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OIC Tibia Nail System
Infrapatellar and Suprapatellar Approach
Surgical Technique Guide

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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 specific needs of the patient.

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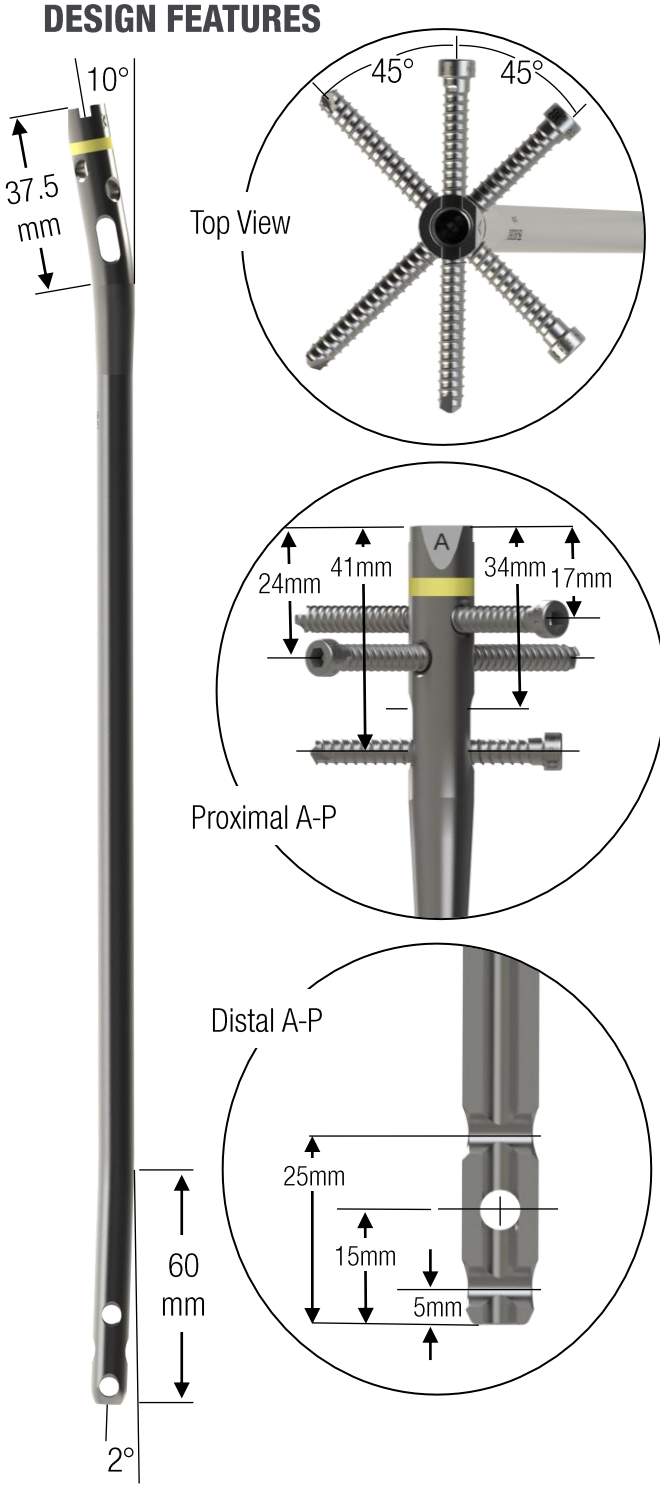
System Features

INTRODUCTION

OIC Tibia Nail is a cost-effective product that incorporates design features of modern intramedullary nails that obtain consistent clinical results. Instruments share a similar platform to other OIC intramedullary nails. OIC Tibia Nails can be implanted through infrapatellar and suprapatellar approaches providing flexibility to the reduction of fractures and installment of the implant.

