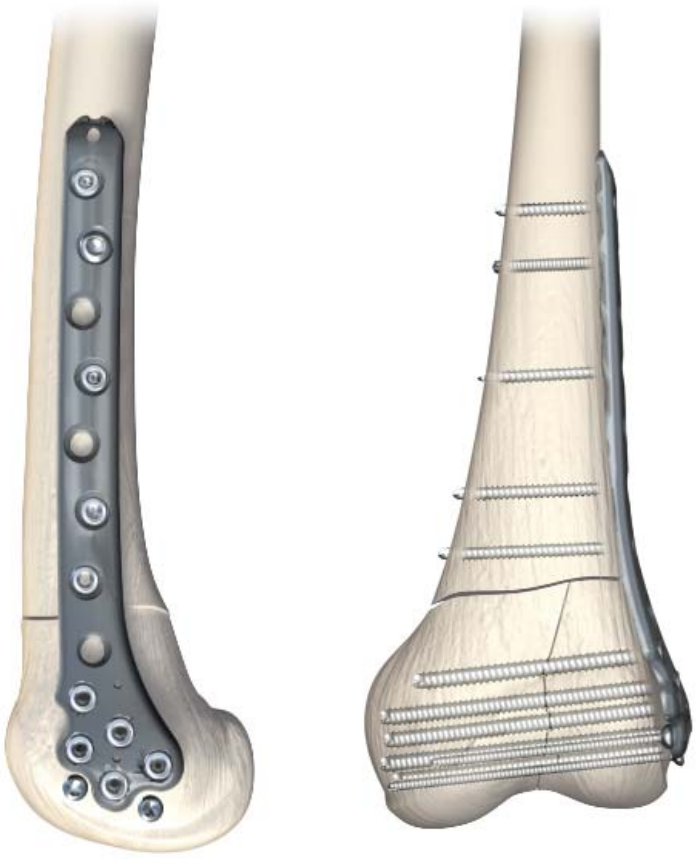
Surgical Technique

smith&nephew

PERI-LOC®

Periarticular Locked
Plating System

4.5mm Distal Femur Locking Plate



PERI-LOC Periarticular Locked Plating System

Distal Femur Plate Surgical Technique

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4.5mm Distal Femur Locking Plate Surgical Technique

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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, Inc. 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 implants are manufactured using the highest quality 316L stainless steel for strength and durability.

The anatomical bow and precontour of the 4.5mm Distal Femur Locking Plate provides an excellent fit against the surface of the bone.

Condylar scallops on the distal end of the plate allow easy placement of lag screws outside the plate for fixation of articular fractures.

Each screw hole will accept one of four different screws allowing you to customize the screw configuration depending on the individual needs of the fracture.



