



**VersaNail**  
Femoral Troch Entry

**Product Rationale &  
Surgical Technique**

**BIOMET**

## One Surgeon. One Patient.

**Over 1 million times per year, Biomet helps one surgeon provide personalized care to one patient.**

The science and art of medical care is to provide the right solution for each individual patient. This requires clinical mastery, a human connection between the surgeon and the patient, and the right tools for each situation.

At Biomet, we strive to view our work through the eyes of one surgeon and one patient. We treat every solution we provide as if it's meant for a family member.

Our approach to innovation creates real solutions that assist each surgeon in the delivery of durable personalized care to each patient, whether that solution requires a minimally invasive surgical technique, advanced biomaterials or a patient-matched implant.

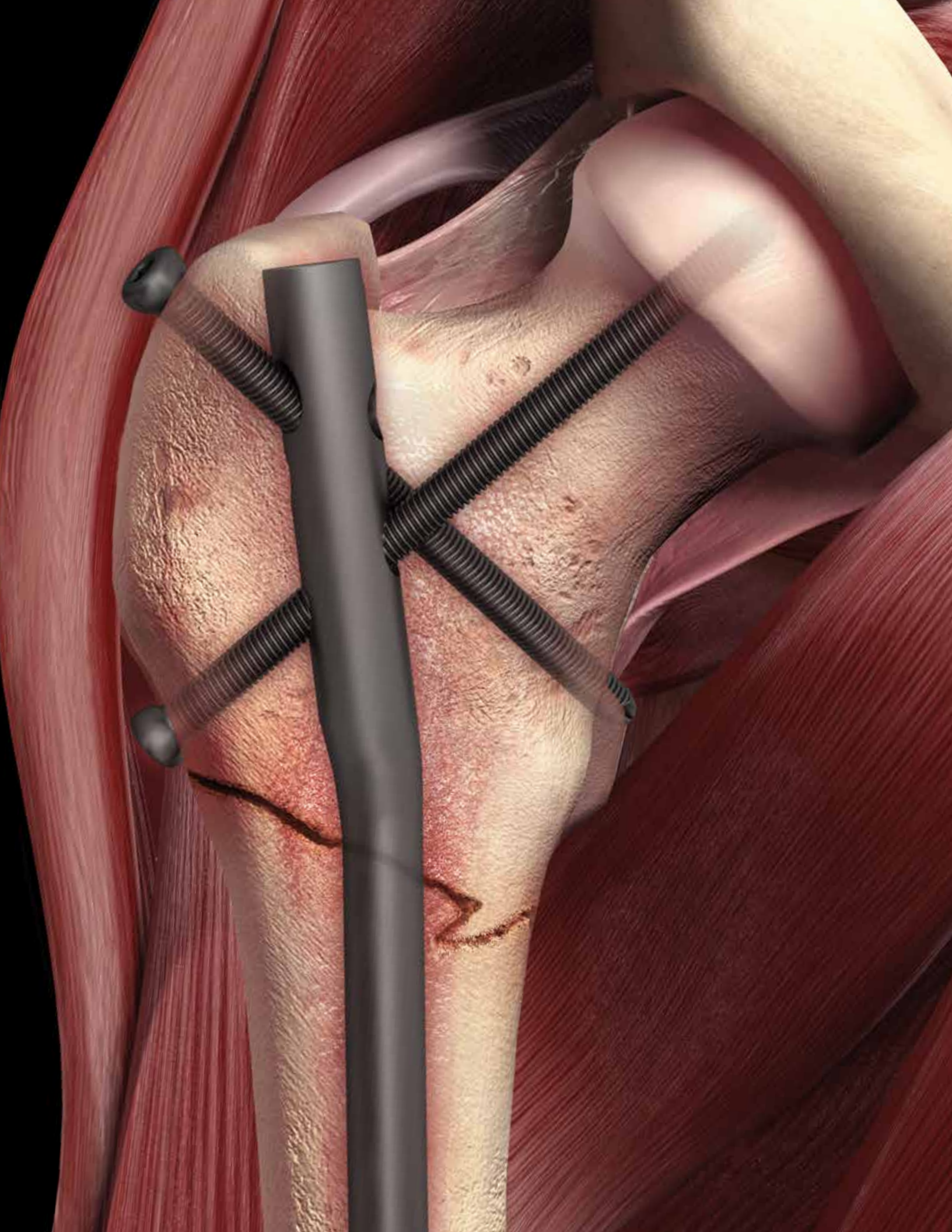
**When one surgeon connects with one patient to provide personalized care, the promise of medicine is fulfilled.**

# VersaNail Femoral Troch Entry Nailing System

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# VersaNail Femoral Troch Entry Nailing System

Engineered to match the patient's natural anatomy

Anatomically designed to aid insertion by navigating around the proximal femur

Multiple locking options for the treatment of simple to complex subtrochanteric to distal femoral shaft fractures

Unique distal bend centers the nail properly in the intramedullary canal, reducing the potential for distal cortex penetration



The Biomet VERSANAIL Troch Entry Femoral Nail is part of a long bone nailing system that offers a complete portfolio of implants and instruments based on a standardized technology platform. The Troch Entry Nail from the VERSANAIL Platform offers an implant design to treat femoral fractures with unique and versatile locking options. This femoral nail incorporates an excellent anatomic design for insertion through the greater trochanter. The VERSANAIL Platform instrumentation is designed to provide options and flexibility for many intraoperative approaches (including percutaneous methods) while maintaining ease-of-use and commonality.

# VersaNail Femoral Troch Entry Nailing System

The Troch Entry Nail is intended to treat:

- Proximal, middle and distal third fractures
- Severely comminuted shaft fractures extending beyond the isthmus
- Spiral, long oblique and segmental fractures
- Non-unions and malunions
- Lengthening of the bone
- Fractures with bone loss
- Bi-lateral fractures
- Pseudoarthrosis of the femoral shaft
- Supracondylar fractures
- Subtrochanteric fractures with or without involvement of lesser trochanter
- Subtrochanteric / intertrochanteric combination fractures
- Ipsilateral femoral shaft and neck fractures
- Stable and unstable proximal fractures of the femur including pertrochanteric fractures
- Intertrochanteric fractures
- High subtrochanteric fractures and combinations of these fractures
- Pertrochanteric fractures associated with shaft fractures
- Pathologic fractures in osteoporotic bone of the trochanteric and diaphyseal areas
- Proximal or distal non-unions and malunions
- Leg length discrepancies secondary to femoral inequality
- Femur reconstruction following tumor resection
- Stable femoral fractures without necessity for interlocking
- Long subtrochanteric fractures
- Revision procedures involving the replacement of implanted hardware.

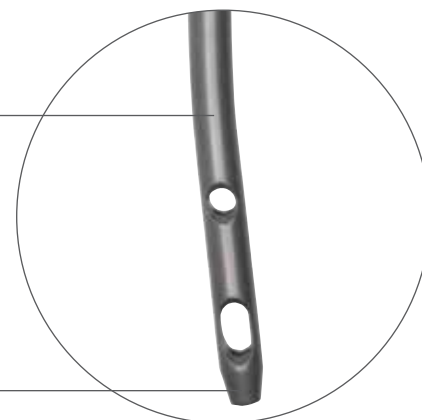
Enlarged nail cannulation accepts the ball nose guide wire, eliminating the need for an exchange tube.

2.2 meter radius of curvature accommodates the anterior bow of the femur.

4.5 or 5.0 mm distal screw options.