DESIGN FEATURES



OIC Tibia Nail	
Characteristics	**Value**
Metallurgy	Titanium Alloy (Ti6AL4V)
Proximal Diameter	11.75mm
Distal Diameter	9, 10, and 11.5mm
Lengths	280-400mm 20mm increments 310mm, 330mm, 350mm
Cross-Section	Circular
Cross-Lock Screw Diameter	5mm
Cross-Lock Screw Lengths	25mm-100mm
Static Lock Locations and Orientations	17mm, 45° 24mm, 45° 41mm, ML Slot
Degree of Proximal Herzog Bend	10°
Compression and Dynamic Slot Location	34mm, ML Slot
Proximal Bend Location	37.5mm
Static Lock Locations and Orientations	5mm, ML 15mm, AP 25MM, ML
Degree of Distal A-P Bend	2°
Distal bend Location	60mm

Indications and Warnings

INDICATIONS FOR USE

The OIC Intramedullary Nail System is intended for surgical management of femoral and tibial fractures including open and closed fractures, pseudarthrosis and correction osteotomy, pathologic fractures, impending pathologic fractures, tumor resections, nonunions and malunions. The hip nails may be used for basilar neck, subtrochanteric and intertrochanteric fractures. The femoral nails may be used for fractures of the femur below the hip joint including ipsilateral femur fractures, fractures proximal to a total knee arthroplasty and supracondylar fractures, including those with intra-articular extension.

CONTRAINDICATIONS

- These systems should not be used in crossing open epiphyseal plates
- Insufficient quantity or quality of bone, obliterated medullary canal or conditions which tend to retard healing, blood supply limitations, previous infections, etc.
- Active infection
- Any hardware that would preclude use of nails
- Congenital or acquired bony deformity
- Hypovolemia, hypothermia and coagulopathy
- Mental conditions that preclude cooperation with the rehabilitation regimen

Indications and Warnings

PREOPERATIVE PLANNING

A correct surgical technique is essential to a successful outcome. Proper reduction of fractures and proper placement of implants are necessary to effectively treat patients using metallic surgical implants. Please review the surgical technique for effective surgical procedures.

Implant Selection – A proper type and sized implant must be selected to ensure effective treatment of patients. The following factors should be considered:

- A patient's size, strength, skeletal characteristics, skeletal health, and general health. Overweight, musculoskeletally deficient or unhealthy patients may create greater loads on implants that may lead to breakage or other failure of the implants.
- A patient's activity level during the time of implantation, including such factors as whether the patient's occupation or typical activities include running, heavy lifting, impact loading, or the like.
- Whether a patient has a degenerative or progressive disease that delays or prevents healing, and consequently decreases the effective life of the implant.
- If a patient is suspected of having material or foreign body sensitivities, appropriate testing should be accomplished prior to implantation.
- Mental conditions or substance abuse problems that may prevent a patient from understanding or following directions or observing precautions.

Implant Alterations – Unless an implant is designed to be physically altered, it should not be altered in any way. If the implant is designed to be altered, it should only be altered in accordance with OIC's instructions

In no case should an implant be sharply or reverse bent, notched, gouged, reamed, scratched or cut.

Component Compatibility – Components such as intramedullary nails, screws, wires, pins, and the like are available in many styles and sizes and are manufactured from various types of metals. The component material is provided on the outside carton label. Use only components made from the same material together unless specifically approved by the manufacturer. Do not mix dissimilar metals or components from different manufacturers unless specifically approved by a manufacturer of the components. Refer to manufacturers' literature for specific product information.

Implant Removal – The patient should be advised that a second procedure for the removal of implants may be necessary.

Indications and Warnings

POSTOPERATIVE CARE

Care Prior to Bony Union – Immobilize and/or externally support skeletal structures that have been implanted with surgical metallic implants until skeletal union is observed. Early weight bearing substantially increases implant loading and increases the risk of loosening, bending or breaking the device. Early weight bearing should only be considered for stable fractures with good bone-to-bone contact. Patients who are obese and/or noncompliant, as well as patients who could be pre-disposed to delayed or non-union, should have auxiliary support. The implant may be exchanged for a larger, stronger nail subsequent to the management of soft tissue injuries.