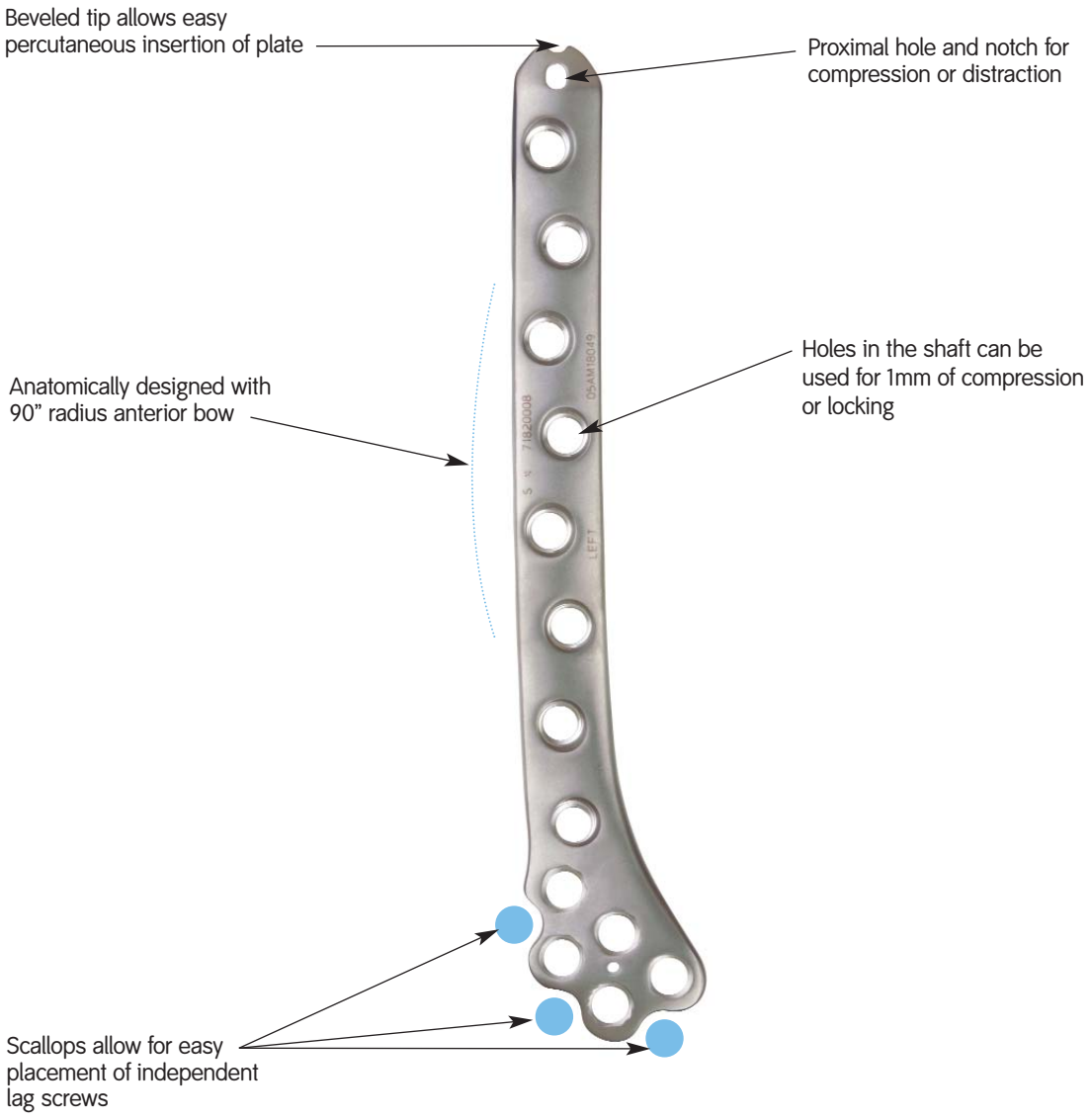
- 4.5mm Self-Tapping Cortex Screw (Non-Locking)
- 4.5mm Locking Self-Tapping Cortex Screws
- 5.7mm Cannulated Locking Screw
- 6.5mm Partially Threaded Cancellous Screw

Indications

The PERI-LOC Periarticular Locked Plating System is used for adult and pediatric patients as indicated for pelvic, small, and long bone fracture fixation. Indications for use include fractures of the tibia, fibula, femoral condyle, pelvis, acetabulum, metacarpals, metatarsals, humerus, ulna, middle hand and middle foot bones (particularly in osteopenic bone); treatment of the calcaneus; hip arthrodesis, and provisional hole fixation.

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

Design Features



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



4.5mm Self-Tapping Cortex Screw (Non-Locking)
Cat. No. 7182-60XX



4.5mm Locking Self-Tapping Cortex Screw
Cat. No. 7182-70XX



5.7mm Cannulated Locking Screw
Cat. No. 7182-80XX



6.5mm Partially Threaded Cancellous Screw
Cat. No. 7182-81XX

All screws use 3.5mm Hexdriver.

Patient Positioning

Place the patient in a supine position on a radiolucent table. A small bump can be used under the ipsilateral hip. The entire leg and lateral hip region should be prepped and draped to allow proximal extension of the surgical exposure if necessary. A sterile tourniquet can be used, especially for distal fractures. Confirm that an unhindered lateral and AP view under fluoroscopy can be obtained.

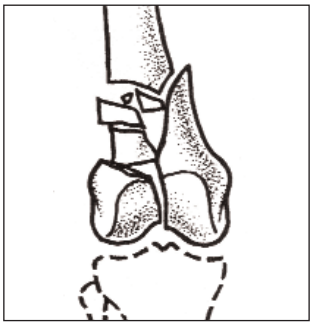
Obtain gross metaphyseal alignment using manual traction or skeletal distraction.

