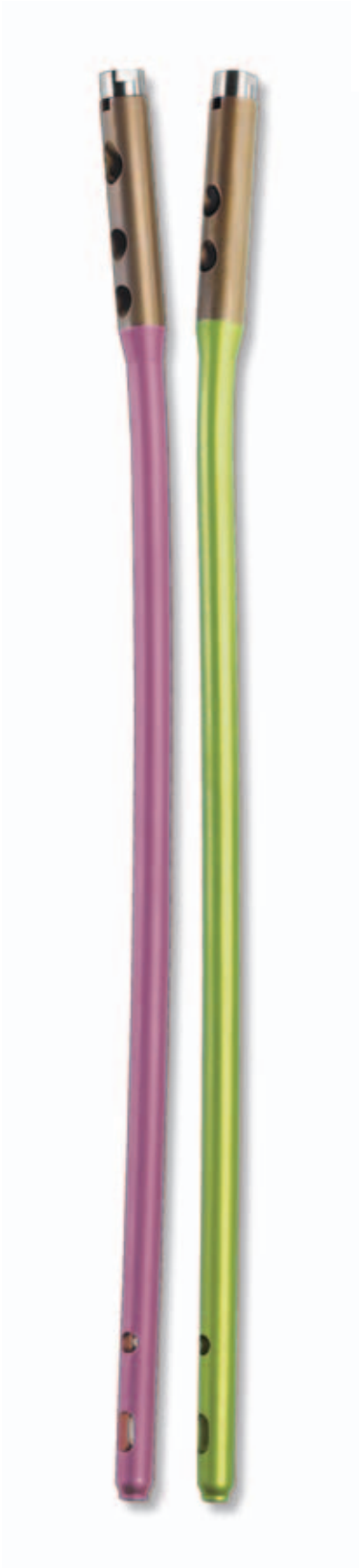
Surgical Technique

smith&nephew

TRIGEN® TAN

Trochanteric Antegrade Nail



TRIGEN TAN Trochanteric Antegrade Nail Surgical Technique

Described by
Thomas A. Russell, M.D.
Roy W. Sanders, M.D.

Introduction

The TRIGEN TAN is designed by surgeons for surgeons, to produce the most successful outcomes, while offering you the most in versatility with the fewest instruments and implants. The minimally invasive technique is designed to reduce blood loss and exposure to blood-borne pathogens. The color-coding system provides easy identification of implant and guide.

Nota Bene

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

Warning

This device is not approved for screw attachment or fixation to the posterior elements (pedicles) of the cervical, thoracic, or lumbar spine.

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Indications

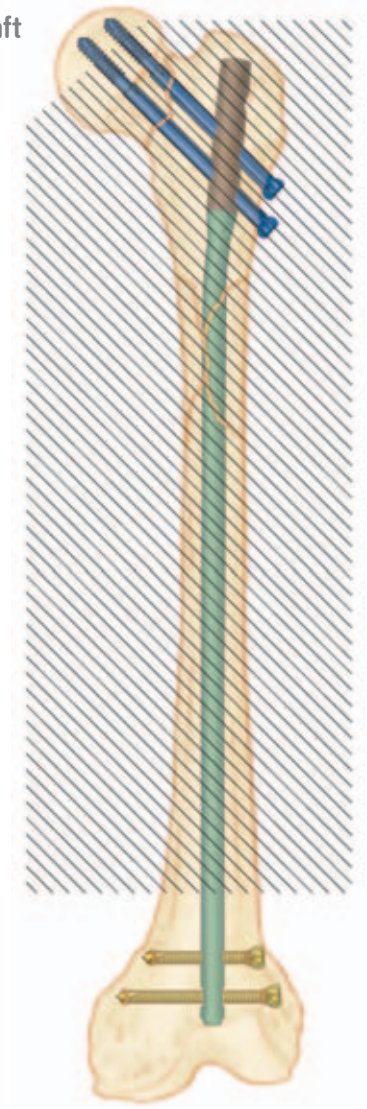
The TRIGEN TAN is indicated to treat the following fracture types:

- Femoral shaft fractures
- Stable and unstable subtrochanteric fractures
- Ipsilateral femoral neck and shaft fractures
- Impending pathological fractures
- Non-unions

The TRIGEN TAN is designed to accommodate a standard femoral locking mode or a recon mode in the same leg. Utilizing innovative TRIGEN instruments, the TRIGEN TAN was developed to simplify the surgical approach by allowing placement of the nail through the greater trochanter versus the piriformis fossa.

Femoral shaft fracture

Femoral shaft and neck fracture



Implant Specifications

130° femoral screw angle

130° or 135° recon screw angle

5° proximal bend

Proximal section is color-coded TAN to distinguish from FAN.

13 mm proximal diameter

Additional specifications:

Patented 5-hole proximal design

12° anteversion
Lengths — 30-50 cm

Diameters: 10, 11.5, & 13 mm

Color coded — Lime for (L) left nail, Rose for (R) right nail.

Cannulated round geometry

Made of Titanium 6A1-4V

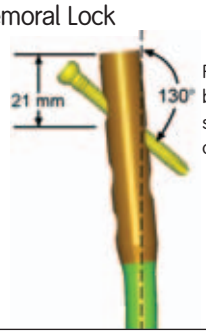
Utilizes 5.0 mm locking screws (Gold)

Distal slot — allows dynamization

Implant Specifications (–cont'd.)

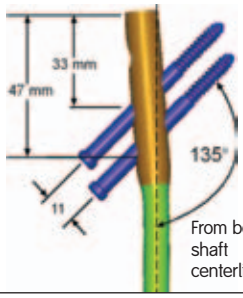
Nailing configurations

Femoral Lock

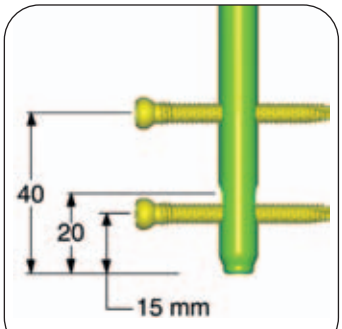


Standard Femoral Lock
130/135 TAN

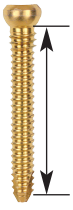
Recon Lock



Recon Lock (12° Anteversion)
130/135 TAN



10, 11.5, 13 mm 130/135 TAN —
Distal Lock (M-L view)



Proper Screw Measurement

All TRIGEN locking screw measuring devices, measure from bottom of head to the last complete thread of screw. This is the working length of the screw. Thus, the screw itself is longer than the measurement and adding length is not necessary.