Distal 5° bend (for 9 mm nails) and 3° bend (for 11 mm and 13 mm nails) facilitate ease of insertion through the proximal intertrochanteric/subtrochanteric region.

Chamfer on the front of the distal tip facilitates insertion, and decreases the risk of anterior cortex penetration in the distal femur.



Proximal locking options allow for two screws into the femoral head or one screw from the greater to lesser trochanter.

Unique crosslocking option allows for one recon screw and one antegrade screw at the same time, providing multi-planar fixation.

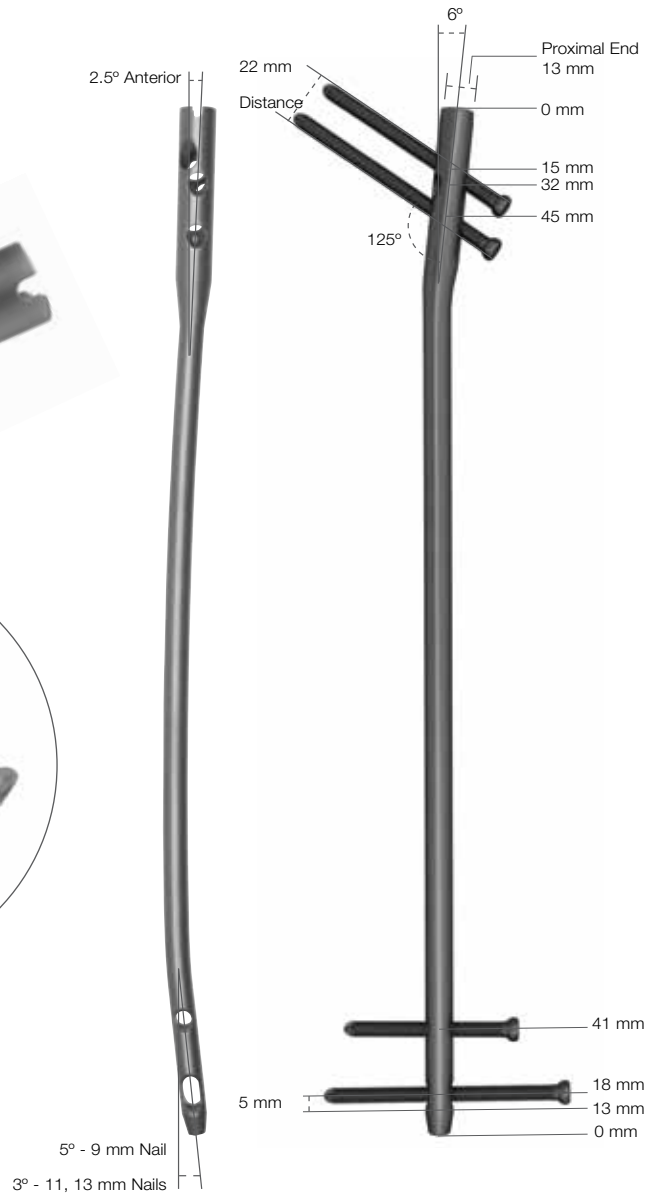
Large core diameter of the proximal 6.5 mm screws decreases risk for screw breakage.



125° neck shaft angle facilitates screw placement into the femoral head.

Proximal 2.5° anterior bend and 6° lateral bend provide optimal anatomic fit in the proximal femur.

8° of anteversion for anatomic proximal screw.



## Multiple locking options for optimum implant stability

The Troch Entry Femoral Nail screw portal configurations provide a number of proximal locking possibilities. The Troch Entry Nail is locked with 6.5 mm screws proximally and 4.5 or 5.0 mm screws distally.



The locking instrumentation is color-coded for ease of use:

Color	Screw Size	Drill Bit Size
Black	6.5 mm Cortical	5.3 mm
Gold	6.5 mm Cancellous	6.5 mm/4.8 mm Step Drill
Silver	3.2 mm Guide Pin Sleeve	
Green	4.5 mm Cortical	3.8 mm
Green	5.0 mm Cortical	4.3 mm

# VersaNail Femoral Troch Entry Nailing System



Figure 1

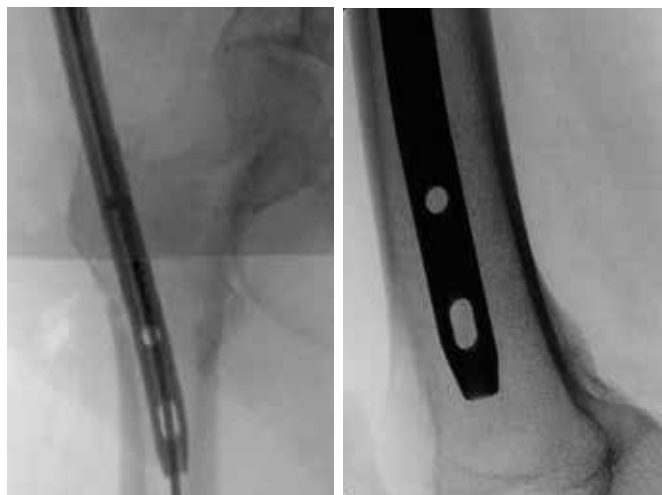


Figure 2a

Figure 2b

## Implant Overview

The Troch Entry Femoral Nail incorporates multiple bends for an excellent anatomic fit. It is designed to facilitate ease of insertion through the greater trochanter (Figure 1).

The distal bend, in line with the anterior bow of the nail, is designed to negotiate the anatomic curve of the greater trochanteric and subtrochanteric entry into the femoral canal (Figure 2a).

Once fully seated in the femoral canal, the distal bend angles posteriorly, reducing potential stress on the anterior cortex (Figure 2b).



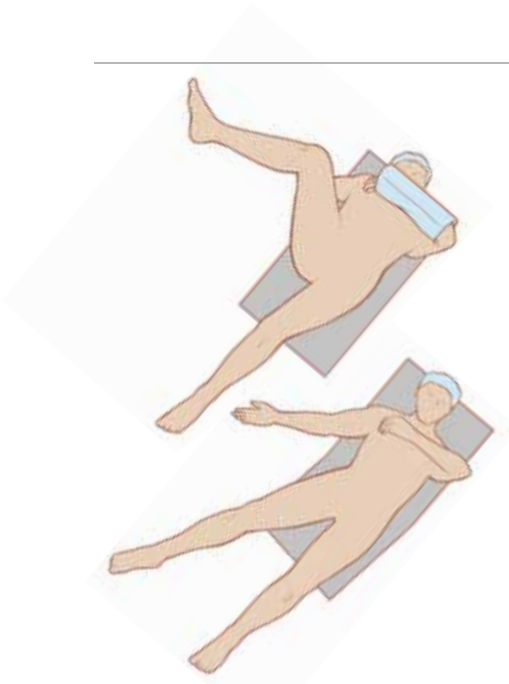


Figure 3



Figure 4

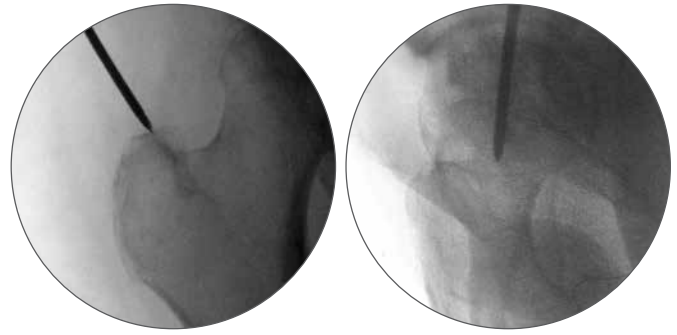


Figure 5



Figure 6

## Entry and Canal Preparation

### Patient Positioning

Place the patient in the supine or lateral position on either a fracture or radiolucent imaging table, depending on surgeon preference. Lateral access to the proximal femur is required. The affected leg must be abducted and the trunk secured. The contralateral leg may be flexed at the hip or scissored below the affected leg (Figure 3).