ADVERSE EFFECTS

1. Loosening, bending, cracking or fracture of the implant components
2. Limb shortening or loss of anatomic position with nonunion or malunion with rotation or angulation
3. Infections, both deep and superficial
4. Irritating injury of soft tissues, including impingement syndrome
5. Supracondylar fractures from retrograde nailing
6. Tissue reactions which include macrophage and foreign body reactions adjacent to implants
7. Although rare, metal sensitivity reactions and/or allergic reactions to foreign materials have been reported in patients.
8. Restricted range of motion of the joint adjacent to the insertion point of the nail, usually transitory due to protruding nails

MAGNETIC RESONANCE IMAGING (MRI) SAFETY

The OIC Tibia Nail has not been evaluated for safety in the MR environment. It has not been tested for heating or unwanted movement in the MR environment. The safety of OIC Tibia Nail in the MR environment is unknown. Performing an MR exam on a person who has this medical device may result in injury or device malfunction.

Surgical Techniques: Infrapatellar Approach

PATIENT POSITIONING

Patient is placed supine on a radiolucent table. Care is taken to pad all bony prominences. A triangle or bone foam can be utilized for positioning. The image intensifier should be positioned so that AP and lateral views of the knee, tibia and ankle can be easily obtained.

FRACTURE REDUCTION

The fracture is reduced by traction and reversal of the mechanism of injury. A pointed reduction clamp can be placed percutaneously to hold oblique fracture patterns. If help load sharing help is not available, external fixators can be of assistance. For proximal or unstable segmental patterns, unicortical locking plates can be placed prior to nailing to prevent malreduction.

FIG 1

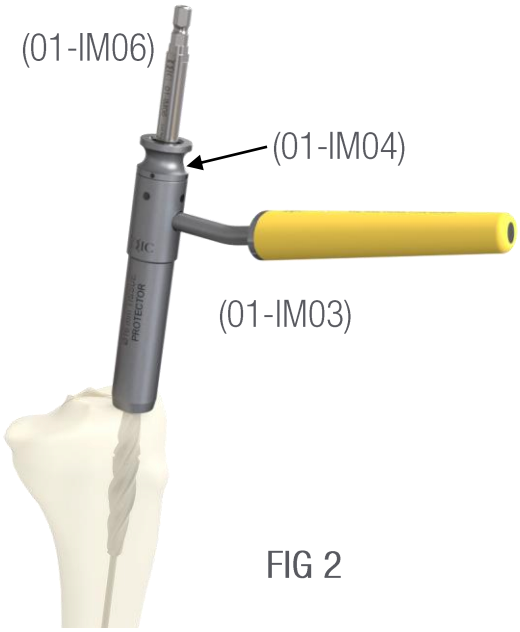


FIG 2

INCISION AND PIN PLACEMENT

After sterile preparation and draping, the image intensifier is used to determine incision placement. The patellar tendon can be retracted laterally or split in line with its fibers. The ideal entry point on the AP image is on the medial aspect of the lateral tibial spine. On lateral image, the point is just anterior to the articular margin. This is the most important part of the surgery as poor entry point can lead to intra-articular damage or fracture malreduction.

The entry portal can be made by the Curved Entry Awl (01-IM01) in FIG 1. Alternatively, the Proximal 12.5mm Entry Reamer (01-IM06) can be passed over the Guide Pin (32-400P) and through the 16mm/12.5mm Tissue Protector Assembly (01-IM03 and 01-IM04) to gain access to the medullary canal in FIG 2. Care should be taken to direct Reamer or Awl into medullary canal to avoid posterior penetration.

PREPARATION OF MEDULLARY CANAL

The Ball Tip Guide Rod (GW03-1000-S) is then attached to the Guide Rod Gripper (01-IM07) and passed across the fracture site into a center-center position in the ankle in FIG 3. A slight bend can be placed in the guide rod to facilitate passage and positioning. This should be confirmed on both AP and Lateral fluoroscopic images to ensure correct placement.