Incision

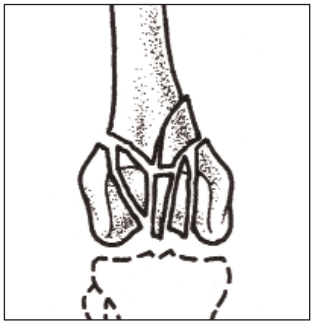
The incision illustrated below is indicated for the following fractures:



Articular simple, metaphyseal simple (33-C1) (optional)

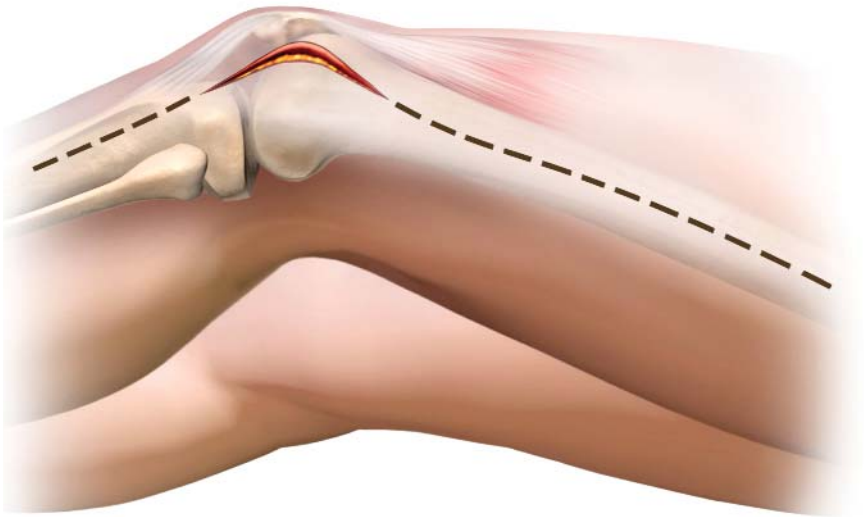


Articular simple, metaphyseal multifragmentary (33-C2)

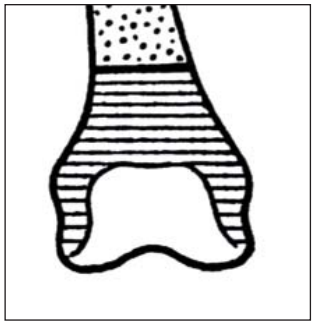


Mulitfragmentary articular fracture (33-C3)

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



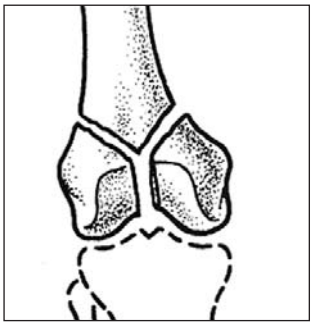
The incision illustrated below is indicated for the following fractures:



Extra articular (33-A)

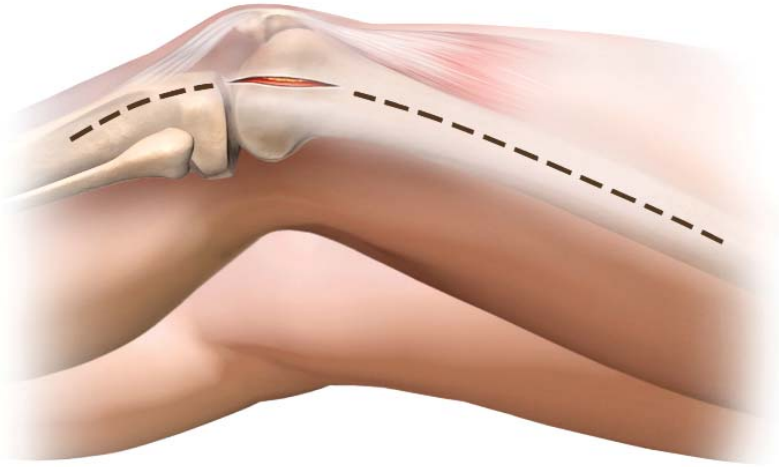


Partial articular (33-B)