### Surgical Approach and Entry Point

Reference the greater trochanter. Identify the entry site, which is at the tip of the greater trochanter. Initiate the entry site with a 3.2 mm guide pin through a stab incision proximal to the trochanteric region, in line with the femoral axis (Figure 4).

Confirm correct entry location and guide pin placement radiographically with AP and lateral views. The guide pin should be in line with the femoral canal in the lateral view and angled approximately 6 degrees in the AP view. Care should be taken to ensure that the guide pin and channel reamer do not migrate laterally, causing varus malalignment (Figure 5).

Once the ideal entry point has been achieved, extend the entry incision to 1-2 cm. The fascia lata is divided along its fibers (Figure 6).

# VersaNail Femoral Troch Entry Nailing System

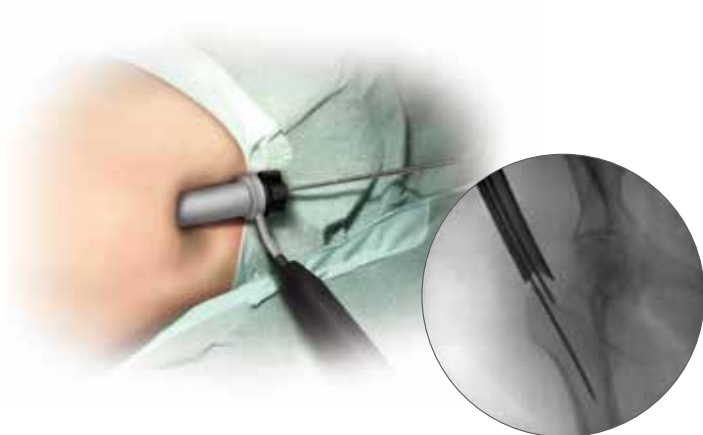


Figure 7

The entry portal sleeve and trocar can be advanced over the guide pin down to the tip of the greater trochanter. Parallel guide holes allow for accurate adjustment of pin positioning. (See image for example). Remove the trocar from the entry portal, keeping the guide pin in place (Figure 7).



Figure 8

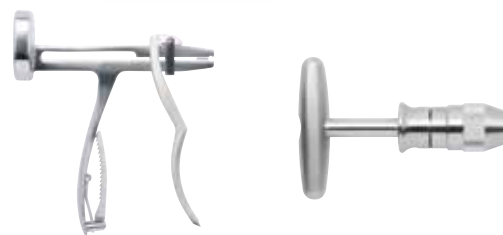


Figure 9

## Canal Entry

The entry site can be made using either an entry reamer or 10.5 mm diameter cannulated awl. Troch Entry Nails have a proximal diameter of 13 mm which extends 6 cm. The entry reamers have an enlarged section that matches the proximal section of the nail. This allows the final depth of the entry reamer to be visualized fluoroscopically. Both 13 mm and 14 mm entry reamers are available depending on surgeon preference (Cat. No. 2810-13-002 or 2810-13-003). An excellent starting hole is especially important when nailing proximal fracture patterns, those with short segments and/or medial comminution. Use AP and lateral fluoroscopic views to confirm accurate placement. Use the Awl (Cat. No. 2810-01-005) or entry reamer to open the proximal femur at the greater trochanter. If required, the Entry Portal Sleeve (Cat. No. 2810-13-005) is available for soft tissue protection (Figure 8).

Once access to the femoral canal has been gained, place the ball nose guide wire into the entry site utilizing the guide wire gripper. Two guide wire gripper styles are available depending on surgeon preference: the Pistol Grip (Cat. No. 2810-01-001) or the T-handle Grip (Cat. No. 2810-01-002) (Figure 9).

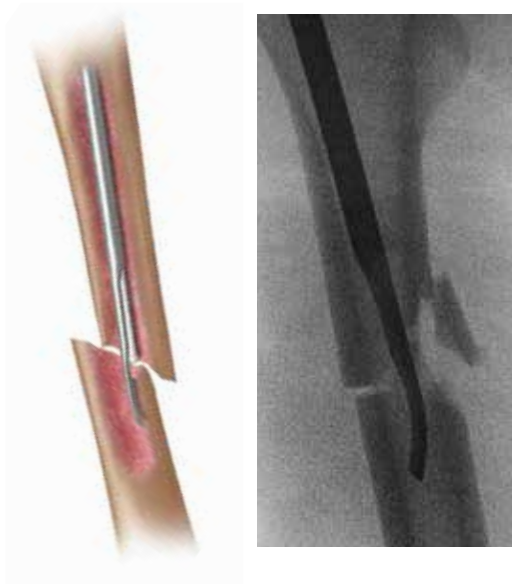


Figure 10



Figure 11

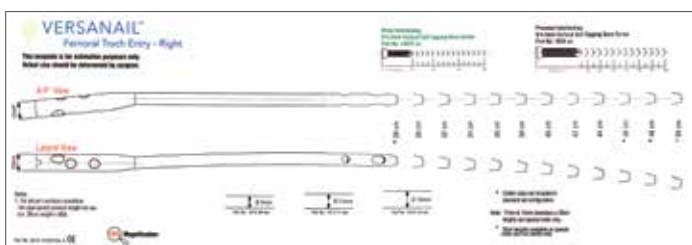


Figure 12

## Fracture Reduction

Obtain appropriate anatomic reduction in order to restore length, anatomic axis alignment and rotation of the injured limb. Reduction can be achieved through the surgeon's preferred method such as traction, external fixator, external aids or joysticks. To aid in manipulating the fracture fragments and passing the Ball Nose Guide Wire, large (7.5 mm diameter, Cat. No. 2810-01-007) and small (6.5 mm diameter, Cat. No. 2810-01-008) reduction tools are available.

Insert the reduction tool into the medullary canal, past the fracture site. Once the fracture is in alignment, pass the Ball Nose Guide Wire, available in both 80 cm (Cat. No. 2810-01-080) and 100 cm (Cat. No. 2810-01-100) lengths, across the fracture site. Remove the reduction tool (Figure 10).

## Canal Preparation

Achieve proper alignment of the injured limb prior to reaming and maintain it throughout the reaming process to avoid eccentric reaming. Commence reaming by placing the VERSANAIL flexible reamer over the Biomet ball nose guide wire (Figure 11). Ream the medullary canal in millimeter increments until cortical bone is reached and in half-millimeter increments thereafter. Surgeon preference should dictate the actual extent of intramedullary reaming. Monitor the reaming procedure using image intensification to avoid eccentric or excessive cortical reaming.

An X-ray template is available to determine nail size preoperatively (Cat. No. 2810-13-033, right, and Cat. No. 2810-13-034, left) (Figure 12).

