

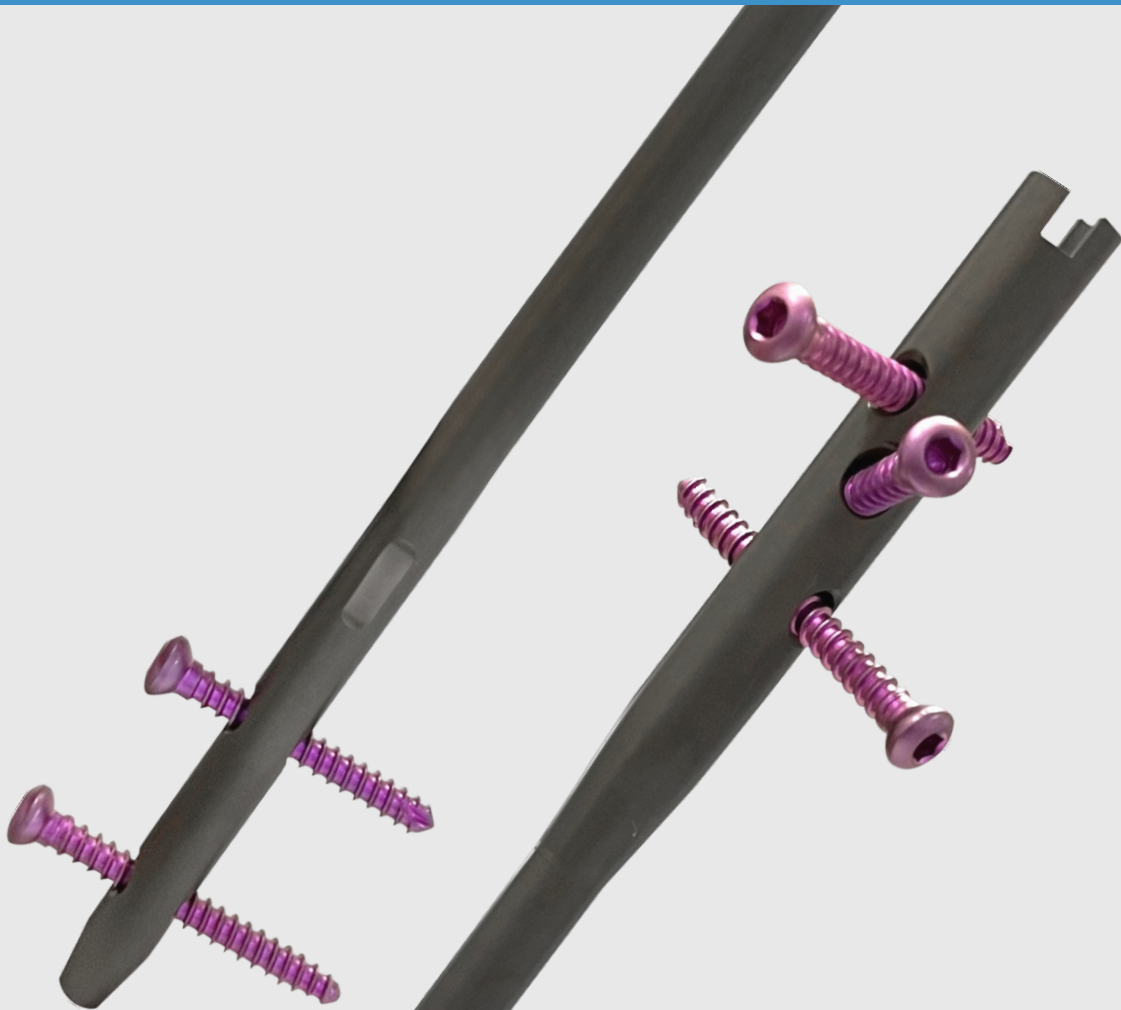


Surgical Technique

Jin Type Humerus Nailing System

INTRODUCTION

AUXEIN'S JIN-Type Humerus Nail is designed for treating the proximal Humerus and shaft fractures



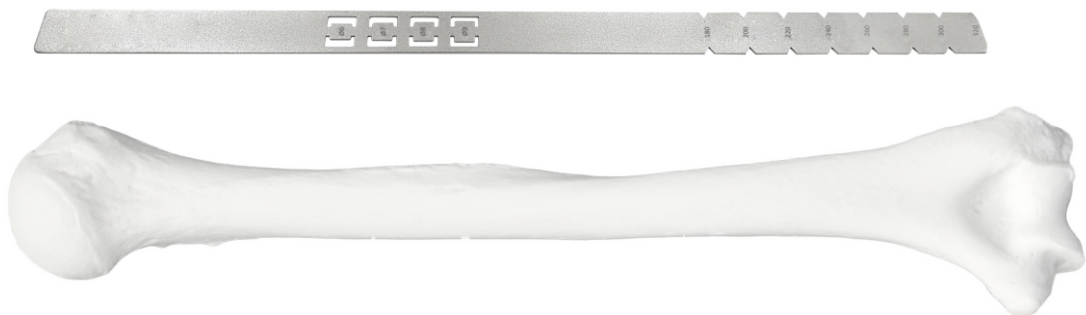
INDICATIONS:

The AUXEIN MEDICAL JIN-Type Humerus Nail is designed to aid in alignment and stabilization of Humeral fractures including:

- Fractures of Humeral Shaft
- Fractures of Proximal Humerus



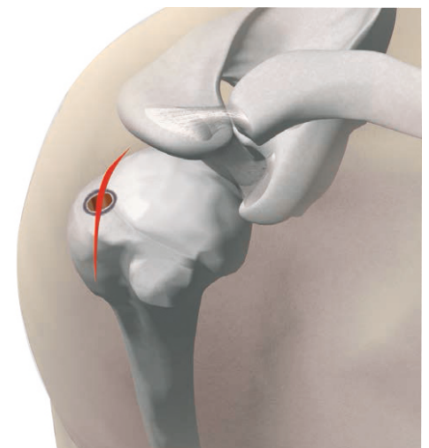
Patient positioning: The Patient is positioned in a beach chair position on radiolucent table. Place the fractured arm on an adjustable side table. Ensure that in this position, the visualization of the entire Humerus in 2 planes is visible through c-arm.



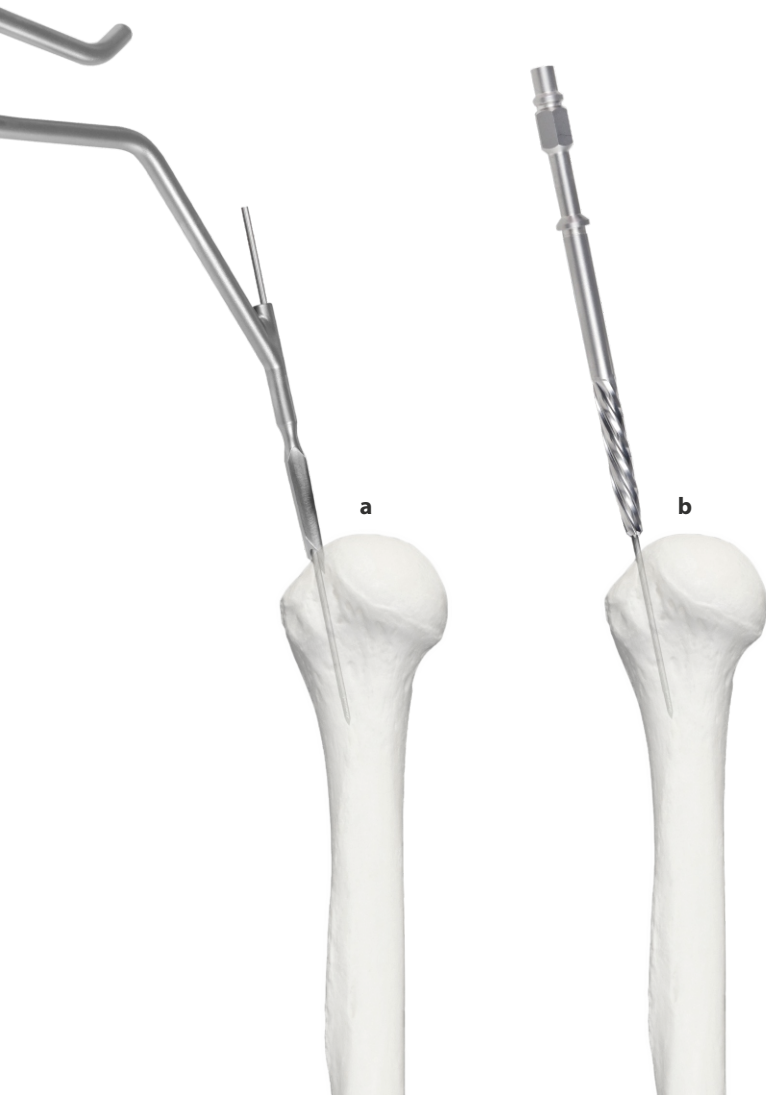
Determine Nail Size: Reduce the fracture and try to restore to the original bone length. Hold the radiographic ruler (7-023-08) along the Humerus with top at desired entry point under the image intensifier. Take the image intensifier to distal Humerus and take anteroposterior image. Read the marking on ruler from the point which is at least 2.5cm proximal to the cranial boundary of the olecranon fossa.

