

Axi+Line® Proximal Bunion Correction System

Surgical Technique



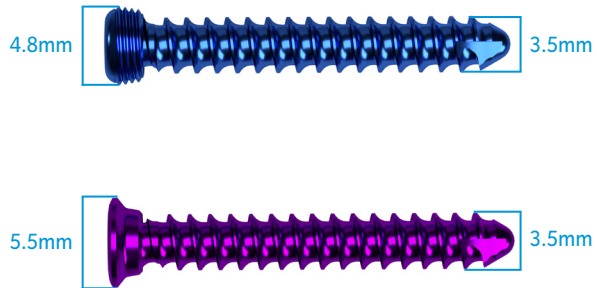
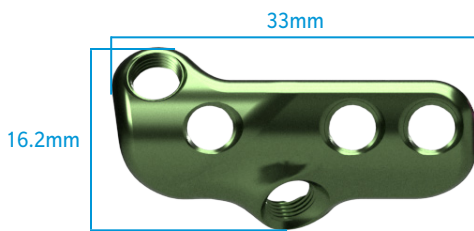
Axi+Line® Proximal Bunion Correction System

Surgical Technique Overview

Pronation Correction

IM angle and frontal plane rotation correction are built into the plate. The degree of first metatarsal pronation is linearly related to the amount medial deviation of the first metatarsal.

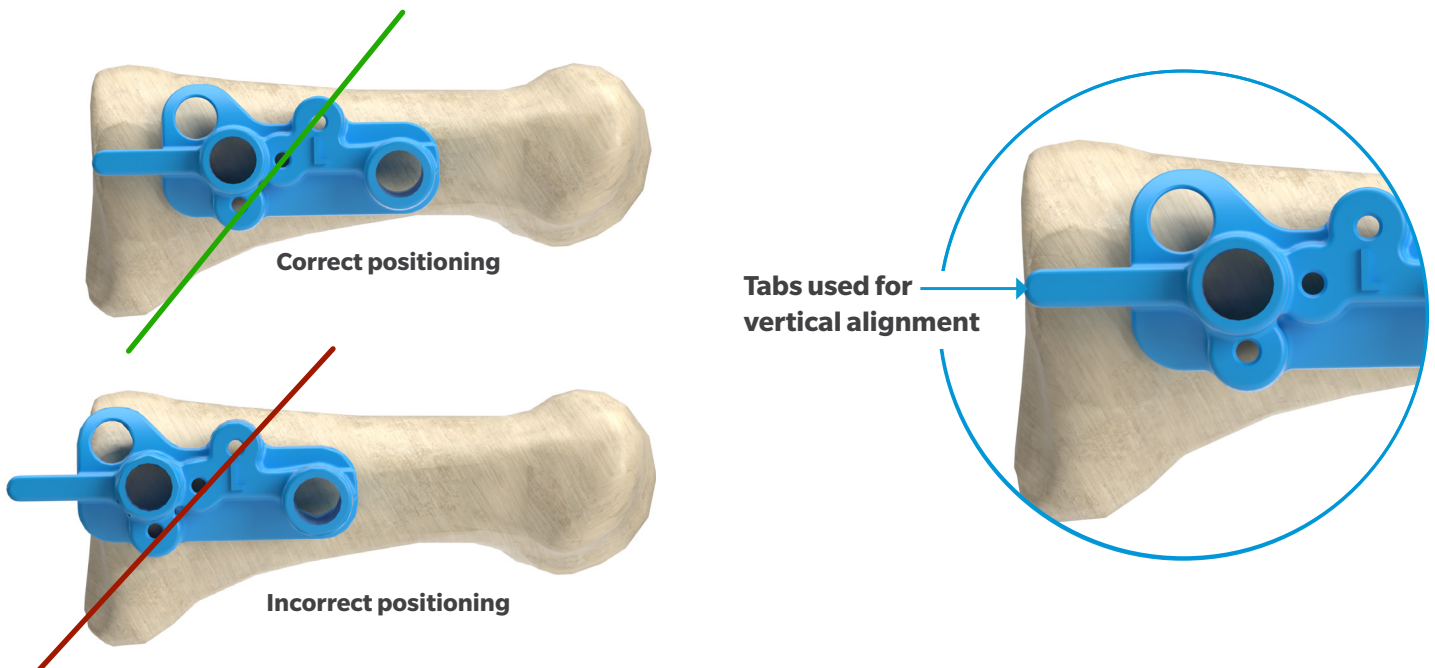
Left Plate	Right Plate	Approximated Pronation Correction	Approximated IM Angle Correction
AXL-050L	AXL-050R	5°	5°
AXL-075L	AXL-075R	7.5°	7.5°
AXL-100L	AXL-100R	10°	10°
AXL-125L	AXL-125R	12.5°	12.5°