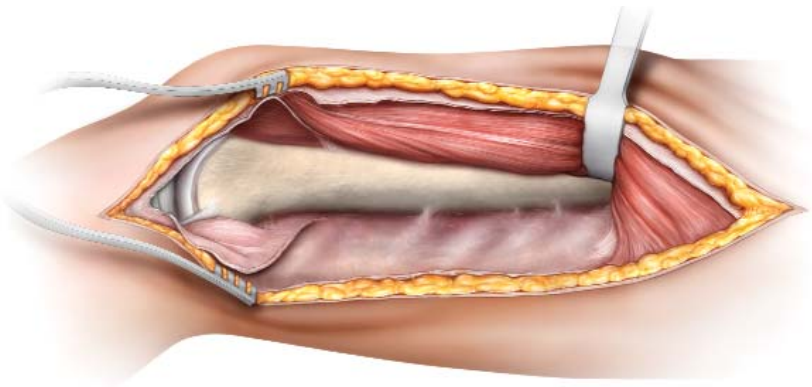


Articular simple, metaphyseal simple (33-C1) (optional)

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



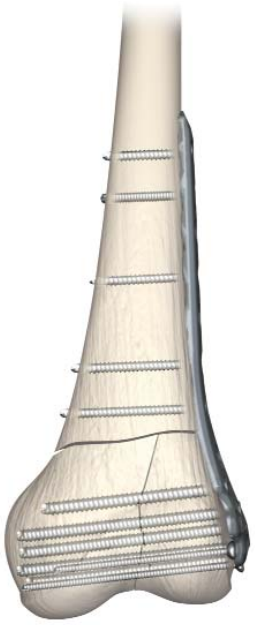
Exposure

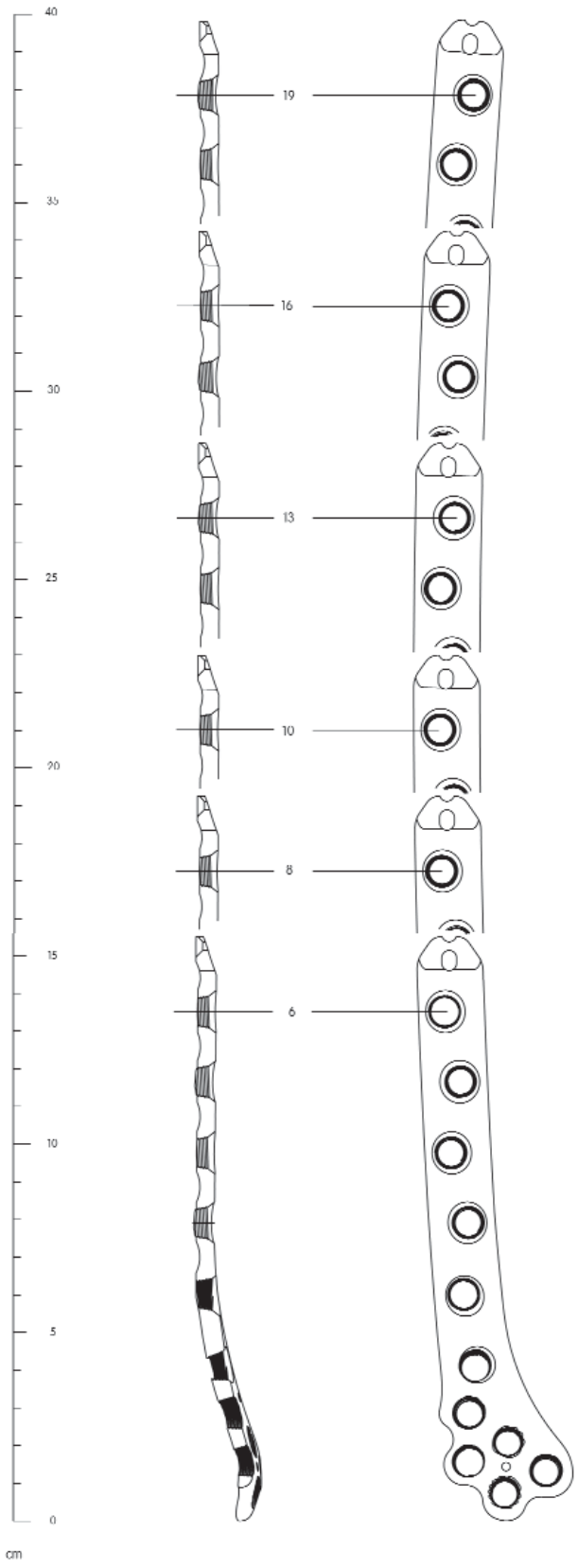


4.5mm Distal Femur Locking Plate Surgical Technique

Plate Selection

Using the PERI-LOC 4.5mm Distal Femur Locking Plate Preoperative Template, determine the appropriate length plate for the fracture. In general, a longer plate allows for better mechanical advantage over a shorter plate. It is recommended that when selecting plate length, allow for five screw holes above the most proximal aspect of the fracture.



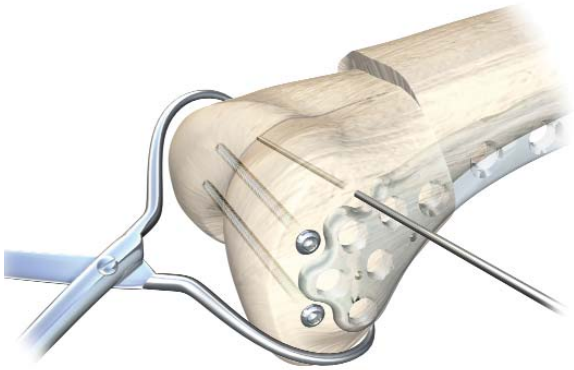


PERI-LOC 4.5mm Distal Femur Plating Preoperative Template

Cat. No. 7118-0915

Articular Reduction and Provisional Fixation

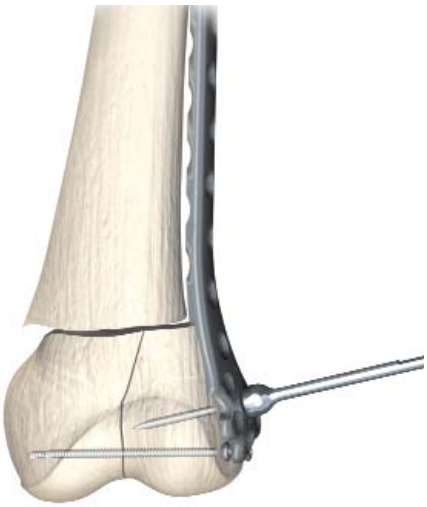
It is important that articular fracture reduction be obtained prior to placement of locking screws. Temporarily secure articular fragments by using K-Wires and/or Reduction Forceps. Place provisional and/or definitive fixation peripheral to the condylar contour of the plate. **3.5mm and 4.5mm Self-Tapping Cortex Screws (Non-Locking) can be nested peripherally in the contours of the plate.**



NOTE: If a **posterior Hoffa fracture** is present, fixation can be obtained by placing 3.5mm cortex screws or 4.0mm cancellous screws from anterior to posterior. Be sure to countersink the screw heads by using the Large Fragment Countersink so that the screw heads rest below the level of articular cartilage.

Position Plate

Position the PERI-LOC 4.5mm Distal Femur Locking Plate by matching the contour of the plate to the distal portion of the lateral femur. Place the long (metaphyseal) Provisional Fixation Pin through the center hole of the distal cluster.





