Surgical Technique

smith&nephew

PERI-LOC

Periarticular Locked Plating System

Targeter System for 4.5mm Lateral Proximal Tibia Locking Plate

PERI-LOC◇ Periarticular Locked Plating System

Targeter System for 4.5mm Sterile Lateral Proximal Tibia Locking Plate

Nota Bene

The technique description herein is made available to the healthcare professional to illustrate the author's suggested treatment for the uncomplicated procedure. In the final analysis, the preferred treatment is that which addresses the needs of the specific patient.

Product Overview

The PERI-LOC® Periarticular Locked Plating System from Smith & Nephew offers the advantages of locked plating with the flexibility and benefits of traditional plating in one system. Utilizing both locking and non-locking screws, PERI-LOC offers a construct that resists angular (e.g. varus/valgus) collapse while simultaneously acting as an effective aid to fracture reduction. A simple and straightforward instrument set features one screwdriver, standardized drill bits, and color-coded instrumentation, making PERI-LOC efficient and easy to use.

All PERI-LOC sterile implants are manufactured using the highest quality 316L stainless steel for strength and durability.

The precontour of the 4.5mm Proximal Tibia Locking Plate provides an excellent fit against the surface of the bone.

Scallops at the proximal end of the plate allow easy placement of lag screws outside the plate for fixation of articular fractures.

Each screw hole in the 4.5mm Sterile Lateral Proximal Tibia Locking Plate will accept one of four different screws allowing customization of the screw configuration depending on the individual needs of the fracture:

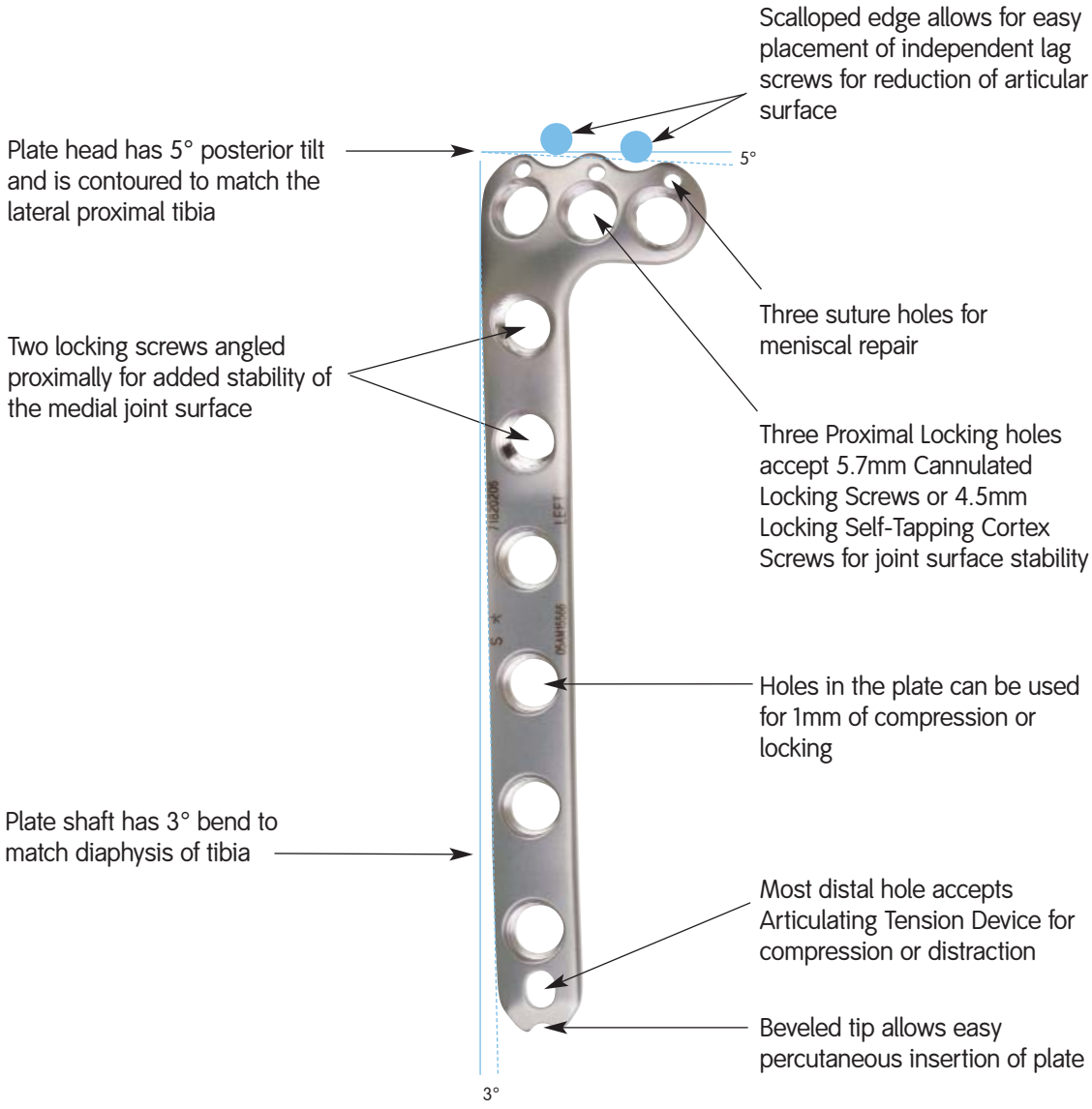
- 4.5mm Self-Tapping Cortex Screw (Non-Locking)
- 4.5mm Locking Self-Tapping Cortex Screw
- 5.7mm Cannulated Locking Screw
- 6.5mm Partially Threaded Cancellous Screw

Indications

The PERI-LOC Periarticular Locked Plating System can be used in adult and pediatric patients as well as patients with osteopenic bone. It is indicated for fixation of pelvic, small and long bone fractures, including those of the tibia, fibula, femur, pelvis, acetabulum, metacarpals, metatarsals, humerus, ulna, and calcaneus.

