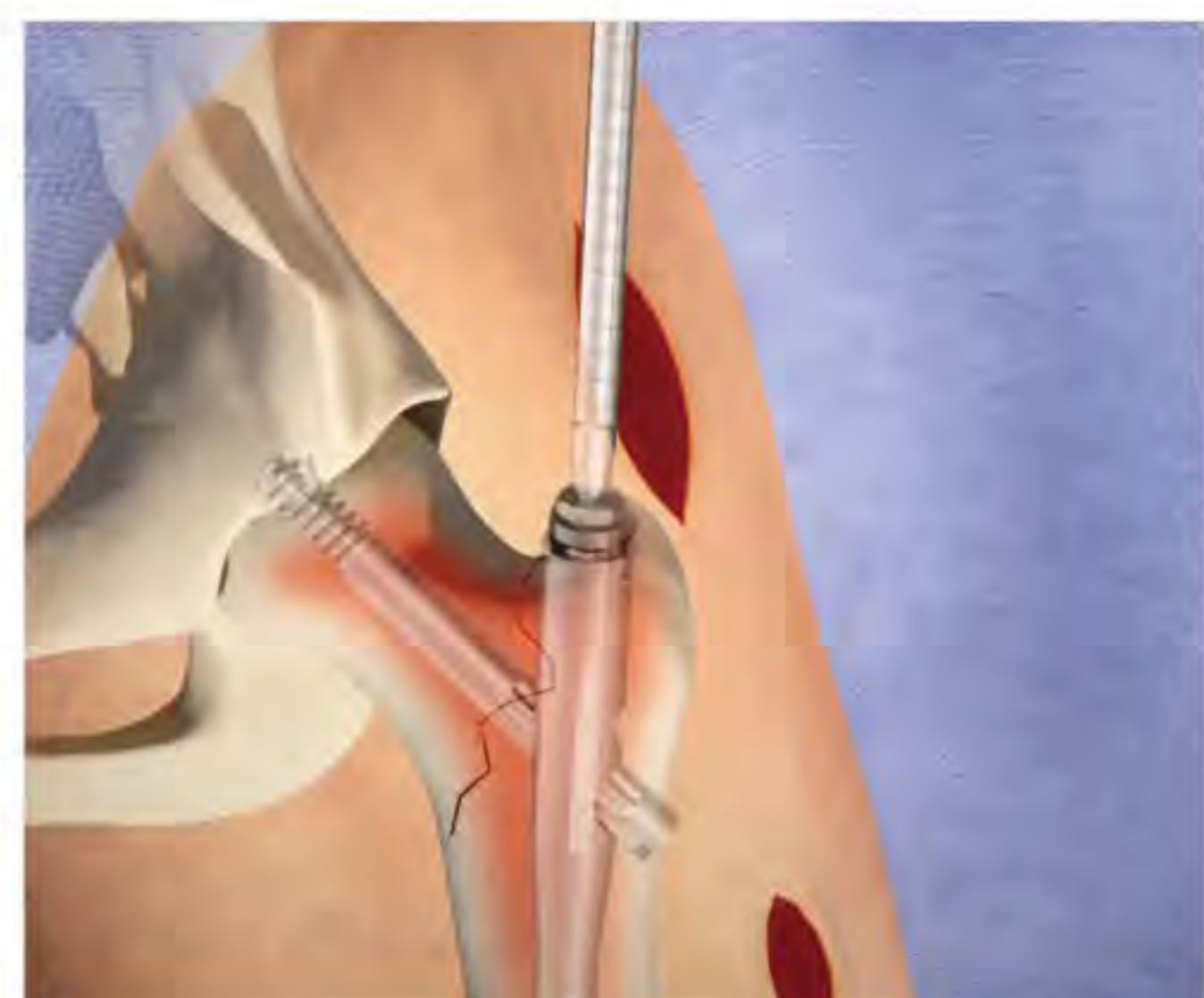
#### *Optional)*

Targeting arm for distal locking could be used optionally as Standard/Static/Dynamic arm according to the fixation option of distal locking.