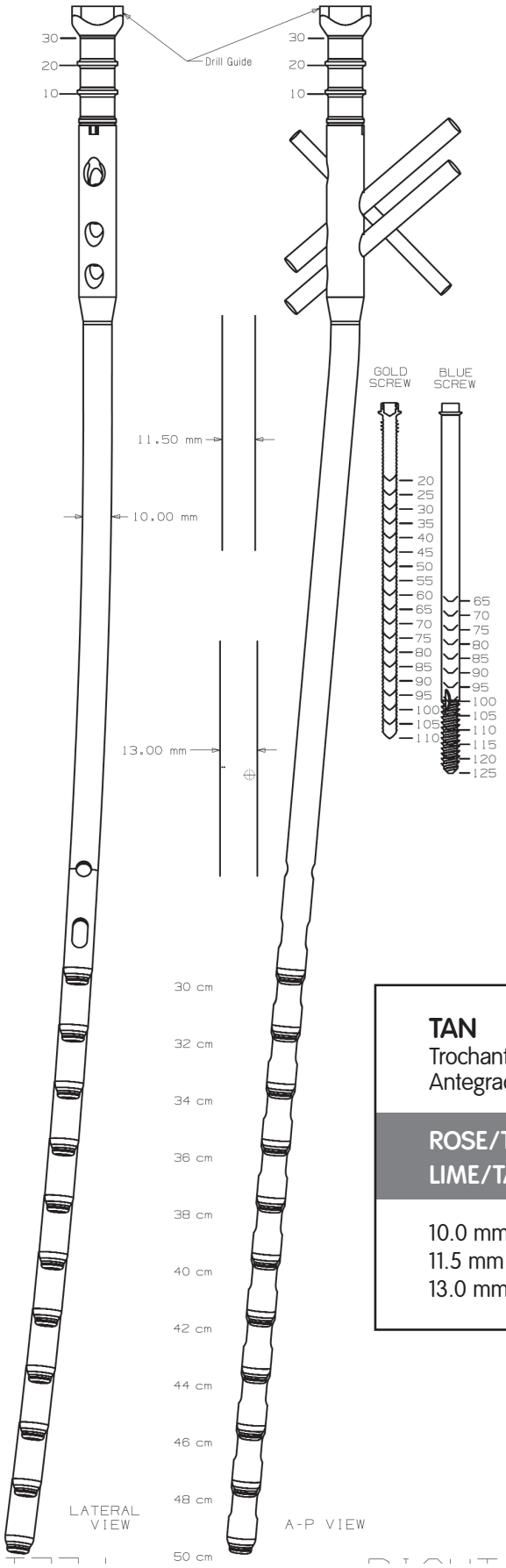
TRIGEN TAN Nail	
Material	TI6AL4V
Diameter	10, 11.5, 13 mm
Lengths	30-50 cm
Nail Color — Left	Tan/Lime
Nail Color — Right	Tan/Rose
Cross Section	Round
Neck Angle	130/135 degrees
Proximal Diameter (driving end)	13 mm
Distal Diameter (non-driving end)	10, 11.5, 13 mm (dia. of the nail)
Smallest Thru Diameter	5.4 mm
Wall Thickness	2.3 mm (10 dia.) 3.0 mm (11.5 dia.) 3.5 mm (13 dia.)
Guide Bolt Thread	5/16-24
Alternative Guide Bolts (Removal only)	RT Tibial, Retrograde, IMSC, Revision
Alternative Modes	Standard Femoral Recon Locking
Proximal Locking	
Screw Diameter	Standard — 5.0 mm Recon — 6.4 mm
Major Diameter	Standard — 5.0 mm Recon — 6.4 mm
Minor Diameter	Standard — 4.3 mm Recon — 4.7 mm
Shank	N/A Recon — 6.3 mm
Hex Size	4.7 mm
Alternative Hex Drivers	RT Femoral & Recon, 7.0 mm Cannulated Screw
Screw Color	Std. Lock — Gold Recon Lock — Blue
Screw Lengths	Standard 25-110 mm Recon 65-125 mm
Anteversion	Recon Lock — 12 Degrees
Location	21, 33, 47 mm
Proximal Dynamization Slot	No
Proximal Screw Hole Dimensions	Standard 5.3 mm Recon 6.4 mm
Deg of Proximal Bend	5 degrees lateral
Location of Proximal Bend	65 mm (a/p bend)
Distal Locking	
Screw Diameter	5.0 mm
Major Diameter	5.0 mm
Minor Diameter (core)	4.3 mm
Screw Color	Gold
Screw Lengths	25-110 mm
Location	15, 20, 40 mm
Orientation	L-M
Dynamization Slot	Yes
Distal Screw Hole Dimensions	5.3 mm
AP Bow	Proximal — 1.5 meters Distal — 2.5 meters
Location of Distal Bend	100 mm
Dynamization Slot Location	Distal

NOTE: These views are not to scale and should be used as a pictorial representation only.

Templates

The TRIGEN TAN implant templates are used to determine nail length and diameter preoperatively. All TRIGEN templates, including TAN, come with 117% magnification to compensate for normal radiographic magnification. Please keep in mind that variances in magnification do occur.

When selecting the nail size, take all aspects of the fracture into consideration.



TAN
Trochanteric
Antegrade Nail

ROSE/TAN = RIGHT
LIME/TAN = LEFT

10.0 mm
11.5 mm
13.0 mm

Patient Preparation

Step 1

Patient is placed supine with unaffected limb extended below the affected limb and trunk. The affected limb is adducted. Flex the affected hip 15°-30°. Apply traction through a skeletal pin or the foot with the fracture table foot holder. Adjust the affected limb for length and rotation by comparison with the unaffected limb. Rotation is further checked by rotating the leg to align the femoral neck anteversion and then making the appropriate correction by foot, usually in 0°-15° of external rotation. This is best checked by visualizing the femoral anteversion proximally and matching it with correct rotation at the knee (Figure 1).

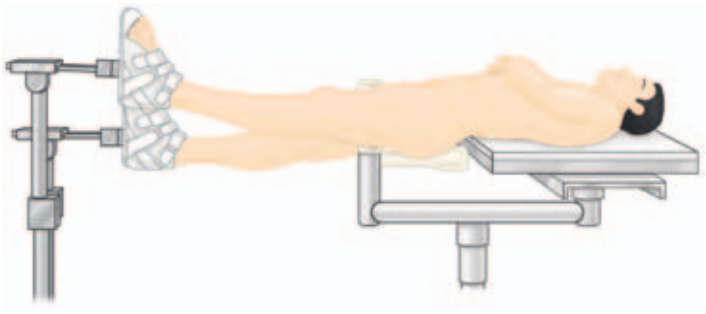


Figure 1

Step 2

Palpate the greater trochanter. Make a 1 to 3 cm incision proximal to the greater trochanter. Angle this incision posteriorly at its proximal end. Carry the incision through the fascia (Figure 2).