FIG 3

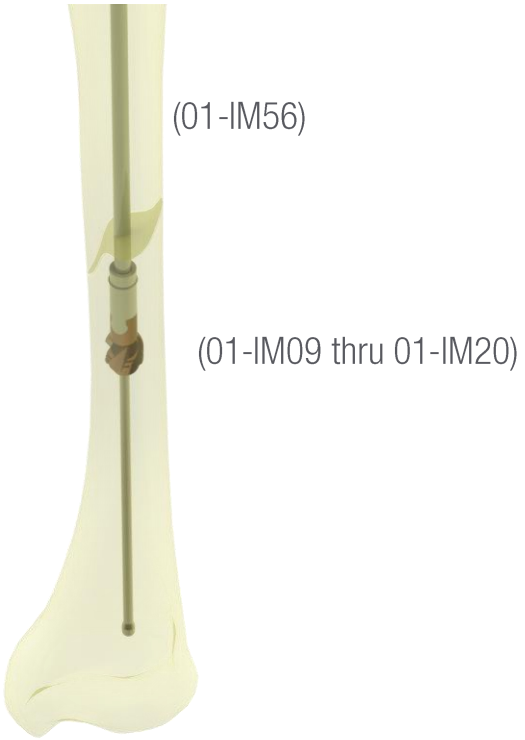


FIG 4

Reaming – Reamers (01-IM09 thru 01-IM20) are then utilized with the Flexible Reamer Shaft (01-IM08) starting at 9mm and increasing by 0.5mm increments FIG 4. The canal should be reamed 1.5-2mm above the diameter of the nail. The Obturator (01-IM56) can be utilized to ensure Guide Rod placement during reaming.

NAIL MEASUREMENT

Measuring the nail length can be done pre- or post-reaming. If measuring post-reaming, care should be taken to ensure an accurate reading. The Nail Depth Gauge (01-IM02) is utilized to determine the appropriate nail length off the scribed mark on the Guide Rod, as seen in FIG 5. The gauge is passed over the Guide Rod up against the cortex. Care should be taken to ensure that the Nail Depth Gauge is not inside the entry hole, which can be verified under fluoroscopy. The appropriate nail length is chosen to the nearest 20mm increment of sizes available.

CAUTION: An excessively long nail can lead to intra-articular hardware and a short nail can increase the possibility of periprosthetic fracture.