# VersaNail Femoral Troch Entry Nailing System

## Nail Insertion

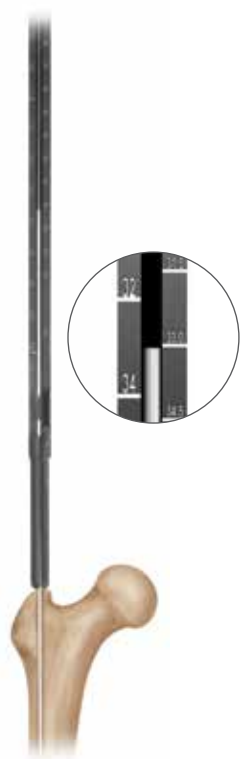


Figure 13



Figure 14

### Nail Diameter Selection

In general, a nail diameter 1 to 1.5 mm less than the final reamer diameter is chosen. Troch Entry Nails are available in 9, 11 and 13 mm diameters.

### Nail Length Selection

With the tip of the ball nose guide wire at the level of the desired depth of nail insertion, slide or snap the Nail Length Gauge (Cat. No. 2810-01-031) onto the ball nose guide wire until it contacts the bone, ensuring that the tip does not fall into the existing trochanteric entry canal, thus providing an inaccurate measurement. To obtain the appropriate nail length, read the measurement mark on the nail length gauge that is closest to the beginning of the black transition area on the guide wire (Figure 13). If a nail of the exact measured length is not available, choose a shorter nail of the next closest available length. A direct measurement can also be taken of the uninjured extremity using either radiographs with magnification markers, or directly on the uninjured limb.

### Nail Insertion

The Troch Entry Nail is available in side specific (right or left) sizes. Ensure that the appropriate nail is chosen depending on the side of the injury. Place the nail on the femoral jig in the correct orientation (the proximal lateral bend should angle toward the jig such that the anterior bow of the nail corresponds with the anterior bow of the femur). Secure the nail to the jig by inserting the Jig Bolt (Cat. No. 2810-13-008) through the cannulation of the jig nose and tightening with the Flexible Jig Bolt Driver (Cat. No. 2810-13-037) and T-handle (Cat. No. 2810-01-004). The flexibility of the jig bolt driver allows 30° of angularity away from the patients side when removing the targeting jig from the nail. Check jig alignment with sleeves and drill bit prior to implanting (Figure 14).



Figure 15

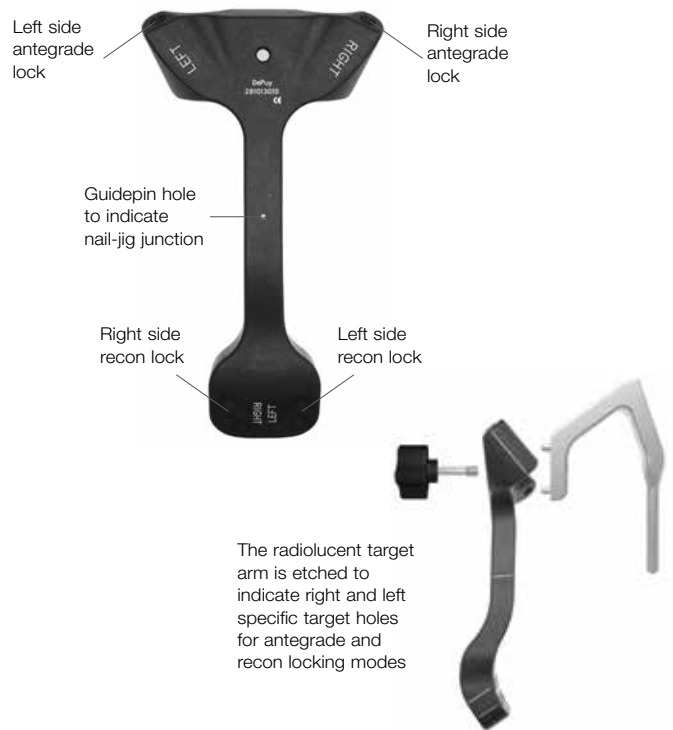


Figure 16

## Locking

### Locking

Prior to locking both proximally and distally, adjust traction, and check femoral length and rotational alignment.

### Proximal Locking

Attach the radiolucent targeting arm to the femoral jig and tighten using the knob on the targeting arm. Ensure that targeting arm is properly secured to the jig for accurate targeting. Prior to drilling, check jig position to ensure that the jig has not externally rotated. The same targeting arm can be used for both left and right nails and is marked to identify which locking option is being targeted (Figure 16).

Insert the nail over the 3 mm ball nose guide wire into the medullary canal. Take care not to strike the jig or targeting arm with the mallet. Instead use the Hammer Pad (Cat. No. 2810-13-011) with the impaction rod and slotted mallet. It may be helpful to preliminarily insert the trochanteric nail utilizing its bow to facilitate clearance of the medial femoral cortex of the proximal fragment. To do this, rotate the insertion jig anteriorly (towards the ceiling). In this position the distal bend in the nail will be angled laterally to aid in passing the nail through the greater trochanteric entry site, and avoid medial cortical penetration. As the nail passes the medial cortex of the proximal fragment, slowly derotate the jig handle into the usual lateral position, so that the anterior bow of the nail now corresponds with the anterior bow of the femur. If the nail requires substantial force to advance, remove it and ream an additional millimeter. Avoid excessive force when inserting the nail (Figure 15). Confirm fracture reduction and ensure appropriate nail insertion depth proximally and distally with biplanar fluoroscopy. Remove ball nose guide wire.

# VersaNail Femoral Troch Entry Nailing System

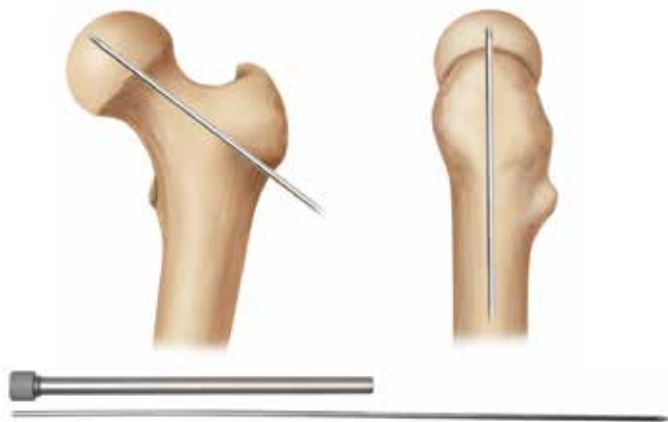


Figure 17

It is important to recheck the AP and lateral views of the hip prior to inserting locking screws directed into the femoral head. A 3.2 mm x 17.5 in Guide Pin (Cat. No. 9030-03-004) and guide pin sleeve (Cat. No. 2810-13-018) are available to check screw positioning prior to drilling (Figure 17).



Figure 18



Figure 19

A measurement can be taken from the guide pin using the 6.5 mm Screw Depth Gauge (Cat. No. 2810-13-035) (Figure 18).

Place the 6.5 mm proximal locking screws with the locking instrumentation. The 6.5 mm solid cortical screws are drilled with a 5.3 mm drill bit. The 5.3 mm drill bit and corresponding drill sleeve are color-coded black. The 6.5 mm/4.8 mm step drill bit and corresponding drill sleeve are color-coded gold (Figure 19).

**Caution: Utilize fluoroscopy when drilling into the femoral head so as to not penetrate the subchondral bone. As noted above, a 3.2 mm x 17.5 in Guide Pin (Cat. No. 9030-03-004) and Guide Pin Sleeve (Cat. No. 2810-13-018) are available to check screw positioning prior to drilling.**



Figure 20



Figure 21



Figure 22



Figure 23

Place the 6.5 mm Screw Sheath (Cat. No. 2810-13-020) and Trocar (Cat. No. 2810-13-021) through the appropriate hole in the targeting jig to locate the incision site. Make a stab incision and advance the sheath and trocar to the bone (Figure 20).