Figure 2

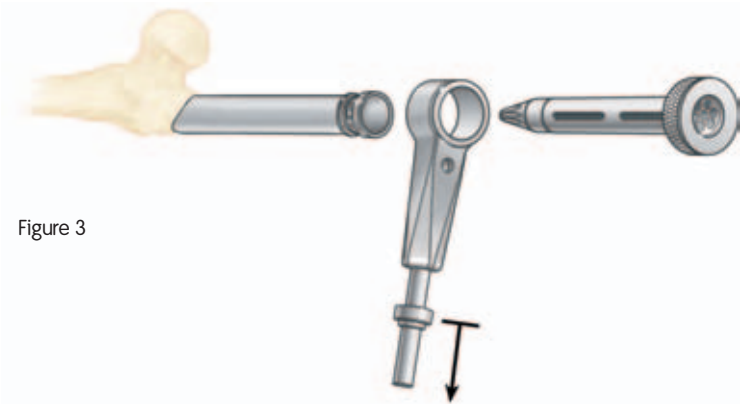


Figure 3

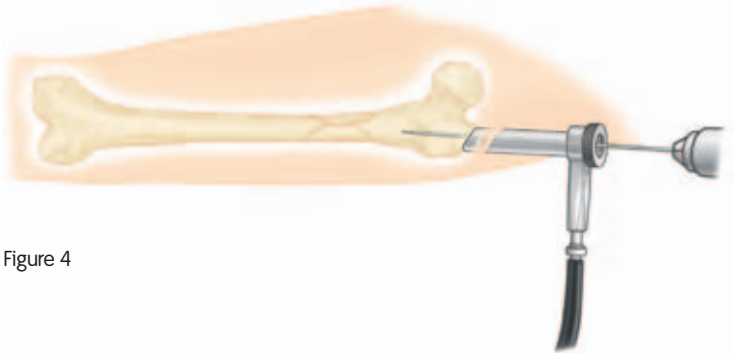


Figure 4

Entry and Fracture Reduction

Step 3

Assemble the Entry Tool. The Entry Tool/Honeycomb assembly is oriented so that the superior side of the bevel is medial and advanced until it rests against the lateral aspect of the greater trochanter. Attach suction to the Entry Tool to assist in blood evacuation and minimize aerosolisation of blood (Figure 3).

Step 4

Insert the 3.2 mm tip threaded guide wire through the Honeycomb and advance 1 to 2 cm in the cortex at the tip of the greater trochanter. The guide wires will quick connect with the Mini-Connector, which easily connects to any drill with a "Hall" connector. Once proper placement of the guide wire is achieved, remove the Honeycomb Insert (Figure 4).

Step 5

Screw the Entry Reamer Connector onto the 14 mm Channel Reamer and insert the 12.5 mm Entry Reamer until it clicks. Attach the 12.5 mm Entry Reamer to power. The Channel Reamer assembly is introduced over the remaining wire and advanced 1 to 2 cm into bone. The assembly is then manipulated under image guidance until the shaft axis and intended path form an approximate angle of 5 degrees in AP and in line with ML. Do not overestimate the angle, as too much insertion angle of the instrument may make advancement more difficult. Having achieved correct orientation, advance the assembly to full depth seated against the entry tool. Remove the 12.5 mm Entry Reamer and guide wire by pushing the gold button on the entry connector to release. Leaving the Entry Tool and 14 mm Channel Reamer in place (Figure 5).

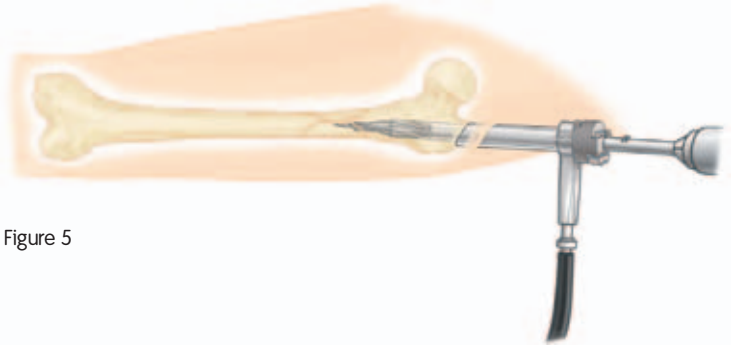


Figure 5

Step 6

Snap the T-Handle onto the Reducer. Insert the reducer through the 14 mm Channel Reamer and Entry Tool (Figure 6). Once the reducer is in the medullary canal and has captured the distal fragment, the 3.0 mm Ball-Tipped Guide Rod is inserted through the reducer into the distal femur. Advance to the region of the epiphyseal scar (Figure 7). The gripper is useful in holding onto the Guide Rod during insertion and removal (Figure 7 inset).

Figure 6

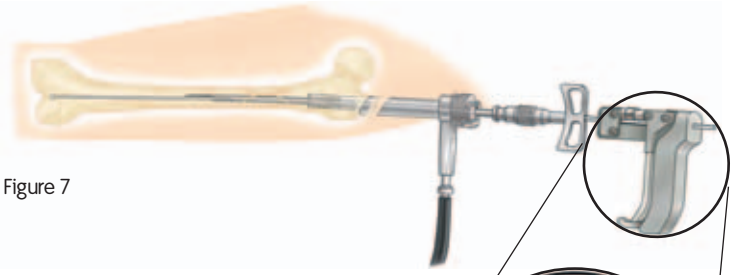


Figure 7

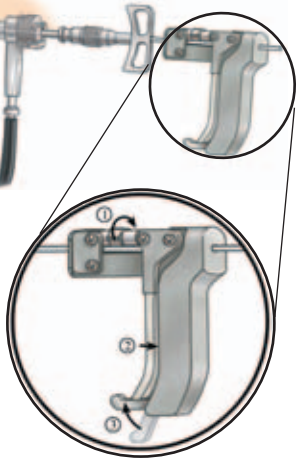


Figure 7 inset

7163-1116
12.5 mm Entry Reamer

7163-1120
Entry Connector

7163-1118
Channel Reamer

7163-1124
Reducer

7163-1172
T-Handle

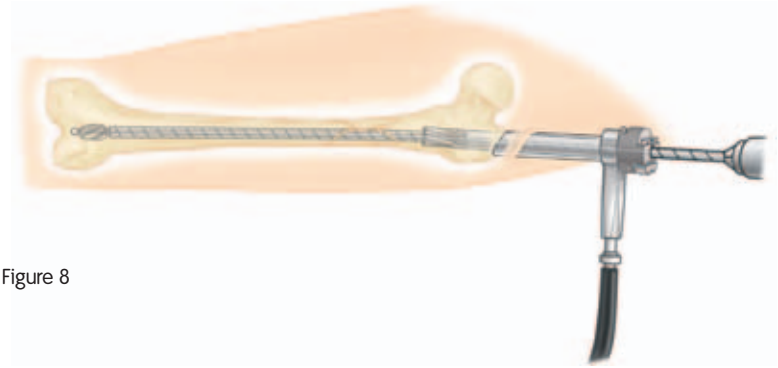


Figure 8

Reaming

Step 7

Once the guide rod is in place, remove the Reducer but leave the 14 mm Channel Reamer in place. Canal preparation is dependent on surgical decision. Unreamed nails are selected based on preoperative planning, but should be of sufficient size to provide translational fill of the intramedullary canal in the mid-diaphysis.
If reaming, proceed to sequentially ream the femoral shaft 0.5 to 1.0 mm larger than the chosen nail diameter through the 14 mm Channel Reamer (Figure 8). In patients that are very tall, the Flex Reamer Extender may be added to extend the shaft of the flexible reamer for very distal fractures or nails longer than 42 cm.

