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ZFN **MULTI-PURPOSE** **FEMORAL NAIL**

Surgical Technique

zimed[®]





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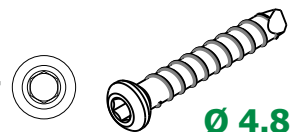
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5.1. Nail Lenght.....	



1.1 Femoral Nail

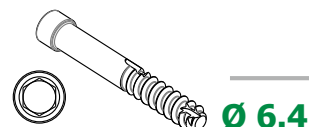
1.1.1.Specifications

It is designed based on the Anatomic Femoral Nail design to treat femoral fractures and deformations. Unlike the others, there are two 90 ° holes in its proximal part. Proximal diameter is 13 mm. Neck angle is 130 ° and reaches 135 ° with 5 ° lateral offset. ZFN 'is available in various lengths from 260 mm to 440 mm (in 20 mm increments). Diameter size options are also in the form of Ø 9,10,11,12,13,14 mm. Right and left designs are available. Nails and all of its components are made of Ti 6AL4V ELI material.



**ZFN
Proximal/Distal Locking
Screw**

REF. NO	SIZE
4292-4830	4.8x30
4292-4835	4.8x35
4292-4840	4.8x40
4292-4845	4.8x45
4292-4850	4.8x50
4292-4855	4.8x55
4292-4860	4.8x60
4292-4865	4.8x65
4292-4870	4.8x70
4292-4875	4.8x75
4292-4880	4.8x80
4292-4885	4.8x85
4292-4890	4.8x90



**ZFN
Femoral Lag
Screw**

REF. NO	SIZE
4612-6050	6.4x50
4612-6055	6.4x55
4612-6060	6.4x60
4612-6065	6.4x65
4612-6070	6.4x70
4612-6075	6.4x75
4612-6080	6.4x80
4612-6085	6.4x85
4612-6090	6.4x90
4612-6095	6.4x95
4612-6100	6.4x 100
4612-6105	6.4x 105
4612-6110	6.4x 110
4612-6115	6.4x 115
4612-6120	6.4x 120



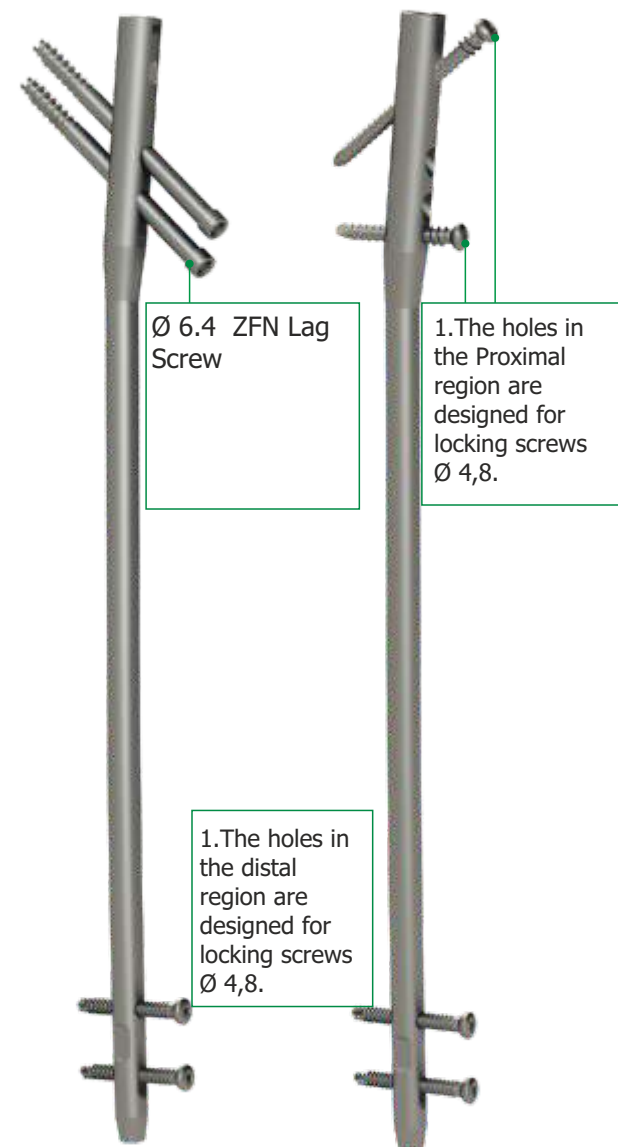
**ZFN
End Cap**

REF. NO	SIZE
4602-0000	0
4602-0005	5
4602-0010	10



**ZFN
Proximal Lag Fixing
Screw**

REF. NO
4622-0000





2.1 Fractures

2.1.1. Subtrochanteric Femur Fractures

Intramedullary nailing can be used for all subtrochanteric femur fractures that do not extend to the piriformis fossa or greater trochanter.

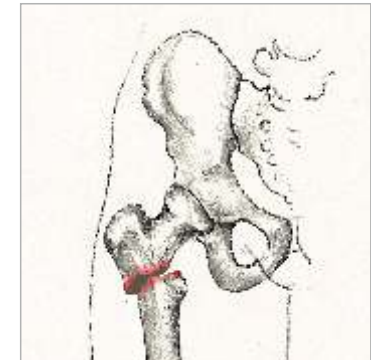
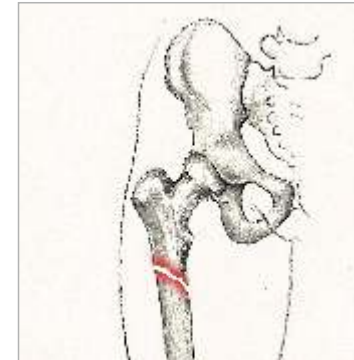
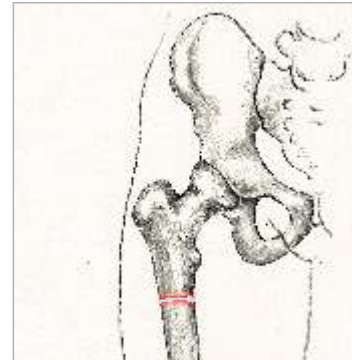
2.1.2. Femur Shaft Fractures

Statically Locked intramedullary nail is standard of care for femoral shaft fracture

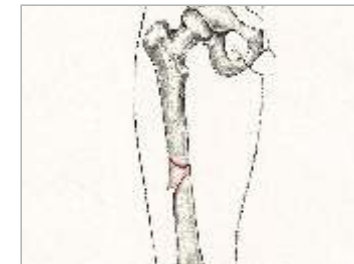
Intramedullary Nailing has some advantages over plates and screws. These are a lower infection rate, less quadriceps scarring, early functional use, rapid fracture healing etc.

2.1.3. Femur Intertrochanteric Fractures

Fixation may be required first before nail insert by fracture types



Subtrochanteric Femur Fractures



Femur Shaft Fractures





2.2 Preparation

2.2.1. Determining Nail Length

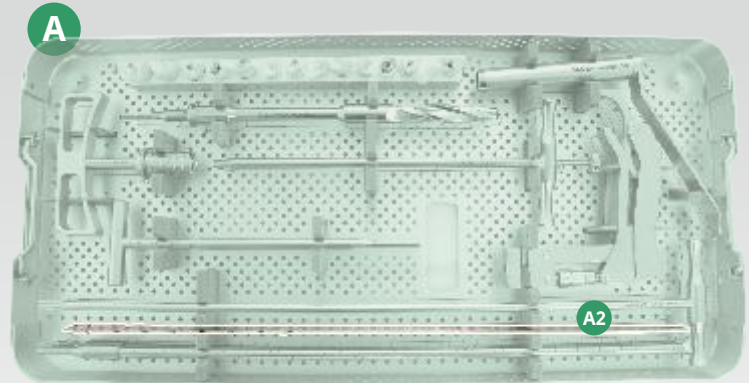
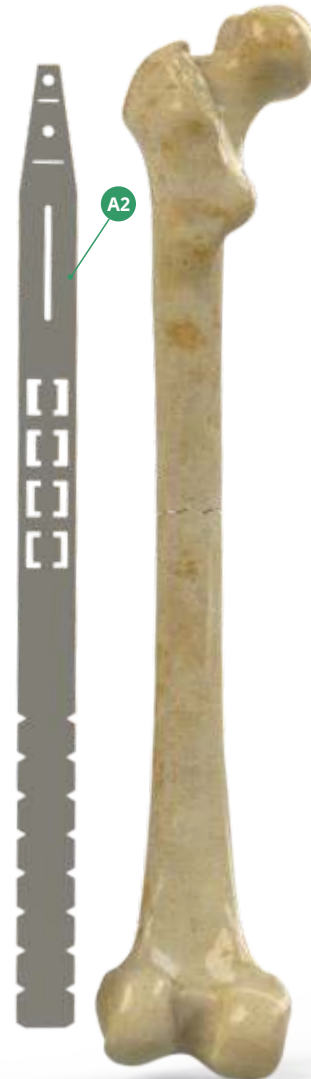
The nail length should be decided after fracture reduction. Alternatively, measurement can be taken on the undamaged leg. In addition, measurements can be taken on the flexible reamer.

(Measuring Device (Ruler))

Position it on the proximal femur and acquire a fluoroscopy view. Mark on skin

Move distal to the femur, Match the (A2 Measuring Device (Ruler)) with your marked proximal location. Take measurement and fluoroscopy images from the distal.

It is aligned to the narrowest part of the Medular Canal. Nail Diameter is determined by reading the table.





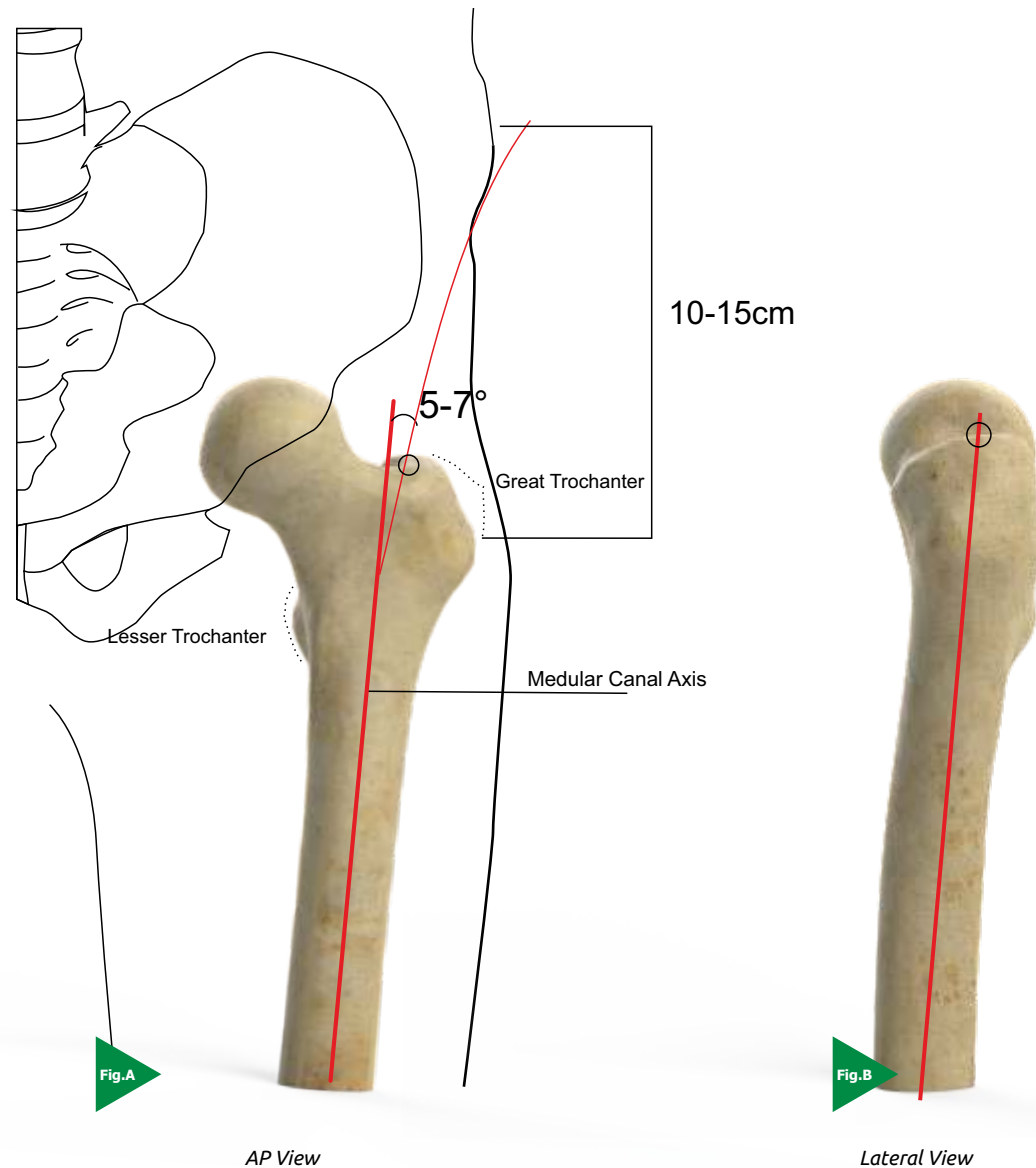
2.2 Preparation

2.2.2.Determine Entry Point

2.2.2.1.Great Trochanter

The nail insertion point is at the tip of the greater trochanter. This represents a point 5 ° lateral to the femoral shaft axis measured from a point just below the lesser trochanter as the angle of the nail is between 5 ° and 7 °. (Fig.A)

Entry point for the nail is centered in the greater trochanter and in line with the medullary canal (Fig.B).



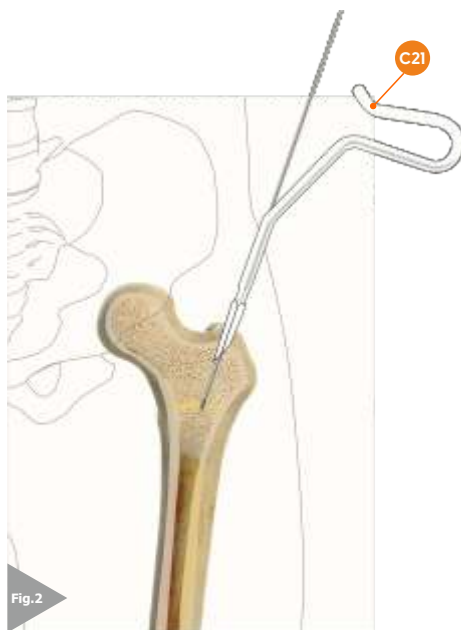


2.3 Medullary Canal

2.3.1. Entry opening

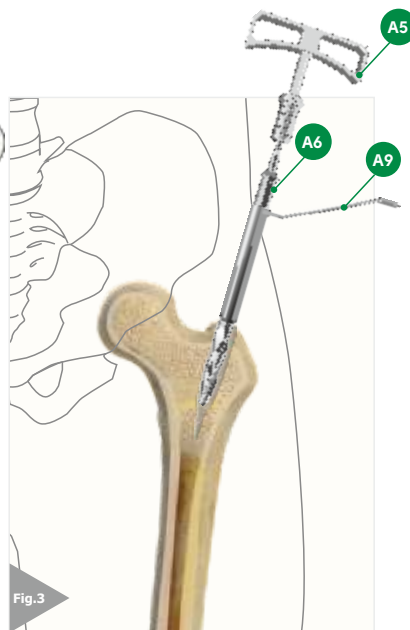


Insert (C5 Threaded K-Wire Ø 2.5 x 315 mm) to the surgical motor and advance it through the entry point you specified. (Fig.1).