Note: In order to get the correct nail length it is important to correctly reduce the fracture. In order to measure required diameter of nail, hold the radiographic ruler over the narrowest part of the humeral medullary canal so that the diameter gauge is in center with the medullary canal. Read the diameter measurement on the circular indicator which fills the canal.

Entry Point: An initial incision is made anterolateral to clavicle-shoulder joint and split the deltoid muscle longitudinally. The antegrade insertion point for humerus nail is located on the extended axis of the central humeral shaft in the lateral view and at the bone cartilage transition of the humeral head in the AP view and not on the greater tuberosity, otherwise the tendon attachment of the supraspinatus will be affected.



Opening Humeral Head: Attach the Ø2.5mm Guide wire (7-023-15) to the wire pusher (7-023-09) and insert it a bit medial to the greater tuberculum in the axis of intramedullary canal. There are two different instruments which could be used to open the canal as described below.

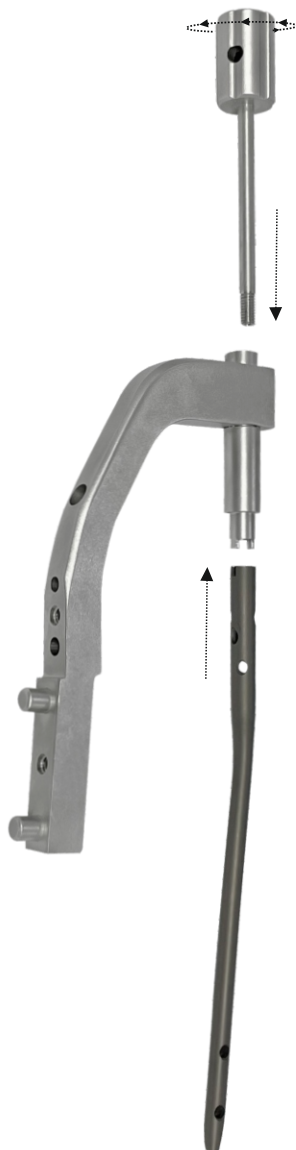


a. Using Cannulated Awl: Pass the cannulated Awl (INS-1296-17) over the pre inserted guide wire and open the humeral cortex up to approximately 7cm in order to get access to the medullary canal.

b. Using Entry Reamer: The Entry Reamer (7-023-02) is attached to Handle for Reamer AO connection (INS-1296-19). This assembly is then passed over the pre inserted guide wire and through the protection sleeve for entry reamer (7-023-01) to open the humeral cortex.



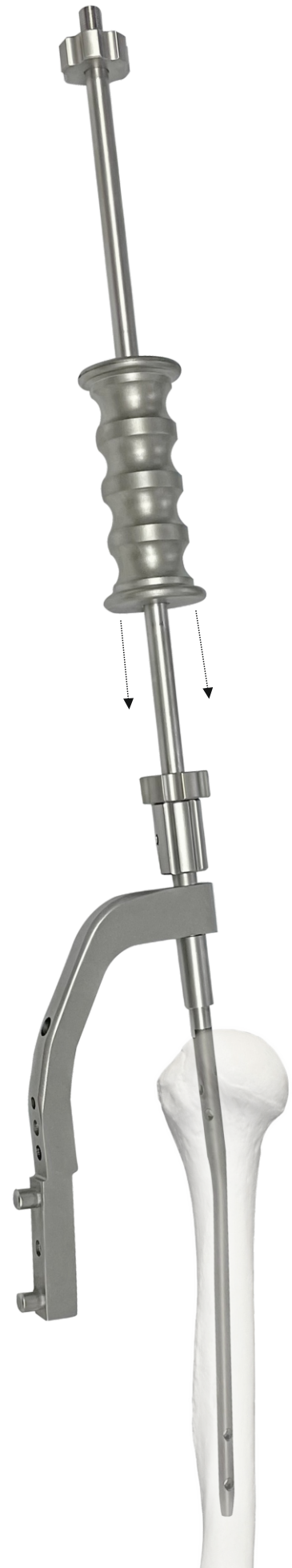
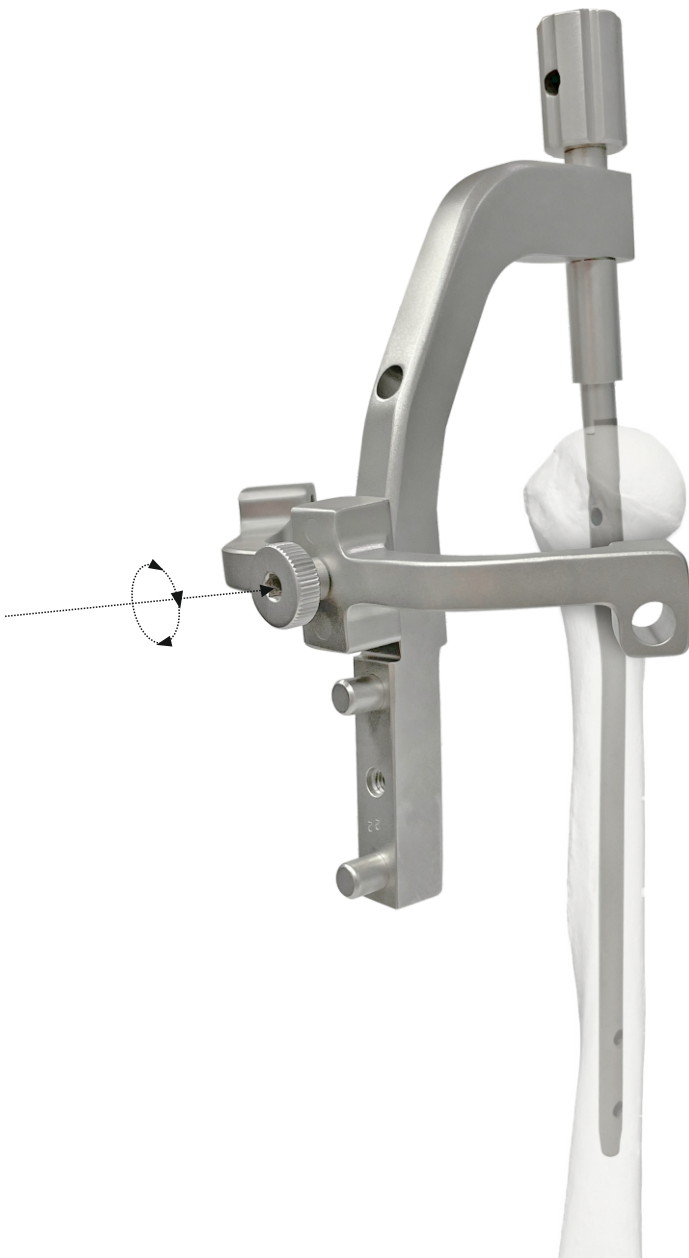
Reaming: After the entry site to the intramedullary canal has been opened, in order to provide easy nail insertion, the intramedullary canal has to be reamed to diameter approximately 1mm larger than the selected nail dia. First insert the Ø3.2mm Guide wire with ball tip (INS-1296-32) into the medullary canal. For reaming start with the smallest dia. reamer and ream in increments of 1mm until the canal is reamed to 1mm larger dia. than the nail. Attach the suitable size flexible reamer shaft Ø6mm to 10mm (7-023-04 to 7-023-07 & 7-023-13) to the power drill and ream the medullary canal. The reaming process can also be carried out manually by attaching the flexible reamer shaft to the Handle for Reamer (INS-1296-19). Remove the reamer and the guide wire.