Remove the trocar and replace it with the 5.3 mm Drill Sleeve (Cat. No. 2810-13-022). Using the 5.3 mm drill bit through the drill sleeve, drill until the far cortex is either reached or penetrated (Figure 21).

Ensure that the drill sleeve is on bone and read the calibration on the drill bit at the end of the drill sleeve to determine the appropriate screw length (Figure 22). If penetrating the far cortex prior to taking the reading, use the screw length indicated on the drill bit at the screw depth measurement line. If you are not penetrating the far cortex prior to taking the reading, add 5 mm in length to the screw length reading.

After selecting the appropriate screw, insert the screw through the sheath using the screwdriver. The etch mark on the screwdriver corresponds with the screw sheath to indicate when the screw is fully seated (Figure 23).

Repeat above steps for additional screw placement.

# VersaNail Femoral Troch Entry Nailing System

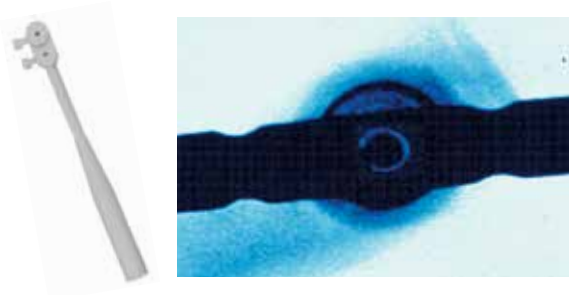


Figure 24



Figure 25

## Distal Locking

Prior to locking distal screws check femoral length and rotation under fluoroscopy. Distal locking should be conducted using the standard image intensification freehand technique. A white Radiolucent Targeting Wand (Cat. No. 1201) is available if desired (Figure 24).

Either a 4.5 mm or 5.0 mm distal screw may be utilized. Using the drill bit that corresponds to the screw diameter of choice, drill until the far cortex is either reached or penetrated. Verify the drill bit position fluoroscopically prior to taking any measurements (Figure 25).

A Screw Depth Gauge (Cat. No. 2810-01-017) is provided to determine the screw length for either a 4.5 mm or 5.0 mm screw. The following alternative distal screw measurement techniques are also available depending on which diameter screw is utilized:

## Distal Screw Drill Options

4.5 mm Screw	5.0 mm Screw
3.8 mm Drill Bit Cat. No. 2810-121-38 (6 in.) Cat. No. 2810-131-38 (8 in.)	4.3 mm Short Graduated Drill Cat. No. 2112-014-06

## Distal Screw Depth Gauge Options

4.5 mm Screw	5.0 mm Screw
Screw Length Gauge Cat. No. 2810-010-32	Drill Measuring Sleeve Cat. No. 2112-014-10
Screw Depth Gauge Cat. No. 2810-010-17	

## Distal Screw Driver Options

4.5 mm Screw	5.0 mm Screw
4.5/5.5 mm Screwdriver Shaft Cat. No. 2810-010-15	
SolidLok Screwdriver Cat. No. 2810-010-19, 2810-010-20, 2810-010-21	

**If using a 4.5 mm screw:** Place the green 4.5 mm Screw Length Gauge (Cat. No. 2810-010-32) onto the calibrated drill bit (Cat. No. 2810-121-38 or 2810-131-38) and advance down to the bone. Read the calibration on the drill bit that corresponds to the measurement line indicated on the Screw Length Gauge.

**If using a 5.0 mm screw:** Use the short 4.3 mm graduated drill (Cat. No. 2112-014-06) and the 4.3 mm drill measuring sleeve (Cat. No. 2112-014-10). Read the calibration directly off of the 4.3 mm graduated drill by using the drill measuring sleeve. The measurement should be taken from the end of the measuring sleeve that is closest to the power source.

To ensure an accurate reading, each screw measuring tool should be fully seated on bone. The use of fluoroscopy is recommended to verify the correct screw length. Remove the drill bit and advance either the 4.5 mm or 5.0mm screw using the SolidLok Screwdriver (Cat. No. 2810-010-19, 2810-010-20, 2810-010-21) or screwdriver shaft (Cat. No. 2810-010-15). Repeat above steps for additional screw placement.



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## End Cap Placement



Figure 26



Figure 27

### End Cap Placement

Cannulated end caps are provided in the system to both prevent bony ingrowth and add length when needed (Figure 26).

End caps have a double hex of 5 mm and 3.5 mm and are cannulated to accept a 3.2 mm guide pin.

Place the end cap into the end of the nail with the 4.5 mm screwdriver. If the end cap will be placed using a 3.2 mm Guide Pin (Cat. No. 14012-14), place the end cap with the 5 mm Jig Bolt Driver (Cat. No. 2810-01-011).

A non-cannulated locking screwdriver is also available to aid in end cap placement (Figure 27). Irrigate the wound and perform a layered closure in the usual fashion.

# VersaNail Femoral Troch Entry Nailing System

## Nail Removal



Figure 28

Figure 29



Figure 30

Figure 31

If the surgeon deems it appropriate to remove the nail, a Cannulated Extractor Bolt (Cat. No. 2810-01-023), used with a 3/4 in Hex Driver (Cat. No. 2810-01-027) and a T-handle Hudson (Cat. No. 2810-01-004), is provided to aid in nail extraction (Figure 28).

Locate the top of the nail through an appropriate incision. Remove the end cap. End caps have a double hex of 5 mm and 3.5 mm and are cannulated to accept a 3.2 mm guide pin. Insert the 3.2 mm guide pin and remove the end cap using the Cannulated Jig Bolt Driver (Cat. No. 2810-01-011) (Figure 29).

The SolidLok Locking Screwdriver (Cat. No. 2810-01-020 and Cat. No. 2810-01-021) is also available to aid in removing the end cap. Insert the SolidLok screwdriver into the Hex Tip (Cat. No. 2810-01-019) and tighten the handle to lock the end cap's hex tip into the inner end cap's 3.5 mm hex. The end cap can also be removed with a standard 3.5 mm hex screwdriver.

Make the appropriate incisions and remove all locking screws. Remove all overgrown bone around the nail's proximal aspect to avoid iatrogenic fracture during nail extraction. Once the locking screws have been removed, drive a 3.2 mm guide pin into the cannulation in the nail's proximal section. Insert the extractor bolt over the 3.2 mm guide pin and thread it into the nail. Ensure that the extractor is fully threaded into the nail prior to extraction. Then thread the impactor rod into the extractor bolt and use either the slotted mallet or sliding hammer to remove the nail (Figure 30). During nail removal it may be helpful to gently counter-rotate the nail as it is being extracted such that the distal and anterior nail contours rotate laterally to aid in removing the nail through the proximal portion of the femur and trochanteric entry portal.

A Conical Nail Extractor Bolt (Cat. No. 2810-01-022) is also available for removal in cases where the nail threads are difficult to engage (Figure 31). This instrument is designed to work with various nail thread/cannulation designs.