Disposable components in the PERI-LOC Periarticular Locked Plating System are for single use only.

Design Features – 4.5mm Sterile Lateral Proximal Tibia Locking Plate



Each of the holes can accept one of four different screws:

4.5mm Self-Tapping Cortex Screw (Non-Locking)
Cat. No. 7180-60XX

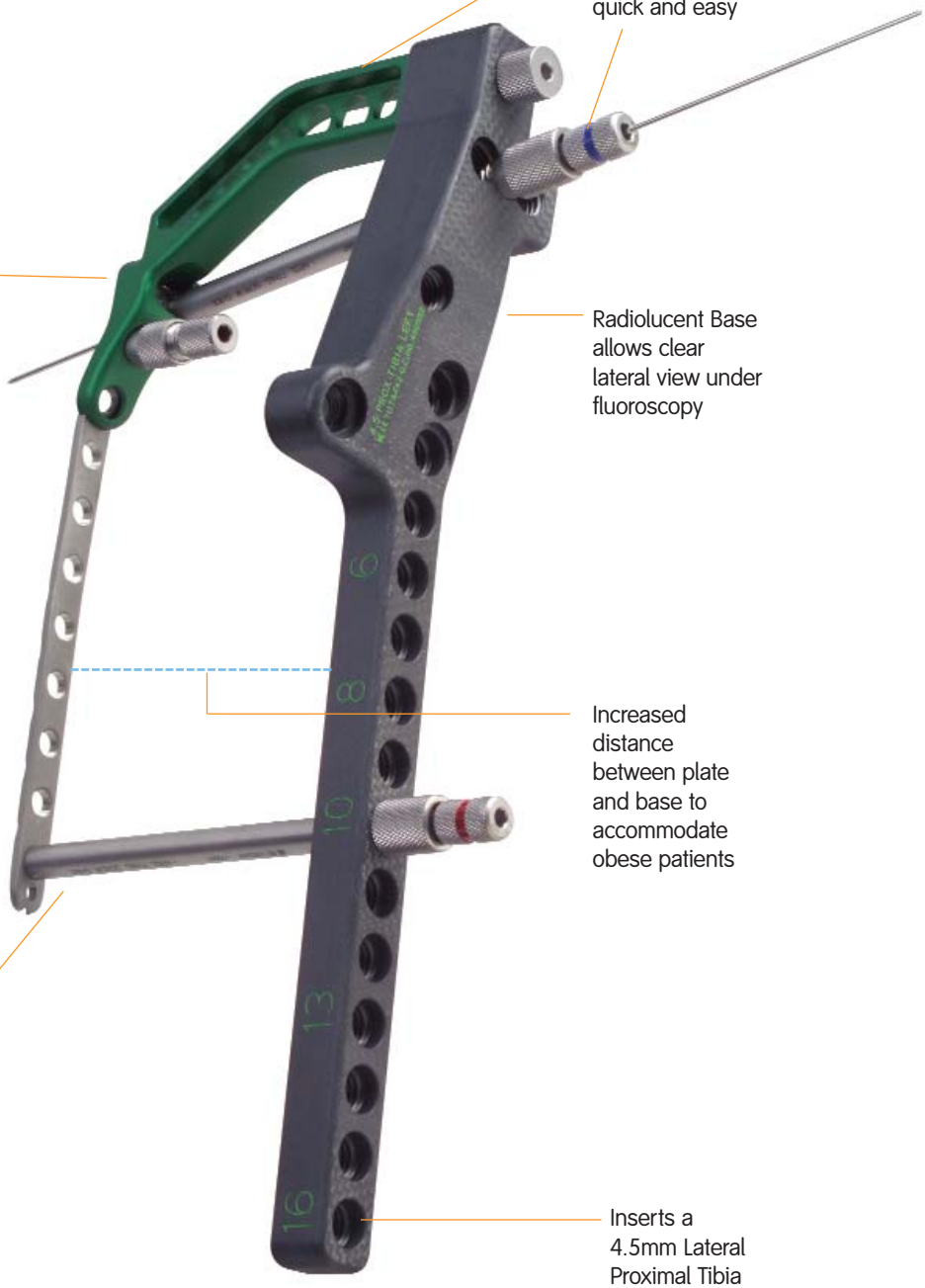
4.5mm Locking Self-Tapping Cortex Screw
Cat. No. 7180-70XX

5.7mm Cannulated Locking Screw
Cat. No. 7180-80XX

6.5mm Partially Threaded Cancellous Screw
Cat. No. 7180-81XX

All screws use 3.5mm Hexdriver.