Nail and Jig Assembly: Align the tabs on Insertion handle (INS-1296-12) to the slots on nail. Insert the Nail holding bolt (INS-1296-13) through the insertion handle. Fix the nail to the insertion handle by tightening the Nail holding bolt using the Allen wrench (INS-1296-20).

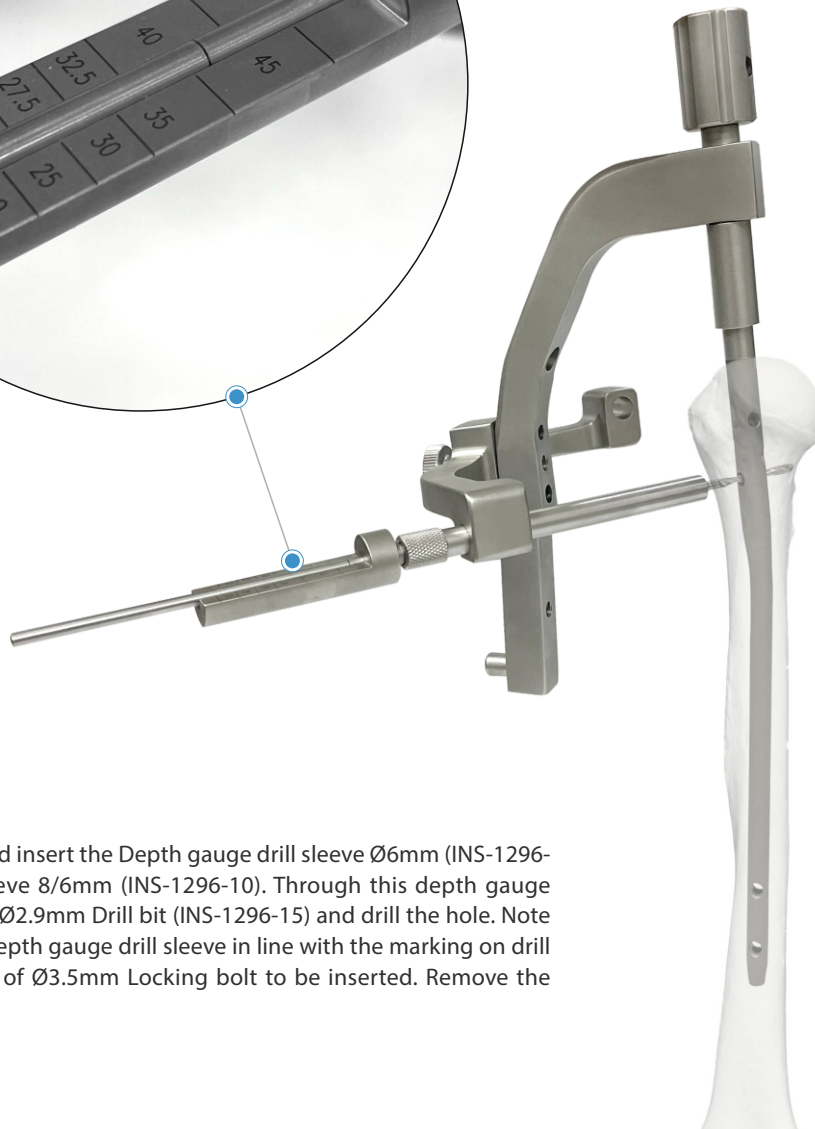
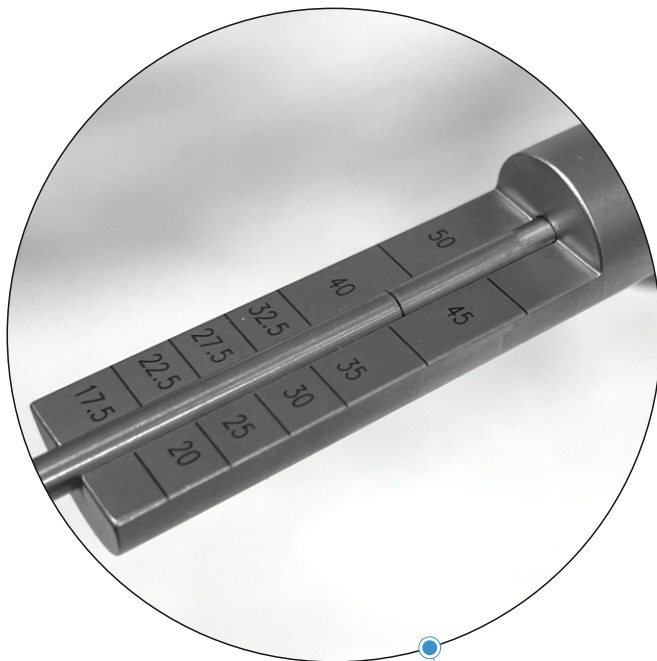


Nail Insertion: Slide the nail and jig assembly into the reamed medullary canal and advance the nail until it sits in the bone. If it is getting difficult to insert the nail, attach the Extraction rod with ram (INS-1296-30) on top of insertion handle. Apply gentle taps using the ram for final seating of nail in the intramedullary canal.



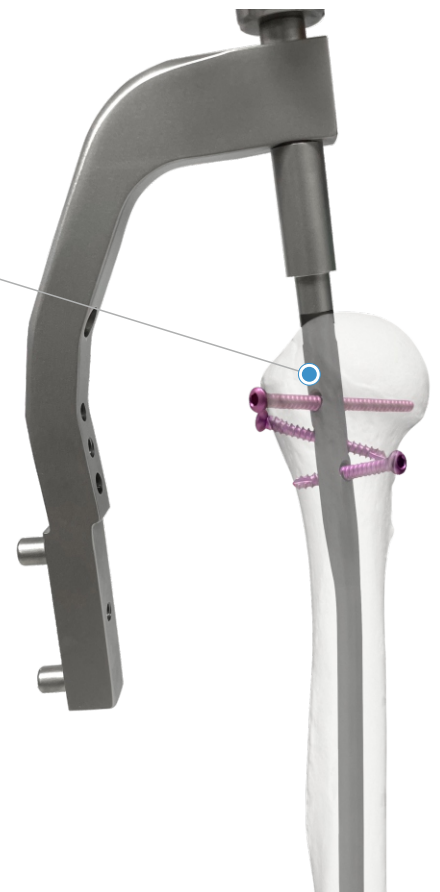
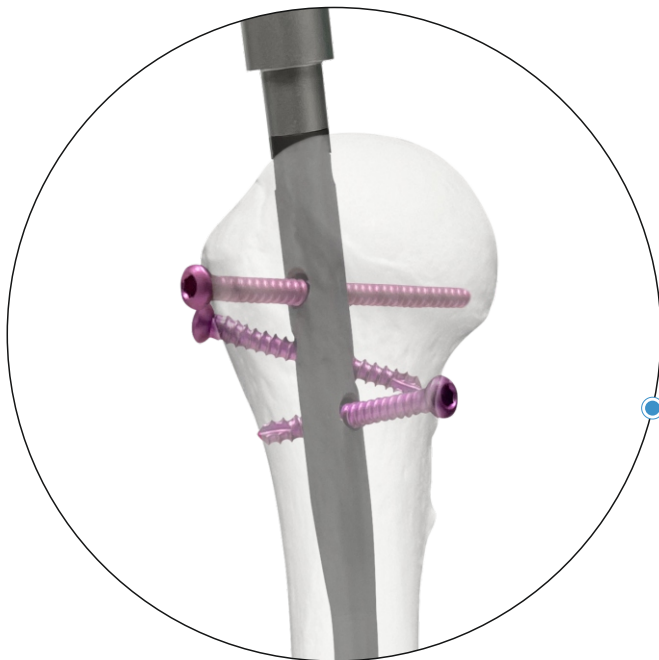
Proximal Locking: Attach the Proximal Targeting Arm (INS-1296-01) to the insertion handle (INS-1296-12) and fix it using the bolt for distal targeting device (INS-1296-03). The 2 holes on Proximal targeting device are aligned with two proximal holes of nail. For locking bolt insertion in the third proximal hole of nail, the hole in the Insertion handle will be used.