Reduction Forceps
Cat. No. 7117-0044



Large Fragment
Countersink
Cat. No. 7117-3353



3.5mm Provisional
Fixation Pin 40mm
Cat. No. 7117-3325

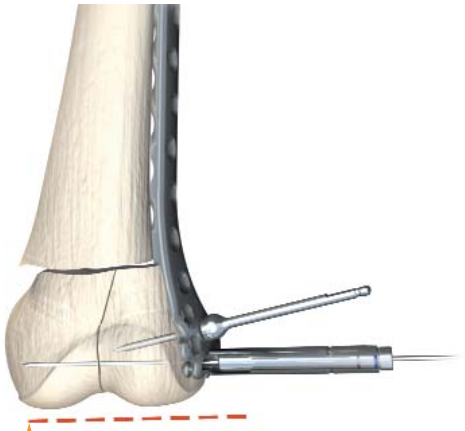


3.5mm Self-Tapping
Cortex Screw
(Non-Locking)
Cat. No. 7182-40XX



4.5mm Self-Tapping
Cortex Screw
(Non-Locking)
Cat. No. 7182-60XX

Attach the 4.5mm/5.7mm Locking Screw Guide to any of the distal holes and insert the 2.0mm K-Wire Locking Guide Insert (blue) which accepts the 2.0mm K-Wire (guide wire). This K-Wire can be re-directed if necessary until it is parallel to the joint in the AP view. Loosening of the Provisional Fixation Pin 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 femoral condyle. 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.





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



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

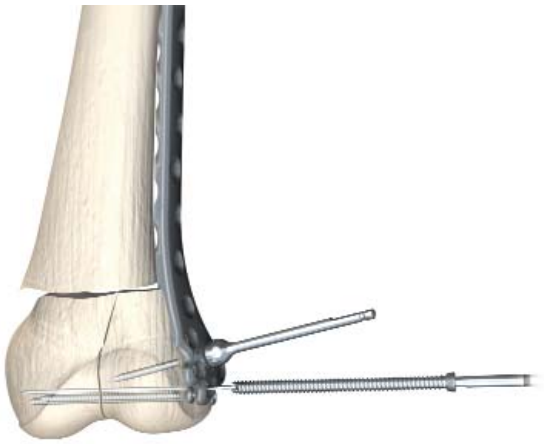
2.0mm X 228mm K-Wire
Cat. No. 7117-3361

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

Screw Insertion

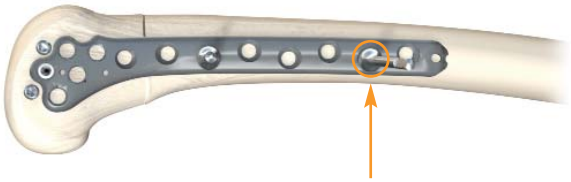
Remove the Locking Screw Guide with Insert and insert the appropriate length 5.7mm Cannulated Locking Screw over the K-Wire and into the bone using the 3.5mm Cannulated Hexdriver Shaft.

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.



Obtain sagittal alignment and confirm with a lateral radiograph. Reference the position of the plate to Blumensaat's Line and the subchondral margin of the trochlear groove.

Center the plate on the lateral aspect of the femur and apply a short (diaphyseal) Provisional Fixation Pin in the second most proximal hole.





5.7mm Cannulated
Locking Screw
Cat. No. 7182-80XX

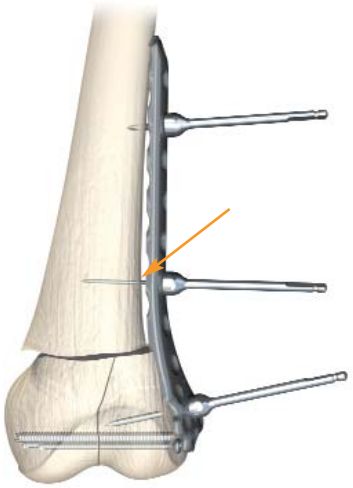
3.5mm Cannulated
Hexdriver Shaft
Cat. No. 7117-3536

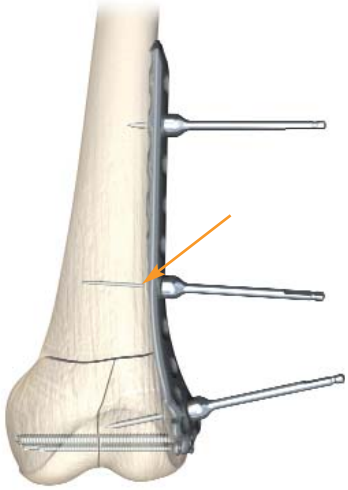
4.5mm Cannulated Drill
Bit with Quick Connect
Cat. No. 7117-3508