Design Features – Targeter



Color-coded instrumentation makes identification quick and easy

A smaller footprint allows for minimal exposure of the lateral proximal tibia

Radiolucent Base allows clear lateral view under fluoroscopy

Increased distance between plate and base to accommodate obese patients

Screw guides allow for placement of locking or non-locking screws

Inserts a 4.5mm Lateral Proximal Tibia Locking Plate up to 16 holes

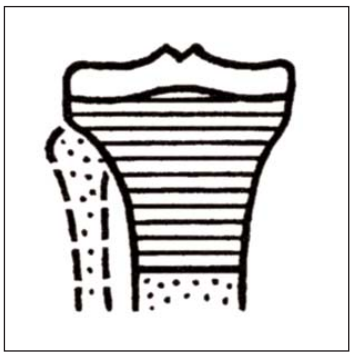
Patient Positioning

Place the patient in a supine position on a radiolucent table. Confirm that an unhindered lateral and AP view under fluoroscopy can be obtained.

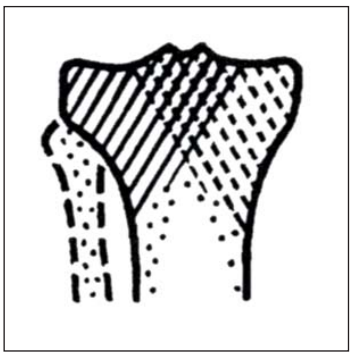
Obtain gross metaphyseal alignment using manual traction or skeletal distraction.

Incision

The lateral S incision is recommended for the following fracture classifications:



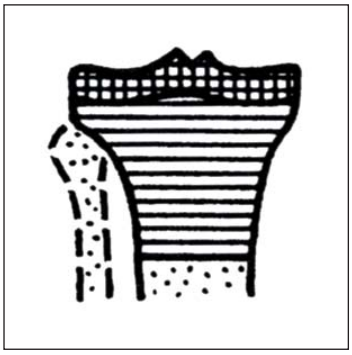
A. Extra-articular (41-A)



B. Partial articular (41-B)

OTA Fracture Classification courtesy of the Orthopaedic Trauma Association. For more information go to www.ota.org

The straight anterolateral incision is recommended for the following fracture classification.

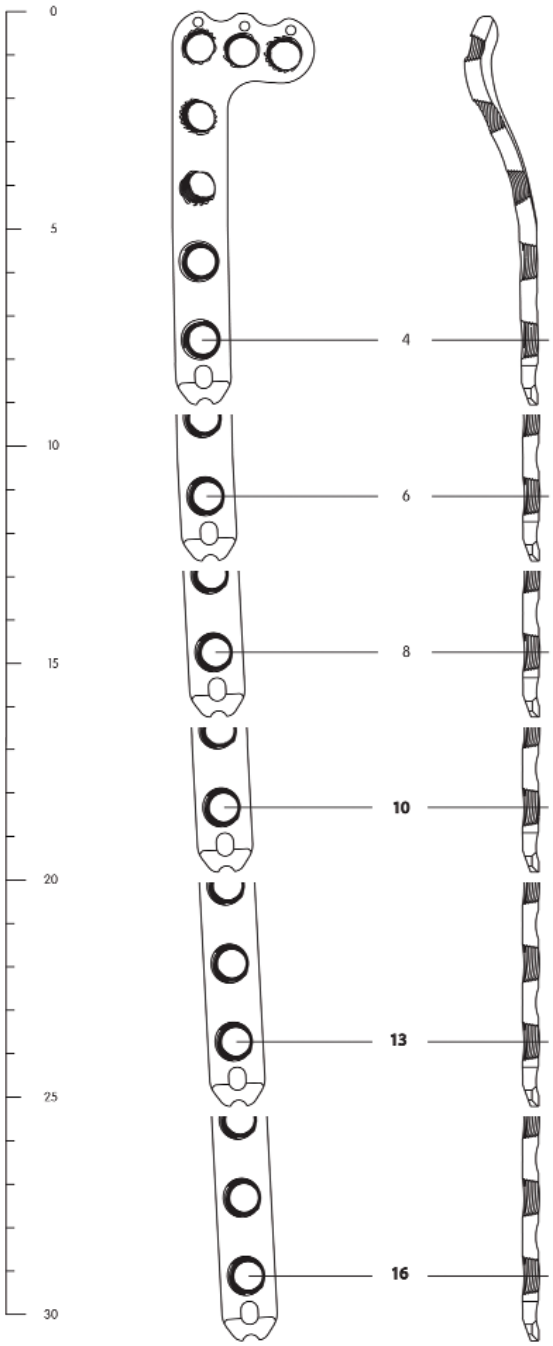


C. Complete articular (41-C)

Targeter System for 4.5mm Lateral Proximal Tibia Locking Plate – Surgical Technique

Plate Selection

Using the PERI-LOC® 4.5mm Proximal Tibia Plating Preoperative Template, determine the appropriate length plate for the fracture. In general, a longer plate allows for better mechanical advantage over a shorter plate. An allowance for five screw holes below the most distal aspect of the fracture is recommended when selecting plate length.



PERI-LOC 4.5mm Proximal Tibia Locking Plate Preoperative Template

Cat. No. 7118-0916

Articular Reduction and Provisional Fixation

It is important that articular fracture reduction be obtained prior to placement of locking screws. Temporarily secure articular fragments by using K-Wires and/or Reduction Forceps. Confirm reduction of the articular surface and place definitive fixation outside the plate if necessary.