Drilling: Through the proximal targeting arm hole insert the Drill Sleeve 8/6mm (INS-1296-10) along with Trocar Ø6mm (INS-1296-06). And push it through the skin. Using trocar make a mark on the bone as starting point for drilling.



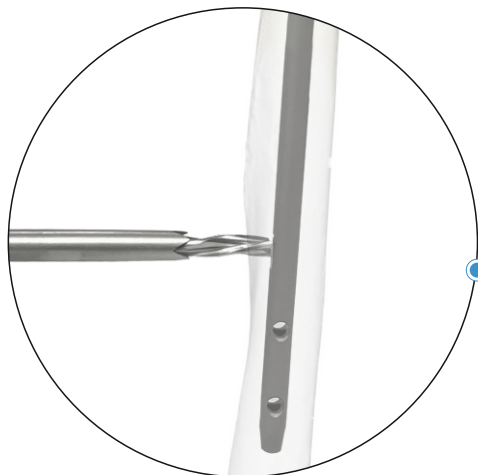
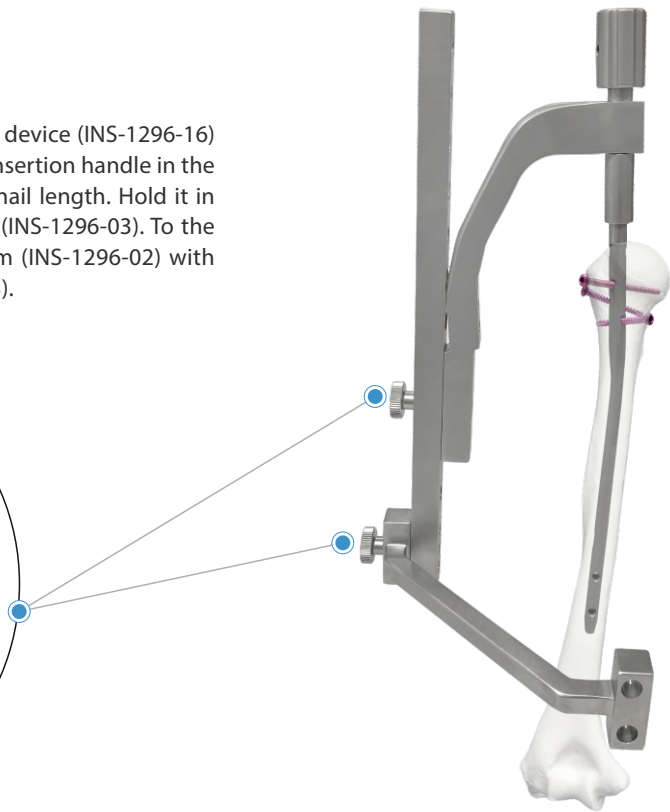
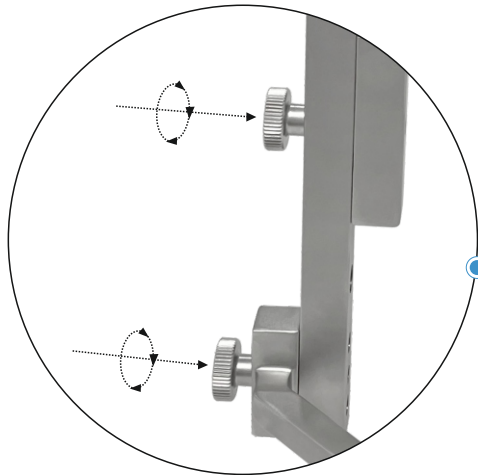
Remove the trocar and insert the Depth gauge drill sleeve Ø6mm (INS-1296-11) into the Drill Sleeve 8/6mm (INS-1296-10). Through this depth gauge drill sleeve insert the Ø2.9mm Drill bit (INS-1296-15) and drill the hole. Note the marking on the depth gauge drill sleeve in line with the marking on drill bit indicating length of Ø3.5mm Locking bolt to be inserted. Remove the drill bit.

Locking Bolt Insertion: Remove the Depth gauge drill sleeve. Use the T-Handle screwdriver, Hex 2.5mm (INS-1296-24) to insert the 3.5mm locking bolt of predetermined length into the predrilled hole through the Drill Sleeve 8/6mm (INS-1296-10).



Similarly using the above mentioned method insert the 3.5mm Locking bolt in the remaining proximal holes.

Distal Locking: For Distal Locking the Distal targeting device (INS-1296-16) will be used. Attach the distal targeting device to the insertion handle in the slot with the marking corresponding to the selected nail length. Hold it in place with the help of bolt for distal targeting device (INS-1296-03). To the distal targeting device attach the Distal targeting arm (INS-1296-02) with the help of bolt for distal targeting device (INS-1296-03).



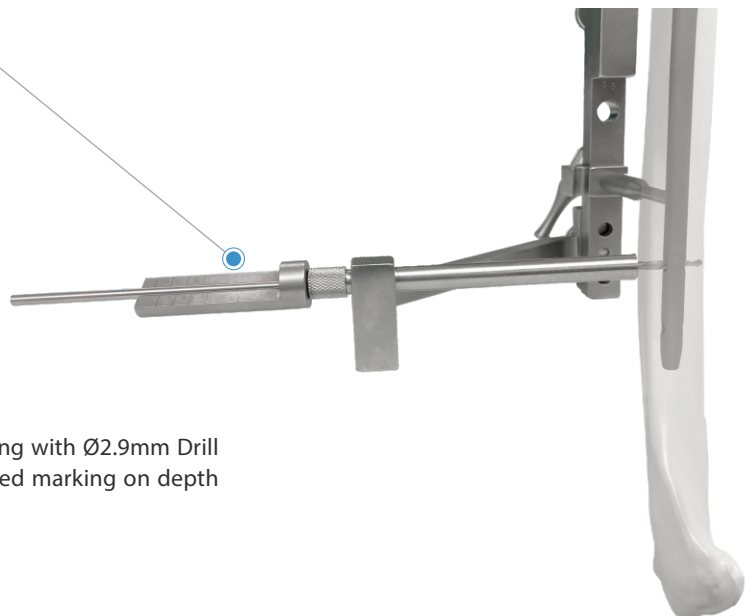
Jig Alignment: Prior to locking bolt insertion it is important to align the targeting arm holes with the distal nail holes. The alignment will be achieved using positioning rod Ø5mm (INS-1296-04).

Through the hole for positioning rod in Distal targeting device (INS-1296-16) insert the Drill sleeve 8/5.7mm (INS-1296-08). Pass the Ø5.5mm Drill bit (INS-1296-07) through the drill sleeve and open the humeral cortex. Remove the Ø5.5mm Drill bit and insert Position flat drill Ø5.5mm (INS-1296-22) through the drill sleeve and drill until it reaches the nail surface. Remove the Flat drill bit.