NOTE: The 14 mm Channel Reamer cannot be used with nails larger than 11.5 mm in diameter, and will not pass reamer heads larger than 12.5 mm.

Step 8

For unreamed technique, determine the nail diameter from image intensifier for templating. If reaming, never insert a nail that has a larger diameter than the last reamer used.

Nail Insertion

Step 9

Position the tip of the guide rod at the desired level of the tip of the nail considering fracture patterns and locking screw positioning (Figure 9). Measure the nail length by positioning the open end of the Ruler over the exposed end of the guide rod pushing the end down to the level of bone through the 14 mm Channel Reamer. Confirm the position on the image intensifier. Read the nail length from the calibrations exposed at the other end of the Ruler and remove the ruler. Leave the guide rod in place for placement of the nail. Exchange of the ball-tipped guide rod is not necessary.

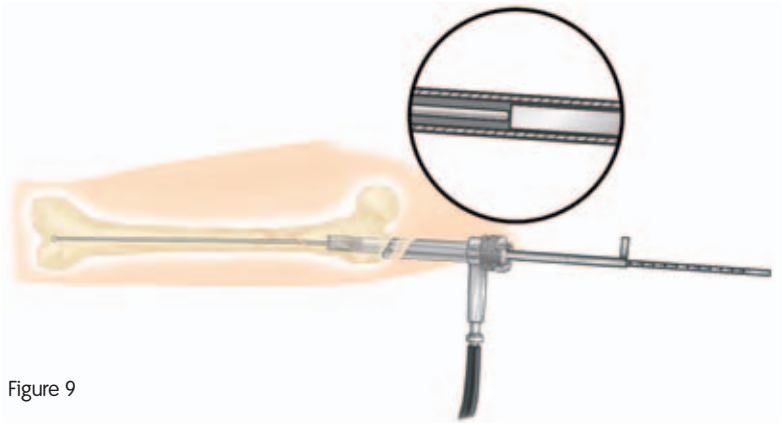


Figure 9

Step 10

Insert the Skin Protector in the incision parallel to the entry reamer tool. Remove the entry tool and 14 mm Channel Reamer. The Skin Protector will assist in maintaining control of the surrounding tissues and provide continued access to the bone. Insert the Guide Bolt into the drill guide and use the Guide Bolt Wrench to secure the bolt to the nail. Screw the impactor into the top of the drill guide to drive the nail into the medullary canal (Figure 10). Position the nail over the guide rod with the anterior bow pointing lateral (drill guide handle pointed anterior). Carefully advance the nail over the guide rod and past the fracture. As the nail is inserted, it is rotated so the bow is oriented correctly with the femoral shaft. Due to the greater trochanter entry point, it may be necessary to countersink the nail to ensure that the proximal locking screws are positioned properly (figure 11).