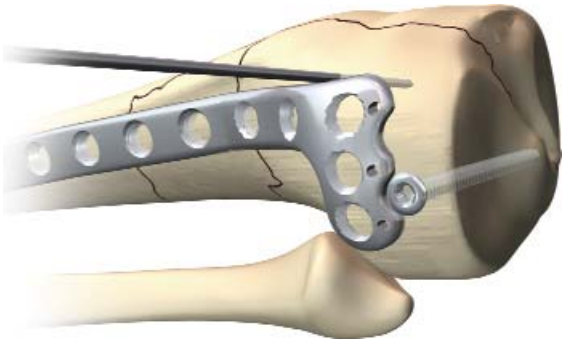


Plate and Targeter Assembly

Assemble the Targeter Base, Handle and Plate on the back table as shown.

3.5mm Self-Tapping Cortex Screw (Non-Locking)
Cat. No. 7180-40XX

4.5mm Self-Tapping Cortex Screw (Non-Locking)
Cat. No. 7180-60XX

Large Fragment Countersink
Cat. No. 7117-3353

Targeter Base
Cat. No. 7117-3442 (Left)
Cat. No. 7117-3443 (Right)

Targeter Handle
Cat. No. 7117-3414 (Left)
Cat. No. 7117-3415 (Right)

Targeter Large Fragment Locking Post Assembly
Cat. No. 7117-3398

Plate Insertion

Insert the plate between the muscle and periosteum keeping the distal end of the plate against the tibia during insertion.

Plate Positioning

Position the PERI-LOC® 4.5mm Proximal Tibia Locking Plate by matching the contour of the plate to the proximal portion of the lateral tibia. Insert the screw guide with the red color-coded 3.5mm drill guide into one of the proximal holes. Tighten the screw guide to the base and tighten the red drill guide to the plate. Insert a long (metaphyseal) Provisional Fixation (PF) pin through the drill guide. Be careful not to over tighten the PF pin as extreme torque may cause the threads to strip.

4.5mm Lateral Proximal Tibia Locking Plate, 10H Left 201mm

Cat. No. 7180-0210

Targeter 3.5mm Drill Guide

Cat. No. 7117-3382

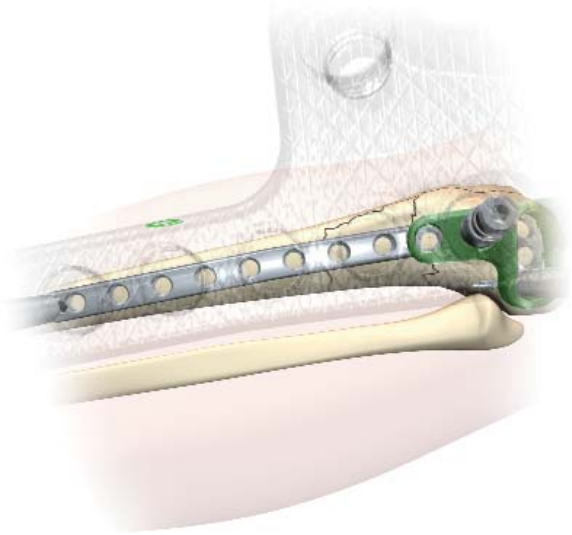
Targeter Provisional Fixation Pin, 40mm

Cat. No. 7117-3408

Targeter Large Fragment Screw Guide

Cat.No. 7117-3397

Obtain sagittal alignment of fracture and confirm with a lateral radiograph. When a sagittal split is present, reduction can be obtained with either clamps or lag screws, outside or through the plate. Insert all necessary lag screws prior to placement of locking screws.



This drawing illustrates the radiolucency of the PERI-LOC® Targeter

To access the distal hole, insert the screw guide with a trocar through a small stab incision until the screw guide reaches the plate and locks into the base.

Targeter Large Fragment Screw Guide

Cat.No. 7117-3397

Targeter Large Fragment Trocar

Cat.No. 7117-3404

Remove the trocar and insert a red drill guide, threading it into the plate.

Center the plate on the lateral aspect of the tibia and insert a short (diaphyseal) PF pin in the most distal hole.

If further reduction of the proximal portion of the diaphyseal fragment is required, center the plate on the proximal diaphyseal fragment and provisionally fix the plate close to the fracture by repeating the previous step. Obtain final confirmation of fracture alignment and implant position.

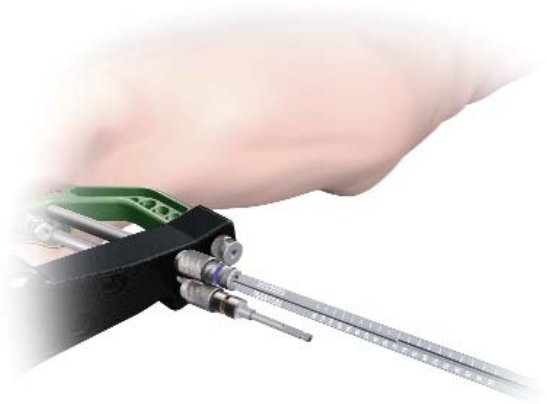
Targeter 3.5mm
Drill Guide
Cat. No. 7117-3382

Targeter 3.5mm
Provisional Fixation
Pin, 18mm
Cat.No. 7117-3416

Insert the Screw Guide through any of the proximal holes securing it to the base. Insert the 2.0mm K-Wire Locking Guide Insert (blue) which accepts the 2.0mm K-Wire (guide wire). This K-Wire can be redirected if necessary until it is parallel to the joint in the AP view. Loosening of the PF pins may be necessary to redirect the K-Wire parallel to the joint.