### STEP 4 Insertion of Endcap

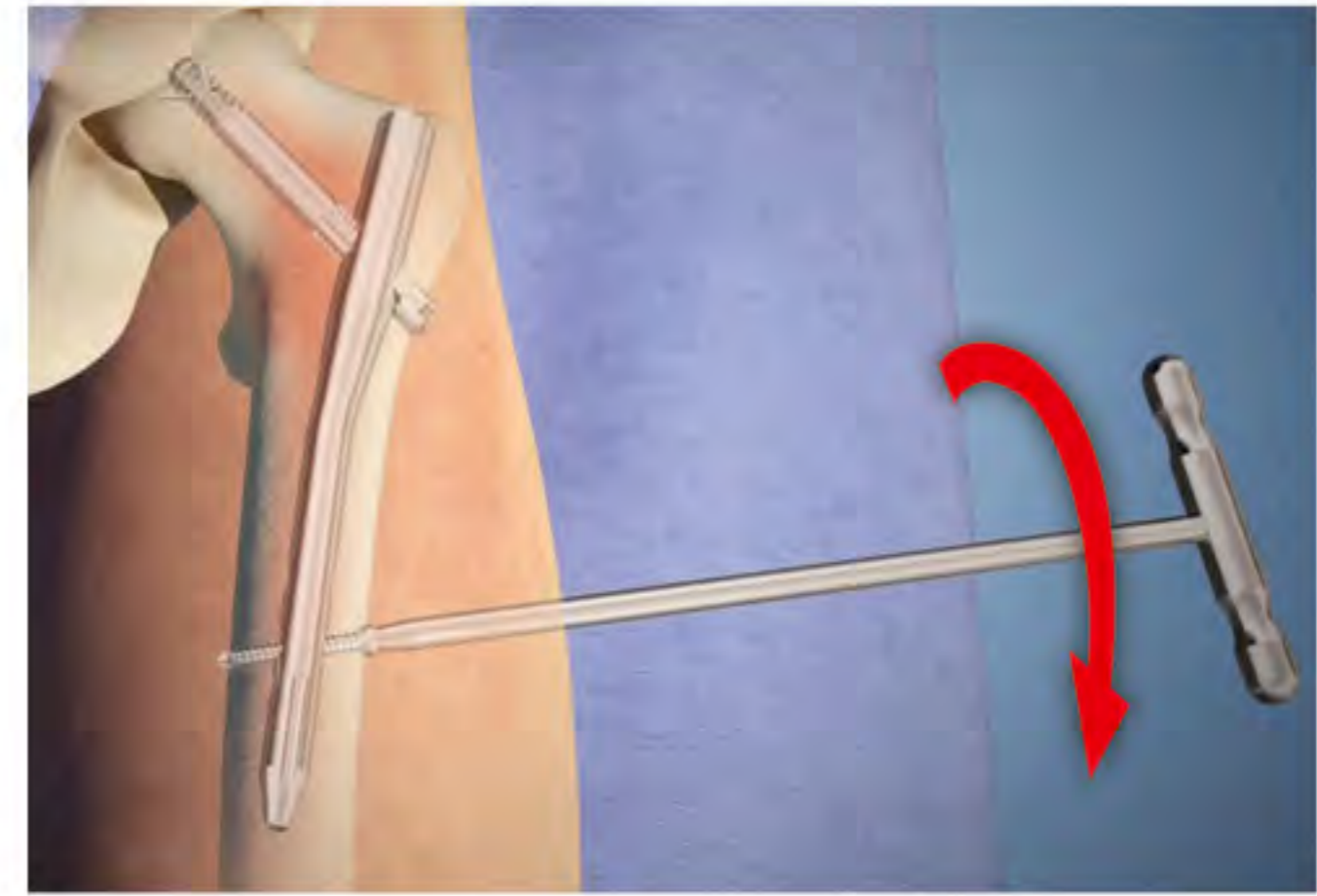
Remove Radiolucent target device(NGS1032) using Universal Wrench(NGS1025)  
Insert of End cap(or short end cap) using Flexible nail cap driver(NG0280).



# Remove Nail

## STEP 1 Remove Distal lockingscrew

Eliminate the locking screw which inserted at the distal portion of the nail using the Set screw driver(NG0230).  
Remove th locking screw using the Set screw driver(NG0230).