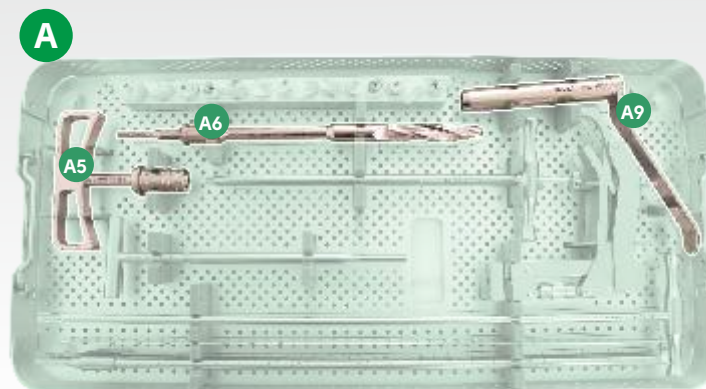
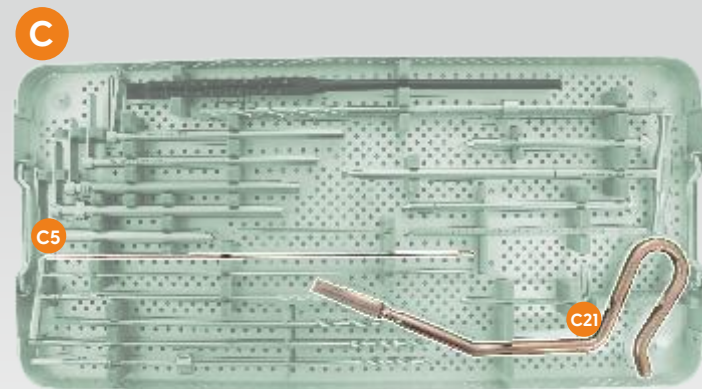
Run (C21 AWL) over (C5 Threaded K-Wire Ø 2.5 x 315 mm). Open the input channel (Fig.2).

Remove (C21 AWL)



Combine (A6 Proximal Drill Ø 14 mm) with (A5 Cannulated T-Handle) Carve through the (C5 Threaded K-Wire Ø 2.5 x 315 mm) and (Proximal Drill Sleeve Ø 14 mm). (Fig.3).

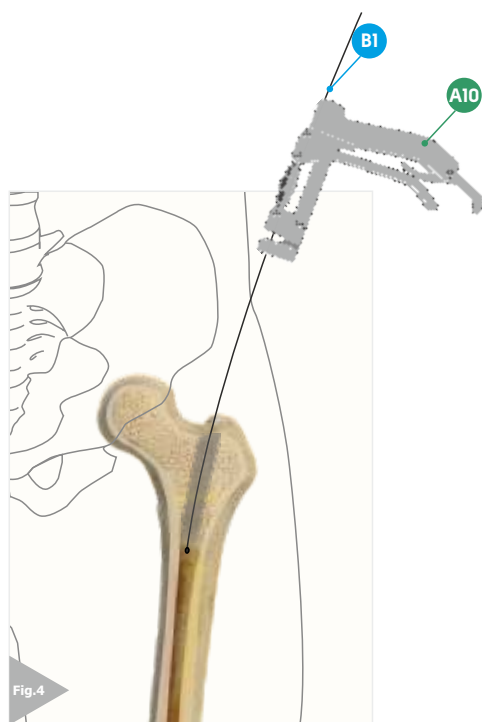
Remove (A6 Proximal Drill Ø 14) (A5 Cannulated T-Handle), (C5 Grooved Kirschner Wire)



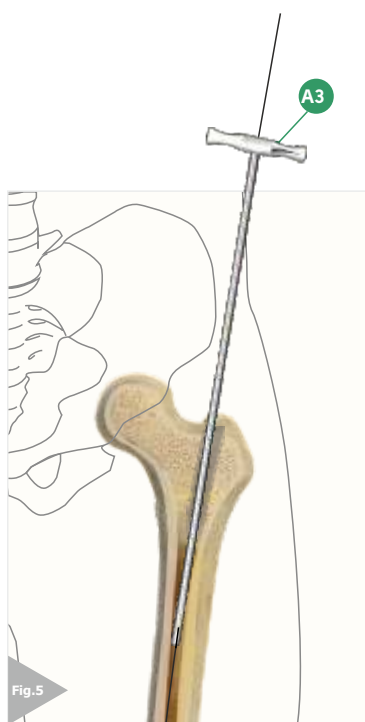


2.3 Medullary Canal

2.3.2.Reduce Fracture

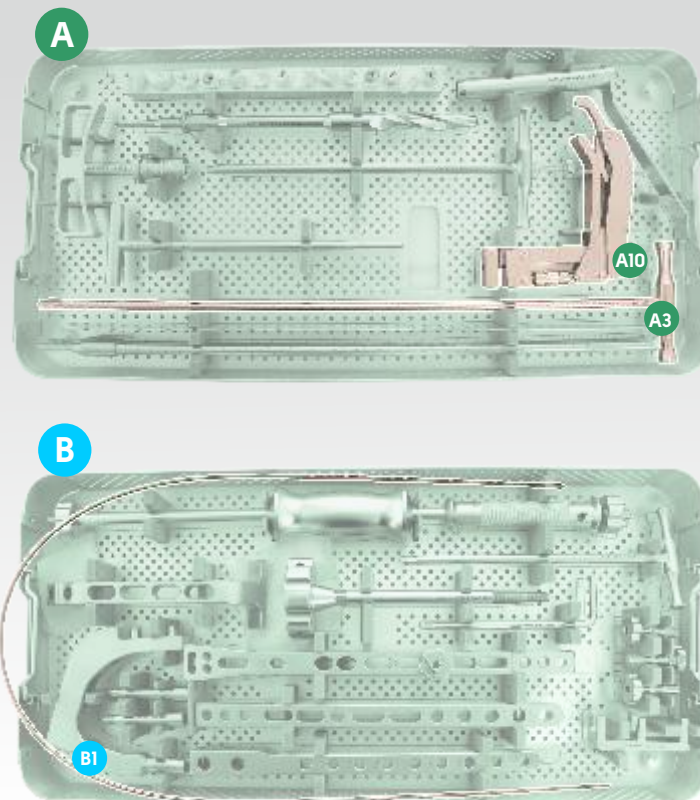
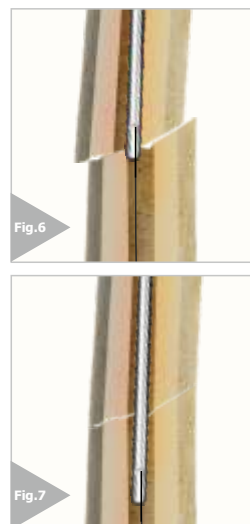


Combine (A10 Guide Wire holder) with (B1 Guide Wire) send through in the canal. (Fig4)



Advance the (A3 T-Chisel) through the canal (Fig.5). After passing the fracture line, reduce fracture by following under viewing. (Fig.6-7)

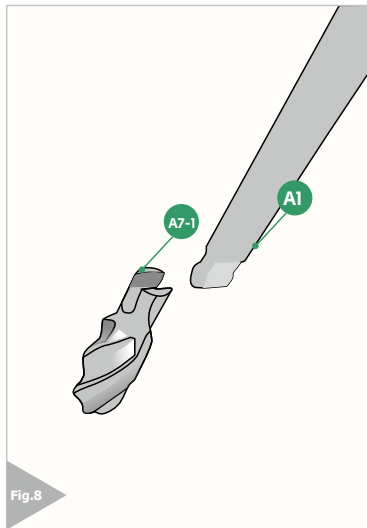
Remove (A3 T-Chisel)



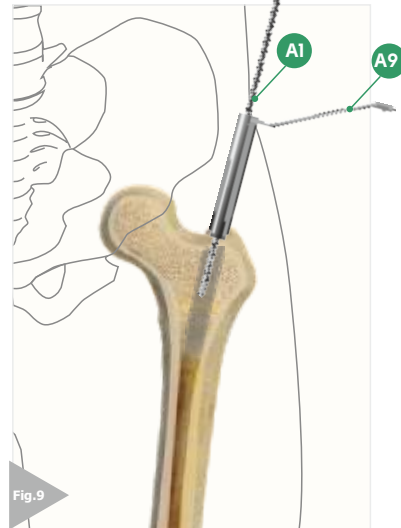


2.3 Medullary Canal

2.3.3. Reaming Canal

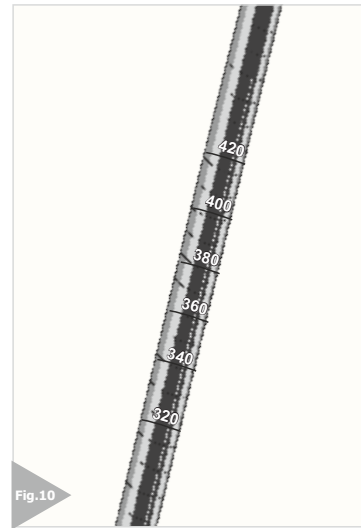


Combine (A1 Flexible Reamer Ø8x460mm) with (A7-1 Flexible Reamer Head) (Fig.8).

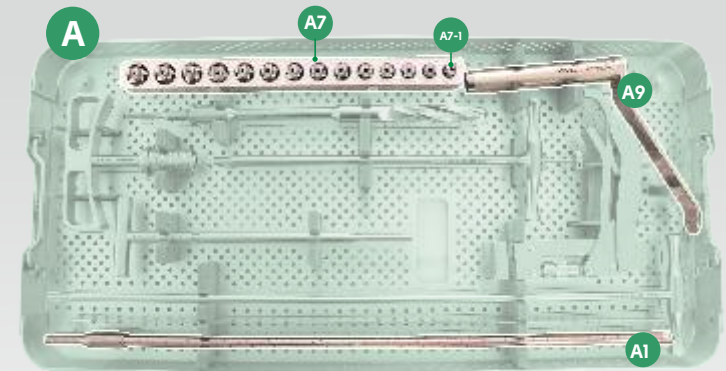


Insert to the surgical motor start to reaming trough (A9 Proximal Drill Sleeve Ø 14 mm) (Fig.9). Continue towards the oversized ends until you get the ideal width (A7 Flexible Reamer Head)

Remove (A9 Proximal Drill Sleeve Ø 14 mm)



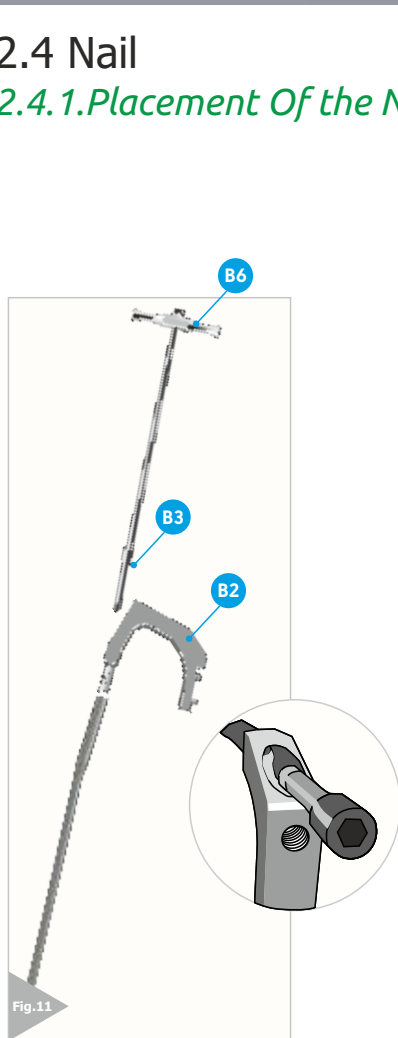
You can determine or verify nail length with table on the reamer (Fig.10)



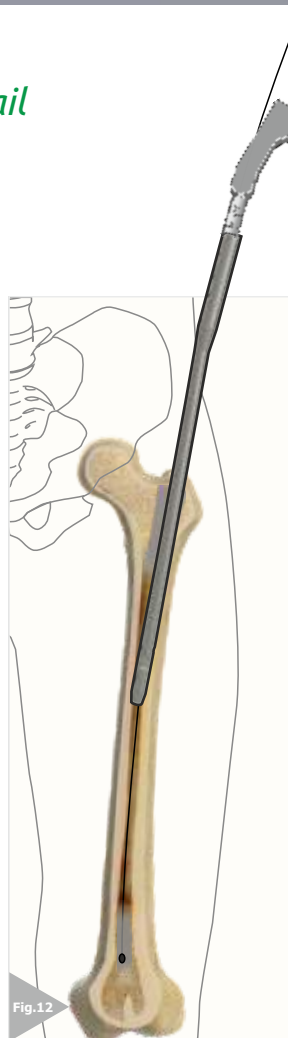


2.4 Nail

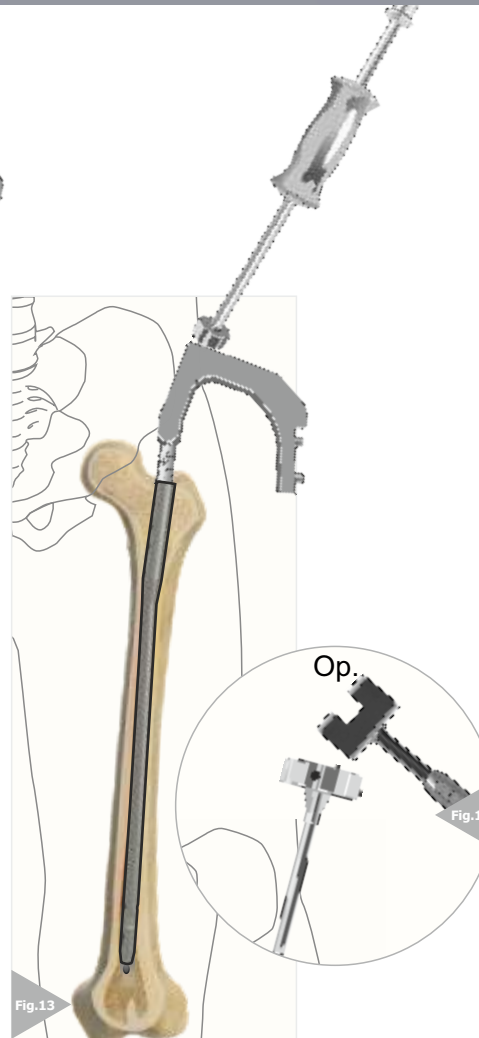
2.4.1.Placement Of the Nail



Combine (B2 Nail Holder) with (ZFN)
Use (B6 T-Screwdriver SW 6.5) with (B3 Nail Connecting Screw) and pass from (B2) screw hole and complete fixing with Nail (Fig.11.)

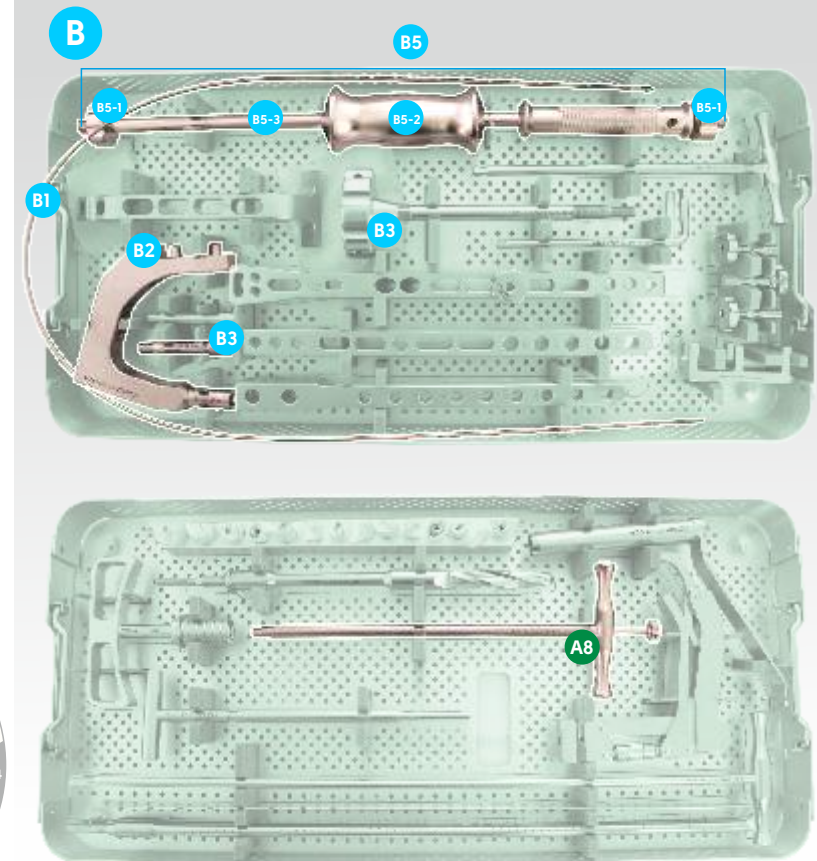


Pass this combination over (B1 Guiding Wire) advance through the channel (Fig.12).