Through the predrilled hole insert the positioning rod Ø5mm (INS-1296-04) and push it to align the nail holes with the distal targeting device hole. Hold the assembly in place using the positioning block (INS-1296-05).



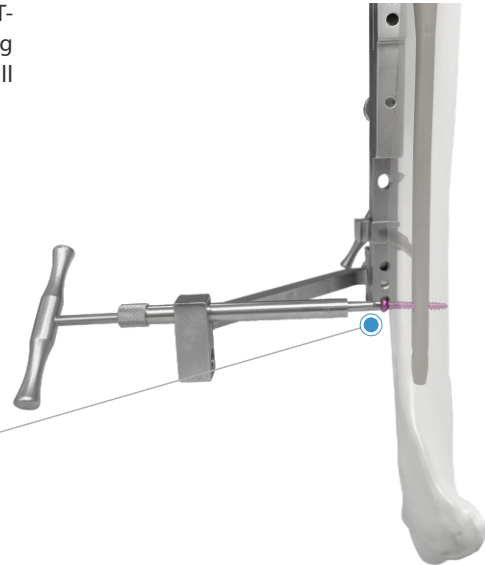
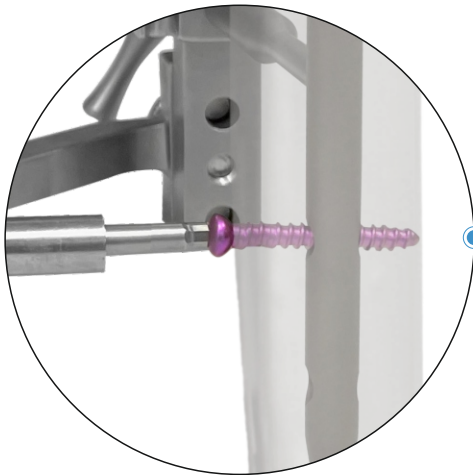
Drilling: Through the Distal Targeting Arm (INS-296-02) hole insert the Drill sleeve 8/6mm (INS-1296-10) along with Trocar Ø6mm (INS-1296-06) and push it through the skin until the trocar sits on bone indenting a starting point for drill. Remove the Trocar.



Insert the Depth Gauge Drill sleeve (INS-1296-11) along with Ø2.9mm Drill bit (INS-1296-15) and drill the bone. Read the indicated marking on depth gauge.

Locking Bolt insertion: Remove the Depth gauge drill sleeve. Use the T-Handle screwdriver, Hex 2.5mm (INS-1296-24) to insert the 3.5mm locking bolt of predetermined length into the predrilled hole through the Drill Sleeve 8/6mm (INS-1296-10).

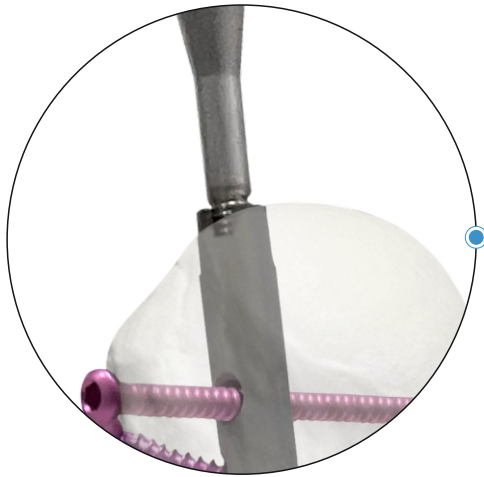
Insert the remaining Locking bolt in distal holes using the same procedure as described above.



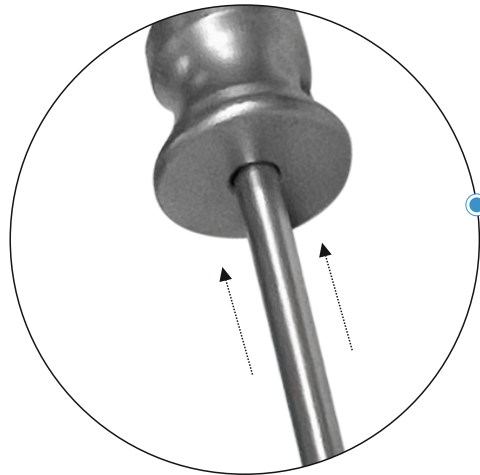
End Cap Insertion: In order to avoid tissue growth inside the nail it is important to close its proximal end using end cap. Using the T-Handle Screwdriver, Hex 2.5mm (INS-1296-24) screw in the end cap at the proximal end of the nail.



Implant Removal: Firstly clean the area for end cap removal and remove the end cap using T-Handle Screwdriver, Hex 2.5mm (INS-1296-24). Following this, attach the Extraction handle (7-023-14) at the proximal end of nail.



Remove all the locking bolts using T-Handle Screwdriver, Hex 2.5mm (INS-1296-24). On top of Extraction handle attach the Extraction rod with ram (INS-1296-30). Apply backward gentle taps to finally extract the nail.



JIN Type - Humerus Nail

Ø Dia	Length	Stainless Steel	Titanium
6mm	180mm	1296-6-180	TI-1296-6-180
6mm	200mm	1296-6-200	TI-1296-6-200
6mm	220mm	1296-6-220	TI-1296-6-220
6mm	240mm	1296-6-240	TI-1296-6-240
6mm	260mm	1296-6-260	TI-1296-6-260
6mm	280mm	1296-6-280	TI-1296-6-280
6mm	300mm	1296-6-300	TI-1296-6-300
6mm	320mm	1296-6-320	TI-1296-6-320
7mm	180mm	1296-7-180	TI-1296-7-180
7mm	200mm	1296-7-200	TI-1296-7-200
7mm	220mm	1296-7-220	TI-1296-7-220
7mm	240mm	1296-7-240	TI-1296-7-240
7mm	260mm	1296-7-260	TI-1296-7-260
7mm	280mm	1296-7-280	TI-1296-7-280
7mm	300mm	1296-7-300	TI-1296-7-300
7mm	320mm	1296-7-320	TI-1296-7-320
8mm	180mm	1296-8-180	TI-1296-8-180
8mm	200mm	1296-8-200	TI-1296-8-200
8mm	220mm	1296-8-220	TI-1296-8-220
8mm	240mm	1296-8-240	TI-1296-8-240
8mm	260mm	1296-8-260	TI-1296-8-260
8mm	280mm	1296-8-280	TI-1296-8-280
8mm	300mm	1296-8-300	TI-1296-8-300
8mm	320mm	1296-8-320	TI-1296-8-320
9mm	180mm	1296-9-180	TI-1296-9-180
9mm	200mm	1296-9-200	TI-1296-9-200
9mm	220mm	1296-9-220	TI-1296-9-220
9mm	240mm	1296-9-240	TI-1296-9-240
9mm	260mm	1296-9-260	TI-1296-9-260
9mm	280mm	1296-9-280	TI-1296-9-280
9mm	300mm	1296-9-300	TI-1296-9-300
9mm	320mm	1296-9-320	TI-1296-9-320
10mm	180mm	1296-10-180	TI-1296-10-180
10mm	200mm	1296-10-200	TI-1296-10-200
10mm	220mm	1296-10-220	TI-1296-10-220
10mm	240mm	1296-10-240	TI-1296-10-240
10mm	260mm	1296-10-260	TI-1296-10-260
10mm	280mm	1296-10-280	TI-1296-10-280
10mm	300mm	1296-10-300	TI-1296-10-300
10mm	320mm	1296-10-320	TI-1296-10-320