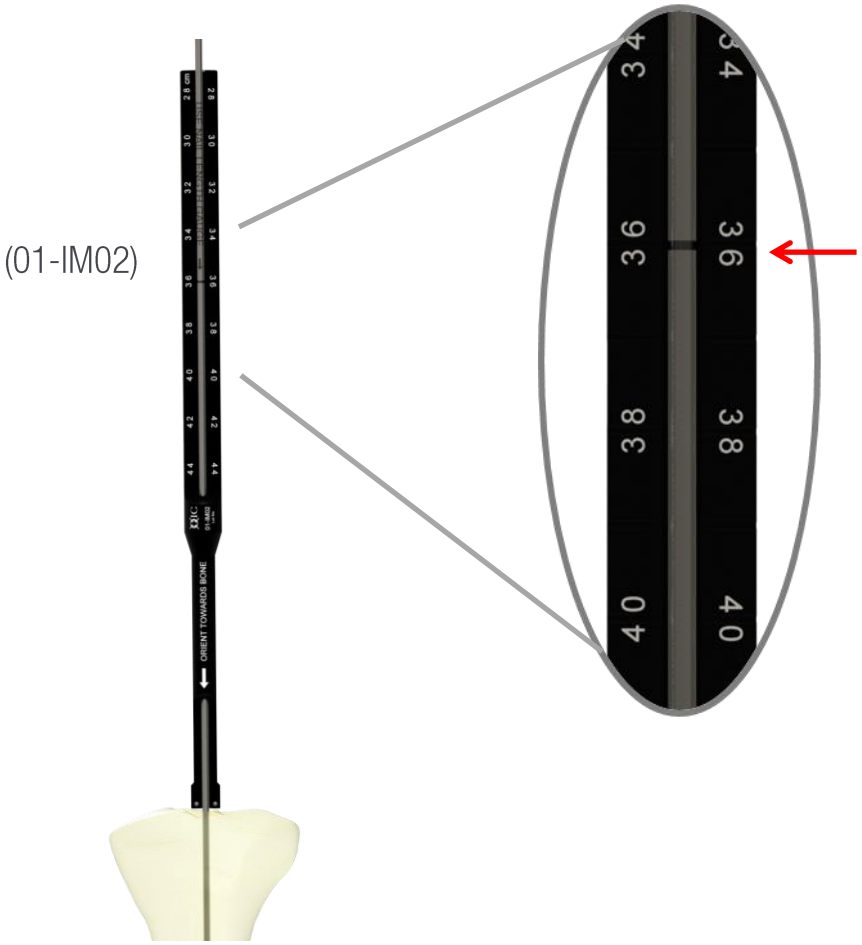


FIG 5

ASSEMBLING THE TIBIA HANDLE TO NAIL

To ensure proper nail orientation, align the “A” on the nail with the “A” on the Tibia Guide Handle (01-IM27) FIG 6. Attach the selected nail by securing it with the Tibia Nail Guide Bolt (01-IM26) and tightening it with the Guide Bolt Driver (01-IM29) FIG 7. Ensure that the notches fit well, and no cross threading occurs. Attach the Impactor (01-IM30) to the tibia nail assembly FIG 8 and use the Slotted Mallet (01-IM31) as a wrench to tighten.