Assemble the (B5 Movable Hammer) with the (B2). Tighten the (B5-1) screw. Fix it with the (B5-2) handle, insert the nail into the channel by moving back and forth in the nail direction (Fig.13). If you want hammer use (B7 Nail Impactor) (Fig.14)

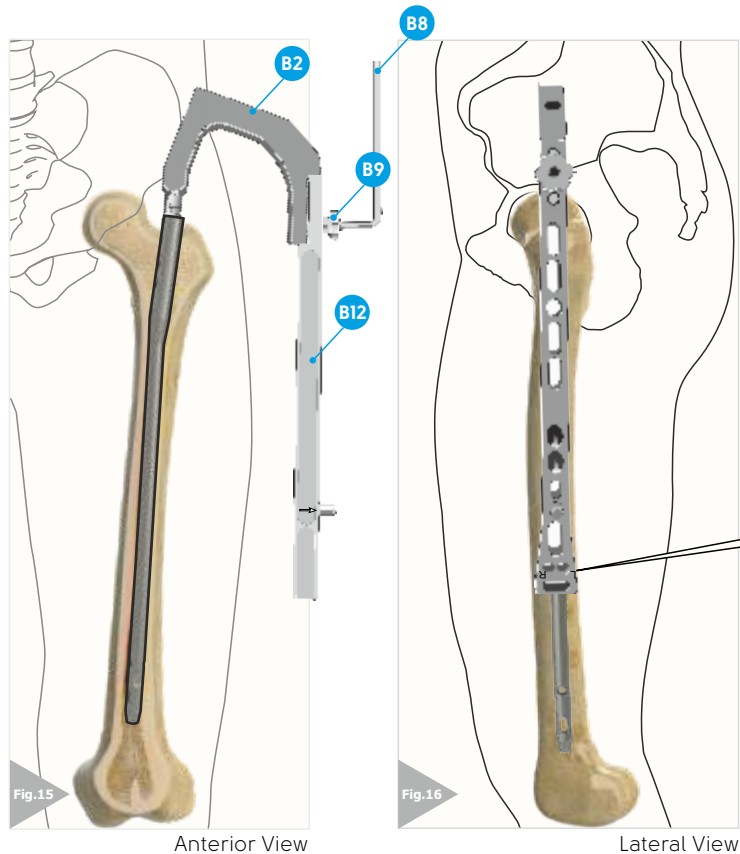
Remove the (B5 Movable Hammer)





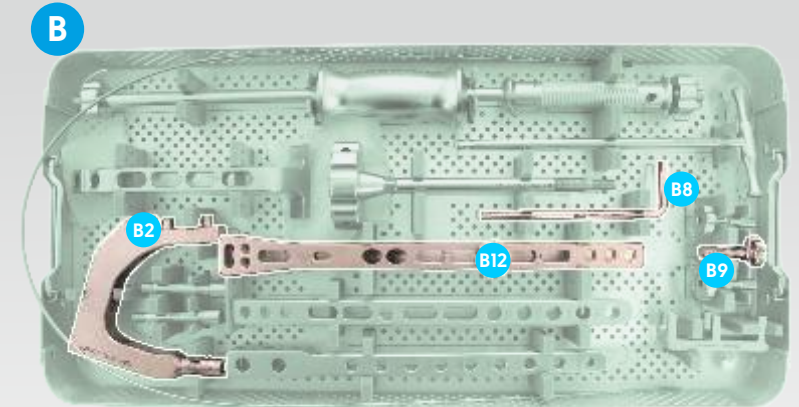
2.5 Locking

2.5.1. Proximal Locking



Combine (B2 Nail Holder) and (B12 Targeting Device Right/Left) from the joining zones.
Insert (B9 Targeting Device Screw Short) into the hole
Tighten and fix with (B8 L-Wrench SW 5).
(Fig.15-16).

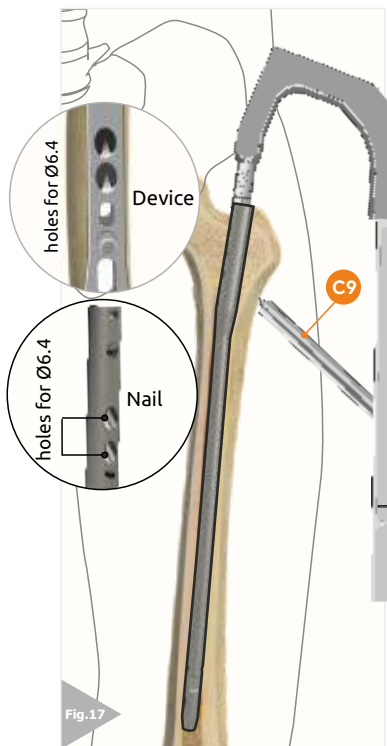
Remove the (B8 L Key)



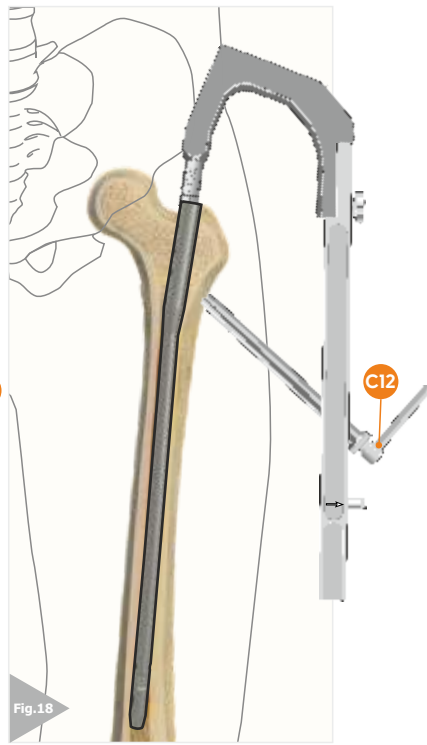


2.6 Proximal Screws

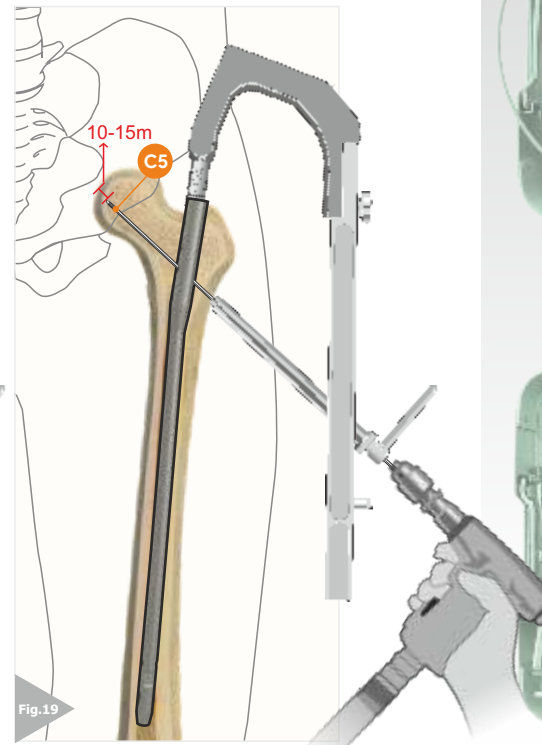
2.6.1. Screw location



Attach (C9 Centering Sleeve Ø 10 / Ø 8.1 mm x 155 mm) to (B12 Targeting Tool Right / Left) inside holes. This is designed for Ø6.4 screws
Insert (C19 Center Punch 175 mm) into (C9 Centering Sleeve Ø 10 / Ø 8.1 mm x 155 mm) and locate the screw.
Remove (C19 Center Punch 175

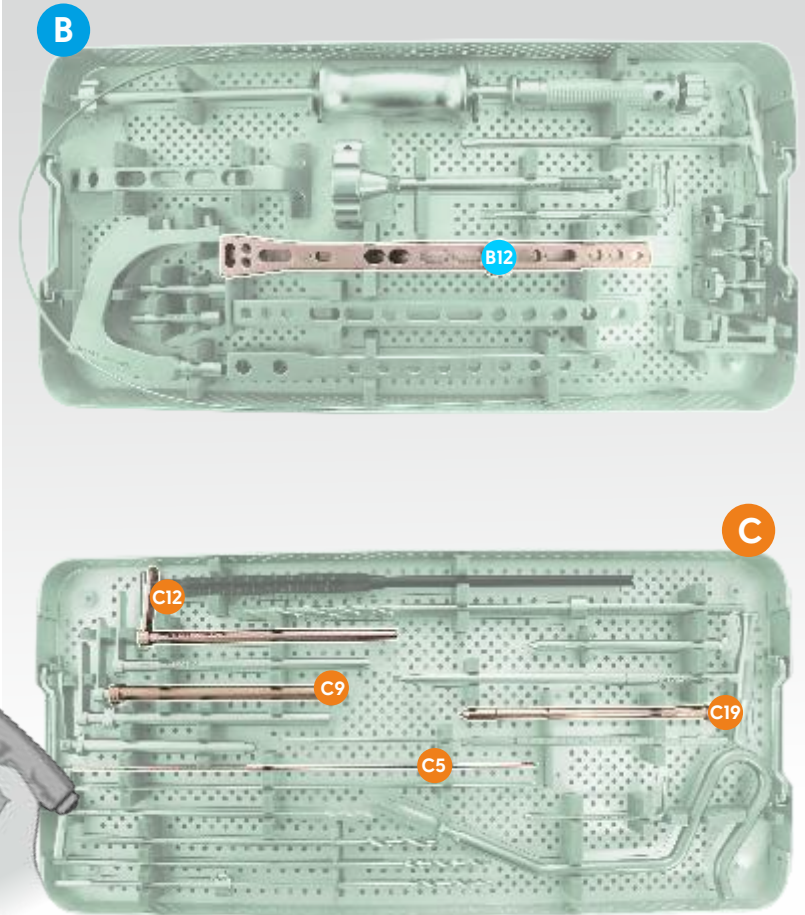


insert (C12 Kirschner Wire Sleeve Ø 2.5 mm) instead (Fig. 18).



(C5 Threaded K-Wire Ø 2.5 x 315 mm) insert surgical motor.
insert through (C12 Kirschner Wire Sleeve Ø 2.5 mm) advance through the femoral head (Fig. 24).
Follow the process in scopy (Fig. 25).

Remove (C12 Kirschner Wire Sleeve Ø 2.5 mm)





2.6 Proximal Screws

2.6.2.Determine Screw Length

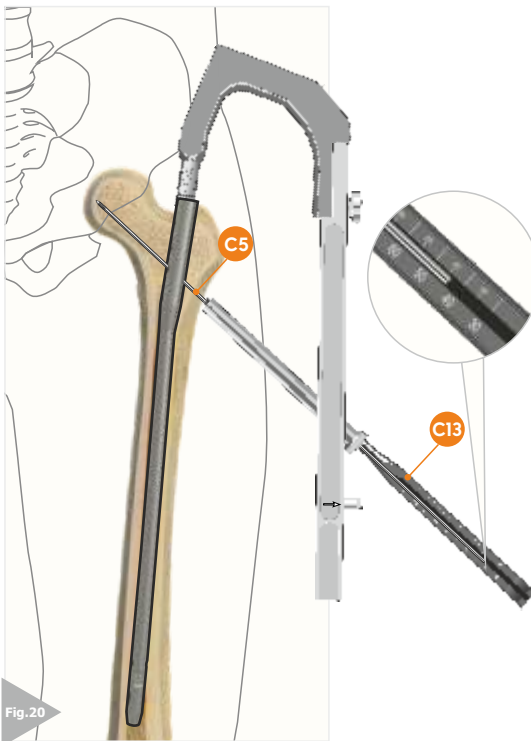


Fig.20

Pass (C13 Depth Guide) over (C5 Threaded K-Wire $\varnothing 2.5 \times 315$ mm). Read the measurement and determine the screw length (Fig.20).

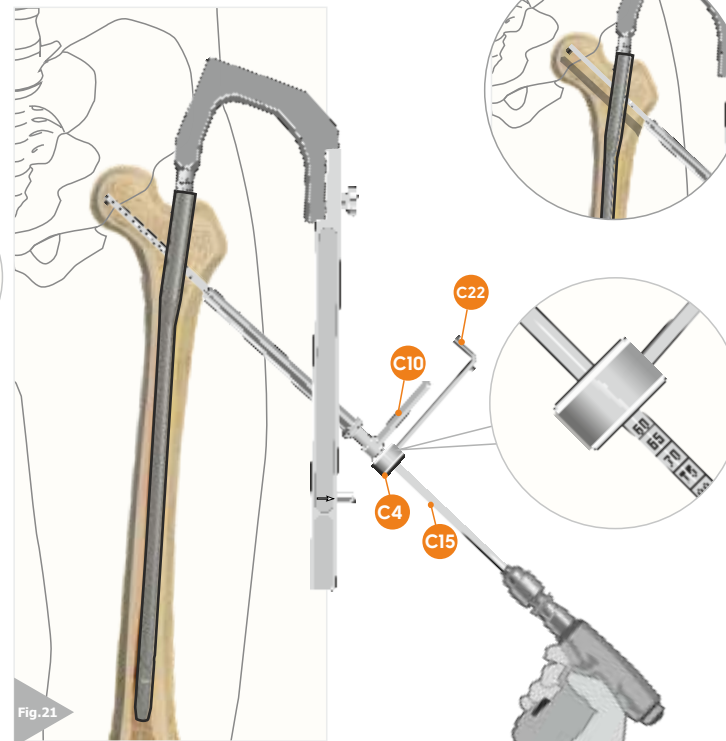
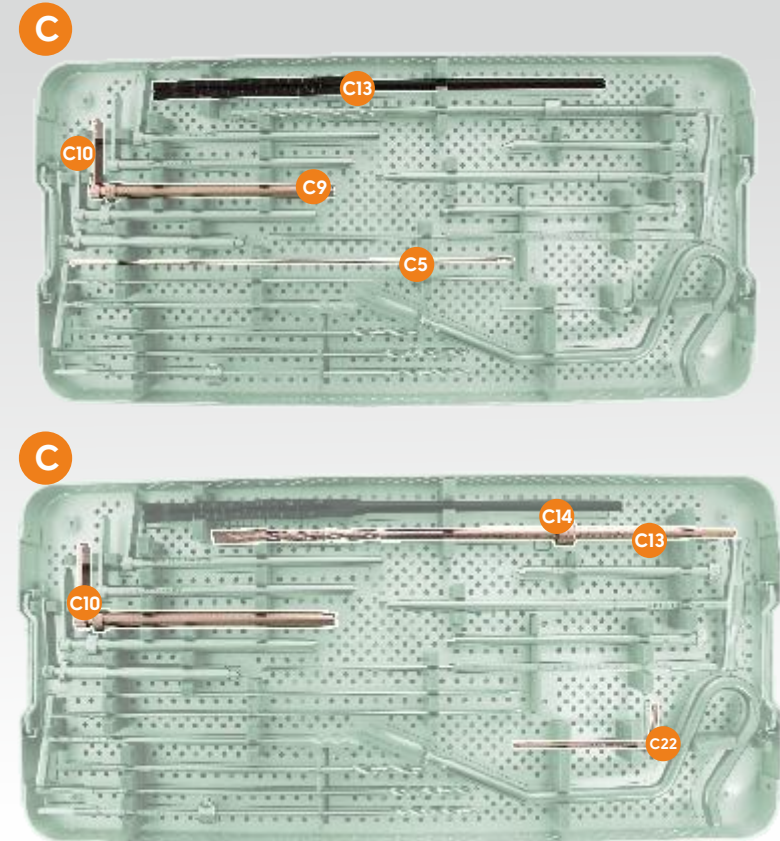


Fig.21

Insert (C10 Drill Sleeve $\varnothing 6.4$ mm).
Adjust the (C14 Drill Stop $\varnothing 6.4$ mm) on (C15 Lag Drill $\varnothing 6.4 \times 340$ mm). Tighten with (C22 L-Wrench SW 3).
insert the (C15 Lag Drill $\varnothing 6.4 \times 340$ mm) to the surgical motor
Complete the drilling process in (C10 Drill Sleeve $\varnothing 6.4$ mm) (Fig.21)

Remove (C13 Depth Guide).