Stainless Steel

Titanium

End Cap For JIN Type - Humerus Nail

Stainless Steel	Titanium
1296-001	TI-1296-001



Ø3.5mm Locking Bolt, Self-Tapping, For JIN Type - Humerus Nail

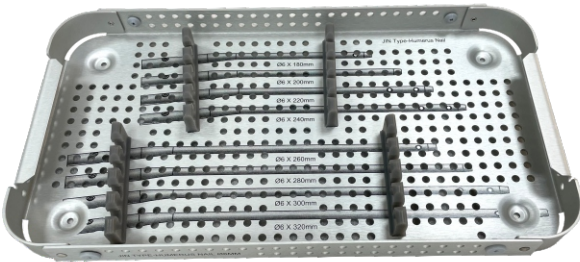
Length	Stainless Steel	Titanium
20mm	1296-3.5-20	TI-1296-3.5-20
25mm	1296-3.5-25	TI-1296-3.5-25
30mm	1296-3.5-30	TI-1296-3.5-30
35mm	1296-3.5-35	TI-1296-3.5-35
40mm	1296-3.5-40	TI-1296-3.5-40
45mm	1296-3.5-45	TI-1296-3.5-45
50mm	1296-3.5-50	TI-1296-3.5-50
55mm	1296-3.5-55	TI-1296-3.5-55
60mm	1296-3.5-60	TI-1296-3.5-60
65mm	1296-3.5-65	TI-1296-3.5-65
70mm	1296-3.5-70	TI-1296-3.5-70
75mm	1296-3.5-75	TI-1296-3.5-75
80mm	1296-3.5-80	TI-1296-3.5-80



1-017 Implant Box for JIN Type - Humerus Nail



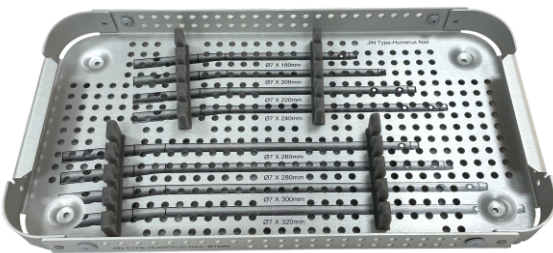
Tray 1



Dia	Length	Qty
Ø6mm	180mm to 320mm	1pcs

Stainless Steel or Titanium Implants can be placed as per requirement

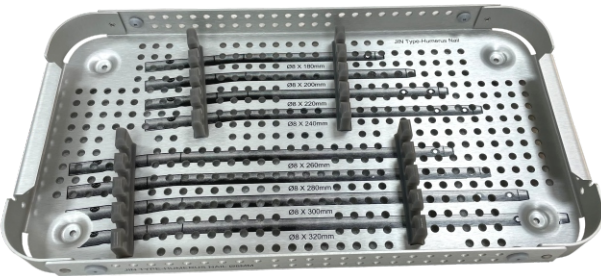
Tray 2



Dia	Length	Qty
Ø7mm	180mm to 320mm	1pcs

Stainless Steel or Titanium Implants can be placed as per requirement

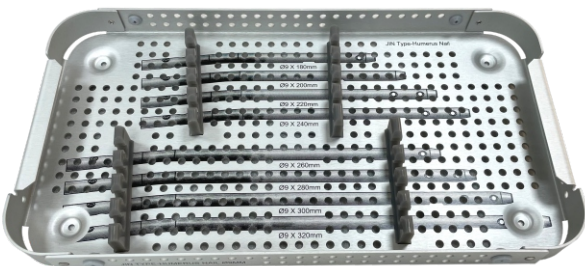
Tray 3



Dia	Length	Qty
Ø8mm	180mm to 320mm	1pcs

Stainless Steel or Titanium Implants can be placed as per requirement

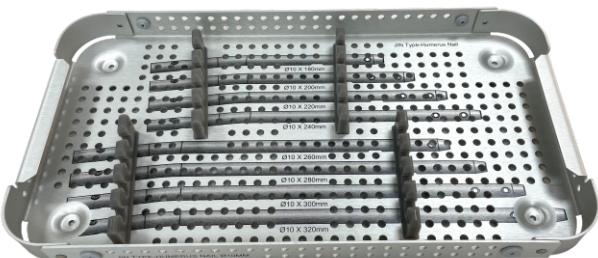
Tray 4



Dia	Length	Qty
Ø9mm	180mm to 320mm	1pcs

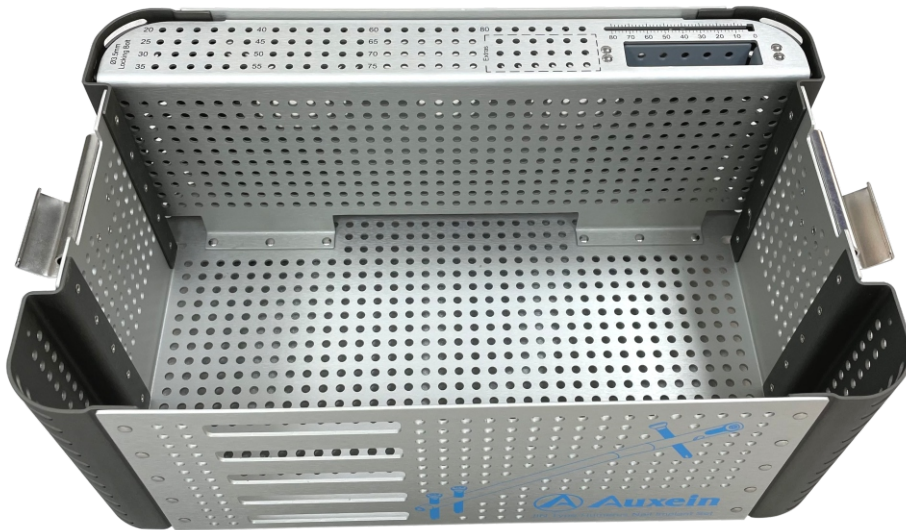
Stainless Steel or Titanium Implants can be placed as per requirement

Tray 5



Dia	Length	Qty
Ø10mm	180mm to 320mm	1pcs

Stainless Steel or Titanium Implants can be placed as per requirement



Ø3.5mm Locking Bolt, Self-Tapping, For JIN Type - Humerus Nail

Dia	Length	Qty
Ø3.5mm	20mm to 80mm	6pcs

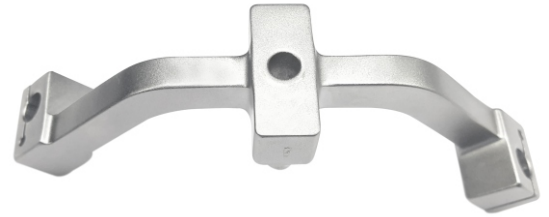
*Stainless Steel or Titanium Implants
can be placed as per requirement*

End Cap For JIN Type - Humerus Nail

Qty
2pcs

*Stainless Steel or Titanium Implants
can be placed as per requirement*

INS-1296-01 Proximal Targeting Arm for JIN Type - Humerus Nail



INS-1296-02 Distal Targeting Arm for JIN Type - Humerus Nail



INS-1296-03 Bolt for Distal Targeting Device M6 - Hex 5mm, for JIN Type - Humerus Nail



INS-1296-04 Positioning Rod Ø5mm for JIN Type - Humerus Nail



INS-1296-05 Positioning Block for JIN Type - Humerus Nail



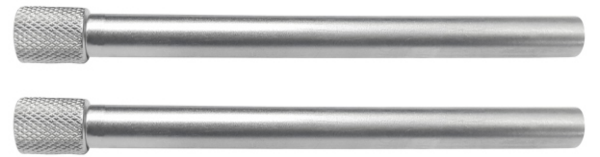
INS-1296-06 Trocar Ø6mm for JIN Type - Humerus Nail



INS-1296-08 Drill Sleeve 8/5.7mm for Drill Bit Ø5.5mm - JIN Type - Humerus Nail



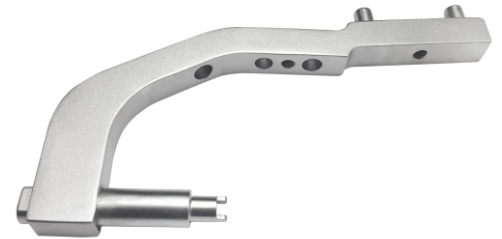
INS-1296-10 Drill Sleeve Ø8/6mm for JIN Type - Humerus Nail