1. Osteotomy Guide

Standard medial incision should be made to visualize entire first metatarsal shaft. Prepare site using standard surgical techniques, such as resecting exostosis if present. Place left/right side specific **Osteotomy Guide** on the first metatarsal, aligning the tab vertically center and to the most proximal edge of the first metatarsal, as seen in the image below.

NOTE: An optional distal soft tissue release can be performed prior to starting plate procedure. Release the lateral sesamoid metatarsal ligament and the lateral capsule of the MTP joint to allow for increased frontal plane rotation of the sesamoids.

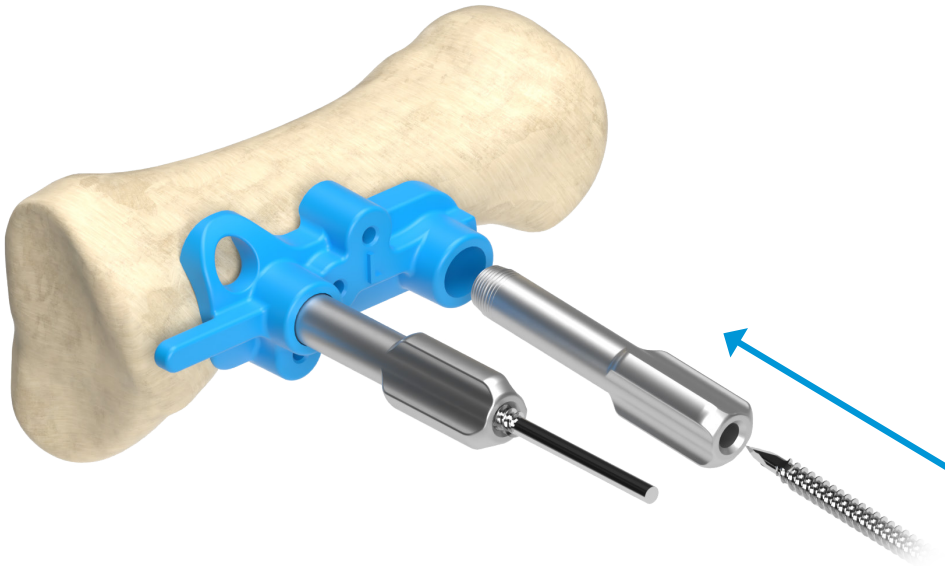


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2. Pin Insertion

Insert **Drill Tubes** into the **Osteotomy Guide**. Place proximal **Threaded Pin**, then distal **Threaded Pin**, making sure to achieve bi-cortical purchase with both pins.