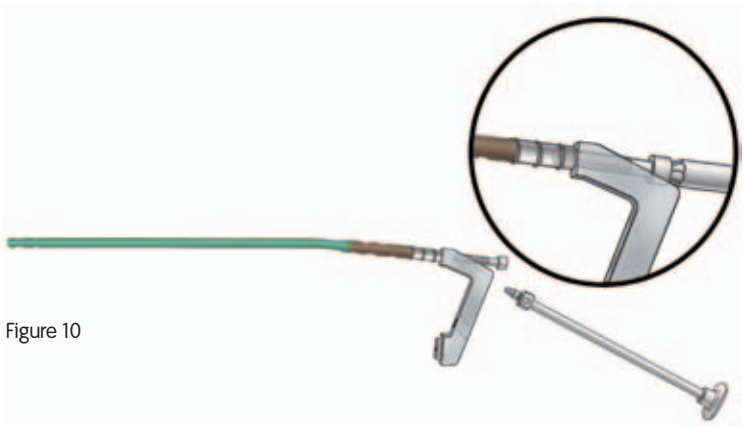


Figure 10

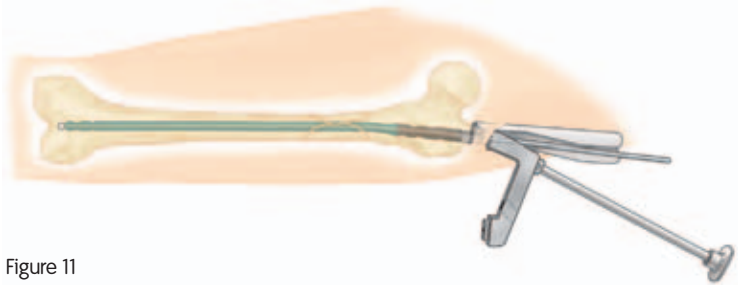


Figure 11

7163-1136
Guide Bolt

7163-1140
Guide Bolt Wrench

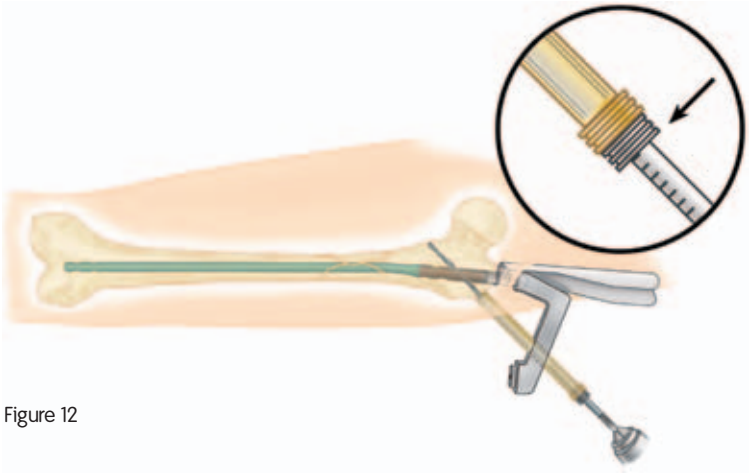


Figure 12

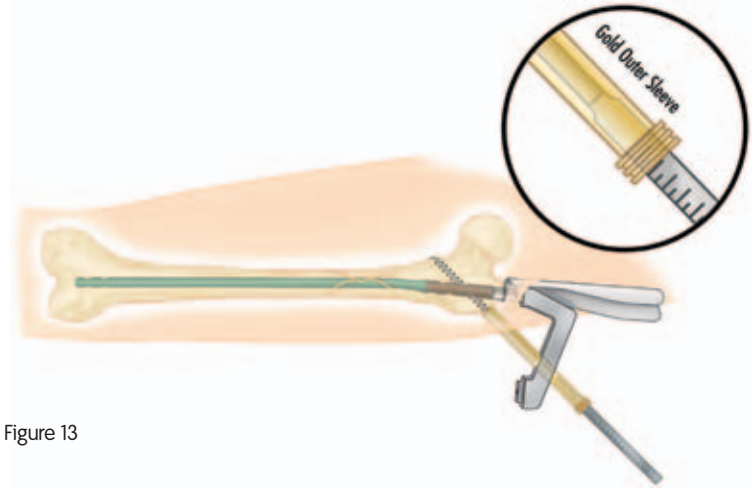


Figure 13

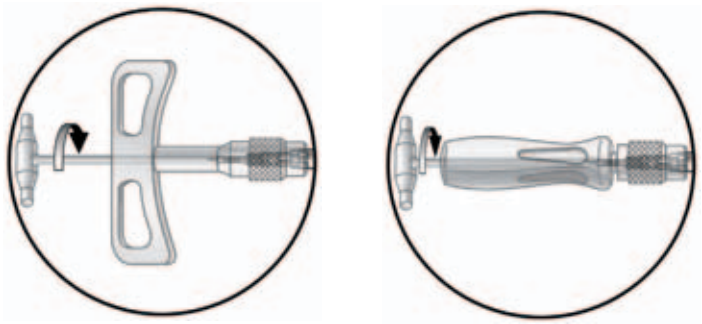


Figure 14

Proximal Locking — Standard

Proximal Screw

To place screws at a 45 degree angle from the greater to lesser trochanter, the following screw length measurement options are available:

Step 11A: Calibrated Drill Bit

Insert the Silver Inner Drill Sleeve through the Gold Outer Drill Sleeve. Make a stab incision at the entry hole and push the Sleeve Assembly through the drill guide hole until it is touching the lateral cortex. Attach the Long Pilot Drill to power using the Mini-Connector, and drill through both cortices. The length measurement is taken from the calibrations on the drill bit in relation to the end of the Silver Inner Drill Sleeve (Figure 12). Remove the Drill and Silver Inner Drill Sleeve.

Step 11B: Direct Measuring Gauge

Pre-drill through both cortices. Remove the drill bit and Silver Inner Drill Sleeve. Insert the Direct Measuring Gauge through the Gold Outer Drill Sleeve to the far cortex to measure for proper 5.0 mm (Gold) screw length (Figure 13). The appropriate length screw is selected and attached to the long or medium screwdrivers. The screw is inserted through the Gold Outer Drill Sleeve with power or manually using the T-Handle. The screwdriver is marked with a laser etched ring. This ring should be stopped short of the Gold Outer Drill Sleeve to prevent final seating of the screw by power. Final tightening should be performed under manual control using the T-Handle (Figures 14). Detach the screws from the screwdriver using the screw-driver release handle (Figure 18). Remove screw-driver and Gold Outer Drill Sleeve.

7163-1152
Gold Outer Sleeve

7163-1156
Silver Inner Drill Sleeve

7163-1110
4.0 mm Long Pilot Drill

7163-1189
Direct Measuring Gauge

7163-1208
Screwdriver Release Handle

Proximal Locking — Recon

Note: Follow the same initial procedure as in the femoral locking mode and connect the blue hip guide.

Step 12

Two aspects of screw placement into the femoral head must be noted before drilling: (1) Alignment of the anteversion and (2) depth of nail insertion. To begin, rotate the C-Arm proximally until a true line of the hip is visualized. This gives the correct axis of alignment for anteversion. Rotate the handle of the nail guide until it bisects the femoral head in the lateral view. This should assist in setting the correct anteversion position of the screws. Mark this position with a skin marker on the leg parallel to the driving handle. Align a guide pin on top of the inferior gold drill sleeve to make sure the nail is properly counter sunk. The guide pin should be slightly superior to the calcar radiographically (Figure 15).

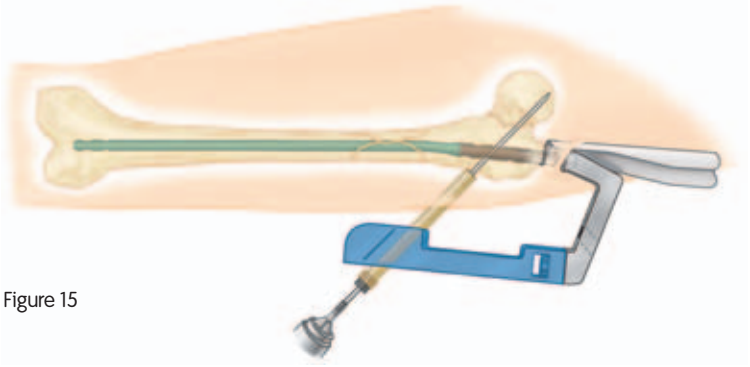


Figure 15

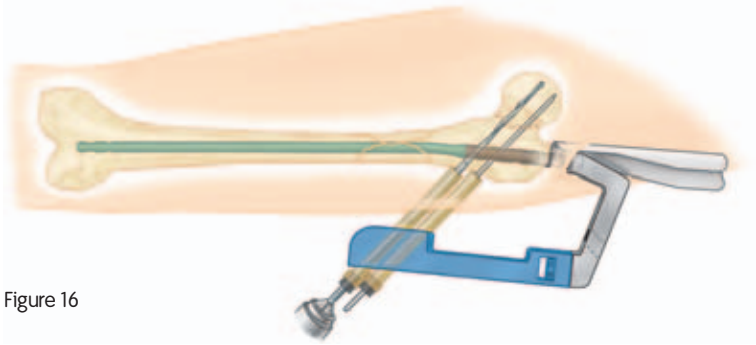


Figure 16

Step 13: Proximal Screws

Once anteversion and depth of nail are established, make stab incisions at the entry holes of the screw sleeves. Connect the puncture incisions to accommodate insertion of both screws. Shoot the 4.0 Long Pilot Drill through the inferior drill sleeve assembly to the desired depth in the femoral head. Repeat this step for the superior hole. Follow up by repeating these steps with the 6.4 mm Step Drill (Figure 16). Measure the depth for the screw length from the etchings on the drill bit in respect to the Silver Inner Drill Sleeve. Attach the proper screw to the medium screwdriver and T-Handle and insert into the inferior hole first. Do not tighten. Repeat the previous step for the superior hole using the long screwdriver (Figure 17). Release traction and tighten screws to maximize compression. If both screws will not seat within the femoral head, it is probable that too much varus positioning of the proximal fragment has occurred, or the entry portal is too lateral.