INS-1296-11 Depth Gauge Drill Sleeve Ø6mm for Drill Bit Ø2.9/3.5mm - JIN Type - Humerus Nail



INS-1296-12 Insertion Handle for JIN Type - Humerus Nail



INS-1296-13 Nail Holding Bolt for JIN Type - Humerus Nail



INS-1296-15 Step Drill Bit Plain Shank/Jacob Chuck End Ø2.9/3.5mm x Length 250mm for JIN Type - Humerus Nail



INS-1296-16 Distal Targeting Device for Length 180mm To 320mm - JIN Type - Humerus Nail



INS-1296-07 Drill Bit Plain Shank/Jacob Chuck End Ø5.5mm x Length 300mm, for JIN Type - Humerus Nail



INS-1296-17 Cannulated Awl for JIN Type - Humerus Nail



INS-1296-18 Combination Wrench 12mm for JIN Type - Humerus Nail



INS-1296-19 Handle For Reamer (AO Connection) for JIN Type - Humerus Nail



INS-1296-20 Allen Key, Hex 5mm for JIN Type - Humerus Nail



INS-1296-21 T-Handle Screwdriver, Hex 3.5mm, for JIN Type - Humerus Nail



INS-1296-22 Ø5.5mm T-Handle Drill Bit with Flat End for JIN Type - Humerus Nail



INS-1296-23 T-Handle Tap for Ø3.5mm Locking Bolt - JIN Type - Humerus Nail



INS-1296-24 T-Handle Screwdriver, Hex 2.5mm, for JIN Type - Humerus Nail



INS-1296-26 Fixed Reamer Ø7.0mm x Length 400mm with Quick Coupling End for JIN Type - Humerus Nail



INS-1296-27 Fixed Reamer Ø8.0mm x Length 400mm with Quick Coupling End for JIN Type - Humerus Nail



INS-1296-28 Fixed Reamer Ø9.0mm x Length 400mm with Quick Coupling End for JIN Type - Humerus Nail



INS-1296-29 Fixed Reamer Ø10.0mm x Length 400mm with Quick Coupling End for JIN Type - Humerus Nail



7-023-04 Flexible Reamer Ø6.5mm for JIN Type - Humerus Nail



7-023-05 Flexible Reamer Ø7.0mm for JIN Type - Humerus Nail



7-023-06 Flexible Reamer Ø8.0mm for JIN Type - Humerus Nail



7-023-07 Flexible Reamer Ø9.0mm for JIN Type - Humerus Nail



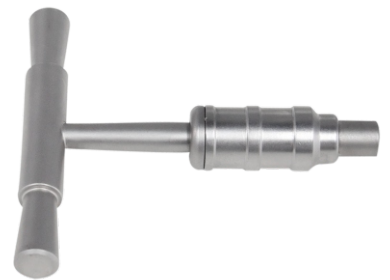
7-023-13 Flexible Reamer Ø10.0mm for JIN Type - Humerus Nail



7-023-01 Protection Sleeve for Entry Reamer - JIN Type - Humerus Nail



7-023-03 Quick Coupling Handle for Jacob Connection for JIN Type - Humerus Nail



7-023-08 Radiographic Ruler for JIN Type - Humerus Nail



7-023-15 Guide Wire with Threaded Tip, Ø2.5mm x Thread Length 10mm x Length 200mm



7-023-14 Extraction Handle for JIN Type- Humerus Nail



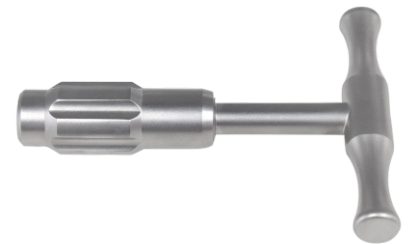
INS-1296-30 Extraction Rod with Ram for JIN Type- Humerus Nail



7-023-02 Entry Reamer for JIN Type- Humerus Nail



7-023-09 Wire Pusher for JIN Type- Humerus Nail



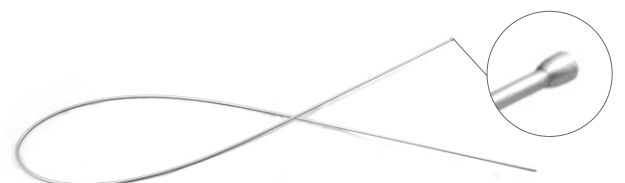
7-023-11 Reduction Device for JIN Type- Humerus Nail



7-023-12 Plastic Exchange Tube for JIN Type- Humerus Nail

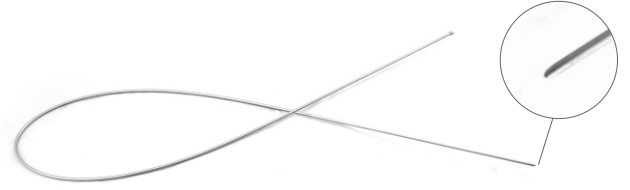


INS-1296-32 Guide Wire with Ball Tip Ø2.5/3.2mm x Length 1000mm - Stainless Steel, for JIN Type- Humerus Nail



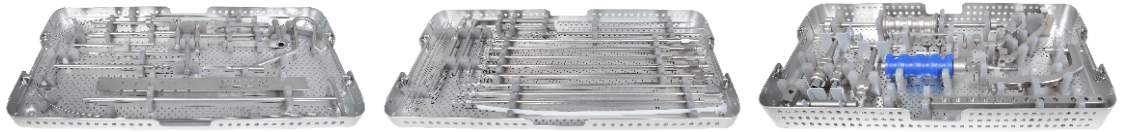
7-023-16

Guide Wire without Ball Tip \varnothing 2.5mm x Length 1000mm - Stainless Steel, for JIN Type- Humerus Nail