3.5mm x 40mm
Provisional Fixation Pin
Cat. No. 7117-3325

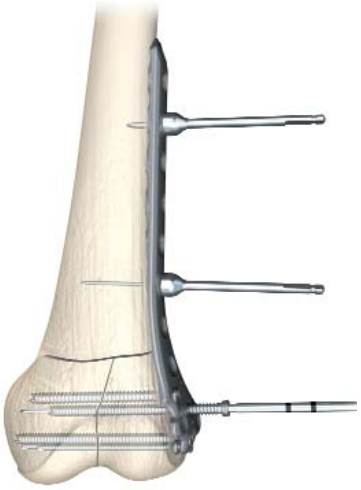
Center the plate on the distal diaphyseal fracture fragment and provisionally fix the plate close to the fracture. Obtain final confirmation of fracture alignment and implant position.





The remaining condylar 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.

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





4.5mm Locking Screw
Cat. No. 7182-70XX

3.5mm Drill Bit with Quick Connect
Cat. No. 7117-3505



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



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

The use of at least one 5.7mm Cannulated Locking Screw is recommended in the distal fragment.

Note: It may be necessary to use a unicondylar screw in the most distal hole to avoid joint impingement.



Proceed with definitive fixation of the shaft and the condylar portions with appropriate screw selections. If a combination of non-locking screws and locking screws is necessary, insert the non-locking cortex screws first to reduce the plate to bone or to compress the fracture before locking screws are inserted.

Pre-drill for the self-tapping cortex screws (non-locking) using the 3.5mm Drill Bit through the 3.5mm Compression or Neutral Locking Hole Insert (green or gold round drill guide inserts). Measure for length using the calibrations on the 3.5mm Drill Bit or Large Fragment Screw Depth Gauge and insert the appropriate length 4.5mm Self-Tapping Cortex Screw (Non-Locking) using the 3.5mm Hexdriver with Quick Connect.





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



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

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



4.5mm Self-Tapping Cortex Screw
Cat. No. 7182-60XX

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

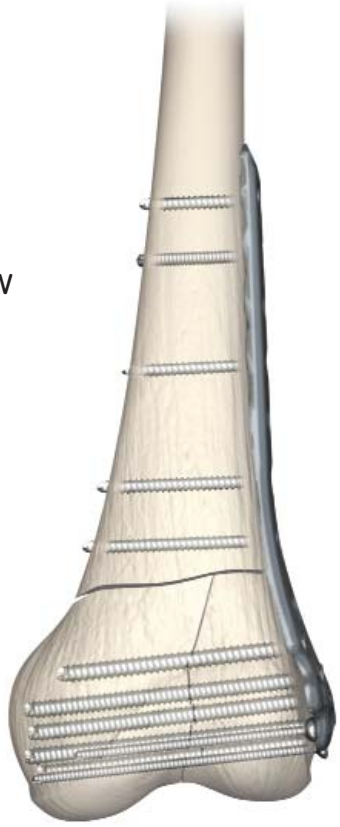
After compression is obtained, thread the 4.5mm/5.7mm Locking Screw Guide with 3.5mm Locking Drill Guide Insert (red) in screw holes where 4.5mm Locking Self-Tapping Cortex Screws are needed. Again, drill using the 3.5mm Drill Bit and read measurement from drill bit or use the Large Fragment Screw Depth Gauge. Insert the appropriate length 4.5mm Locking Self-Tapping Cortex Screw using the 3.5mm Hexdriver with Quick Connect. Make sure all screws are tight before closing the wound.