For correct coronal alignment, the K-Wire (guide wire) must be parallel to the joint in the AP view.

Advance the K-Wire until it reaches the medial wall of the proximal tibia. Measure for screw length by placing the 5.7mm Cannulated Depth Gauge against the end of the 2.0mm K-Wire Locking Guide Insert for proper measurement.



Targeter Large Fragment K-Wire Guide

Cat.No. 7117-3384

Targeter K-Wire 2.0mm x 350mm

Cat.No. 7117-3381

5.7mm Cannulated Depth Gauge

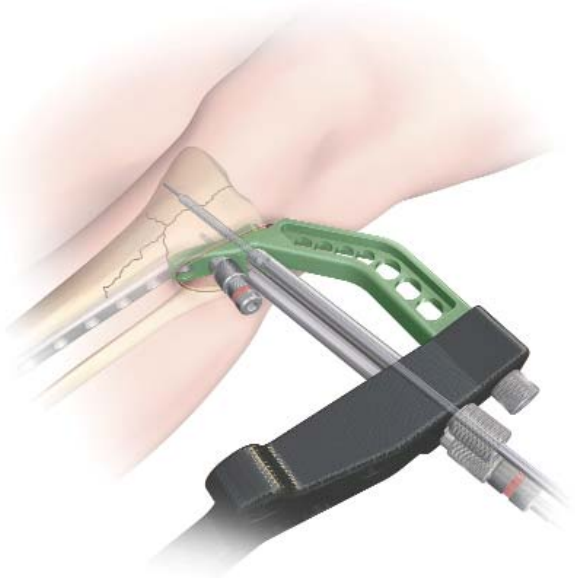
Cat.No. 7117-3332

Targeter 3.5mm Drill Guide

Cat. No. 7117-3382

Screw Insertion

Remove the 2.0mm K-Wire Locking Guide Insert and implant the appropriate length 5.7mm Cannulated Locking Screw over the K-Wire and into the bone using the 3.5mm Cannulated Hexdriver Shaft.



Note: The 5.7mm Cannulated Screws are self-drilling and self-tapping, making predrilling unnecessary in most cases. However, if predrilling is necessary, drill the near cortex using the 4.5mm Cannulated Drill Bit with Quick Connect.

The remaining proximal screws can be either 5.7mm Cannulated Locking Screws or 4.5mm Locking Self-Tapping Cortex Screws. To implant 4.5mm Locking Self-Tapping Cortex Screws, predrill with the 3.5mm Drill Bit with Quick Connect through the 4.5mm/5.7mm Locking Screw Guide and 3.5mm Locking Drill Guide Insert (red), stopping short of the medial cortex.

5.7mm Cannulated Locking Screw

Cat. No. 7180-80XX

Targeter 3.5mm Large Fragment Cannulated Hexdriver

Cat.No. 7117-3434

Targeter 3.5mm Drill Bit

Cat.No. 7117-3402

Targeter 3.5mm Drill Guide

Cat. No. 7117-3382

The proximal PF pin should remain until all other proximal screws have been implanted to keep the base-to-plate alignment secure. After all other proximal screws have been inserted, remove the PF pin and replace with either a 5.7mm cannulated locking screw or a 4.5mm locking screw using the steps previously described.

Note: Locking screws can be inserted using a powered drill system but should be tightened by hand. Tightening screws with a powered drill system may cause loss of reduction or expose the screw heads to excess torque.

Proceed with definitive fixation of the shaft and the proximal fragments with appropriate screw selections. If a combination of non-locking screws and locking screws is necessary, insert the non-locking cortex screws before locking screws are inserted in each fragment.

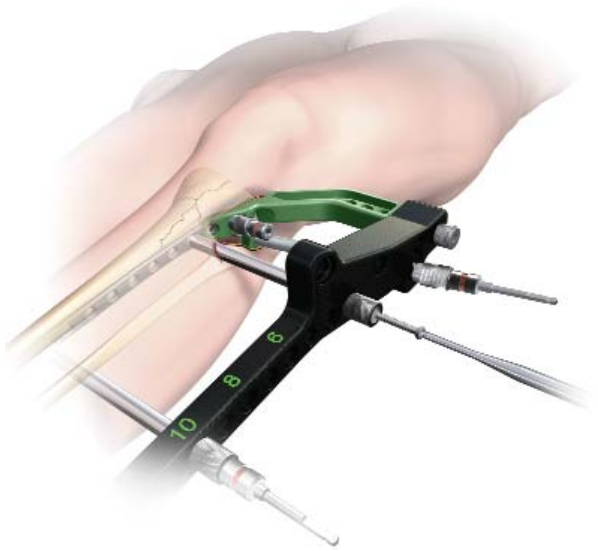
Pre-drill for the 4.5mm self-tapping cortex screws (non-locking) using the 3.5mm (red) Drill Bit through the 3.5mm (red) drill guide. Measure for length using the calibrations on the 3.5mm Drill Bit.