Remove (C5 Threaded K-Wire $\varnothing 2.5 \times 315$ mm) with surgical Motor . (C10 Drill Sleeve $\varnothing 6.4$ mm) remove it after the process is completed





2.6 Proximal Screws

2.6.4. Ø6.4mmLag Screw

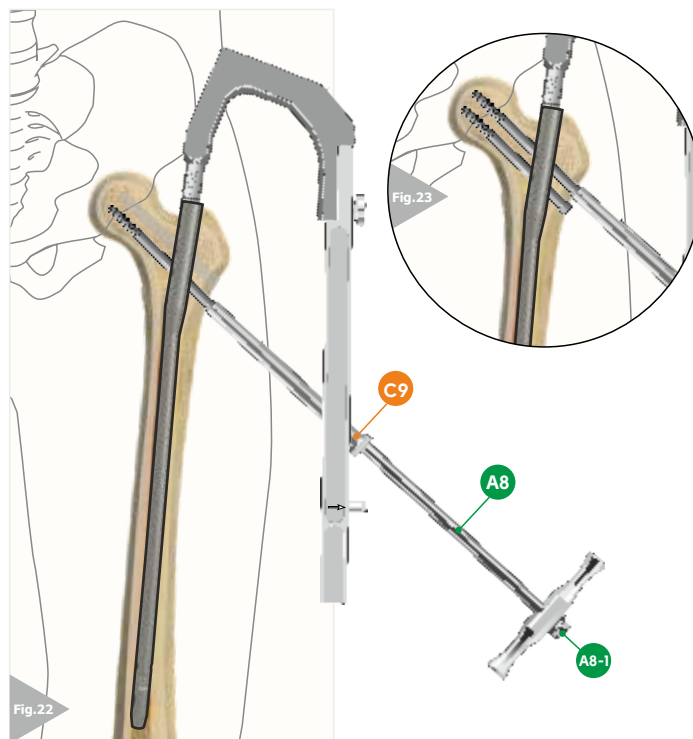
Hold the Lag screw with (A8 T-Type Lag Screwdriver SW 5).

Insert the (A8-1 Lag screwdriver shaft)

Screw the lag screw (C9 Centering Sleeve Ø 10 / Ø 8.1 mm x 155 mm) through it.

Tighten the (A8 T-Type Lag Screwdriver SW 5). (Fig.22)

Follow the procedure for the other screw. (Fig.23)

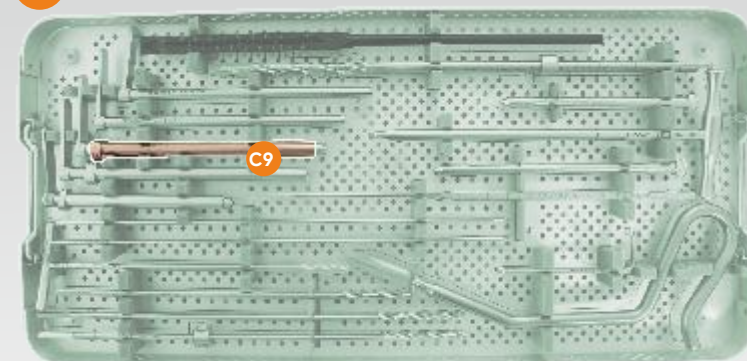


Remove (C9 Centering Sleeve Ø 10 / Ø 8.1 mm x 155 mm).

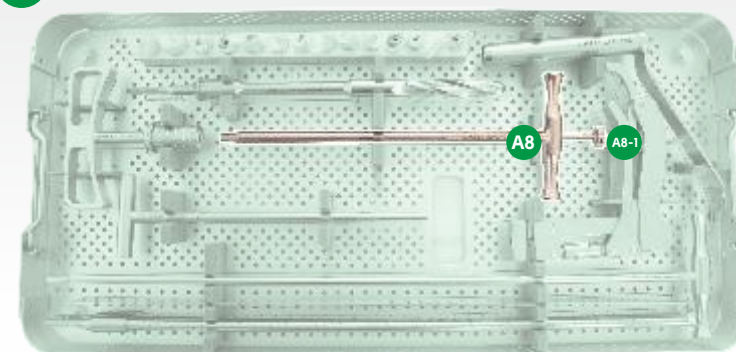
Proximal Screws

REF. NO	LENGTH (mm)	REF. NO	LENGTH (mm)
4612-6050	50	4612-6085	85
4612-6055	55	4612-6090	90
4612-6060	60	4612-6095	95
4612-6065	65	4612-6100	100
4612-6070	70	4612-6105	105
4612-6075	75	4612-6110	110
4612-6080	80	4612-6115	115
		4612-6120	120

C



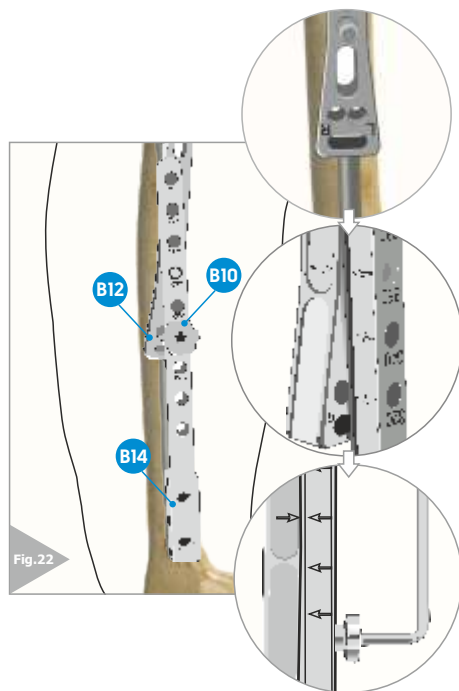
A





2.7 Locking 2

2.7.1. Distal Locking

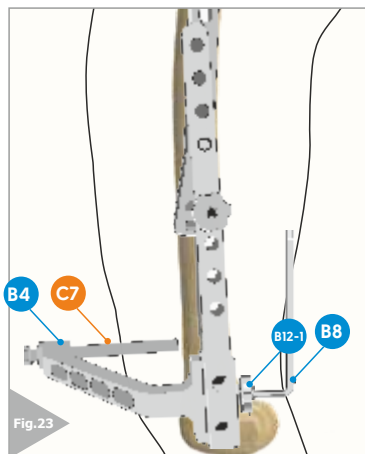


Combination of the targeting device is made according to the nail length. Use the length which is determined in the measurement steps.

Combine (B12 Targeting Device Right/Left) with (B14 Targeting Device).

Attached according to right or left and length of the nail.

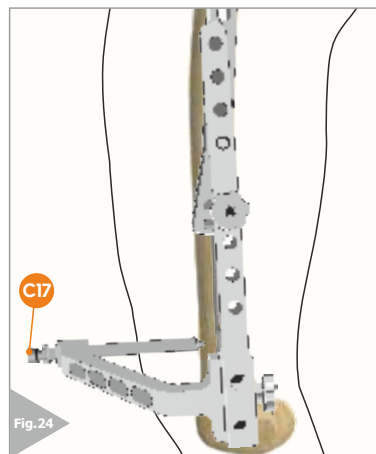
Install the (B9 Targeting Device Screw Short) on the (B14 Targeting Device). Tighten with (B8 L-Wrench SW 5) (Fig.22).



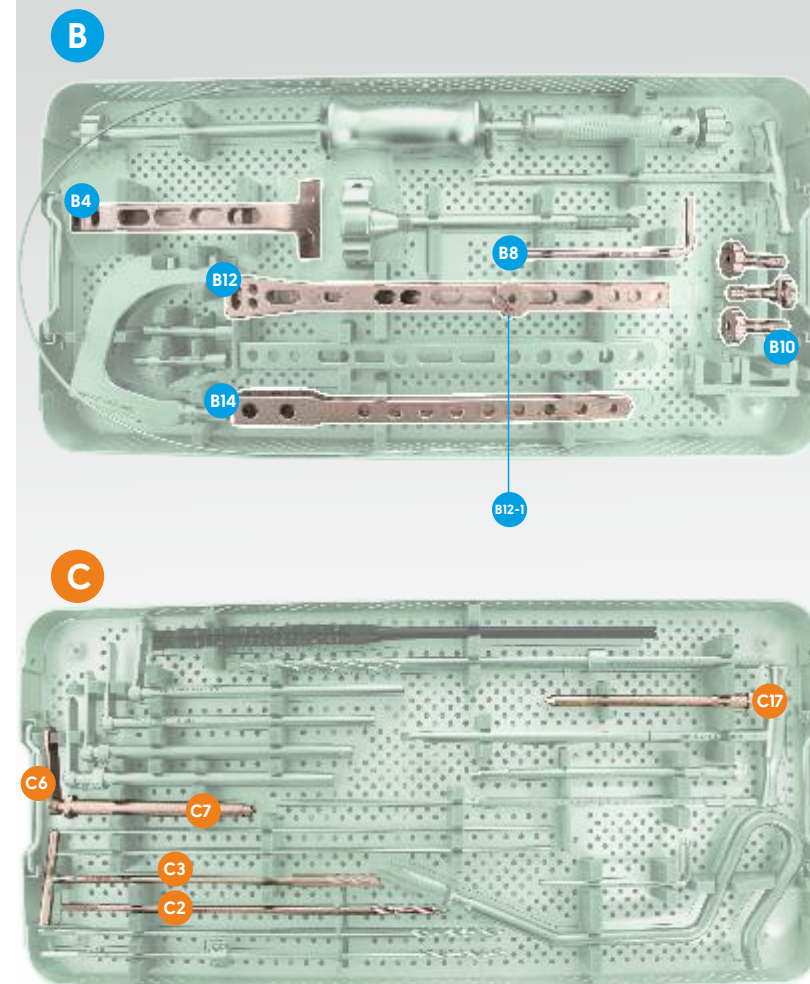
Attach the (B4 Distal Targeting Guide) to the (B14 Targeting Device). B12-1 Distal Guide Screw to fix it. Fix with (B8 L-Wrench SW 5).

In this case, the attachment of targeting devices is complete.

Insert the (C7 Centering Sleeve $\varnothing 10 / \varnothing 8.2 \text{ mm} \times 120 \text{ mm}$) into the fixing slot of the (B4 Distal Targeting) instrument. (Fig.23).



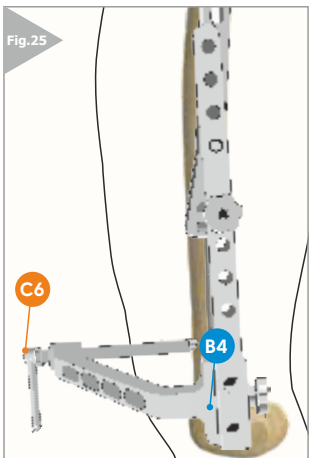
Place the (C17 Center Punch 140 mm) inside. Make the marking. (Fig.24). Remove the (C17 Center Punch 140 mm.)



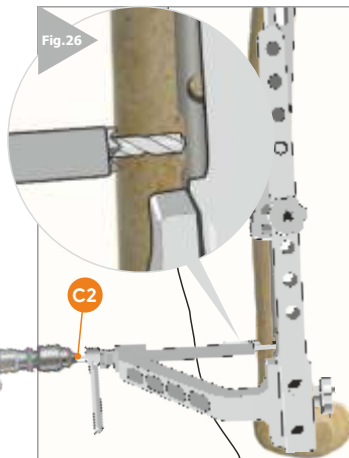


2.7 Locking 2

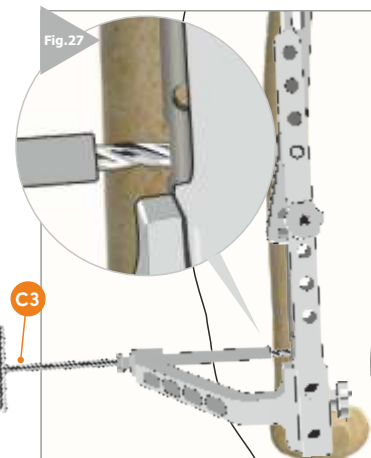
2.7.1. Distal Locking



Fit (C6 Drill Sleeve Ø 5.2 mm) to its place (Fig.25).



Drill with (C2 Drill Bit Ø 5.2 x 250 mm). Remove (C6 Drill Sleeve Ø 5.2 mm) (Fig.26).

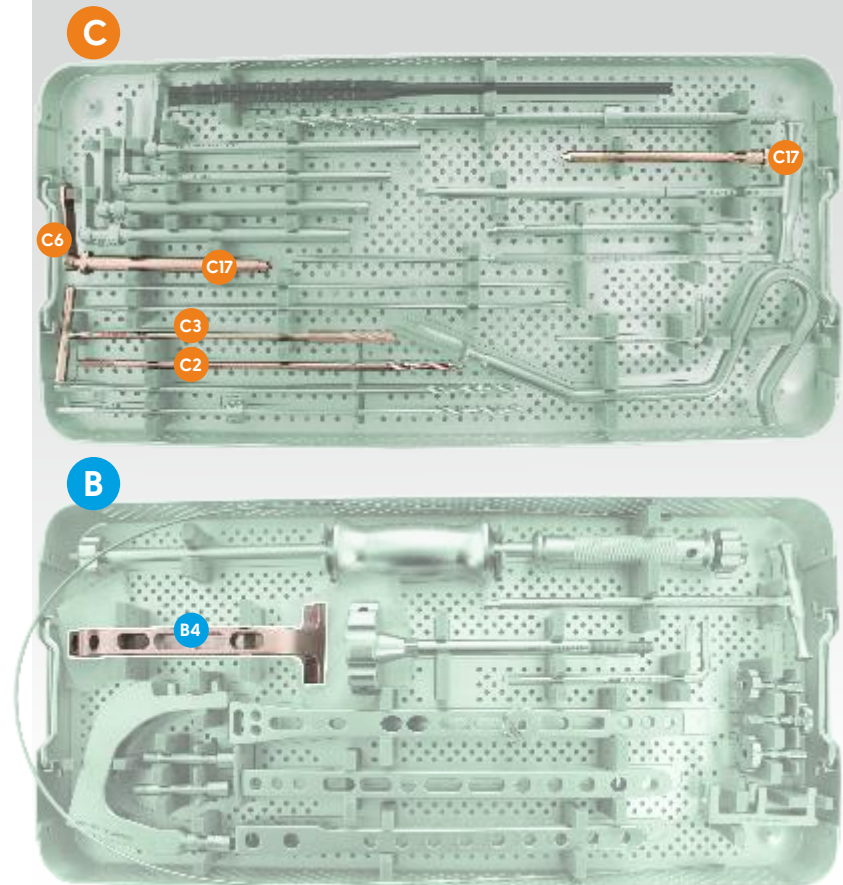


(C2 Drill Ø5.2) (C3 T Drill Ø5.2)



Make sure that the drilled area is fully opened with (C3 T Drill Ø5.2mm). The importance of this stage is that it enables the drilling of the area of the drill bit, which is close to the triangle, in a smooth form, and allows a more uniform fixation in the distal. (Fig.26-27).