**Note: Nail thread/cannulation condition may limit the purchase amount that can be gained using the conical extractor bolt.**

# Ordering Information

Cat. No. Rights	Cat. No. Lefts	Description
<b>Femoral Troch Entry Nail 9 mm 28-50 cm</b>		
1814-09-280	1815-09-280	9 mm x 28 cm
1814-09-300	1815-09-300	9 mm x 30 cm
1814-09-320	1815-09-320	9 mm x 32 cm
1814-09-340	1815-09-340	9 mm x 34 cm
1814-09-360	1815-09-360	9 mm x 36 cm
1814-09-380	1815-09-380	9 mm x 38 cm
1814-09-400	1815-09-400	9 mm x 40 cm
1814-09-420	1815-09-420	9 mm x 42 cm
1814-09-440	1815-09-440	9 mm x 44 cm
1814-09-460	1815-09-460	9 mm x 46 cm
1814-09-480	1815-09-480	9 mm x 48 cm
1814-09-500	1815-09-500	9 mm x 50 cm

<b>Femoral Troch Entry Nail 11 mm 28-50 cm</b>		
1814-11-280	1815-11-280	11 mm x 28 cm
1814-11-300	1815-11-300	11 mm x 30 cm
1814-11-320	1815-11-320	11 mm x 32 cm
1814-11-340	1815-11-340	11 mm x 34 cm
1814-11-360	1815-11-360	11 mm x 36 cm
1814-11-380	1815-11-380	11 mm x 38 cm
1814-11-400	1815-11-400	11 mm x 40 cm
1814-11-420	1815-11-420	11 mm x 42 cm
1814-11-440	1815-11-440	11 mm x 44 cm
1814-11-460	1815-11-460	11 mm x 46 cm
1814-11-480	1815-11-480	11 mm x 48 cm
1814-11-500	1815-11-500	11 mm x 50 cm

<b>Femoral Troch Entry Nail 13 mm 28-50 cm</b>		
1814-13-280	1815-13-280	13 mm x 28 cm
1814-13-300	1815-13-300	13 mm x 30 cm
1814-13-320	1815-13-320	13 mm x 32 cm
1814-13-340	1815-13-340	13 mm x 34 cm
1814-13-360	1815-13-360	13 mm x 36 cm
1814-13-380	1815-13-380	13 mm x 38 cm
1814-13-400	1815-13-400	13 mm x 40 cm
1814-13-420	1815-13-420	13 mm x 42 cm
1814-13-440	1815-13-440	13 mm x 44 cm
1814-13-460	1815-13-460	13 mm x 46 cm
1814-13-480	1815-13-480	13 mm x 48 cm
1814-13-500	1815-13-500	13 mm x 50 cm

<b>End Caps</b>		
1813-00-001		End Cap Universal Flush
1813-00-005		End Cap Universal 5 mm
1813-00-010		End Cap Universal 10 mm
1813-00-015		End Cap Universal 15 mm

<b>6.5 mm Self Tapping Cortical Screws Full Thread (Proximal)</b>		
1020-40		40 mm Length
1020-45		45 mm Length
1020-50		50 mm Length
1020-55		55 mm Length
1020-60		60 mm Length
1020-65		65 mm Length
1020-70		70 mm Length
1020-75		75 mm Length
1020-80		80 mm Length
1020-85		85 mm Length
1020-90		90 mm Length


Cat. No.	Description
1020-95	95 mm Length
1020-100	100 mm Length
8050-65-105	105 mm Length
8050-65-110	110 mm Length
8050-65-115	115 mm Length
8050-65-120	120 mm Length

<b>4.5 mm Self Tapping Cortical Screws Full Thread (Distal)</b>		
14022-24		24 mm Length
14022-28		28 mm Length
14022-32		32 mm Length
14022-36		36 mm Length
14022-40		40 mm Length
14022-44		44 mm Length
14022-48		48 mm Length
14022-52		52 mm Length
14022-56		56 mm Length
14022-60		60 mm Length
14022-65		65 mm Length
14022-70		70 mm Length
14022-75		75 mm Length
14022-80		80 mm Length

4.5 mm screws available in 2 mm increments up to 60 mm.

<b>5.0 mm Self Tapping Cortical Screws Full Thread (Distal)</b>		
8145-50-020		20 mm Length
8145-50-022		22 mm Length
8145-50-024		24 mm Length
8145-50-026		26 mm Length
8145-50-028		28 mm Length
8145-50-030		30 mm Length
8145-50-032		32 mm Length
8145-50-034		34 mm Length
8145-50-036		36 mm Length
8145-50-038		38 mm Length
8145-50-040		40 mm Length
8145-50-042		42 mm Length
8145-50-044		44 mm Length
8145-50-046		46 mm Length
8145-50-048		48 mm Length
8145-50-050		50 mm Length
8145-50-052		52 mm Length
8145-50-054		54 mm Length
8145-50-056		56 mm Length
8145-50-058		58 mm Length
8145-50-060		60 mm Length
8145-50-065		65 mm Length
8145-50-070		70 mm Length
8145-50-075		75 mm Length
8145-50-080		80 mm Length

 Indicates outlier size not included in standard set configuration.

 Indicates special orders only. Not an inventory item. Packaged non-sterile only.

 Sterile packaged.

# VersaNail Femoral Troch Entry Nailing System



## General

2810-01-001	Pistol Guidewire Gripper	1
2810-01-002	T-Handle Guidewire Gripper (optional)	2
2810-01-003	Slotted Mallet	3
2810-01-004	T-Handle Hudson	4
1096	Sliding Hammer	5



## Canal Prep

2810-01-008	Short Reduction Tool	6
2810-01-007	Long Reduction Tool	7
2810-01-005	Curved Cannulated Awl	8
2810-01-025	Awl Stylus	9
2810-01-026	Guidewire Pusher	10
2810-13-002	13 mm Entry Reamer, Femur	11
2810-13-003	14 mm Entry Reamer, Femur	12
2810-13-004	Entry Portal Trocar	13
2810-13-005	Long Entry Portal	14



## Nail Insertion

1186	3/4 in. Combination Wrench	15
2810-13-037	Flexible Jig Bolt Driver	16
2810-13-008	Femoral Jig Bolt	17
1095	Impactor Rod/Extraction	18
2810-13-010	Troch Entry Target Arm	19
2810-13-007	Femoral Insertion Handle	20
2810-13-011	Hammer Pad Femur	21
2810-13-026	Target Arm Attachment Bolt	22

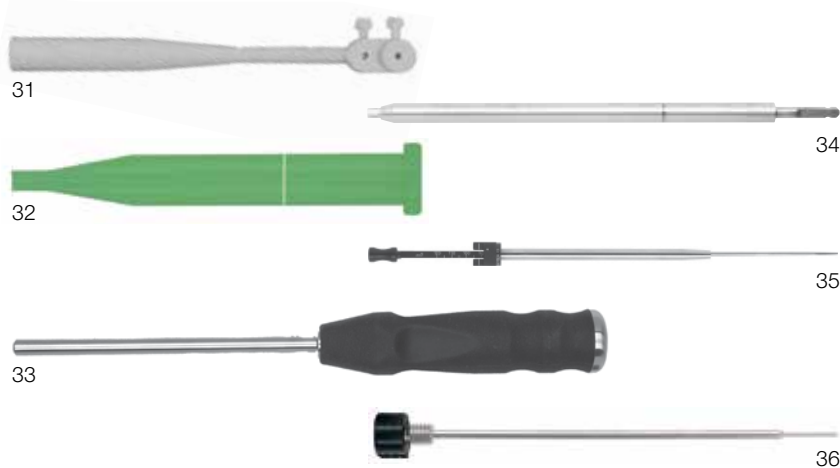
**Proximal Locking**

2810-13-020	6.5 mm Screw Sheath	23
2810-13-018	3.2 mm Guide Pin Sleeve - Silver	24
2810-13-021	6.5 mm Screw Trocar	25
2810-13-022	5.3 mm Drill Sleeve - Black	26
2810-13-023	6.5/4.8 mm Step Drill Sleeve - Gold	27
2141-49-000	AO Quick Couple Screwdriver	28
2810-13-024	6.5 mm Screwdriver Shaft	29
2810-13-035	6.5 mm Screw Depth Gauge	30