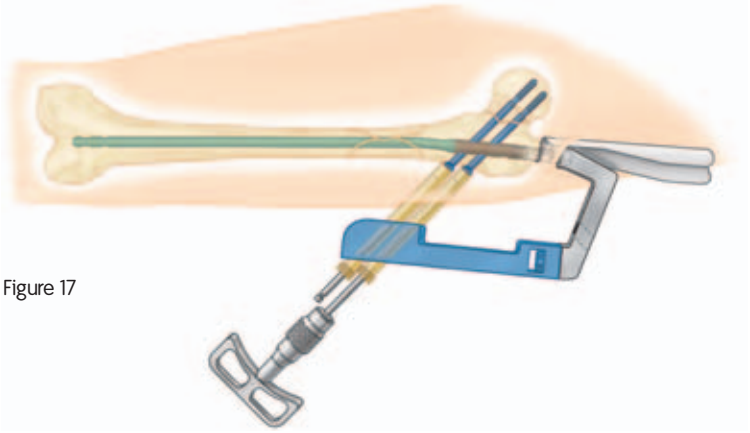


Figure 17

Distal Locking

Step 14

Use the freehand technique to perform distal locking. Begin by making adjustments to the C-Arm until perfect circles are observed. Make a stab incision over the holes. Confirm alignment and attach the Short Pilot Drill. Drill through both cortices. Remove the drill. Insert the Direct Measuring Gauge to the far cortex and take the proper screw length measurement from the gauge. The appropriate screw is selected and attached to the short screwdriver. Attach to power or the T-Handle. Final tightening of the screw should be under manual control.

Note: The 4.0 mm Screw Length Sleeve (110238) can be used with the 4.0 mm Short Pilot Drill to prepare the distal locks. The calibrations on the drill can be used with the screw length sleeve to determine appropriate screw length.

Implantation Complete

Follow standardized procedures for closure.

Note: Bone graft or bone graft substitutes should be used to fill in gaps around the bones to enhance bony union.

VIAGRAF® Demineralized Bone Matrix – Crunch
Cat. no. 71791x

VIAGRAF Demineralized Bone Matrix – Flex
Cat. no. 71991x

VIAGRAF Demineralized Bone Matrix – Gel
Cat. no. 71791x

VIAGRAF Demineralized Bone Matrix – Paste
Cat. no. 71790x

VIAGRAF Demineralized Bone Matrix – Putty
Cat. no. 71790x

VIAGRAF Demineralized Bone Matrix – Cancellous Chips
Cat. no. 71792x

TRIGEN Nail Extraction Technique

Patient Positioning

For Femoral and Trochanteric Antegrade or Knee Nails Used Femoral Retrograde:
Place the patient in the lateral decubitus or supine position.

For Knee Nails Used Tibial Antegrade:
Place the patient in the supine position on a radiolucent table with the affected leg in a figure four configuration.

Surgical Technique

Step 1
After prepping and draping, remove any distal screws and all but one proximal screw from the nail, leaving the screw closest to the driving end of the nail. Under fluoroscopy, percutaneously place a 3.2 mm Tip-Threaded Guide Pin (Figure 1) (7163-1190) into the threaded end of the nail. (If a cap is on the nail, an incision must be made and the cap removed.) A mallet may be used to insert this guide pin, but usually power equipment is available and can be used for percutaneous placement.

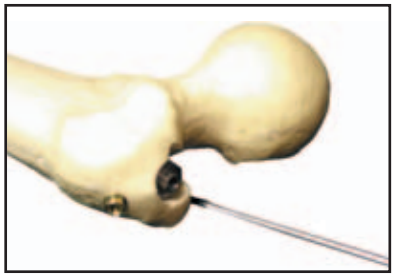


Figure 1

Step 2
When the guide pin is in the nail, make a one-inch incision about the pin and advance the 12.5 mm Entry Reamer (Figure 2) (7163-1116) over the pin to remove the tissue and ingrowth overlying the nail. Note that the tip of the reamer is straight for approximately ½ inch before flaring out. It is this portion of the reamer that enters the nail.

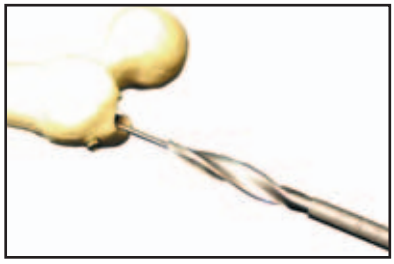


Figure 2

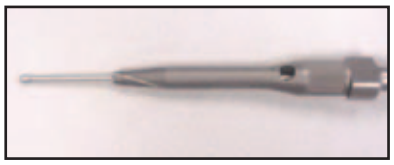


Figure 3

Figure 4

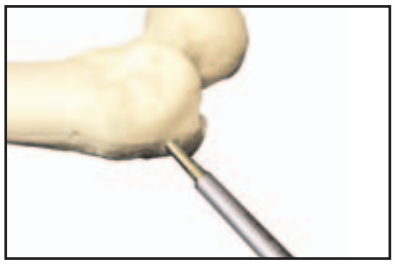


Figure 5

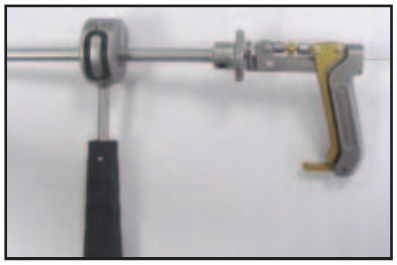


Figure 6

Step 3

After reaming, remove the reamer and the guide pin and insert the 3.0 X 1000 mm TRIGEN Ball Tipped Guide Rod (7163-1126). Attach the extractor to the Impactor Handle (7163-1185) and tighten, then thread the extractor into the nail (with the guide rod in place) (Figure 3). Place the screwdriver shaft into the impactor handle slot and turn until the impactor is securely engaged. This can be verified by fluoroscopy (Figure 4).

Step 4

After the impactor is securely engaged in the nail, remove the last locking screw (Figure 5).

Step 5

Attach the gripper to the guide rod adjacent to the end of the impactor. The gripper will provide a handle for the surgeon to use while backslapping the impactor with the slotted hammer when extracting the nail (Figure 6).

USE EXTREME CAUTION not to exert any side loads on the impactor extractor assembly. Excessive pulling and pushing on the end of the impactor handle could result in premature failure of the extraction device. In the event of extractor failure, pull the guide rod until the ball tip engages the extractor, re-tighten the gripper adjacent to the impactor, and proceed with the extraction.

Recommended usage for extractor: 7-10 times

Cat. No.	Description
7163-1278	Large Extractor

Alternative Methods for Extraction

Method 1

Jamming the Guide Rods
Utilizing two guide rods, one 3.0 mm ball tip and one 2.0 mm smooth, advance the 3.0 mm ball tip guide rod past the end of the nail then insert the 2.0 mm smooth rod in a similar manner, past the tip of the nail. Once both wires are in place, attach the gripper to the end of the 3.0 mm ball tipped rod and pull back to wedge the ball tip with the 2.0 rod and the end of the nail. Backslap against the gripper to remove the nail.

Cat. No.	Description
115120	2.0 x 700 mm smooth
71631126	3.0 x 1000 mm ball tip
71118280	2.0 x 900 mm smooth
71118202	3.0 x 900 mm ball tip
112069	3.0 x 900 mm ball tip

Method 2

After following the patient positioning and entry reaming techniques cited at the beginning of this document, proceed with the following substitution for the quick bolt:
Attach the RUSSELL-TAYLOR® Tibial Extraction Bolt (112041) to the slide hammer (112011). Thread the assembly into the nail and proceed with extracting the nail via the slide hammer mechanism.