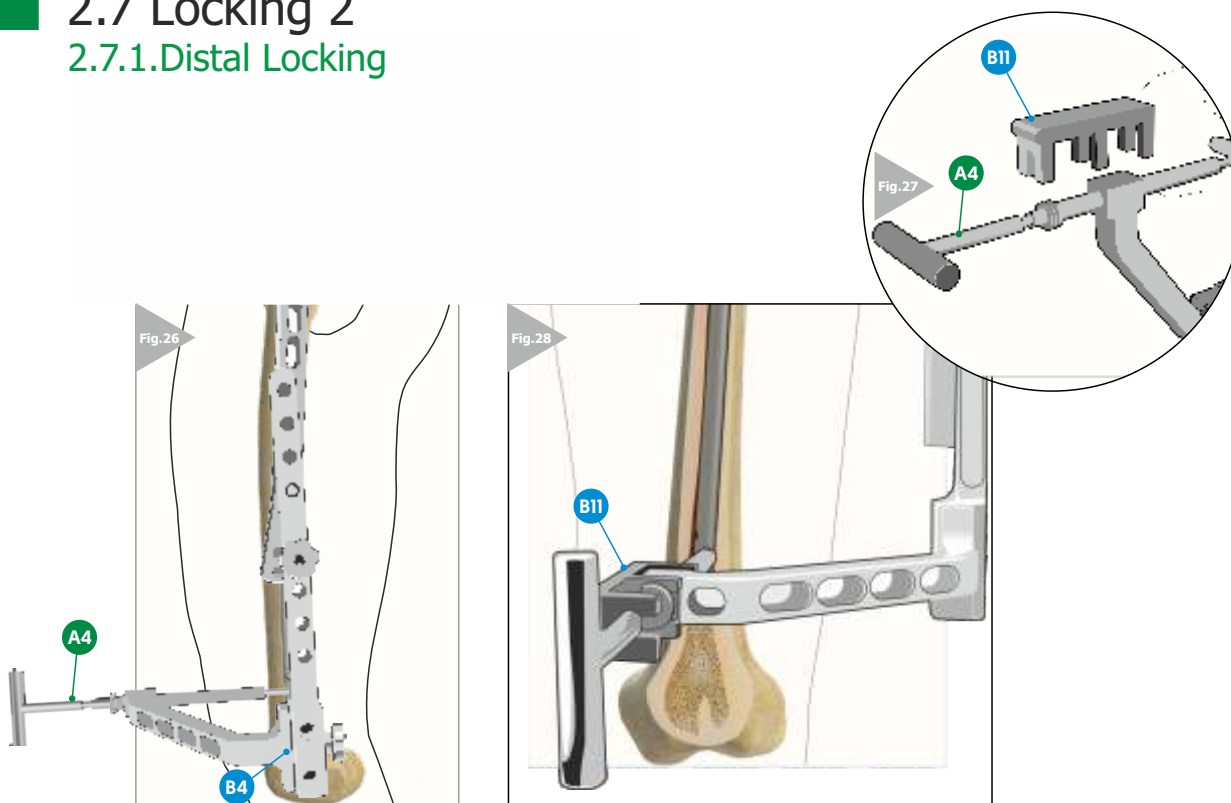
Remove (C3 T Drill Ø5.2mm) and (C6 Drill Sleeve Ø 5.2 mm).





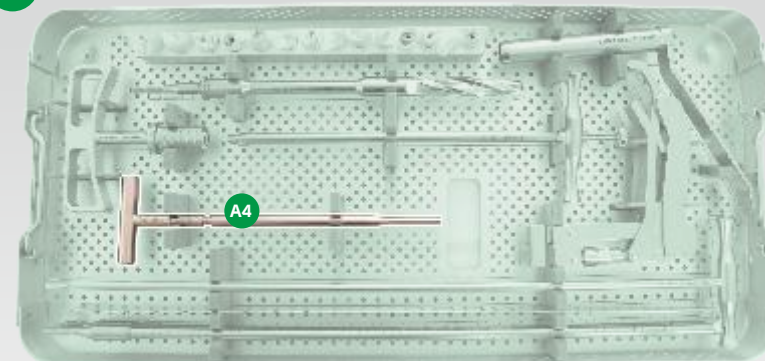
2.7 Locking 2

2.7.1. Distal Locking

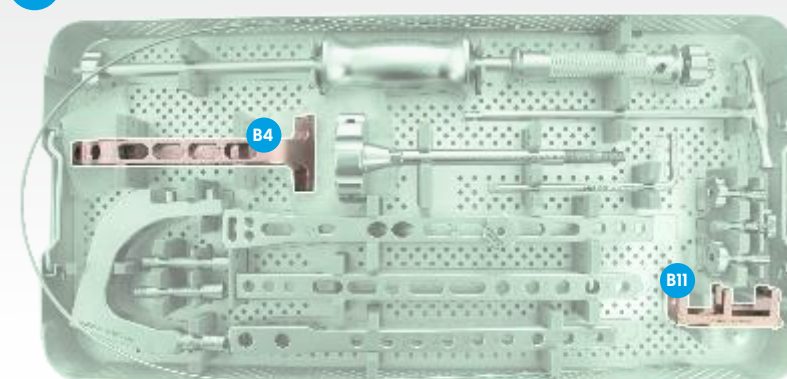


Attach (A4 T-Type Distal Locking Arm) to (B4 Distal Targeting Guide) (Fig.26). Assemble (B11 Distal Locking U-Guide) from the area suitable for (A4 T Distal Locking) and ensure the control. (Fig.27)
In this way, distal locking will be completed. (Fig.28) Distal screwing can be started.

A



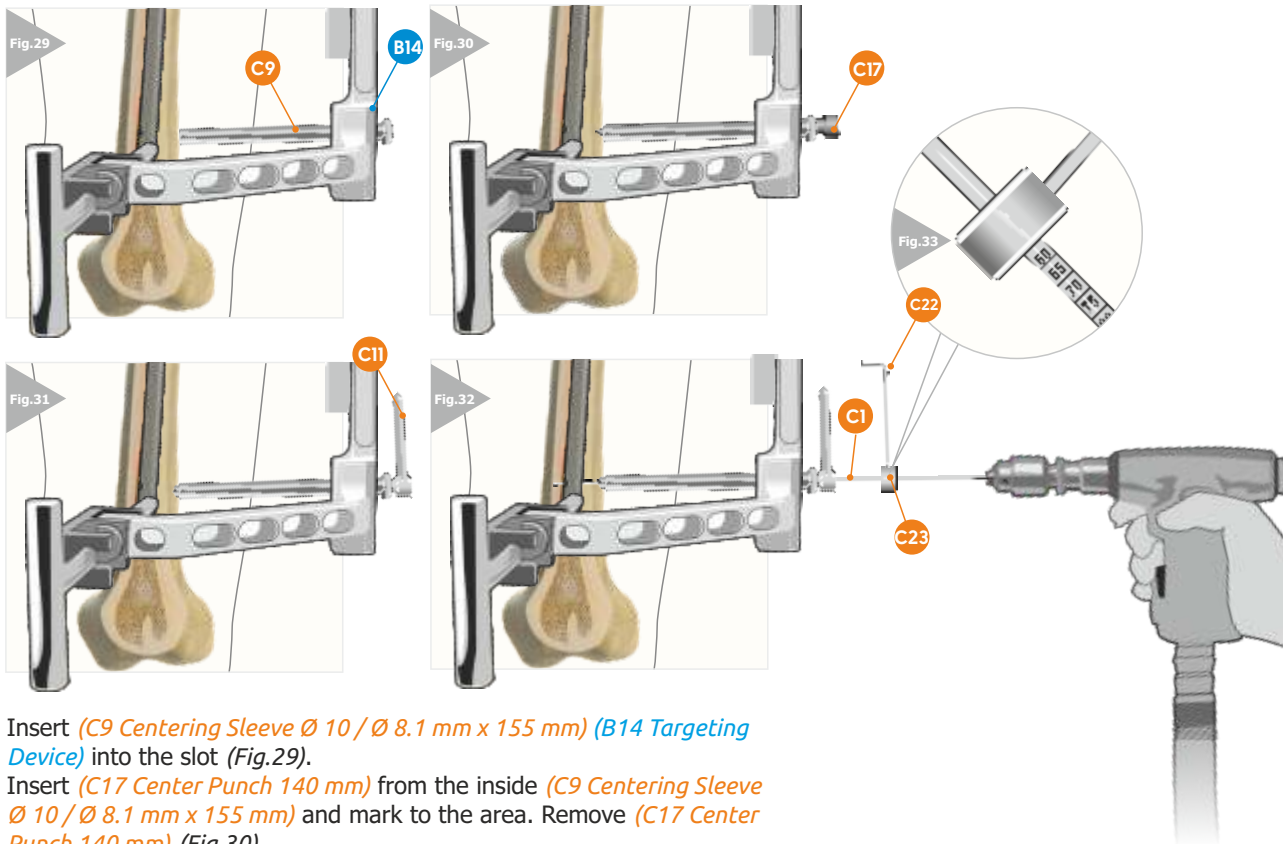
B





2.8 Distal ScREW

2.8.1. Drilling



Insert (C9 Centering Sleeve $\varnothing 10 / \varnothing 8.1 \text{ mm} \times 155 \text{ mm}$) (B14 Targeting Device) into the slot (Fig.29).

Insert (C17 Center Punch 140 mm) from the inside (C9 Centering Sleeve $\varnothing 10 / \varnothing 8.1 \text{ mm} \times 155 \text{ mm}$) and mark to the area. Remove (C17 Center Punch 140 mm) (Fig.30).

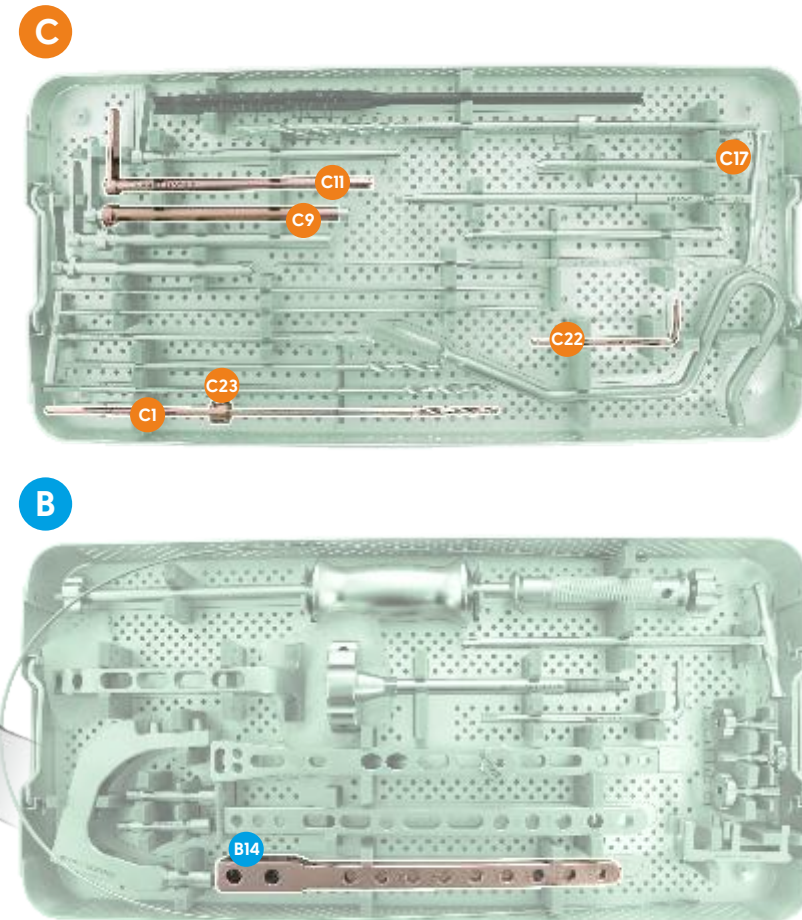
Place (C11 Drill Sleeve $\varnothing 4.3 \text{ mm}$) into (C9 Centering Sleeve $\varnothing 10 / \varnothing 8.1 \text{ mm} \times 155 \text{ mm}$) (Fig.31).

(C1 Drill Bit $\varnothing 4.3 \times 300 \text{ mm}$) Attach to the surgical motor .

Drill up to the second cortex (Fig.32) Fix the (C23 Drill Stop $\varnothing 4.3 \text{ mm}$) you have adjusted with (C22 L-Wrench SW 3) (Fig.33)

Complete the drilling process.

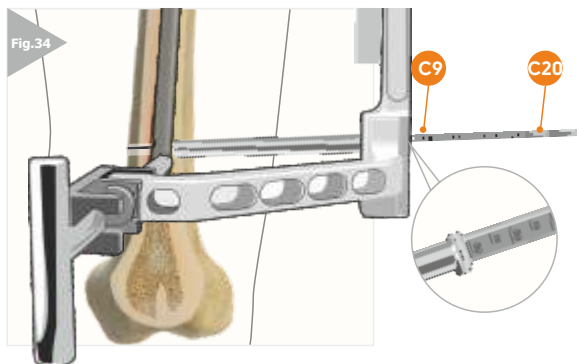
Remove (C11 Drill Sleeve $\varnothing 4.3 \text{ mm}$).



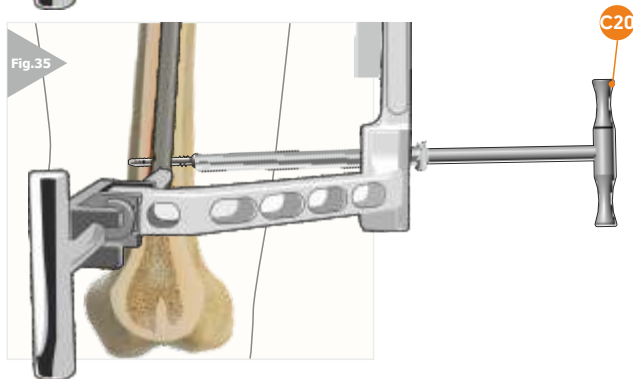


2.8 Distal Scwew

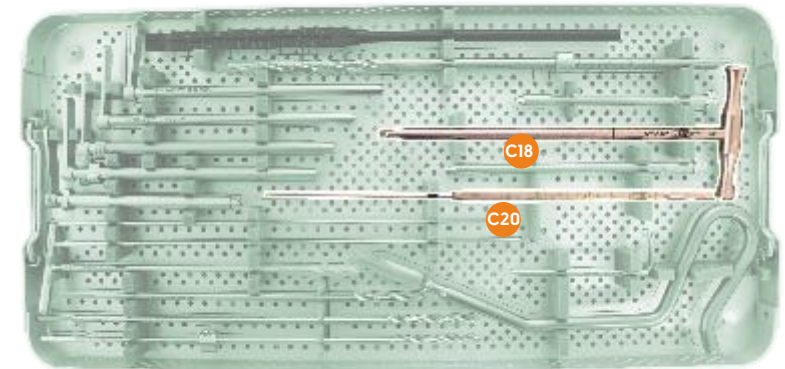
2.8.2.Determine Screw Lenght & Ø4.8mm Screw



In the previous stage the drill guide was removed
Place (C20 Screw Length Gauge) into (Centering Sleeve Ø 10 / Ø 8.1 mm x 155 mm). Determine the Screw Length. (Fig.34). Remove the (C20 Screw Length Gauge).
Send the Ø4.8 screw (C9 Centering Sleeve Ø 10 / Ø 8.1 mm x 155 mm) you determined the length with (C18 T Screwdriver SW 3.5 mm) (Fig.35).