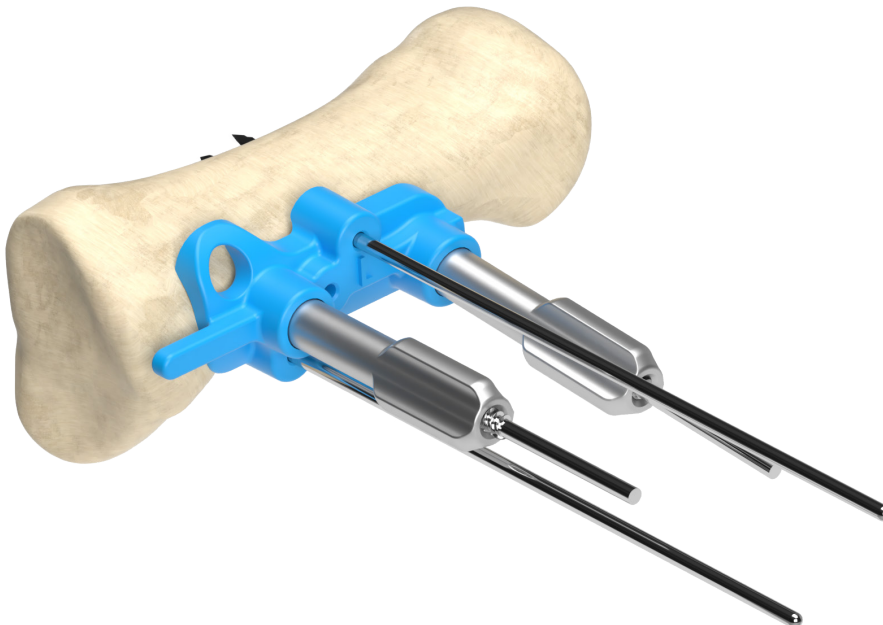


3. K-Wire Insertion

Drive **K-wire** through dorsal hole, ensuring wire crosses both cortices. Remove **K-wire** and repeat for the middle and plantar diagonal holes.

Remove non-threaded **K-wires** from diagonal holes.

NOTE: Use a surgical marker on K-wires prior to drilling the three diagonal holes for better visualization when cutting osteotomy.