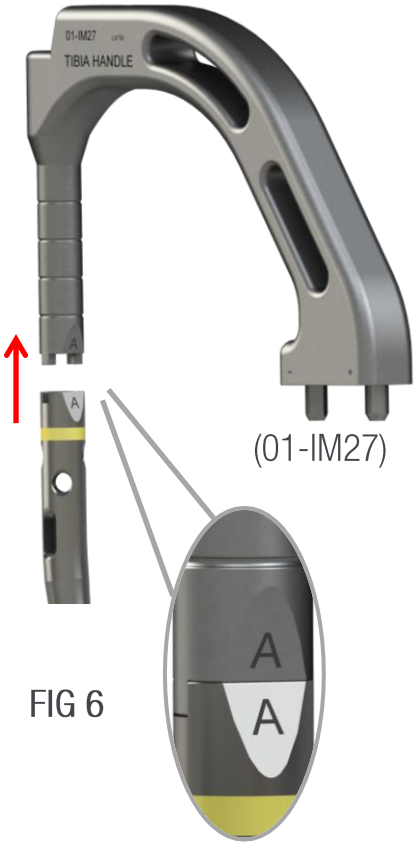


FIG 6

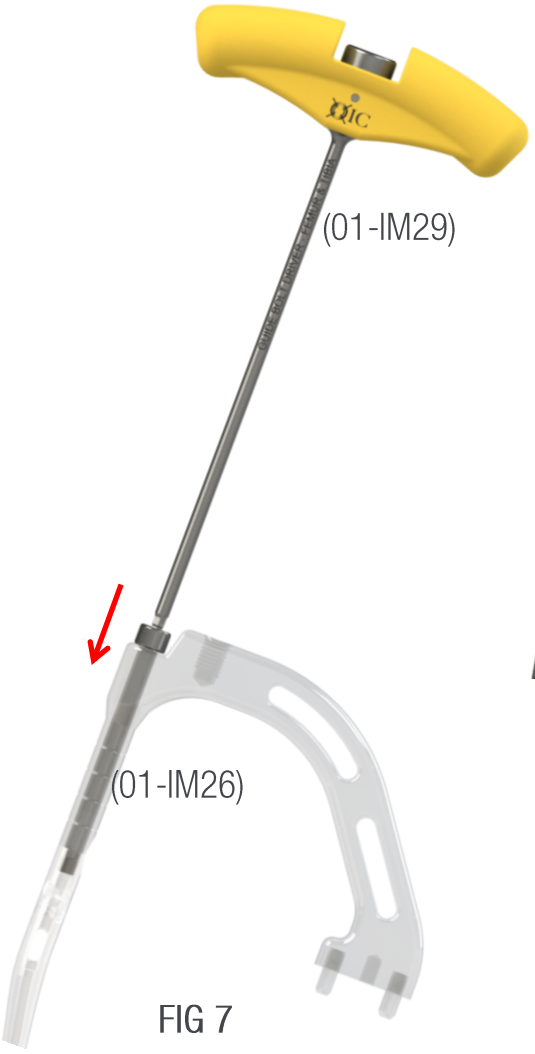


FIG 7

FIG 8

Surgical Techniques: Infrapatellar Approach

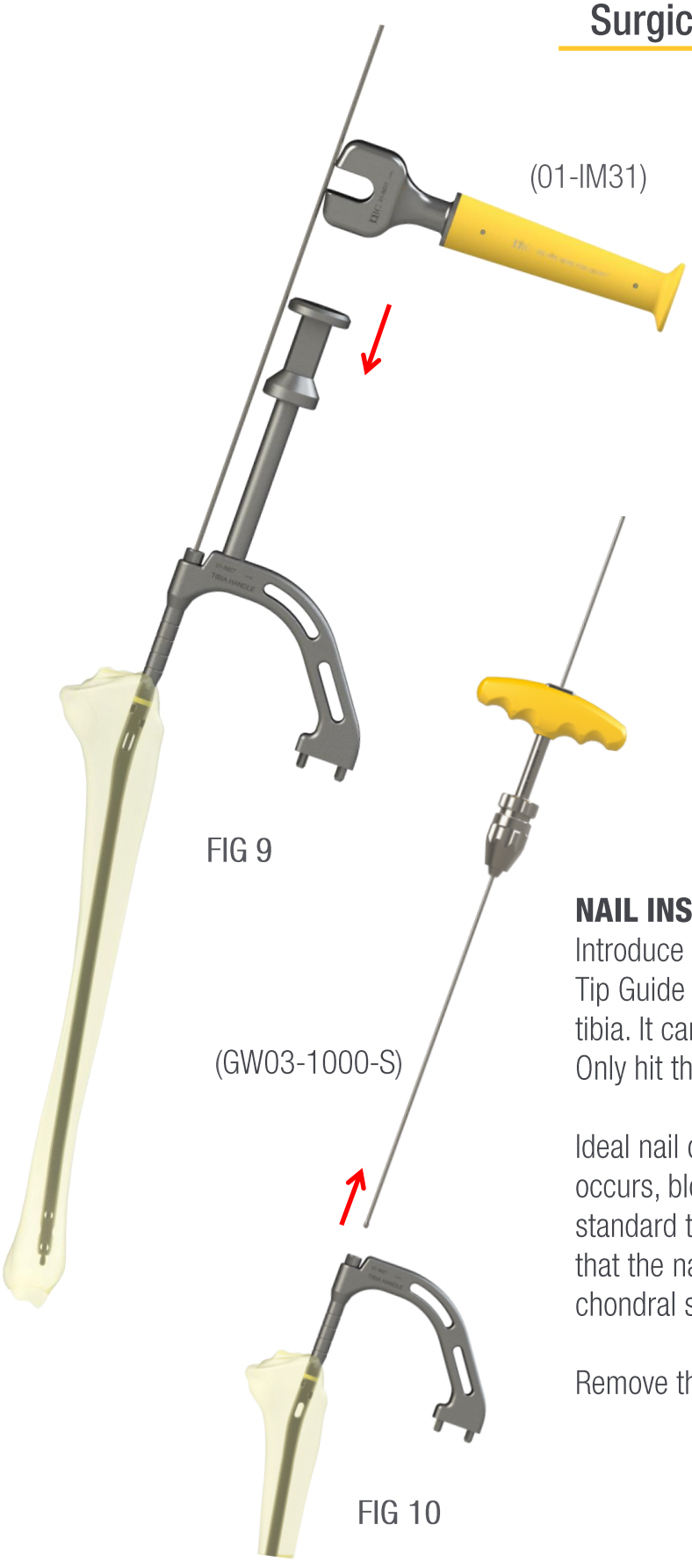


FIG 9

FIG 10

NAIL INSERTION

Introduce the assembled nail and Tibia Guide Handle over the Ball Tip Guide Rod. Nail should be inserted by hand into the proximal tibia. It can then be advanced with the Slotted Mallet (01-IM31). Only hit the Metal Impactor (01-IM30), seen in **FIG 9**.