C



Proximal/Distal Locking Screw For ZFN
(Ø 4.8 mm)

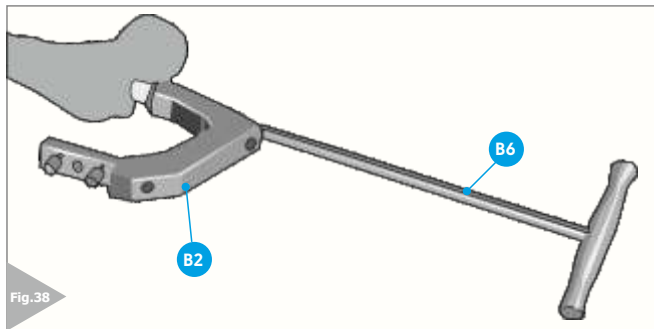
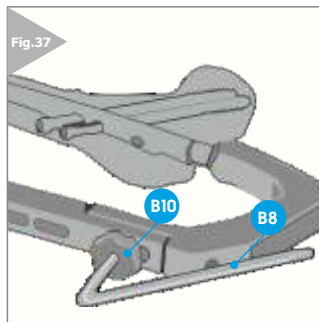
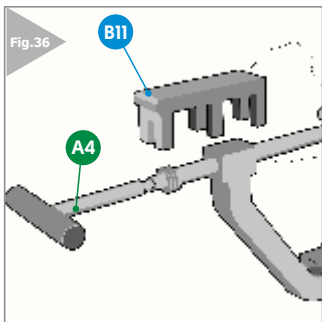


REF. NO	LENGTH (mm)
4292-4830	30
4292-4835	35
4292-4840	40
4292-4845	45
4292-4850	50
4292-4855	55
4292-4860	60
4292-4865	65
4292-4870	70
4292-4875	75
4292-4880	80
4292-4885	85
4292-4890	90



2.9 Finishing

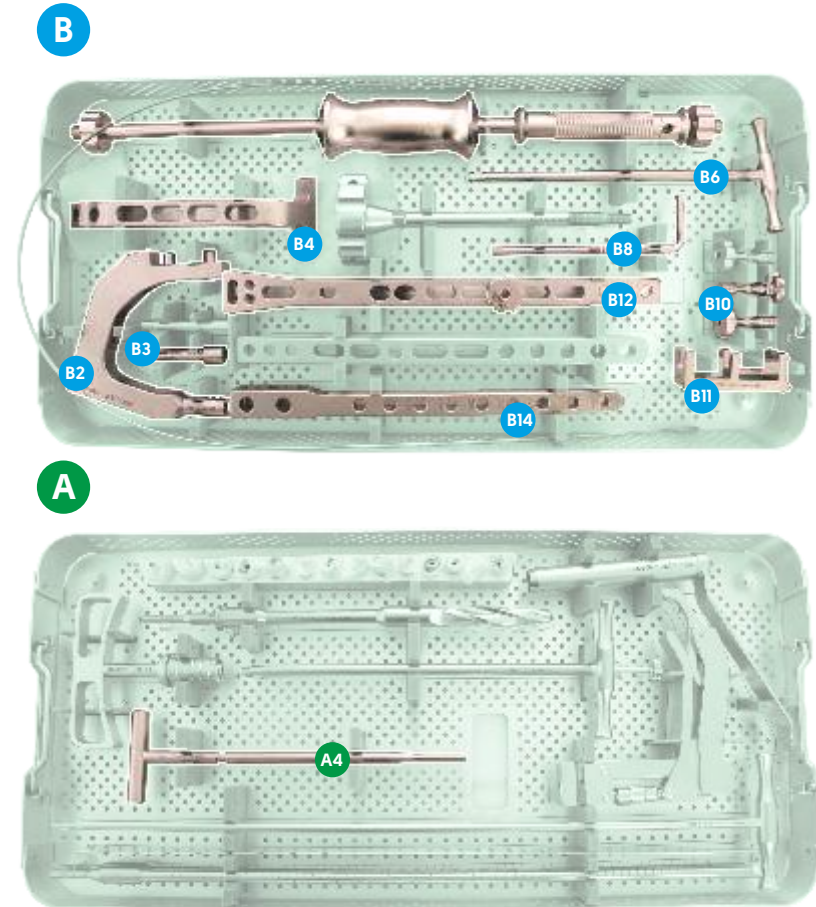
2.9.1. Removing Targeting Device



All screws were attached and fixed on the nail in previous steps. The targeting and fixing parts are detachable. A reverse process will be done. (B11 Distal Locking U-Guide) is removed. Then (A4 T-Type Distal Locking Arm) is removed. (C7 Centering Sleeve $\varnothing 10 / \varnothing 8.2 \text{ mm} \times 120 \text{ mm}$) can be removed (Fig. 36).

(B10 Proximal Locking Screw) is loosened with (B8 L-Wrench SW 5) (Fig. 37). Some of the targeting pieces can be removed as a whole. Later, these parts can be removed.

The remaining (B2 Nail Holder) is loosened with (B6 T-Screwdriver SW 6.5) and (B3 Nail Connecting Screw)

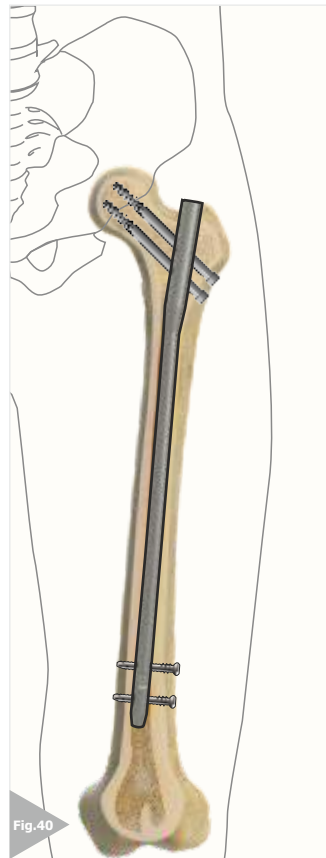
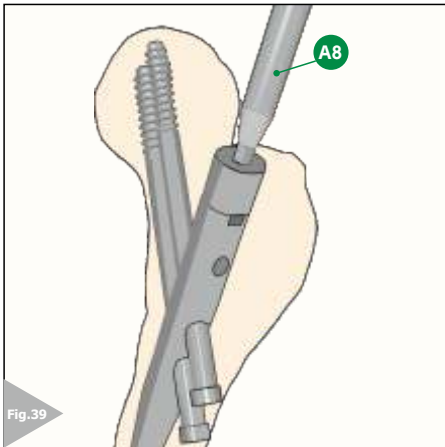




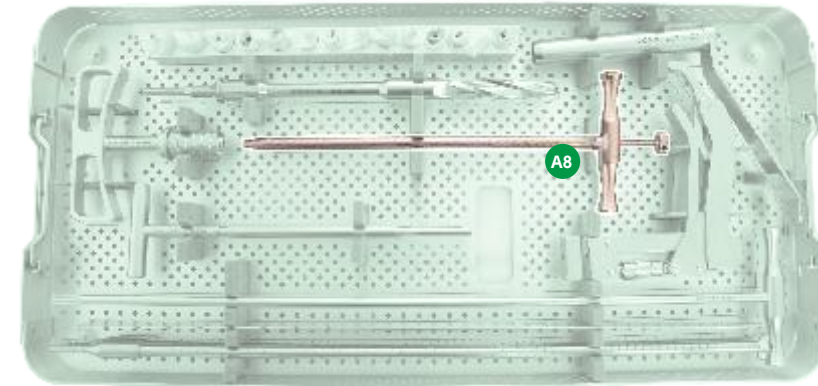
2.9 Finishing

2.9.2.End Cap

It is attached to its place with the appropriate size End Cap (*A8 T-Type Lag Screwdriver SW 5*)(Fig.39) and the process is completed.(Fig.40)



A



ZFN End Cap



REF. NO	LENGTH (mm)
4602-0000	0
4602-0005	5
4602-0010	10



2.10 Removing

2.10.1. Removing nail

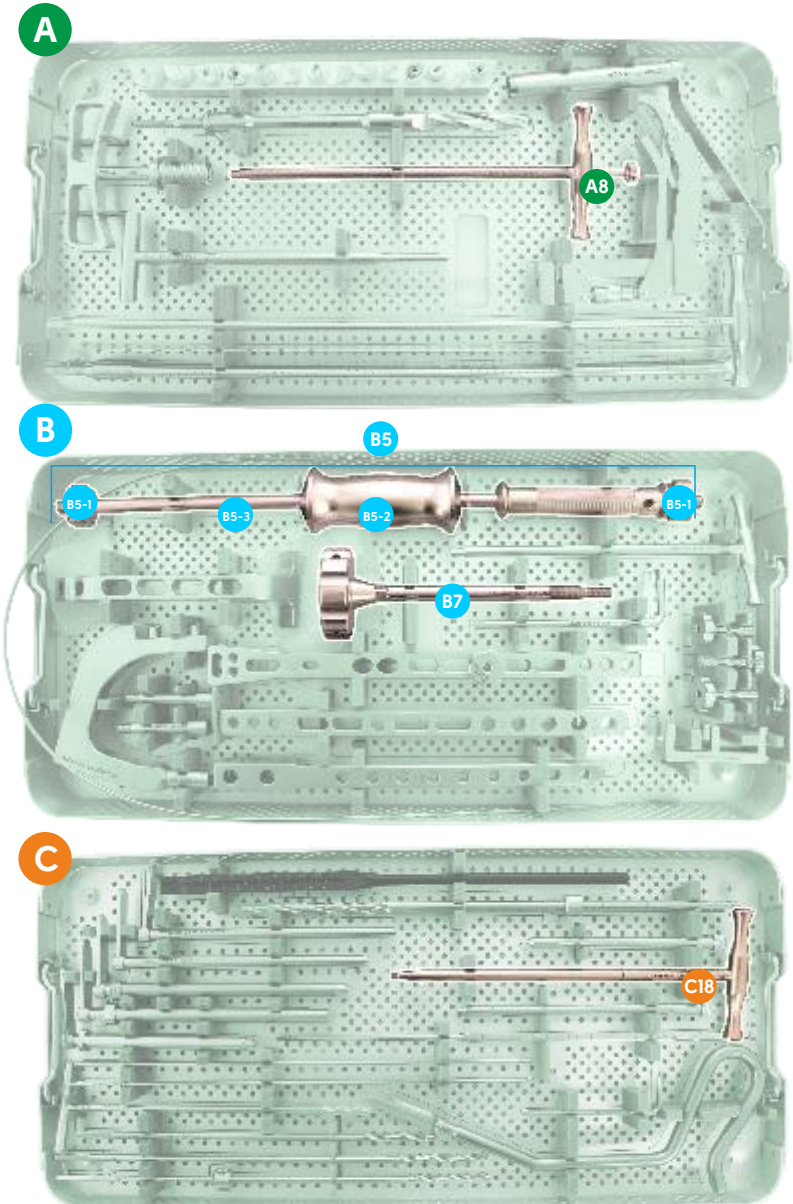
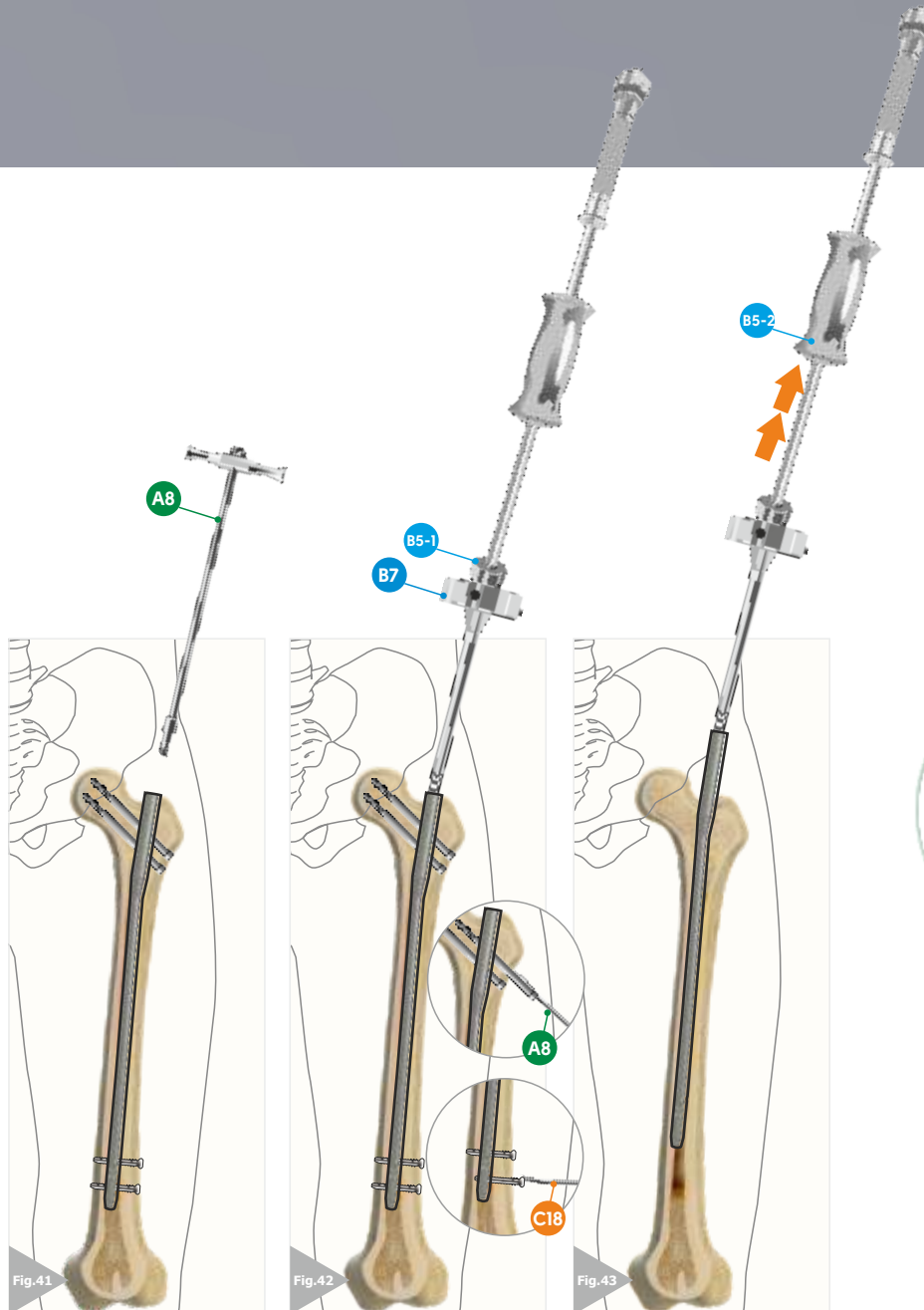
In order for the nail to be removed, screws must be removed. End cap screw removed with *(A8 T-Type Lag Screwdriver SW 5)* and then *(Fig.41)*.

(B7 Nail Impactor) is attached to the end cap slot proximal to the nail. *(Fig.79)*
It is attached to the *(B7 Nail Impactor)* part with *(B5 Movable Hammer)* *(B5-1 Sliding Hammer Shaft Screw)*. *(Fig.42)*.

In this way All the screws on can be removed position.
Proximal Screws are removed with *(A8 T-Type Lag Screwdriver SW 5)*.

Distal screws are removed with *(C18 T Screwdriver SW 3.5 mm)* *(Fig.42)*.