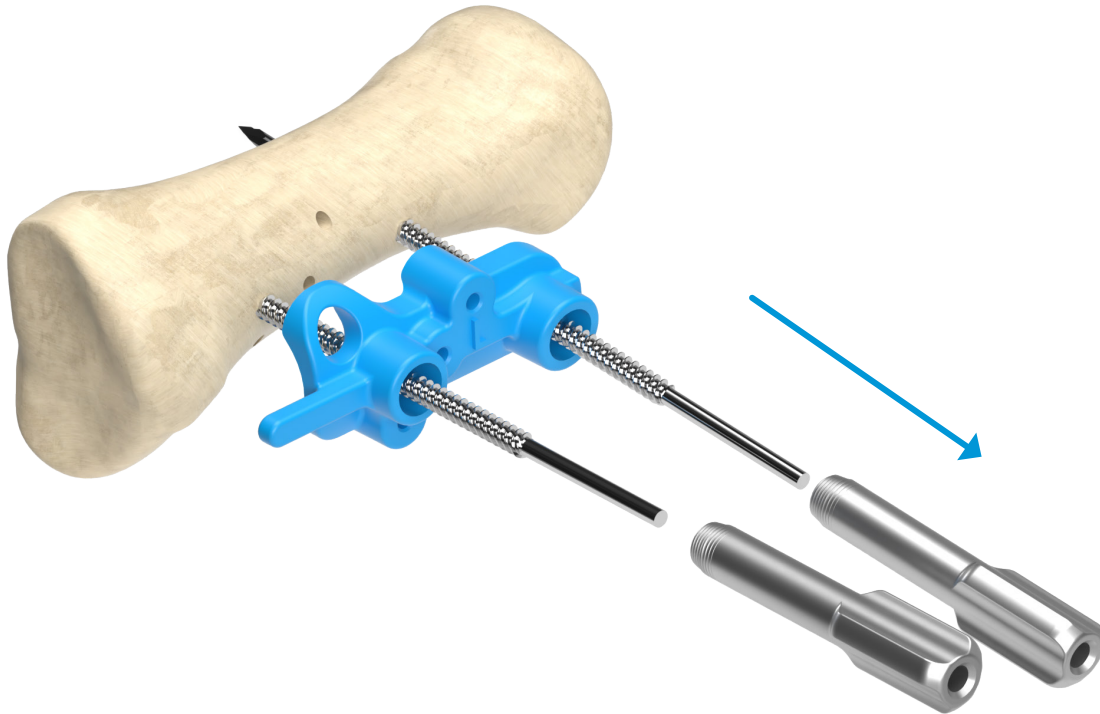


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4. Osteotomy Guide Removal

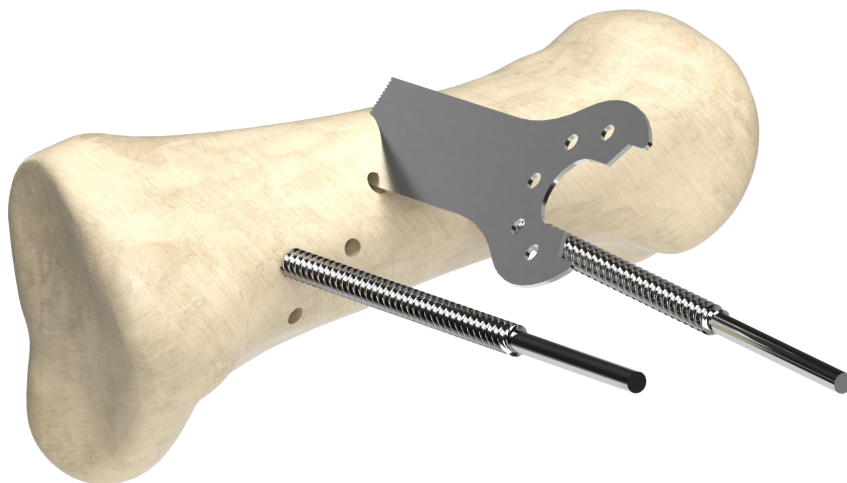
Once the non-threaded **K-wires** have been removed, remove the **Drill Tubes** and then the **Osteotomy Guide**, leaving the **Threaded Pins** in place.



5. Cut

Keeping saw blade parallel to the proximal **Threaded Pin**, make a Proximal Modified Mau osteotomy by sawing along the line extending through the three holes created by the **K-wires**.

Verify distal fragment mobility.

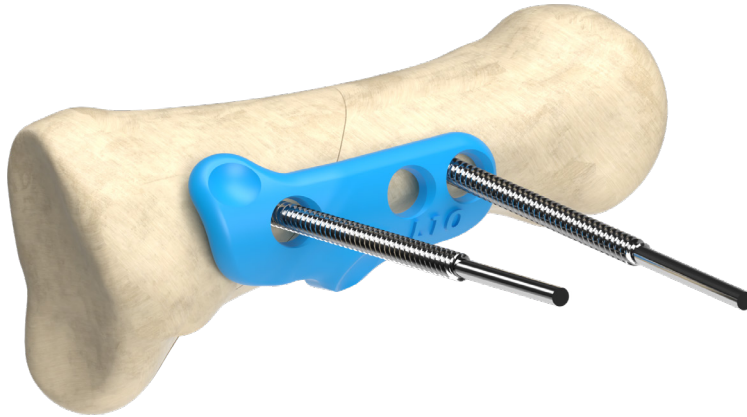


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6. Trial Placement

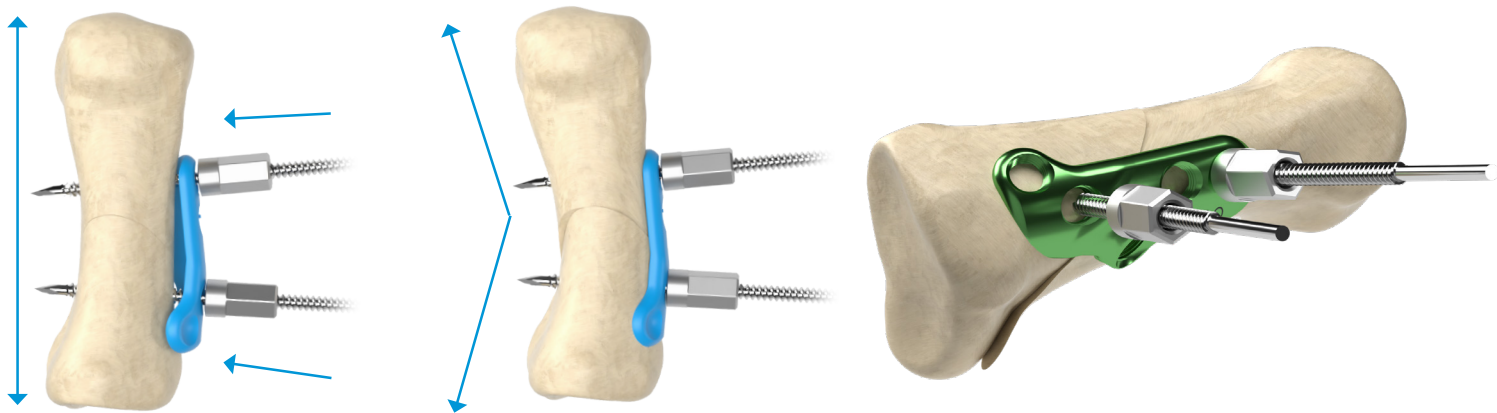
Based on desired degree of correction, select appropriate left or right **Axi+Line Plate Trial** (5, 7.5, 10 or 12.5 degrees of correction) and place trial over the **Threaded Pins** as shown.