Targeter Large Fragment Hexdriver Shaft
Cat.No. 7117-3409

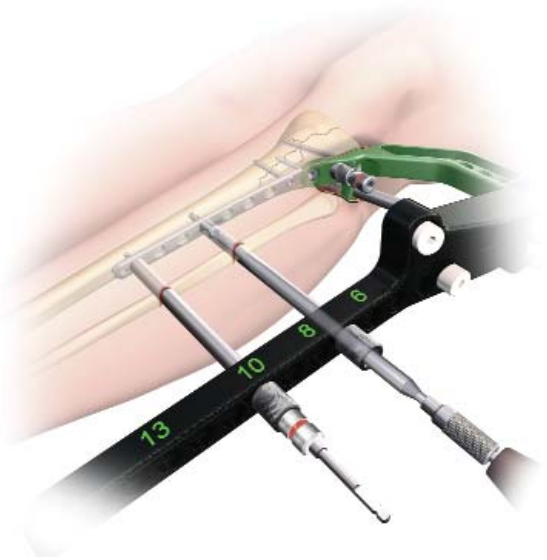
Targeter 3.5mm Drill Guide
Cat. No. 7117-3382

Targeter 3.5mm Drill Bit
Cat.No. 7117-3402

Insert the appropriate length 4.5mm Self-Tapping Cortex Screw (non-locking) using the 3.5mm Hexdriver.



After any/all non-locking screws have been inserted, insert 4.5mm locking screws using the same steps outlined in the previous step. Again, drill using the 3.5mm Drill Bit and read measurement from the Drill Bit. Insert the appropriate length 4.5mm Locking Self-Tapping Cortex Screw using the 3.5mm Hexdriver.

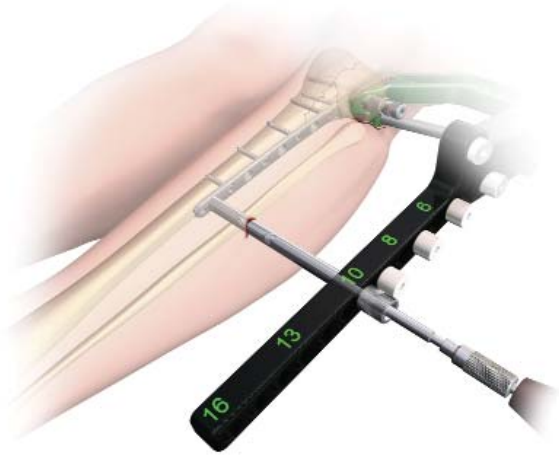


4.5mm Locking Self-Tapping Cortex Screw (non-locking)
Cat. No. 7180-60XX

Targeter Large Fragment Hexdriver Shaft
Cat.No. 7117-3409

4.5mm Locking Self-Tapping Cortex Screws
Cat. No. 7180-70XX

The distal hole with the PF pin should be the last to be filled in the distal fragment. Remove the PF pin and replace with a 4.5mm locking screw by first pre-drilling with the 3.5mm drill bit.



Remove the handle and base from the plate by unscrewing the Locking Post Assembly. Insert either a 4.5mm locking screw or a 5.7mm cannulated locking screw by threading either the blue 2.0mm wire guide or the red 3.5mm drill guide into that hole and follow the previous steps for inserting the final screw.

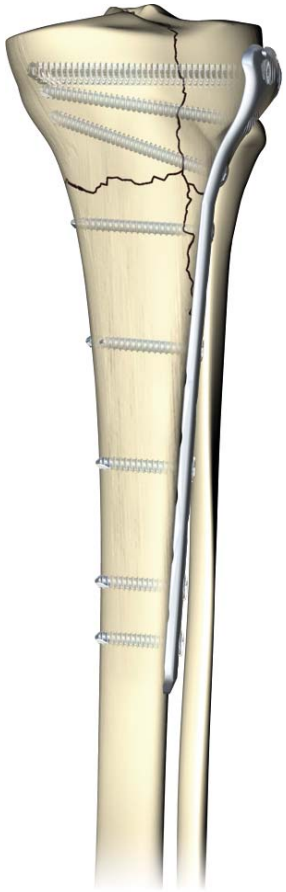
Make sure all screws are tight before closing the wound.

Targeter 3.5mm Drill Bit
Cat.No. 7117-3402

Targeter Large Fragment Hexdriver Shaft
Cat.No. 7117-3409

Large Fragment Screwdriver Handle
Cat.No. 7117-3547

Final lateral view



Final AP view

Catalog Information – Large Fragment Plates

4.5mm Sterile Lateral Proximal Tibia Locking Plates

Cat. No.	Length	Quantity in Set
7180-0204	4H Left 94mm	1
7180-0206	6H Left 130mm	1
7180-0208	8H Left 165mm	1
7180-0210	10H Left 201mm	1
7180-0213	13H Left 255mm	0 (optional)
7180-0216	16H Left 309mm	0
7180-0304	4H Right 94mm	1
7180-0306	6H Right 130mm	1
7180-0308	8H Right 165mm	1
7180-0310	10H Right 201mm	1
7180-0313	13H Right 255mm	0 (optional)
7180-0316	16H Right 309mm	0

Catalog Information – Large Fragment System Screws

Large Fragment System 4.5mm Sterile Self-Tapping Cortex Screws (Non-Locking)