The nail can be removed by holding it from the *(B5-2 Movable Hammer)* part by movements in the direction in the image. *(Fig.43)*

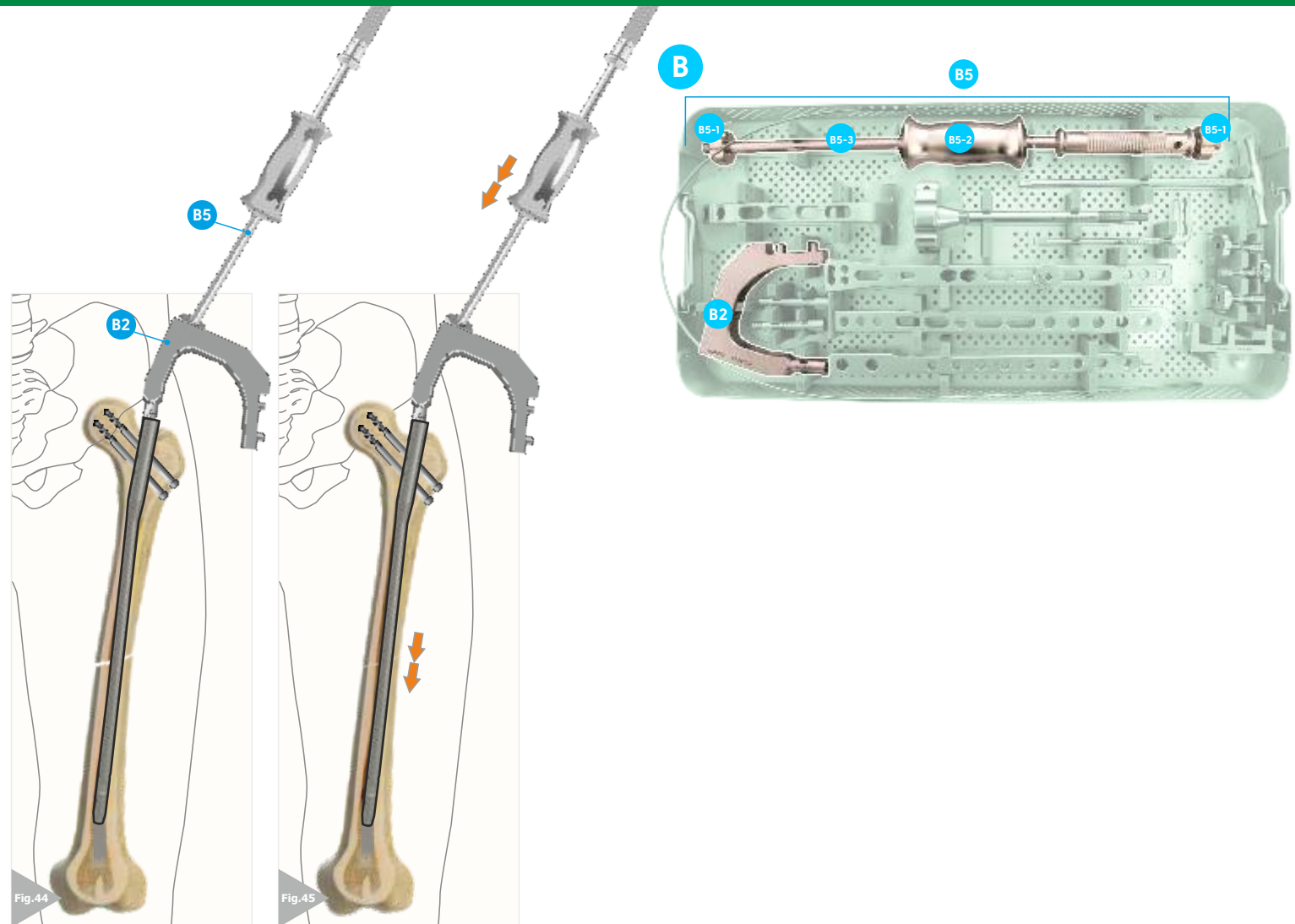




2.11 OP.Distrraction, Compression

2.11.1.Compression

If necessary, before the distal screws are sent for compression (when the distal is in free position), after the proximal screws are attached, some compression can be obtained by connecting to *(B2 Nail Holder)* *(B5 Movable Hammer)* (Fig.41). After the compression the distal screws are sent.



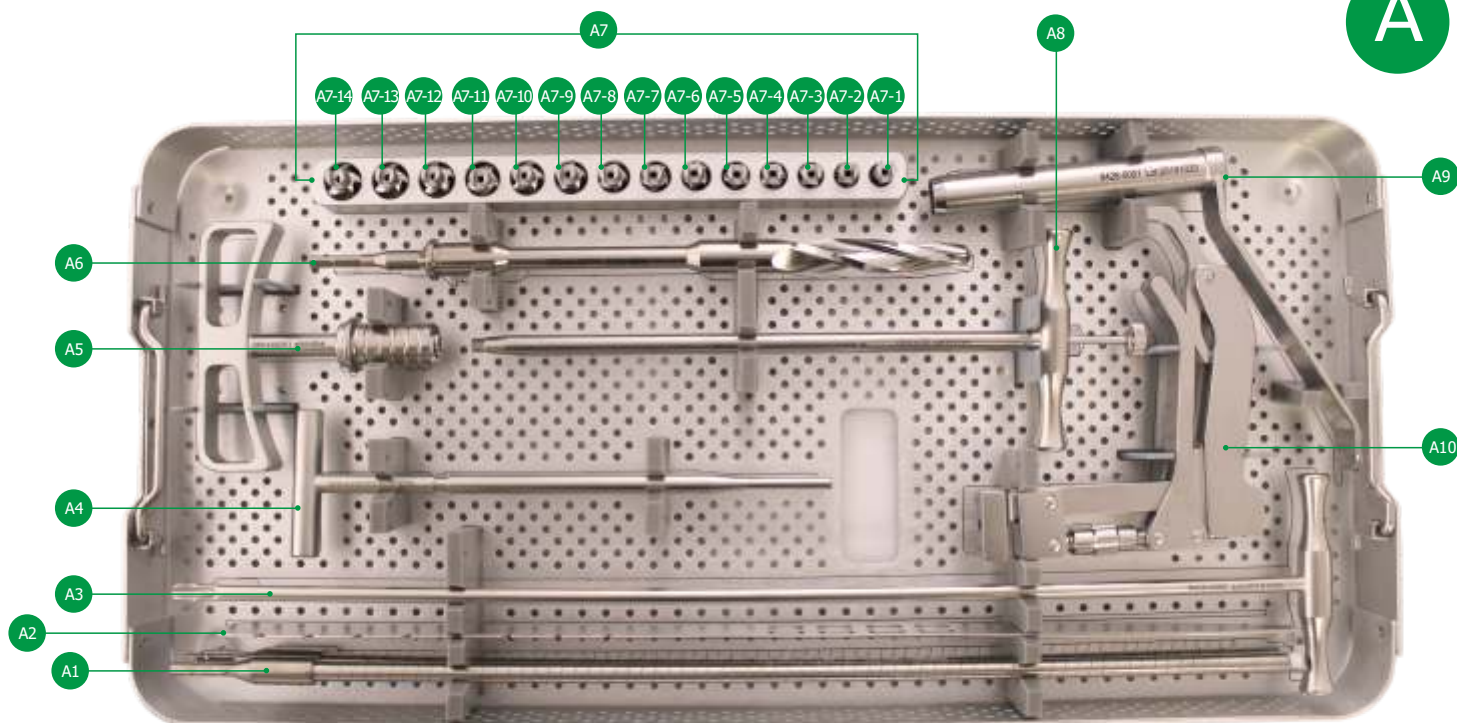


ZFN Nail Instrument Set Tray 9426-0000-T3

A1	Flexible Reamer Ø8x460mm	9426-0007
A2	Measuring Device (Ruler)	9426-0061
A3	T-Chisel	9426-0005
A4	T-Type Distal Locking Arm	9426-0038
A5	Cannulated T-Handle	9426-0004
A6	Proximal Drill Ø 14 mm	9426-0003
A7	Flexible Reamer Tips	
A8	T-Type Lag Screwdriver SW 5	9426-0048
A9	Proximal Drill Sleeve Ø 14 mm	9426-0001
A10	Guide Wire Holder	9413-0002

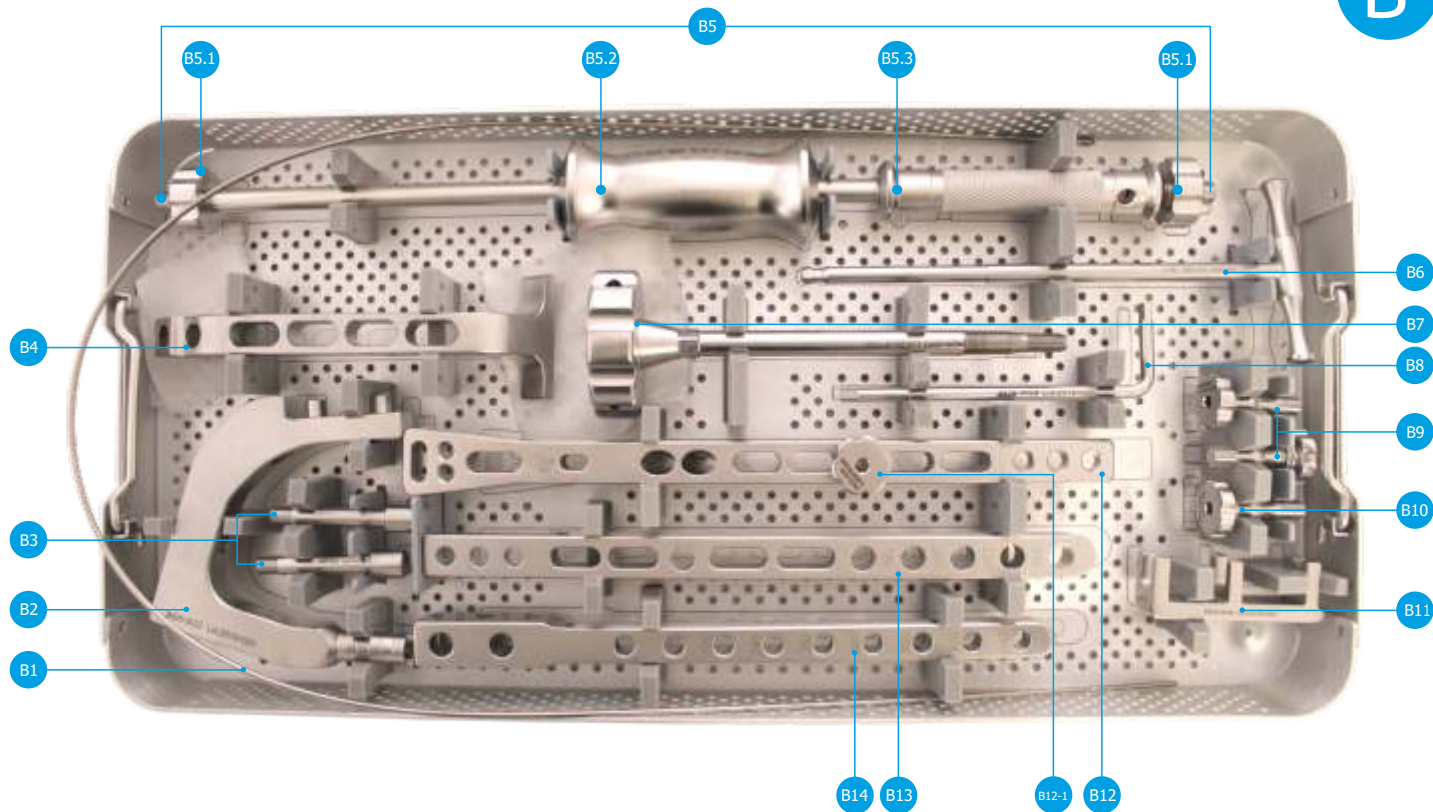
A7-1	Flexible Reamer Head Ø 8 mm	9426-0080
A7-2	Flexible Reamer Head Ø 8.5 mm	9426-0085
A7-3	Flexible Reamer Head Ø 9 mm	9426-0090
A7-4	Flexible Reamer Head Ø 9.5 mm	9426-0095
A7-5	Flexible Reamer Head Ø 10 mm	9426-0100
A7-6	Flexible Reamer Head Ø 10.5 mm	9426-0105
A7-7	Flexible Reamer Head Ø 11 mm	9426-0110

A7-8	Flexible Reamer Head Ø 11.5 mm	9426-0115
A7-9	Flexible Reamer Head Ø 12 mm	9426-0120
A7-10	Flexible Reamer Head Ø 12.5 mm	9426-0125
A7-11	Flexible Reamer Head Ø 13 mm	9426-0130
A7-12	Flexible Reamer Head Ø 13.5 mm	9426-0135
A7-13	Flexible Reamer Head Ø 14 mm	9426-0140
A7-14	Flexible Reamer Head Ø 14.5 mm	9426-0145
A7-15	Flexible Reamer Head Ø 15 mm	9426-0150





B



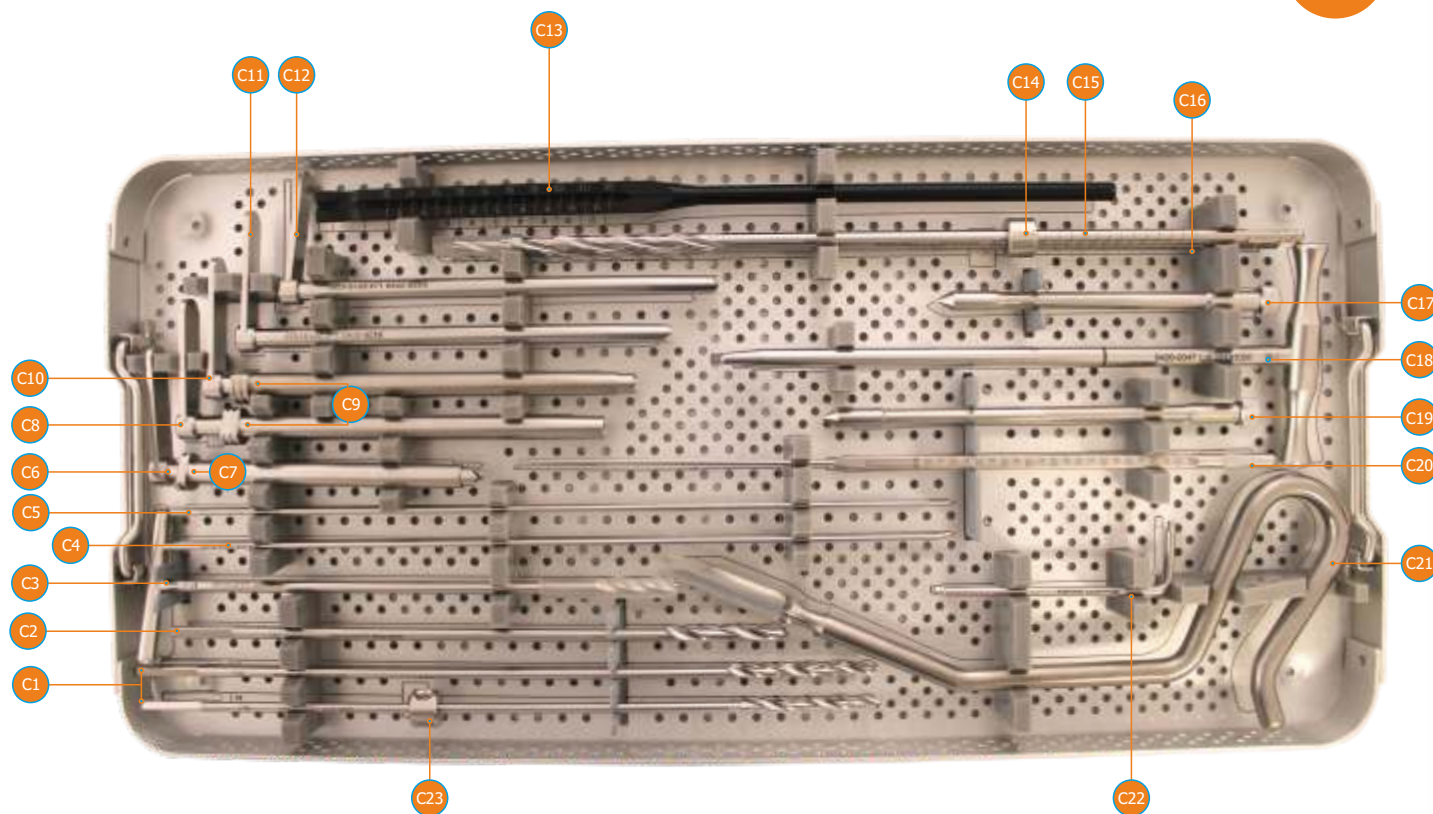
ZFN Nail Instrument Set Tray 19426-0000-T1