Cat. No.	Description
112041	5/16–24 extraction bolt
112011	Slide hammer

Additional Tips for Extraction

Thoroughly review all extraction alternatives with the surgeon pre-operatively and have access to instrumentation cited in this update.
Other items that may be helpful in removal are as follows:

Cat. No.	Description
115074	Large Extractor Hook
115073	Small Extractor Hook
914659	Small Easy Out
914658	Large Easy Out

Last Resort

In the event that the above techniques are unsuccessful or result in device failure, the screw extractor that is currently available in the cannulated screw sets will remove cannulated extraction devices that have failed during surgery and will also possibly remove the nail. The surgeon should hand tighten the screw extractor (71119014) then tap with the hammer to ensure engagement.

At this point, the surgeon can then attempt to remove the nail with the screw extractor and/or back turn the broken piece of extractor and then insert the guide bolt (71631136), quick bolt, or R-T tibial extraction bolt into the nail to remove the nail.

Implants — Trochanteric Antegrade Nails

Trochanteric 135 Degrees

Left (Lime)

Cat. No.	Length
7163-7230	10 X 30 cm
7163-7232	10 X 32 cm
7163-7234	10 X 34 cm
7163-7236	10 X 36 cm
7163-7238	10 X 38 cm
7163-7240	10 X 40 cm
7163-7242	10 X 42 cm
7163-7244	10 X 44 cm
7163-7246	10 X 46 cm
7163-7248	10 X 48 cm
7163-7250	10 X 50 cm
7163-7330	11.5 X 30 cm
7163-7332	11.5 X 32 cm
7163-7334	11.5 X 34 cm
7163-7336	11.5 X 36 cm
7163-7338	11.5 X 38 cm
7163-7340	11.5 X 40 cm
7163-7342	11.5 X 42 cm
7163-7344	11.5 X 44 cm
7163-7346	11.5 X 46 cm
7163-7348	11.5 X 48 cm
7163-7350	11.5 X 50 cm
7163-7430	13 X 30 cm
7163-7432	13 X 32 cm
7163-7434	13 X 34 cm
7163-7436	13 X 36 cm
7163-7438	13 X 38 cm
7163-7440	13 X 40 cm
7163-7442	13 X 42 cm
7163-7444	13 X 44 cm
7163-7446	13 X 46 cm
7163-7448	13 X 48 cm
7163-7450	13 X 50 cm

Right (Rose)

Cat. No.	Length
7163-8230	10 X 30 cm
7163-8232	10 X 32 cm
7163-8234	10 X 34 cm
7163-8236	10 X 36 cm
7163-8238	10 X 38 cm
7163-8240	10 X 40 cm
7163-8242	10 X 42 cm
7163-8244	10 X 44 cm
7163-8246	10 X 46 cm
7163-8248	10 X 48 cm
7163-8250	10 X 50 cm
7163-8330	11.5 X 30 cm
7163-8332	11.5 X 32 cm
7163-8334	11.5 X 34 cm
7163-8336	11.5 X 36 cm
7163-8338	11.5 X 38 cm
7163-8340	11.5 X 40 cm
7163-8342	11.5 X 42 cm
7163-8344	11.5 X 44 cm
7163-8346	11.5 X 46 cm
7163-8348	11.5 X 48 cm
7163-8350	11.5 X 50 cm
7163-8430	13 X 30 cm
7163-8432	13 X 32 cm
7163-8434	13 X 34 cm
7163-8436	13 X 36 cm
7163-8438	13 X 38 cm
7163-8440	13 X 40 cm
7163-8442	13 X 42 cm
7163-8444	13 X 44 cm
7163-8446	13 X 46 cm
7163-8448	13 X 48 cm
7163-8450	13 X 50 cm

Standard Femoral or Reconstruction Modes

Trochanteric 130 Degrees

Left (Lime)

Cat. No.	Length
7164-7230	10 mm X 30 cm
7164-7232	10 mm X 32 cm
7164-7234	10 mm X 34 cm
7164-7236	10 mm X 36 cm
7164-7238	10 mm X 38 cm
7164-7240	10 mm X 40 cm
7164-7242	10 mm X 42 cm
7164-7244	10 mm X 44 cm
7164-7246	10 mm X 46 cm
7164-7248	10 mm X 48 cm
7164-7250	10 mm X 50 cm
7164-7330	11.5 mm X 30 cm
7164-7332	11.5 mm X 32 cm
7164-7334	11.5 mm X 34 cm
7164-7336	11.5 mm X 36 cm
7164-7338	11.5 mm X 38 cm
7164-7340	11.5 mm X 40 cm
7164-7342	11.5 mm X 42 cm
7164-7344	11.5 mm X 44 cm
7164-7346	11.5 mm X 46 cm
7164-7348	11.5 mm X 48 cm
7164-7350	11.5 mm X 50 cm
7164-7430	13 mm X 30 cm
7164-7432	13 mm X 32 cm
7164-7434	13 mm X 34 cm
7164-7436	13 mm X 36 cm
7164-7438	13 mm X 38 cm
7164-7440	13 mm X 40 cm
7164-7442	13 mm X 42 cm
7164-7444	13 mm X 44 cm
7164-7446	13 mm X 46 cm
7164-7448	13 mm X 48 cm
7164-7450	13 mm X 50 cm

Right (Rose)

Cat. No.	Length
7164-8230	10 mm X 30 cm
7164-8232	10 mm X 32 cm
7164-8234	10 mm X 34 cm
7164-8236	10 mm X 36 cm
7164-8238	10 mm X 38 cm
7164-8240	10 mm X 40 cm
7164-8242	10 mm X 42 cm
7164-8244	10 mm X 44 cm
7164-8246	10 mm X 46 cm
7164-8248	10 mm X 48 cm
7164-8250	10 mm X 50 cm
7164-8330	11.5 mm X 30 cm
7164-8332	11.5 mm X 32 cm
7164-8334	11.5 mm X 34 cm
7164-8336	11.5 mm X 36 cm
7164-8338	11.5 mm X 38 cm
7164-8340	11.5 mm X 40 cm
7164-8342	11.5 mm X 42 cm
7164-8344	11.5 mm X 44 cm
7164-8346	11.5 mm X 46 cm
7164-8348	11.5 mm X 48 cm
7164-8350	11.5 mm X 50 cm
7164-8430	13 mm X 30 cm
7164-8432	13 mm X 32 cm
7164-8434	13 mm X 34 cm
7164-8436	13 mm X 36 cm
7164-8438	13 mm X 38 cm
7164-8440	13 mm X 40 cm
7164-8442	13 mm X 42 cm
7164-8444	13 mm X 44 cm
7164-8446	13 mm X 46 cm
7164-8448	13 mm X 48 cm
7164-8450	13 mm X 50 cm

Screws & Nail Caps

5.0 mm Internal Captured Screw

(Gold)