7. Trial & Manual Plate Reduction

Place **Threaded Nuts** on each **Threaded Pin**. Manually reduce with fingers by pinching **Plate Trial** to bone. Hold **Plate Trial** to bone as to assist reduction. Starting with the **Threaded Nut** centered in each hole, alternately advance **Threaded Nuts** in small increments, while gently moving the distal fragment, until osteotomy and the **Plate Trial** on the bone are fully reduced. **Threaded Nuts** should be two-finger tight, but not over tightened. Verify position of toe is as desired. Use **Threaded Nut Handle** if additional tightening is needed. Fluoroscopy should be used to verify that adequate correction of both frontal plane and IM angle has been achieved.

Once desired position is achieved, remove the **Threaded Nuts** and **Plate Trial** and replace with corresponding **Plate**. Secure **Plate** into position and reduce with **Threaded Nuts** in the same fashion as the trial.



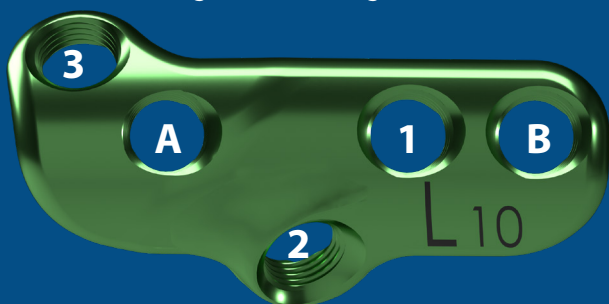
IMPORTANT: DO NOT use **Threaded Nuts** only to hold reduction of **Plate Trial** or **Plate** to bone. Manual manipulation is required, especially in less dense bone. **Threaded Nuts** intended to hold reduction **ONLY AFTER** manual reduction.

Axi+Line Proximal Bunion Correction System - Surgical Technique Overview

Screw Placement

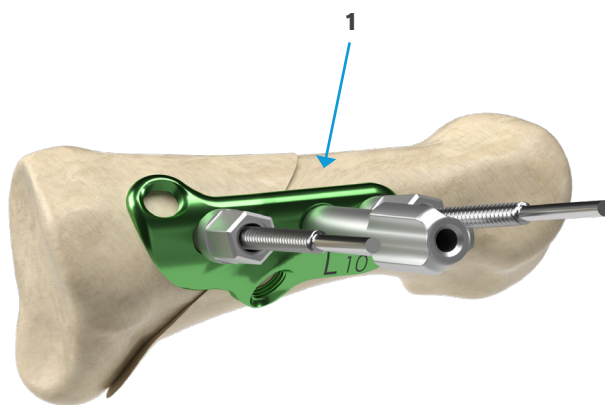
It is recommended to use non-locking screws in holes 1,2,and 3. It is also recommended to use locking screws in holes A and B.

NOTE: All holes will accept either locking or non-locking screws at surgeon discretion