Cat. No.	Length	Quantity in Set
7180-6014	14mm	4
7180-6016	16mm	4
7180-6018	18mm	4
7180-6020	20mm	6
7180-6022	22mm	6
7180-6024	24mm	6
7180-6026	26mm	6
7180-6028	28mm	6
7180-6030	30mm	10
7180-6032	32mm	10
7180-6034	34mm	10
7180-6036	36mm	10
7180-6038	38mm	10
7180-6040	40mm	10
7180-6042	42mm	6
7180-6044	44mm	4
7180-6046	46mm	4
7180-6048	48mm	4
7180-6050	50mm	4
7180-6052	52mm	4
7180-6054	54mm	4
7180-6056	56mm	4
7180-6058	58mm	4
7180-6060	60mm	4
7180-6062	62mm	4
7180-6064	64mm	4
7180-6066	66mm	4
7180-6068	68mm	4
7180-6070	70mm	4
7180-6072	72mm	4
7180-6074	74mm	4
7180-6076	76mm	4
7180-6078	78mm	4
7180-6080	80mm	4
7180-6085	85mm	4
7180-6090	90mm	2
7180-6095	95mm	2
7180-6100	100mm	2
7180-6105	105mm	0
7180-6110	110mm	0
7180-6115	115mm	0
7180-6120	120mm	0
7180-6125	125mm	0
7180-6130	130mm	0

Large Fragment System Sterile
4.5mm Locking Self-Tapping Cortex Screws

Cat. No.	Length	Quantity in Set
7180-7010	10mm (Blunt Tip)	4
7180-7012	12mm (Blunt Tip)	4
7180-7014	14mm	4
7180-7016	16mm	4
7180-7018	18mm	4
7180-7020	20mm	6
7180-7022	22mm	6
7180-7024	24mm	6
7180-7026	26mm	6
7180-7028	28mm	6
7180-7030	30mm	10
7180-7032	32mm	10
7180-7034	34mm	10
7180-7036	36mm	10
7180-7038	38mm	10
7180-7040	40mm	10
7180-7042	42mm	6
7180-7044	44mm	4
7180-7046	46mm	4
7180-7048	48mm	4
7180-7050	50mm	4
7180-7052	52mm	4
7180-7054	54mm	4
7180-7056	56mm	4
7180-7058	58mm	4
7180-7060	60mm	4
7180-7062	62mm	4
7180-7064	64mm	4
7180-7066	66mm	4
7180-7068	68mm	4
7180-7070	70mm	4
7180-7072	72mm	4
7180-7074	74mm	4
7180-7076	76mm	4
7180-7078	78mm	4
7180-7080	80mm	4
7180-7085	85mm	4
7180-7090	90mm	2
7180-7095	95mm	2
7180-7100	100mm	2
7180-7105	105mm	0
7180-7110	110mm	0
7180-7115	115mm	0
7180-7120	120m	0
7180-7125	125mm	0
7180-7130	130mm	0

Large Fragment System Sterile 5.7mm Cannulated Locking Screws

Cat. No.	Length	Quantity in Set
7180-8020	20mm	3
7180-8025	25mm	3
7180-8030	30mm	3
7180-8035	35mm	3
7180-8040	40mm	3
7180-8045	45mm	3
7180-8050	50mm	3
7180-8055	55mm	5
7180-8060	60mm	5
7180-8065	65mm	5
7180-8070	70mm	5
7180-8075	75mm	5
7180-8080	80mm	5
7180-8085	85mm	3
7180-8090	90mm	3
7180-8095	95mm	3
7180-8100	100mm	3
7180-8105	105mm	0
7180-8110	110mm	0
7180-8115	115mm	0
7180-8120	120mm	0

6.5mm Sterile Partially Threaded Cancellous Screws

Cat. No.	Length	Quantity in Set
7180-8150	50mm	4
7180-8155	55mm	4
7180-8160	60mm	4
7180-8165	65mm	4
7180-8170	70mm	4
7180-8175	75mm	4
7180-8180	80mm	4
7180-8185	85mm	4
7180-8190	90mm	4
7180-8195	95mm	4
7180-8200	100mm	4
7180-8205	105mm	0
7180-8210	110mm	0

Washers

Cat. No.	Length	Quantity in Set
7114-3110	10mm O.D.	6
7114-3113	13mm O.D.	6

Catalog Information – Targeter System for 4.5mm Sterile Lateral Proximal Tibia Locking Plate Instruments

Small Outer Case – 2.4”
Cat. No. 7112-9401

Lid for Outer Cases
Cat. No. 7112-9402

4.5mm Proximal Tibia Targeter Tray
Cat.No. 7117-0322

Targeter 3.5mm Drill Guide
Cat.No. 7117-3382

Targeter 4.5mm Drill Guide
Cat.No. 7117-3383

Targeter Large Fragment K-Wire Guide
Cat.No. 7117-3384

Targeter Large Fragment Screw Guide
Cat.No. 7117-3397

Targeter Large Fragment Locking Post Assembly
Cat.No. 7117-3398

Targeter 4.5mm Lateral Proximal Tibia Handle, Left
Cat.No. 7117-3414

Targeter 4.5mm Lateral Proximal Tibia Handle, Right
Cat.No. 7117-3415

Targeter Large Fragment Trocar
Cat.No. 7117-3404

Targeter Large Fragment Hexdriver Shaft
Cat.No. 7117-3409

Targeter 4.7mm Hexdriver
Cat.No. 7117-3410

Targeter 3.5mm Large Fragment Cannulated Hexdriver
Cat.No. 7117-3434

Targeter 4.5mm Lateral Proximal Tibia 19-Hole Base, Left
Cat.No. 7117-3442

Targeter 4.5mm Lateral Proximal Tibia 19-Hole Base, Right
Cat.No. 7117-3443

5.7mm Cannulated Depth Gauge
Cat.No. 7117-3332

Large Fragment Screwdriver Handle
Cat.No. 7117-3547

Targeter LF Base Plug
Cat.No. 7117-3436

Catalog Information – Targeter System for 4.5mm Lateral Proximal Tibia Locking Plate Disposables