Final lateral view



Final AP view



Catalog Information – 4.5mm Distal Femur Plates

4.5mm Distal Femur Locking Plates



Cat. No.	Length	Quantity in Set
7182-0006	6H Left 155mm	1
7182-0008	8H Left 193mm	1
7182-0010	10H Left 230mm	1
7182-0013	13H Left 286mm	1
7182-0016	16H Left 342mm	1
7180-0019	19H Left 399mm	0
7182-0106	6H Right 155mm	1
7182-0108	8H Right 193mm	1
7182-0110	10H Right 230mm	1
7182-0113	13H Right 286mm	1
7182-0116	16H Right 342mm	1
7180-0119	19H Right 399mm	0

Small Outer Case – 2.4”

Cat. No. 7112-9401

Lid for Outer Cases

Cat. No. 7112-9402

Plate Tray

Cat. No. 7117-0323

Catalog Information – Large Fragment System Screws

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



Cat. No.	Length	Quantity in Set
7182-6014	14mm	4
7182-6016	16mm	4
7182-6018	18mm	4
7182-6020	20mm	6
7182-6022	22mm	6
7182-6024	24mm	6
7182-6026	26mm	6
7182-6028	28mm	6
7182-6030	30mm	10
7182-6032	32mm	10
7182-6034	34mm	10
7182-6036	36mm	10
7182-6038	38mm	10
7182-6040	40mm	10
7182-6042	42mm	6
7182-6044	44mm	4
7182-6046	46mm	4
7182-6048	48mm	4
7182-6050	50mm	4
7182-6052	52mm	4
7182-6054	54mm	4
7182-6056	56mm	4
7182-6058	58mm	4
7182-6060	60mm	4
7182-6062	62mm	4
7182-6064	64mm	4
7182-6066	66mm	4
7182-6068	68mm	4
7182-6070	70mm	4
7182-6072	72mm	4
7182-6074	74mm	4
7182-6076	76mm	4
7182-6078	78mm	4
7182-6080	80mm	4
7182-6085	85mm	4
7182-6090	90mm	2
7182-6095	95mm	2
7182-6100	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
4.5mm Locking Self-Tapping Cortex Screws



Cat. No.	Length	Quantity in Set
7182-7010	10mm (Blunt Tip)	4
7182-7012	12mm (Blunt Tip)	4
7182-7014	14mm	4
7182-7016	16mm	4
7182-7018	18mm	4
7182-7020	20mm	6
7182-7022	22mm	6
7182-7024	24mm	6
7182-7026	26mm	6
7182-7028	28mm	6
7182-7030	30mm	10
7182-7032	32mm	10
7182-7034	34mm	10
7182-7036	36mm	10
7182-7038	38mm	10
7182-7040	40mm	10
7182-7042	42mm	6
7182-7044	44mm	4
7182-7046	46mm	4
7182-7048	48mm	4
7182-7050	50mm	4
7182-7052	52mm	4
7182-7054	54mm	4
7182-7056	56mm	4
7182-7058	58mm	4
7182-7060	60mm	4
7182-7062	62mm	4
7182-7064	64mm	4
7182-7066	66mm	4
7182-7068	68mm	4
7182-7070	70mm	4
7182-7072	72mm	4
7182-7074	74mm	4
7182-7076	76mm	4
7182-7078	78mm	4
7182-7080	80mm	4
7182-7085	85mm	4
7182-7090	90mm	2
7182-7095	95mm	2
7182-7100	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
5.7mm Cannulated Locking Screws



Cat. No.	Length	Quantity in Set
7182-8020	20mm	3
7182-8025	25mm	3
7182-8030	30mm	3
7182-8035	35mm	3
7182-8040	40mm	3
7182-8045	45mm	3
7182-8050	50mm	3
7182-8055	55mm	5
7182-8060	60mm	5
7182-8065	65mm	5
7182-8070	70mm	5
7182-8075	75mm	5
7182-8080	80mm	5
7182-8085	85mm	3
7182-8090	90mm	3
7182-8095	95mm	3
7182-8100	100mm	3
7180-8105	105mm	0
7180-8110	110mm	0
7180-8115	115mm	0
7180-8120	120mm	0

6.5mm Partially Threaded Cancellous Screws



Cat. No.	Length	Quantity in Set
7182-8150	50mm	4
7182-8155	55mm	4
7182-8160	60mm	4
7182-8165	65mm	4
7182-8170	70mm	4
7182-8175	75mm	4
7182-8180	80mm	4
7182-8185	85mm	4
7182-8190	90mm	4
7182-8195	95mm	4
7182-8200	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 – 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

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The following statement is required by the U.S. FDA: WARNING: This device is not approved for screw attachment or screw fixation to the posterior elements (pedicles) of the cervical, thoracic or lumbar spine.

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