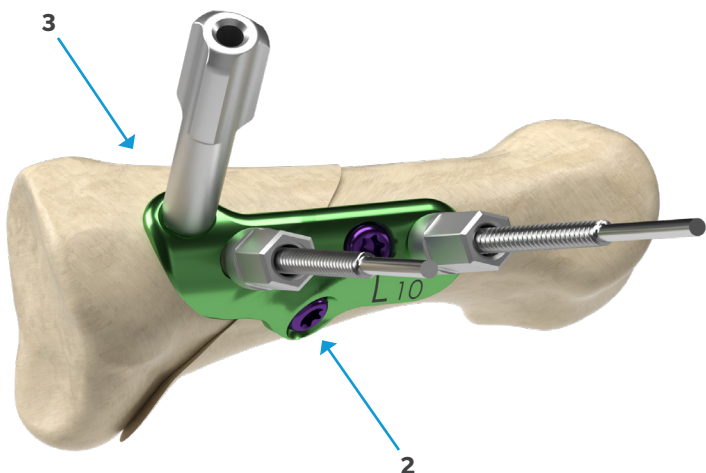
8. Drill Hole #1

Thread Drill Tube into second distal hole. Using the provided **AO Drill Bit**, drill through both cortices and measure using either the **Depth Gauge** or using the **Drill Bit's** laser scale as measured from the top of the **Drill Tube**. Remove **Drill Tube**. Verify plate is sitting flush to the distal bone. If not, loosen both **Nuts** and retighten while gently moving proximal fragment. Select appropriate length **Non-Locking Screw** and drive using the **T10 Driver**. NOTE: **T10 Shaft** may be connected to a power driver if desired. Alligator clamp can be used to hold and reduce osteotomy.



9. Drill Holes #2 & #3

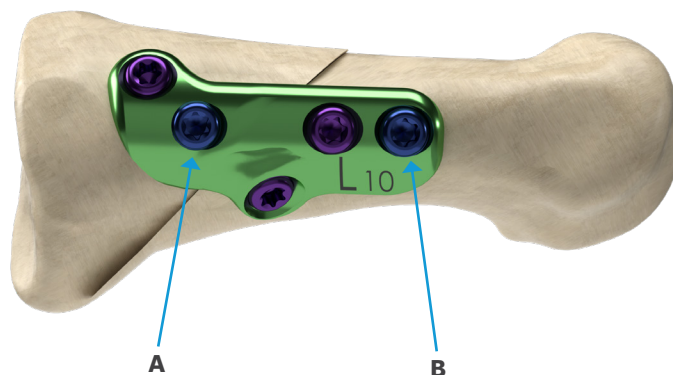
Thread **Drill Tube** starting with the inferior, transverse hole (2) and repeat step 8 using appropriate **Non-Locking Screw**. Repeat steps for proximal, superior hole using **Non-Locking Screw** (3).



10. Drill Holes A & B

Remove proximal **Nut** and **Threaded Pin** from hole A. Place **Drill Tube** into drill hole and repeat step 8 using appropriate **Non-Locking** or **Locking Screw**. Remove distal **Nut** and **Threaded Pin** from hole B and repeat for distal hole B.