Targeter K-Wire 2.0mm x 350mm
Cat.No. 7117-3381

Targeter 3.5mm Drill Bit
Cat.No. 7117-3402

Targeter 4.5mm Drill Bit
Cat.No. 7117-3403

Targeter 3.5mm Provisional Fixation Pin, 40mm
Cat.No. 7117-3408

Targeter 3.5mm Provisional Fixation Pin, 18mm
Cat.No. 7117-3416

Targeter Large Fragment 4.5mm Cannulated Drill
Cat.No. 7117-3444

Catalog Information – Large Fragment System Instruments

Sharp Hook
Cat. No. 7117-0043

Wire Bending Pliers, 140mm Length
Cat. No. 7117-0063

Large Fragment Screw Depth Gauge
Cat.No. 7117-3331

5.7mm Cannulated Depth Gauge
Cat.No. 7117-3526

Large Fragment Countersink
Cat.No. 7117-3353

Universal Plate Bending Irons
Cat.No. 7117-3367

Hohmann Retractor Long, 15mm Width
Cat.No. 7117-3393

Universal Drill Guide Handle
Cat.No. 7117-3349

2.0mm Wire/Drill Insert
Cat.No. 7117-3517

3.5mm Drill Guide Insert
Cat.No. 7117-3513

2.0mm Parallel Wire/Drill Guide
Cat.No. 7117-3516

4.5mm Drill Guide Insert
Cat.No. 7117-3520

3.5mm Neutral Locking Hole Insert
Cat.No. 7117-3521

3.5mm Compression Locking Hole Insert
Cat.No. 7117-3522

3.5mm Neutral Slot Insert
Cat.No. 7117-3519

3.5mm Compression Slot Insert
Cat.No. 7117-3518

4.7mm Hexdriver
Cat.No. 7117-3540

Cannulated Bending Irons for K-Wires
Cat.No. 7117-3527

Cannulated AO to Trinkle Adaptor
Cat.No. 7117-3528

4.5/5.7mm Locking Screw Guide
Cat.No. 7117-3539

2.0mm K-Wire Locking Guide Insert
Cat.No. 7117-3531

3.5mm Locking Drill Guide Insert
Cat.No. 7117-3530

4.5mm Locking Drill Guide Insert
Cat.No. 7117-3532

3.5mm Locking Drill Guide – One Piece
Optional
Cat. No. 7117-3451

4.5mm Locking Drill Guide – One Piece
Optional
Cat. No. 7117-3541

Large Fragment Guide Removal Assembly
Cat.No. 7117-3550

Large Screwdriver Handle
Cat.No. 7117-3547

Tear Drop Handle Screwdriver with Quick Connect
Cat.No. 7117-3543

Small T-Handle, Quick Coupling
Cat.No. 7117-3542

3.5mm Hexdriver Shaft
with AO Quick Connect
Cat.No. 7117-3537

3.5mm Cannulated Hexdriver Shaft
Cat.No. 7117-3536

Catalog Information – Large Fragment System
Forceps Tray Instruments

Self Centering Reverse Verbrugge

Cat. No.	Description
7117-3544	190mm
7117-3545	240mm
7117-3546	280mm

Reduction Forceps with Ratchet, 205mm
Cat. No. 7117-0044

Reduction Forceps with Speed Knob, 240mm
Cat. No. 7117-0050

Socket Wrench with Universal Joint
Cat. No. 7117-0143

Articulated Tension Device with Gauge
Cat. No. 7117-0145

Lamina Spreader
Cat. No. 7117-3365

Reduction Forceps with Ratchet-Bowed, 205mm
Cat. No. 7117-3370

Reduction Forceps with Ratchet, 240mm
Cat. No. 7117-3371

Reduction Forceps with Points, Broad
Cat. No. 7117-3377

Reduction Forceps with Serrated Jaw
Cat. No. 7117-3378

Catalog Information – Large Fragment System Trays

PERI-LOC® Large Fragment Instrument Tray
Cat.No. 7117-0327

Small Outer Case – 2.4”
Cat. No. 7112-9401

Lid for Outer Cases
Cat. No. 7112-9402

PERI-LOC Forceps Tray
Cat. No. 7117-0326

Catalog Information – Large Fragment System Disposables

K-Wires with Trocar Point and Threaded Pins

Cat. No.	Description	Quantity in Set
7116-1020	2.0mm x 150mm	6
7117-3361	2.0mm x 228mm	6

Taps with Quick Connect

Cat. No.	Description	Quantity in Set
7117-3319	4.5mm	2
7117-3509	6.5mm Cancellous	2

Provisional Fixation Pins

Cat. No.	Description	Quantity in Set
7117-3324	3.5mm x 18mm	4
7117-3325	3.5mm x 40mm	4

Drill Bits with Quick Connect

Cat. No.	Description	Quantity in Set
7117-3504	3.5mm Short	2
7117-3505	3.5mm	2
7117-3506	4.5mm	2
7117-3507	4.5mm Short	2
7117-3508	4.5mm Cannulated	2

Notes

Notes

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