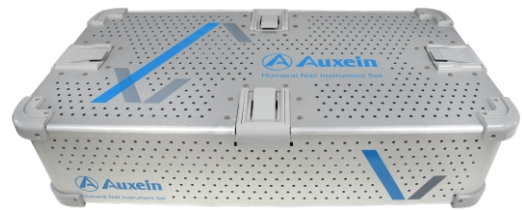
INS-1296T

Instrument Trays For JIN Type - Humerus Nailing Set

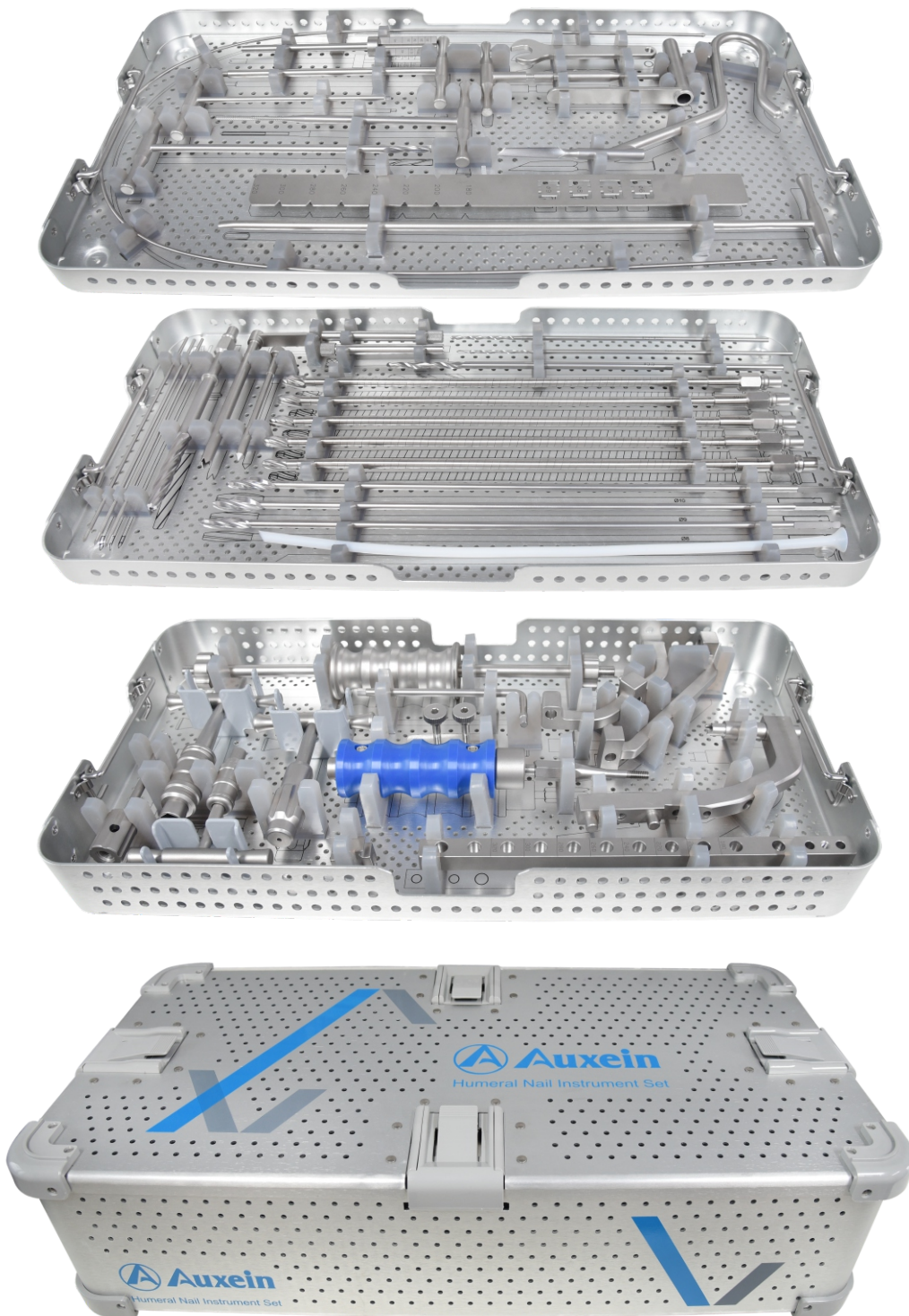


INS-1296B

Container For JIN Type - Humerus Nailing Set



INS-1296-000 JIN Type - Humerus Nailing Instrument Set



INS-1296-000 JIN Type- Humerus Nailing Instrument Set

Code	Set Consisting of	Units
INS-1296-01	Proximal Targeting Arm for JIN Type - Humerus Nail	1
INS-1296-02	Distal Targeting Arm for JIN Type - Humerus Nail	1
INS-1296-03	Bolt for Distal Targeting Device M6 - Hex 5mm, for JIN Type - Humerus Nail	2
INS-1296-04	Positioning Rod Ø5mm for JIN Type - Humerus Nail	1
INS-1296-05	Positioning Block for JIN Type - Humerus Nail	1
INS-1296-06	Trocar Ø6mm for JIN Type - Humerus Nail	1
INS-1296-08	Drill Sleeve 8/5.7mm for Drill Bit Ø5.5mm - JIN Type - Humerus Nail	1
INS-1296-10	Drill Sleeve Ø8/6mm for JIN Type - Humerus Nail	2
INS-1296-11	Depth Gauge Drill Sleeve Ø6mm for Drill Bit Ø2.9/3.5mm - JIN Type - Humerus Nail	1
INS-1296-12	Insertion Handle for JIN Type - Humerus Nail	1
INS-1296-13	Nail Holding Bolt for JIN Type - Humerus Nail	1
INS-1296-15	Step Drill Bit Plain Shank/Jacob Chuck End Ø2.9/3.5mm x Length 250mm for JIN Type - Humerus Nail	2
INS-1296-16	Distal Targeting Device for Length 180mm To 320mm - JIN Type - Humerus Nail	1
INS-1296-07	Drill Bit Plain Shank/Jacob Chuck End Ø5.5mm x Length 300mm, for JIN Type - Humerus Nail	1
INS-1296-17	Cannulated Awl for JIN Type - Humerus Nail	1
INS-1296-18	Combination Wrench 12mm for JIN Type - Humerus Nail	1
INS-1296-19	Handle For Reamer (AO Connection) for JIN Type - Humerus Nail	1
INS-1296-20	Allen Key, Hex 5mm for JIN Type - Humerus Nail	1
INS-1296-21	T-Handle Screwdriver, Hex 3.5mm, for JIN Type - Humerus Nail	1
INS-1296-22	Ø5.5mm T-Handle Drill Bit with Flat End for JIN Type - Humerus Nail	1
INS-1296-23	T-Handle Tap for Ø3.5mm Locking Bolt - JIN Type - Humerus Nail	1
INS-1296-24	T-Handle Screwdriver, Hex 2.5mm, for JIN Type - Humerus Nail	1
INS-1296-26	Fixed Reamer Ø7.0mm x Length 400mm with Quick Coupling End for JIN Type - Humerus Nail	1
INS-1296-27	Fixed Reamer Ø8.0mm x Length 400mm with Quick Coupling End for JIN Type - Humerus Nail	1
INS-1296-28	Fixed Reamer Ø9.0mm x Length 400mm with Quick Coupling End for JIN Type - Humerus Nail	1
INS-1296-29	Fixed Reamer Ø10.0mm x Length 400mm with Quick Coupling End for JIN Type - Humerus Nail	1
7-023-04	Flexible Reamer Ø6.5mm for JIN Type - Humerus Nail	1
7-023-05	Flexible Reamer Ø7.0mm for JIN Type - Humerus Nail	1
7-023-06	Flexible Reamer Ø8.0mm for JIN Type - Humerus Nail	1
7-023-07	Flexible Reamer Ø9.0mm for JIN Type - Humerus Nail	1
7-023-13	Flexible Reamer Ø10.0mm for JIN Type - Humerus Nail	1
7-023-01	Protection Sleeve for Entry Reamer - JIN Type - Humerus Nail	1
7-023-03	Quick Coupling Handle for Jacob Connection for JIN Type - Humerus Nail	1
7-023-08	Radiographic Ruler for JIN Type - Humerus Nail	1
7-023-15	Guide Wire with Threaded Tip, Ø2.5mm x Thread Length 10mm x Length 200mm	3

Code	Set Consisting of	Units
7-023-14	Extraction Handle for JIN Type- Humerus Nail	1
INS-1296-30	Extraction Rod with Ram for JIN Type- Humerus Nail	1
7-023-02	Entry Reamer for JIN Type- Humerus Nail	1
7-023-09	Wire Pusher for JIN Type- Humerus Nail	1
7-023-11	Reduction Device for JIN Type- Humerus Nail	1
7-023-12	Plastic Exchange Tube for JIN Type- Humerus Nail	1
INS-1296-32	Guide Wire with Ball Tip Ø2.5/3.2mm x Length 1000mm - Stainless Steel, for JIN Type- Humerus Nail	1
7-023-16	Guide Wire without Ball Tip Ø2.5mm x Length 1000mm - Stainless Steel, for JIN Type- Humerus Nail	1
INS-1296T	Instrument Trays For JIN Type - Humerus Nailing Set	3
INS-1296B	Container For JIN Type - Humerus Nailing Set	1



USA

Auxein Inc.
1500 Nw 89th Court, Suite 205,
Doral, Florida 33172
Tel: +1 305 395 6062
E Fax: +1 305 395 6262
Email: USoffice@auxein.com

MEXICO

Auxein México, S.A. de C.V.
Tepic 139 int 801, Colonia Roma Sur,
Alcaldía Cuauhtémoc, CDMX,
México, C.P. 06760
Tel: +521 55 7261 0318
Email: info@auxein.mx

INDIA

Auxein Medical Pvt. Ltd.
Plot No. 168-169-170, Phase-4,
Kundli Industrial Area,
HSIIDC, Sector-57, Sonapat - 131028, Haryana
Tel: +91 99106 43638 | Fax: +91 86077 70197
Email: info@auxein.com