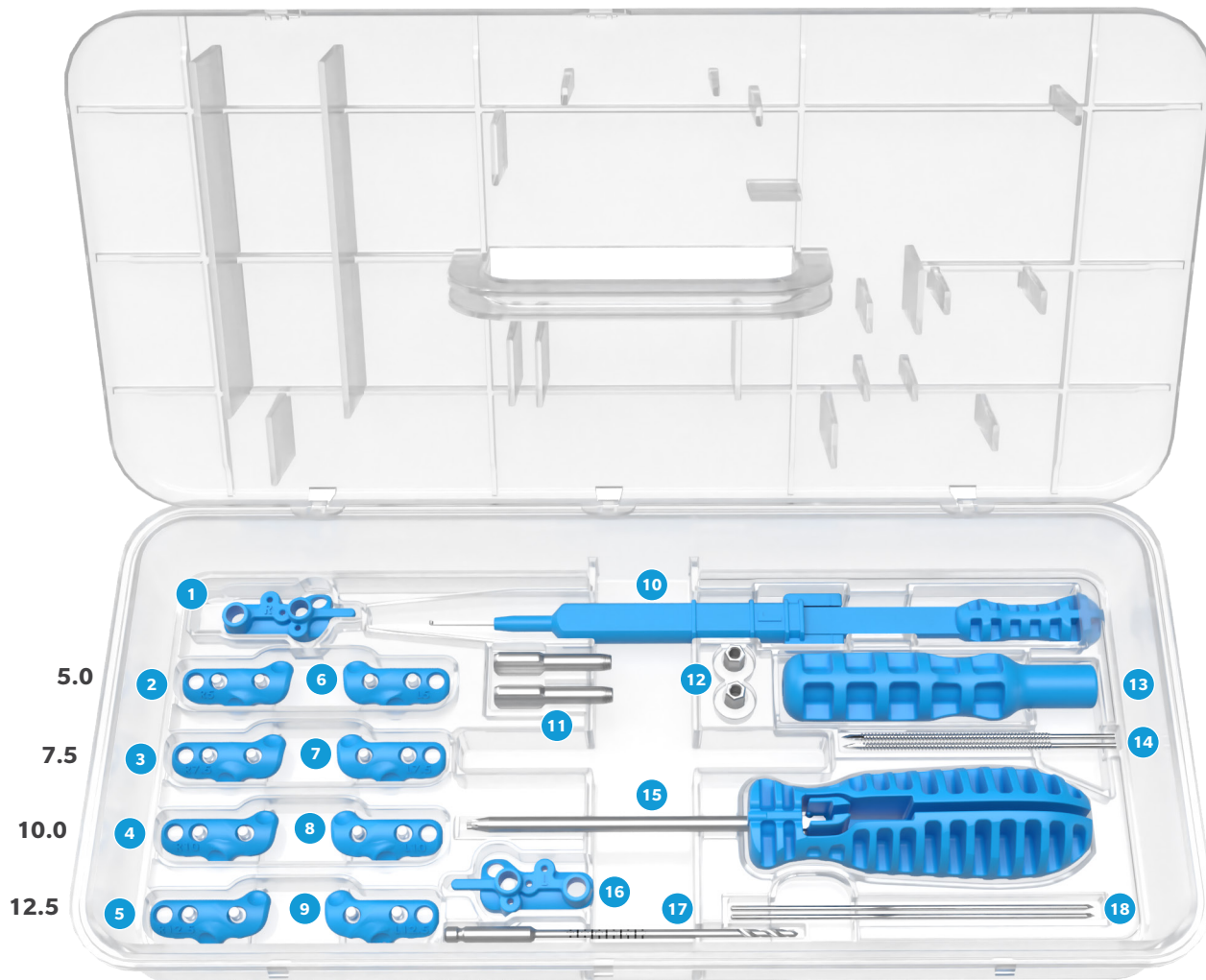
Close in the usual manner.



NOTE: In some cases, the near cortex ONLY can be opened up slightly and the direction of a non-locking screw (#2) can be adjusted at such an angle as to cross the osteotomy site. In this case, and at surgeon discretion, a traditional AO lag effect can be implemented to further compress the bone fragments.

Axi+Line Proximal Bunion Correction System - Sterile Instrumentation

Axi+Line Instrument Kit (AXL-INST)



1	Osteotomy Guide - Right
2	5.0 Plate Trial - Right
3	7.5 Plate Trial - Right
4	10.0 Plate Trial - Right
5	12.5 Plate Trial - Right
6	5.0 Plate Trial - Left
7	7.5 Plate Trial - Left
8	10.0 Plate Trial - Left
9	12.5 Plate Trial - Left

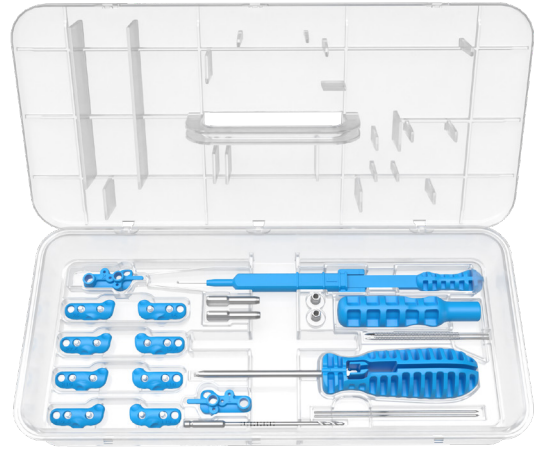
10	Depth Gauge
11	Drill Tubes (x2)
12	Threaded Nuts (x2)
13	Threaded Nut Handle
14	2.6mm Threaded Wires (x2)
15	T10 Driver
16	Osteotomy Guide - Left
17	2.6mm AO Drill
18	1.6mm x 4in K-Wires (x2)