**Distal Locking**

1201	Freehand Distal Targ. Dev. Troch Entry - White	31
2810-01-032	4.5 mm Screw Length Gauge	32
2810-01-020	SolidLok Screwdriver Handle	33
2810-01-015	4.5/5.5 mm Screwdriver Shaft	34
2810-01-017	Screw Depth Gauge	35
2810-01-021	SolidLok Driver Inner Shaft	36



**Nail Removal**

2810-01-023	Extractor Bolt, Tibia/Femur	37
2810-01-022	Conical Extractor Tool	38
2810-01-027	3/4 in Hex Driver	39



**Disposables**

14012-14	3.2 mm x 14 in Short Threaded Guide Pin	40
2810-01-019	SolidLok Hex Tip, 3.5 mm	41
9030-03-004	3.2 mm x 17 1/2 in Threaded Guide Pin	42
2810-01-100	Ball Nose Guide Wire 100 cm	43
2810-12-138	3.8 mm Drill Bit 6 in, Non-sterile	44
2810-13-138	3.8 mm Drill Bit 8 in, Non-sterile	45
2810-13-153	5.3 mm Drill Bit, Non-sterile	46
2810-13-165	6.5/4.8 mm Step Drill Bit, Non-sterile	47
2112-01-406	4.3 mm Distal Graduated Drill Short	48



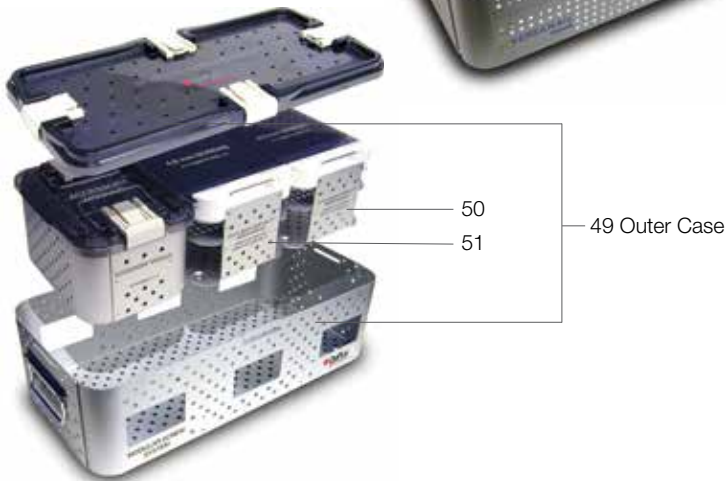
# VersaNail Femoral Troch Entry Nailing System



47



48



50

51

49 Outer Case

## Cases & Trays

2810-13-030	Femoral Tray Entry & Jigs	47
2810-13-031	Femoral Tray Locking & Extraction	48
8299-10-500	Modular Screw System Outer Case	49
8299-10-065	6.5 mm Screw Module	50
8299-10-045	4.5 mm Cort Screw Module	51



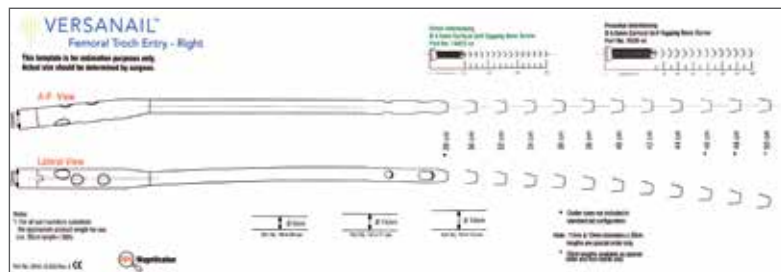
52



53

## Nail Measurement

1245	Radiographic Ruler	52
2810-01-031	Nail Length Gauge, 14 mm	53
2810-13-033	VERSANAIL Troch Entry Template - Right	54
2810-13-034	VERSANAIL Troch Entry Template - Left	54
1815-99-380	TEN Femoral DNI 11 mm x 38 cm	



54



55

## Endcap Placement

2810-01-037	5.0 mm Hex Driver, Long	55
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# Flexible Reaming System



## Monobloc Reamer Hudson

Cat. No.	Diameter
2810-02-060	6.0 mm
2810-02-065	6.5 mm
2810-02-070	7.0 mm
2810-02-075	7.5 mm
2810-02-080	8.0 mm
2810-02-085	8.5 mm
2810-02-090	9.0 mm
2810-02-095	9.5 mm
2810-02-100	10.0 mm
2810-02-105	10.5 mm
2810-02-110	11.0 mm
2810-02-115	11.5 mm
2810-02-120	12.0 mm
2810-02-125	12.5 mm
2810-02-130	13.0 mm

## Modular Reamer Head

Cat. No.	Diameter
2810-04-090	9.0 mm
2810-04-095	9.5 mm
2810-04-100	10.0 mm
2810-04-105	10.5 mm
2810-04-110	11.0 mm
2810-04-115	11.5 mm
2810-04-120	12.0 mm
2810-04-125	12.5 mm
2810-04-130	13.0 mm
2810-04-135	13.5 mm
2810-04-140	14.0 mm
2810-04-145	14.5 mm
2810-04-150	15.0 mm
2810-04-155	15.5 mm
2810-04-160	16.0 mm
2810-04-165	16.5 mm
2810-04-170	17.0 mm
2810-04-175	17.5 mm
2810-04-180	18.0 mm
2810-04-185	18.5 mm
2810-04-190	19.0 mm
2810-04-195	19.5 mm
2810-04-200	20.0 mm
2810-04-205	20.5 mm
2810-04-210	21.0 mm
2810-04-215	21.5 mm
2810-04-220	22.0 mm