For 10 mm, 11.5 mm & 13 mm Implants

Cat. No.	Length
7164-2225	25 mm
7164-2230	30 mm
7164-2235	35 mm
7164-2240	40 mm
7164-2245	45 mm
7164-2250	50 mm
7164-2255	55 mm
7164-2260	60 mm
7164-2265	65 mm
7164-2270	70 mm
7164-2275	75 mm
7164-2280	80 mm
7164-2285	85 mm
7164-2290	90 mm
7164-2295	95 mm
7164-2200	100 mm
7164-2205	105 mm
7164-2210	110 mm

6.4 mm Captured Recon Screw

(Blue)

Cat. No.	Length
7164-2365	65 mm
7164-2370	70 mm
7164-2375	75 mm
7164-2380	80 mm
7164-2385	85 mm
7164-2390	90 mm
7164-2395	95 mm
7164-2300	100 mm
7164-2305	105 mm
7164-2310	110 mm
7164-2315	115 mm
7164-2320	120 mm
7164-2325	125 mm

Nail Caps

Cat. No.	Length
7163-4000	0 mm
7163-4005	5 mm
7163-4010	10 mm
7163-4015	15 mm
7163-4020	20 mm

Instrumentation — TAN

Gripper
Cat. No. 7163-1100

4.0 mm Long Pilot Drill
Cat. No. 7163-1110

4.0 mm Short Pilot Drill
Cat. No. 7163-1117

4.0 mm Short AO Pilot Drill
Cat. No. 7163-1123

4.0 mm Long AO Pilot Drill
Cat. No. 7163-1121

4.0 mm Short AO Step Drill
Cat. No. 7164-1123

4.0 mm Screw Length Sleeve
Cat. No. 11-0238

Entry Tool
Cat. No. 7163-1114

12.5 mm Entry Reamer
Cat. No. 7163-1116

14 mm Channel Reamer
Cat. No. 7163-1118

Entry Reamer Connector
Cat. No. 7163-1120

Obturator
Cat. No. 7163-1122

Reducer
Cat. No. 7163-1124

3.0 mm X 1000 mm Ball Tip Guide Rod
Cat. No. 7163-1126 & 7163-1626 (6 per box)

Catalog

Ruler
Cat. No. 7163-1128

Flex Reamer Extender
Cat. No. 7163-1130

Skin Protector
Cat. No. 7163-1132

Drill Guide 135°
Cat. No. 7163-1134

Drill Guide 130°
(Not Shown)
Cat. No. 7163-1345

Guide Bolt
Cat. No. 7163-1136

Guide Bolt Wrench
Cat. No. 7163-1140

Hip Guide
Cat. No. 7163-1144

8.5 mm FAN Guide
Cat. No. 7163-1119

One Piece Impactor
Cat. No. 7163-1185

Hammer
Cat. No. 7163-1150

Gold Outer Drill Sleeve
Cat. No. 7163-1152

Silver Inner Drill Sleeve
Cat. No. 7163-1156

6.4 mm Drill

Cat. No. 7163-1160

6.4 mm Tap

Cat. No. 7163-1162

Long External Screwdriver

Cat. No. 7163-1164

Medium External Screwdriver

Cat. No. 7163-1166

Short External Screwdriver

Cat. No. 7163-1168

Screwdriver Replacement Bars for External Screwdrivers

Cat. No.	Description
7163-1165	Large
7163-1167	Medium
7163-1169	Short

Hexdriver 4.5 mm, 5.0 mm & 6.4 mm Internal Captured Hex Screws

Cat. No.	Description
7163-1066	Medium
7163-1068	Short
7163-1070	Long

Screw Length Gauge

Cat. No. 7163-1170

Direct Measuring Gauge

Cat. No. 7163-1189

T-Handle (Zimmer-Hall)

Cat. No. 7163-1172

Straight Screwdriver Handle

Cat. No. 7163-1163

Targeter

Cat. No. 7163-1174

Catalog

Large Extractor
Cat. No. 7163-1278

Small AO Adapter
Cat. No. 7163-1184

Trinkle Adapter
Cat. No. 7163-1183

Mini Connector
Cat. No. 7163-1186

Trinkle Mini Connector
Cat. No. 7163-1187

Tip Threaded Guide Wire
Cat. No. 7163-1190 & 7163-1690 (6 per box)

Flex Reamer Shaft
Cat. No. 7163-1192

Screwdriver Release Handle
Cat. No. 7163-1208

Pilot Nose Reamer Heads

Cat. No.	Description
7111-8232	9.0 mm Head
7111-8233	9.5 mm Head
7111-8234	10.0 mm Head
7111-8235	10.5 mm Head
7111-8236	11.0 mm Head
7111-8237	11.5 mm Head
7111-8238	12.0 mm Head
7111-8239	12.5 mm Head
7111-8240	13.0 mm Head
7111-8241	13.5 mm Head
7111-8242	14.0 mm Head

End Cutting Reamer

Cat. No.	Description
7111-8231	9.0 mm Head

Modular Reamer Box
Cat. No. 7163-1218

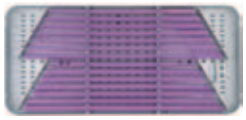
Implant Trays

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

TRIGEN Instrument Tray 1
Cat. No. 7163-1199

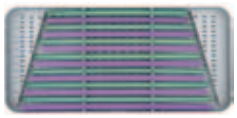
TRIGEN Instrument Tray 2
Cat. No. 7163-1201

FAN Case – Left
Cat. No. 7163-1202



FAN Case – Right
Cat. No. 7163-1203

Knee Nail Case
Cat. No. 7163-1204



FAN Case – 13 mm Nails
Cat. No. 7163-1206

Screw Caddy
Cat. No. 7163-1180

Screw Caddy Conversion Kit
(Not Shown)
Cat. No. 7163-1074

Large Outer Case 4.8”
Cat. No. 7112-9400

Lid for Outer Case
(Shown with Case)
Cat. No. 7112-9402

Catalog Information – VIAGRAF◇ Demineralized Bone Matrix

Crunch

Cat No.	Container
717914	5cc Jar
717915	15cc Jar

Flex

Cat No.	Container
717917	5 x 2.5cm Poly Bag
717918	10 x 2.5cm Poly Bag
717919	5 x 5cm Poly Bag

Gel

Cat No.	Container
717910	1cc Syringe
717911	5cc Syringe
717912	10cc Syringe

Paste

Cat No.	Container
717906	1cc Syringe
717907	5cc Syringe
717908	10cc Syringe

Putty

Cat No.	Container
717902	1cc Jar
717904	5cc Jar
717905	10cc Jar

Cancellous Chips

Cat No.	Container
717920	1.7-10mm 15cc Tray
717921	1.7-10mm 30cc Tray

Notes

Notes

Notes

Orthopaedics
Smith & Nephew, Inc.
1450 Brooks Road
Memphis, TN 38116
USA

Telephone: 901-396-2121
Information: 1-800-821-5700
Orders/Inquiries: 1-800-238-7538

www.smith-nephew.com

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