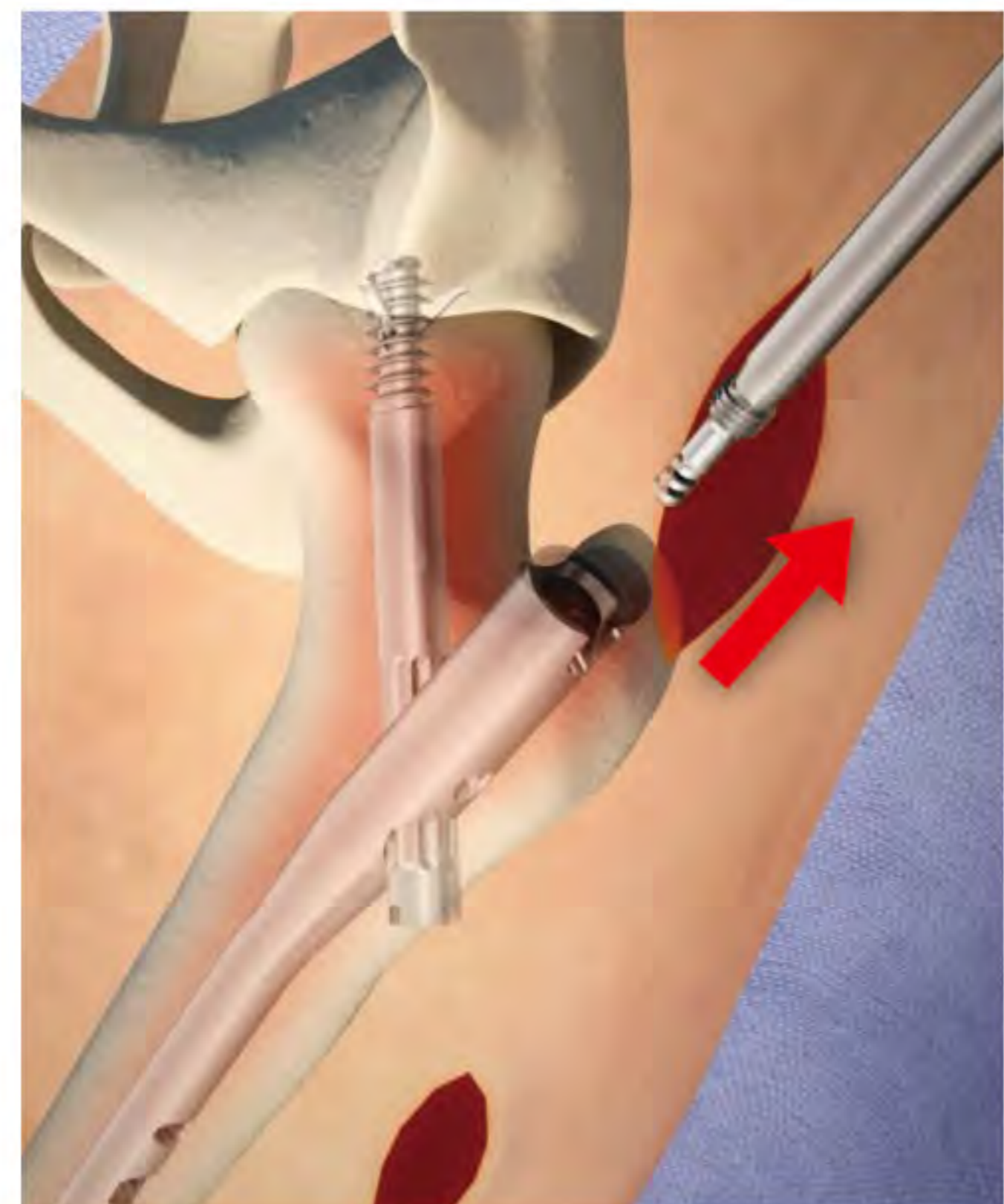
## STEP 2 Remove end cap

If an End cap has been placed, remove it with Set screw driver (NG0230).



## STEP 3 Loosen Set screw and attach the extracting bolt

Loosen the set screw using the Set screw driver (NG0230). In large patients it may be necessary to adduct the leg to facilitate driver seating on the set screw. And then, thread Remove bolt for DLT(NG0220) securely into the top of the nail.



#### STEP 4 Retracting the wings

Remove soft tissue/bone from lateral end of neck screw. Insert Guide wire (NGS1024) into neck screw. Pass neck screw wrench (NG0150) and Wrench holder (NG0155, wrench holder) over Guide wire (NGS1024) into neck screw. Tighten down securely the Wrench holder for neck screw(NG0155). Take out guide wire (NGS1024) and insert the wing remover (NG0210). Turn to wing retractor handle clockwise till it comes to a soft stop.



#### STEP 5 Retracting the wings

Remove the neck screw by turning the neck screw wrench(NG0150).



#### STEP 6 Remove Nail

Use sliding hammer(IN1010) to remove nail





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