## Nitinol Modular

Reamer Shaft Hudson	
Cat. No.	Length
2810-02-400	400 mm
2810-02-470	470 mm

## Reamer Extension

Cat. No.	Length
2810-02-015	150 mm

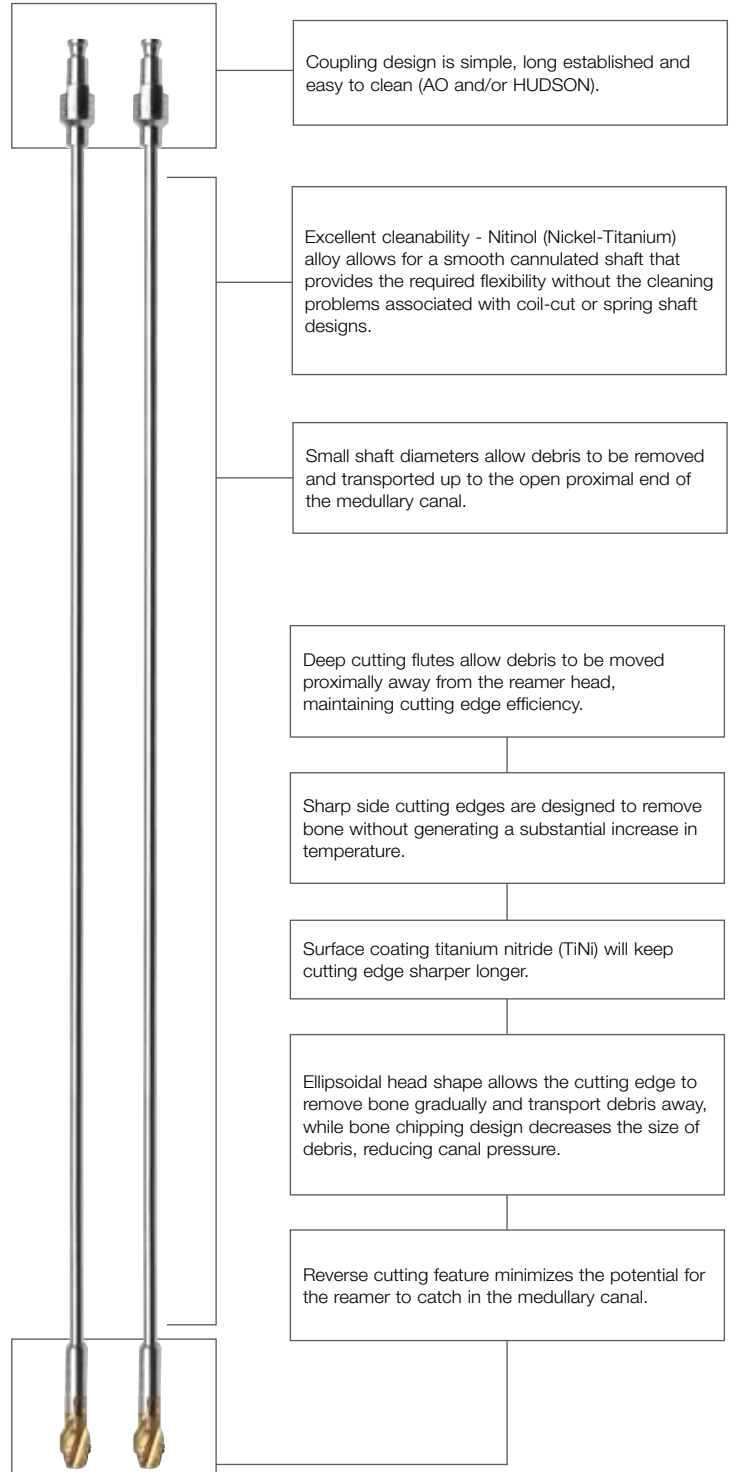
## Ball Nose Guide Wires

Cat. No.	Length
<b>3.0 mm</b> (use with 8.0-22.0 mm Reamers)	
2810-01-080	800 mm
2810-01-100	1000 mm

<b>2.0 mm</b> (use with 6.0-7.5 mm Reamers)	
2810-17-006	700 mm

## Flexible Reamer Case

2810-02-016
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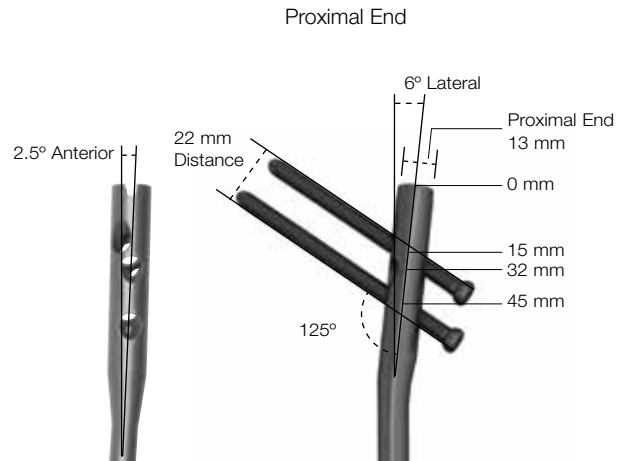
**Important:**

This Essential Product Information does not include all of the information necessary for selection and use of a device. Please see full labeling for all necessary information.

The use of metallic surgical appliances (screws, plates, intramedullary nails, compression hip screw, pins and wires) provides the orthopaedic surgeon and reconstructive surgeries. These implants are intended as a guide to normal healing, and are NOT intended to replace normal body structure or bear the weight of the body in the presence of incomplete bone healing. Delayed unions or nonunions in the presence of load bearing or weight bearing might eventually cause the implant to break due to metal fatigue. All metal surgical implants are subjected to repeated stress in use, which can result in metal fatigue.

**Indications:**

The VersaNail Femoral Troch entry is indicated to treat proximal, middle and distal third fractures, severely comminuted shaft fractures extending beyond the isthmus, spiral, long oblique and segmental fractures, non-unions and malunions, lengthening of the bone, fractures with bone loss, bi-lateral fractures, pseudoarthrosis of the femoral shaft, supracondylar fractures, subtrochanteric fractures, with or without involvement of lesser trochanter, subtrochanteric/intertrochanteric combination fractures, ipsilateral femoral shaft and neck fractures, stable and unstable proximal fractures of the femur, including pertrochanteric fractures, intertrochanteric fractures, high subtrochanteric fractures and combinations of these fractures, pertrochanteric fractures associated with shaft fractures, pathologic fractures in osteoporotic bone of the trochanteric and diaphyseal areas, proximal or distal non-unions and malunions, leg length discrepancies secondary to femoral inequality, femur reconstruction following tumor resection, stable femoral fractures without necessity for interlocking, long subtrochanteric fractures, and revision procedures involving the replacement of implanted hardware.



**Contraindications:**

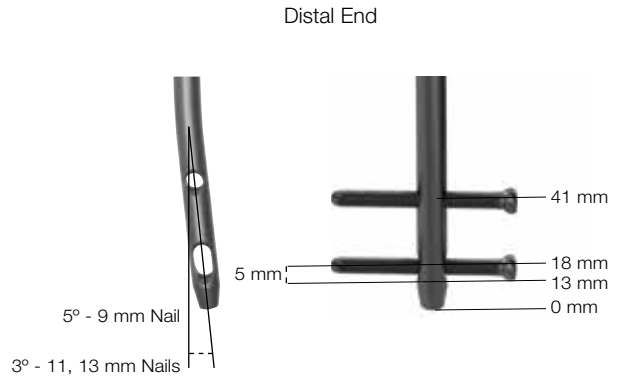
Screws, plates, intramedullary nails, compression hip screws, pins and wires are contraindicated in: active infection, conditions which tend to retard healing such as blood supply limitations, previous infections, insufficient quantity or quality of bone to permit stabilization of the fracture complex, conditions that restrict the patient's ability or willingness to follow postoperative instructions during the healing process, foreign body sensitivity, and cases where the implant(s) would cross open epiphyseal plates in skeletally immature patients.

**Additional Contraindication for Retrograde Femoral Nailing:**

A history of septic arthritis of the knee and knee extension contracture with inability to attain at least 45° of flexion.

**Adverse Events:**

The following are the most frequent adverse events after fixation with orthopaedic screws, plates, intramedullary nails, compression hip screws, pins and wires: loosening, bending, cracking or fracture of the components or loss of fixation in bone attributable to nonunion, osteoporosis, markedly unstable comminuted fractures; loss of anatomic position with nonunion or malunion with rotation or angulation; infection and allergies and adverse reactions to the device material. Surgeons should take care when targeting and drilling for the proximal screws in any tibial nail with oblique proximal screws. Care should be taken as the drill bit is advanced to penetrate the far cortex. Advancing the drill bit too far in this area may cause injury to the deep peroneal nerve. Fluoroscopy should be used to verify correct positioning of the drill bit.



**Locking Options**



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56 East Bell Drive  
P.O. Box 587  
Warsaw, Indiana 46581  
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**Authorised Representative**  
Biomet UK Ltd.  
Watertown Industrial Estate  
Bridgend, South Wales  
CF31 3XA  
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