Actual Size (Left Plate)



Actual Size (Right Plate)



ORDERING INFORMATION - INSTRUMENT KITS, PLATES & SCREWS

Part No.	Description		
AXL-INST	Axi+Line Instrument Kit - Universal	AXL-DRV-T10	Axi+Line Individual Packaged Driver
AXL-050L	Axi+Line Plate 5.0 degree (LEFT)	AXL-050R	Axi+Line Plate 5.0 degree (RIGHT)
AXL-075L	Axi+Line Plate 7.5 degree (LEFT)	AXL-075R	Axi+Line Plate 7.5 degree (RIGHT)
AXL-100L	Axi+Line Plate 10.0 degree (LEFT)	AXL-100R	Axi+Line Plate 10.0 degree (RIGHT)
AXL-125L	Axi+Line Plate 12.5 degree (LEFT)	AXL-125R	Axi+Line Plate 12.5 degree (RIGHT)
Part No.	Description		
SCR-3510NL	3.5mm Cortical Headed Screw, Non-Locking – 10mm Length	SCR-3510L	3.5mm Cortical Headed Screw, Locking – 10mm Length
SCR-3512NL	3.5mm Cortical Headed Screw, Non-Locking – 12mm Length	SCR-3512L	3.5mm Cortical Headed Screw, Locking – 12mm Length
SCR-3514NL	3.5mm Cortical Headed Screw, Non-Locking – 14mm Length	SCR-3514L	3.5mm Cortical Headed Screw, Locking – 14mm Length
SCR-3516NL	3.5mm Cortical Headed Screw, Non-Locking – 16mm Length	SCR-3516L	3.5mm Cortical Headed Screw, Locking – 16mm Length
SCR-3518NL	3.5mm Cortical Headed Screw, Non-Locking – 18mm Length	SCR-3518L	3.5mm Cortical Headed Screw, Locking – 18mm Length
SCR-3520NL	3.5mm Cortical Headed Screw, Non-Locking – 20mm Length	SCR-3520L	3.5mm Cortical Headed Screw, Locking – 20mm Length
SCR-3522NL	3.5mm Cortical Headed Screw, Non-Locking – 22mm Length	SCR-3522L	3.5mm Cortical Headed Screw, Locking – 22mm Length
SCR-3524NL	3.5mm Cortical Headed Screw, Non-Locking – 24mm Length	SCR-3524L	3.5mm Cortical Headed Screw, Locking – 24mm Length
SCR-3526NL	3.5mm Cortical Headed Screw, Non-Locking – 26mm Length	SCR-3526L	3.5mm Cortical Headed Screw, Locking – 26mm Length
SCR-3528NL	3.5mm Cortical Headed Screw, Non-Locking – 28mm Length	SCR-3528L	3.5mm Cortical Headed Screw, Locking – 28mm Length
SCR-3530NL	3.5mm Cortical Headed Screw, Non-Locking – 30mm Length	SCR-3530L	3.5mm Cortical Headed Screw, Locking – 30mm Length

INDICATIONS: The Nextremity Solutions Axi+Line Proximal Bunion Correction System is indicated for fixation of fractures, osteotomies, non-unions and fusions of small bones and small bone segments in the foot and ankle.

CONTRAINDICATIONS: (1) Patient conditions including insufficient quantity or quality of bone; (2) Blood supply limitations and previous or active infections that may inhibit healing; (3) Surgical procedures other than for the indications listed; (4) Patients with conditions that limit their ability or willingness to follow postoperative care instructions; (5) The device may not be suitable for patients with insufficient or immature bone. The physician should carefully assess bone quality before performing orthopedic surgery on patients who are skeletally immature; (6) Foreign-body sensitivity. Where material sensitivity is suspected, appropriate test should be made and sensitivity ruled out prior to implantation.

This material is intended for health care professionals. Distribution to any other recipient is prohibited. For product information, including indications, contraindications, warnings, precautions, potential adverse effects and patient counseling information, see the package insert. Check for country product clearances and reference product-specific instructions for use.

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The Axi+Line Proximal Bunion Correction System is manufactured using Ti 6-4 ELI.

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