B1	Guide Wire Ø2.5/Ø3.3/1000mm With Knob	9426-0006
B2	Nail Holder	9426-0022
B3	Nail Connecting Screw	9426-0023
B4	Distal Targeting Guide	9426-0031
B5	Movable Hammer	
B6	T-Screwdriver SW 6.5	9426-0024
B7	Nail Impactor	9426-0063
B8	L-Wrench SW 5	9426-0028
B9	Targeting Device Screw Short	9426-0027
B10	Proximal Locking Screw	9413-0060
B11	Distal Locking U-Guide	9426-0039
B12	Targeting Device Right/Left	9426-0026
B12-1	Distal Guide Screw	9413-0058
B13	Targeting Device (for Short Nail)	9413-0032
B14	Targeting Device	9413-0029

B5-1	Sliding Hammer Shaft Screw	9426-0025.3
B5-2	Sliding Hammer	9426-0025.1
B5-3	Sliding Hammer Shaft	9426-0005.2



ZFN Nail Instrument Set Tray 9426-0000-T2



C1	Drill Bit Ø 4.3 x 300 mm	9426-0043
C2	Drill Bit Ø 5.2 x 250 mm	9426-0036
C3	T Drill Ø5.2mm	9426-0037
C4	K-Wire Ø 2.5 x 315 mm	9426-0050
C5	Threaded K-Wire Ø 2.5 x 315 mm	9426-0051
C6	Drill Sleeve Ø 5.2 mm	9426-0035
C7	Centering Sleeve Ø 10 / Ø 8.2 mm x 120 mm	9426-0033
C8	Drill Sleeve Ø 4.3 mm	9426-0042
C9	Centering Sleeve Ø 10 / Ø 8.1 mm x 155 mm	9426-0040
C10	Drill Sleeve Ø 6.4 mm	9413-0053
C11	Drill Sleeve Ø 4.3 mm	9426-0042
C12	Kirschner Wire Sleeve Ø 2.5 mm	9426-0049
C13	Depth Guide	9413-0046
C14	Drill Stop Ø 6.4 mm	9413-0056
C15	Lag Drill Ø 6.4 x 340 mm	9413-0055
C16	Cannulated Lag Drill Ø 6.4 x 340 mm	9413-0054
C17	Center Punch 140 mm	9426-0041
C18	T Screwdriver SW 3.5 mm	9426-0047
C19	Center Punch 175 mm	9413-0034
C20	Screw Length Gauge	9413-0052
C21	AWL	9413-0021
C22	L-Wrench SW 3	9413-0045
C23	Drill Stop Ø 4.3 mm	9413-0044



4.1 DEVICE CLEANING CONDITIONS

Do not use metal brushes or rubbing pads during Decontamination of the tools should be performed immediately after the surgical procedure is completed. Contaminated tools must not be allowed to dry before reprocessing.

Excessive blood or debris must be removed in order to prevent the drying on the surface. All users must be qualified staff with documented evidence of training and competence. Training should include the current guidelines, standards and hospital policies. Even if they are made of high-grade stainless steel, the surgical tools must be thoroughly dried in order to prevent rust formation. Prior to sterilization, all the tools should be examined for the cleanliness of the lumens of the joints of the surfaces. manual cleaning process. Use cleaning agents with low-foam surfactant to be able to see the tools in the cleaning solution. Rinse the cleaning materials easily from the tool in order to prevent residue formation.

Mineral oil or silicon lubricants should not be used on Zimed tools. Neutral pH enzymatic and cleaning materials are recommended for cleaning the reusable instruments. It is very important to neutralize and rinse the alkaline cleaning materials thoroughly from the tools. Anodized aluminum should not contact with certain cleaning or disinfectant solutions. Avoid strong alkaline cleaners and disinfectants and solutions containing iodine, chlorine or certain metal salts.

4.1.1 Manual Cleaning/Disinfection

Prepare the enzymatic and cleaning materials at the dilution rates and temperatures as recommended by the manufacturer. New solutions should be prepared when the existing solutions are heavily contaminated. Place the tools in the enzymatic solution so that they are completely immersed. Operate all the movable parts so that the detergent contacts with all the surfaces.

Keep in the fluid for minimum 20 min. Use a nylon, soft-bristled brush to gently rub the tools until all visible debris is cleaned. Pay particular attention to the accessible areas and use a suitable bottle brush. In order to remove the dirt in the open springs, coils or flexible parts, wash the recesses with plenty of cleaning solution. Rub the surface with a scrubbing brush to remove all the visible dirt from the surface and the recesses. To ensure that all the recesses are cleaned, turn the component while rubbing. Remove the tools and rinse them for minimum 3 min. under running water. Pay particular attention to the cannulas and use a syringe to pass the fluid through the hard-to-reach areas. Place all the tools that are completely immersed in water, in an ultrasonic unit containing the cleaning solution. Operate all the movable parts so that the detergent contacts with all the surfaces. Expose the tools to sonification process for minimum 10 min..

Remove the tools and rinse with deionized water for at least 3 minutes or unless all the blood or dirt traces are eliminated in the rinsing water. Examine the tools under normal light to verify that visible dirt is removed. If visible dirt is present, repeat the above mentioned sonification procedure and the rinsing steps. Remove the excessive moisture on the tool with a clean, absorbent, lint-free cloth.

4.1.2 Combination Manual / Automated Cleaning and Disinfection

Prepare the enzymatic and cleaning materials at the dilution rates and temperatures as recommended by the manufacturer. New solutions should be prepared when the existing solutions are heavily contaminated. Place the tools in the enzymatic solution so that they are completely immersed. Operate all the movable parts so that the detergent contacts with all the surfaces. Keep in the fluid for minimum 10 min. Use a nylon, soft-bristled brush to gently rub the tools until all visible debris is cleaned. Pay particular attention to the accessible areas and use a suitable bottle brush. A sonicator will help to clean the instruments thoroughly. The use of a syringe or a water fountain will facilitate passing of the liquid from the low-spaced areas and difficult-to-access areas. Remove the tools from the enzyme solution and rinse them for minimum 1 min. under deionized water. Place the tools in a suitable washer / disinfectant basket and perform a standard washer / disinfectant cycle. Specific minimum parameters are essential for a complete cleaning and disinfection. These parameters are given in a below mentioned table.

4.1.3 Automated Cleaning and Disinfection

Automated washing / drying systems are not recommended as the only cleaning method for surgical tools. An automated system can be used as a follow-up operation after manual cleaning. To ensure an effective cleaning, tools must be thoroughly examined before sterilization. For detailed information on Washing and Disinfection see

Specific minimum parameters used for a complete cleaning and disinfection:

Definition	
1	Pre-washing for 2 minutes with cold tap water
2	enzyme spray for 20 seconds with hot tap water
3	Immersion in enzyme after 1 minute
4	rinsing for 15 seconds with cold tap water (Should be repeated twice)
5	Washing with detergent for 2 minutes with hot tap water
6	rinsing for 15 seconds with hot tap water
7	Rinsing with 10 seconds with optional lubricated purified water
8	Drying for 7 minutes with hot air

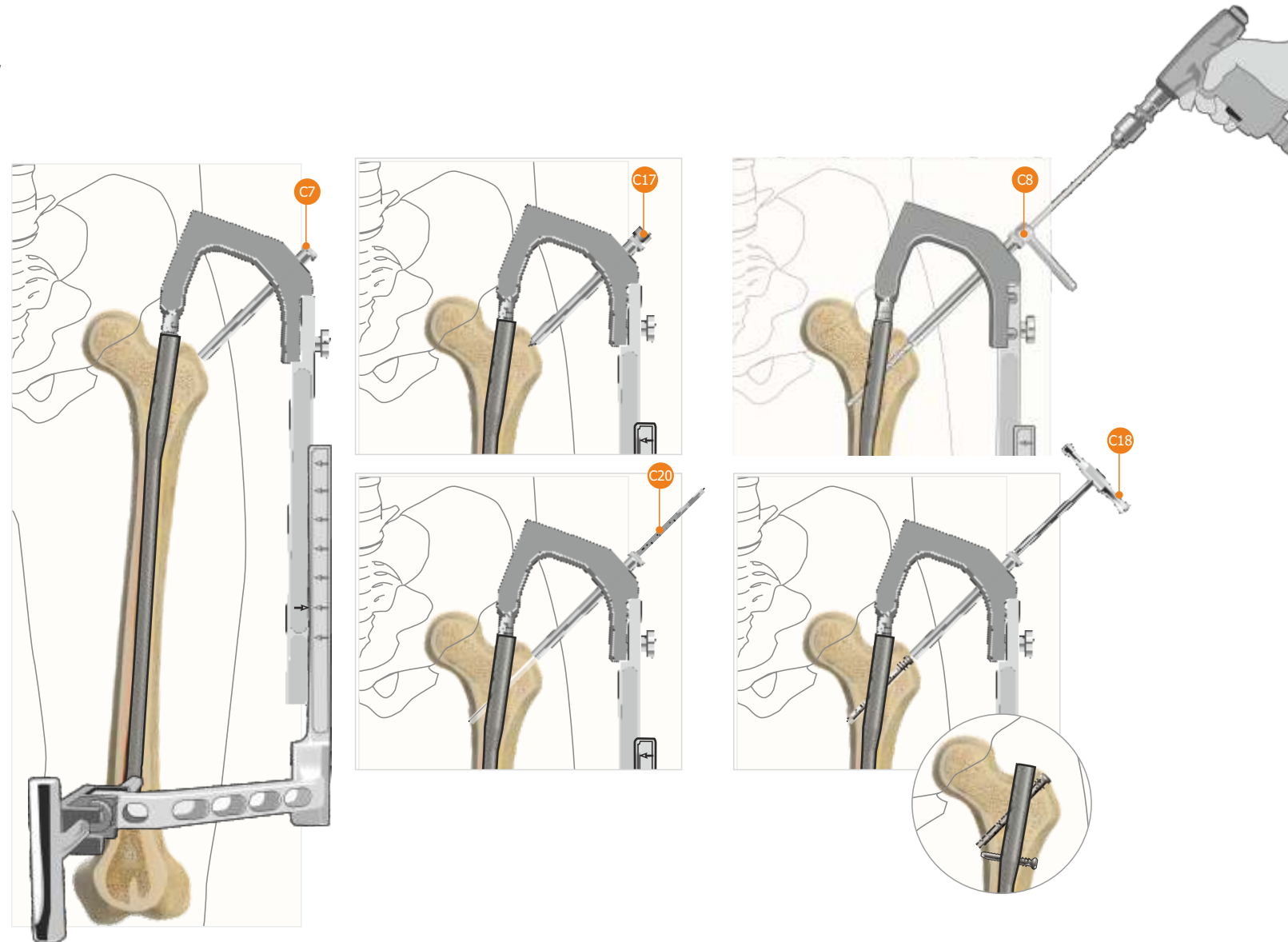
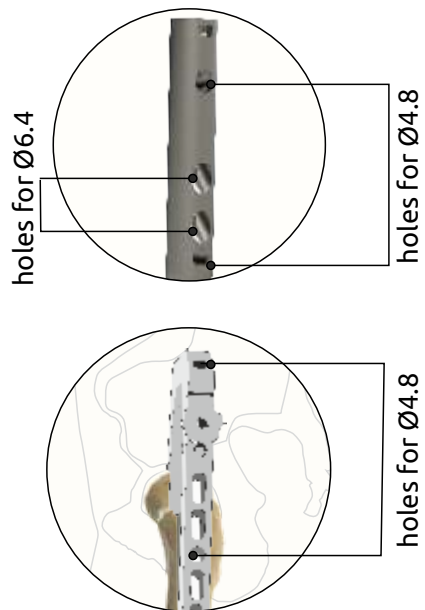
Note: Follow the instruction of the washer/disinfectant manufacturer

5.1 Nail Size

		RIGHT		LEFT		RIGHT		LEFT	
REF. NO	SIZE	REF. NO	SIZE	REF. NO	SIZE	REF. NO	SIZE	REF. NO	SIZE
4602-0918	9x180	4262-0932	9x320	4272-0932	9x320	4262-1240	12x 400	4272-1240	12x 400
4602-0920	9x200	4262-0934	9x340	4272-0934	9x340	4262-1242	12x 420	4272-1242	12x 420
4602-0922	9x220	4262-0936	9x360	4272-0936	9x360	4262-1244	12x 440	4272-1244	12x 440
4602-0924	9x240	4262-0938	9x380	4272-0938	9x380	4262-1332	13x 320	4272-1332	13x 320
4602-1018	10x180	4262-0940	9x400	4272-0940	9x400	4262-1334	13x 340	4272-1334	13x 340
4602-1020	10x200	4262-0942	9x420	4272-0942	9x420	4262-1336	13x 360	4272-1336	13x 360
4602-1022	10x220	4262-0944	9x440	4272-0944	9x440	4262-1338	13x 380	4272-1338	13x 380
4602-1024	10x240	4262-1032	10x 320	4272-1032	10x 320	4262-1340	13x 400	4272-1340	13x 400
4602-1118	11x180	4262-1034	10x 340	4272-1034	10x 340	4262-1342	13x 420	4272-1342	13x 420
4602-1120	11x200	4262-1036	10x 360	4272-1036	10x 360	4262-1344	13x 440	4272-1344	13x 440
4602-1122	11x220	4262-1038	10x 380	4272-1038	10x 380	4262-1432	14x 320	4272-1432	14x 320
4602-1124	11x240	4262-1040	10x 400	4272-1040	10x 400	4262-1434	14x 340	4272-1434	14x 340
4602-1218	12x180	4262-1042	10x 420	4272-1042	10x 420	4262-1436	14x 360	4272-1436	14x 360
4602-1220	12x200	4262-1044	10x 440	4272-1044	10x 440	4262-1438	14x 380	4272-1438	14x 380
4602-1222	12x220	4262-1132	11x 320	4272-1132	11x 320	4262-1440	14x 400	4272-1440	14x 400
4602-1224	12x240	4262-1134	11x 340	4272-1134	11x 340	4262-1442	14x 420	4272-1442	14x 420
4602-1318	13x180	4262-1136	11x 360	4272-1136	11x 360	4262-1444	14x 440	4272-1444	14x 440
4602-1320	13x200	4262-1138	11x 380	4272-1138	11x 380				
4602-1322	13x220	4262-1140	11x 400	4272-1140	11x 400				
4602-1324	13x240	4262-1142	11x 420	4272-1142	11x 420				
4602-1418	14x180	4262-1144	11x 440	4272-1144	11x 440				
4602-1420	14x200	4262-1232	12x 320	4272-1232	12x 320				
4602-1422	14x220	4262-1234	12x 340	4272-1234	12x 340				
4602-1424	14x240	4262-1236	12x 360	4272-1236	12x 360				
		4262-1238	12x 380	4272-1238	12x 380				

5.2 Proximal Ø4.8 Screw

If fracture is only on shaft or distal place of the femur there is no need to use lag screw. In stead of lag screw, Ø4.8 screw is preferred. The purpose of this is fixed the nail on the proximal it could be prevent from rotation. First of all nail is stabilized from distal with devices. And then Ø4.8 screw is send.



● *Zimed Medical, as the manufacturer of this device, and their surgical consultants do not recommend this or any other surgical technique for use on a specific patient. The surgeon who performs any implant procedure is responsible for determining and utilizing the appropriate techniques for implanting the device in each individual patient. **Zimed** and their surgical consultants are not responsible for selection of the appropriate surgical technique to be utilized for an individual patient.*

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