Ideal nail depth is to the level of the physeal scar. If malreduction occurs, blocking or poller screws can be used according to standard techniques. Proximally, care should be taken to ensure that the nail is not proud and sunk at least 2mm below the chondral surface.

Remove the Ball Tip Guide Rod (GW03-1000-S), seen in **FIG 10**.

PROXIMAL CROSS LOCK SCREW INSERTION

Once nail has been inserted to the desired depth, the Proximal Targeting Guide (01-IM28) should be attached to the handle, as seen in FIG 11. Three proximal options are available and can be used at the surgeon's discretion. Each screw can be placed using the Tissue Protection Sleeve (01-IM32), the Drill Sleeve (01-IM34) and the Trocar (01-IM33). When the triple sleeve is advanced to the bone through a small incision, the Trocar (01-IM33) is removed. The drill is placed through the Drill Sleeve (01-IM34) and the screw length measured off the Long Calibrated Drill Bit (DR42-330C) FIG 12. Alternatively, the Depth Gauge (01-IM51) can be used. The Drill Sleeve (01-IM34) is then removed, and the correctly sized Cross Lock Screw (NLB-XXXX) is inserted through the Tissue Protection Sleeve (01-IM32) using the AO Connect Handle (01-IM49) and the 3.5mm Long Hex Driver (01-IM37) seen in FIG 13.

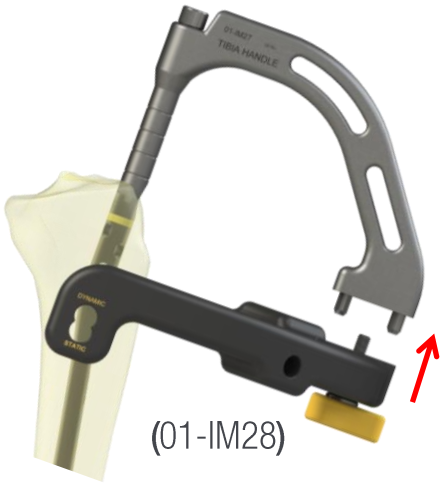


FIG 11

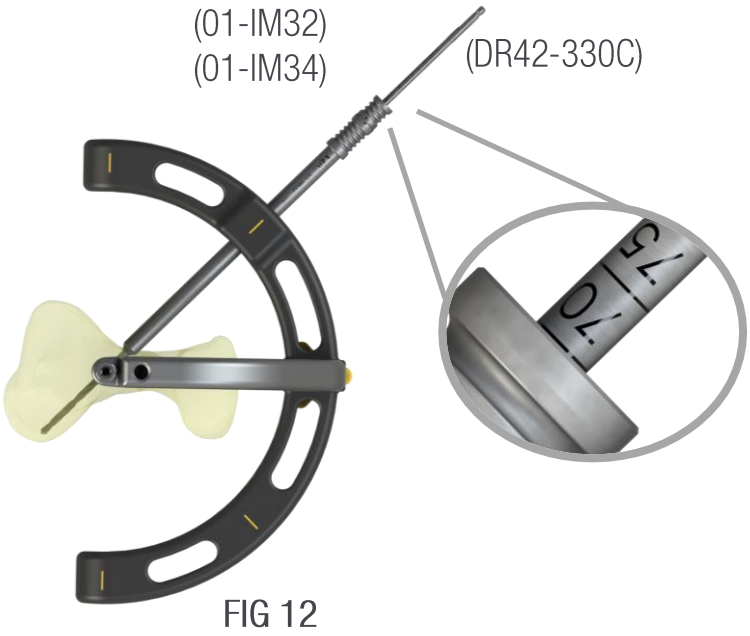


FIG 12

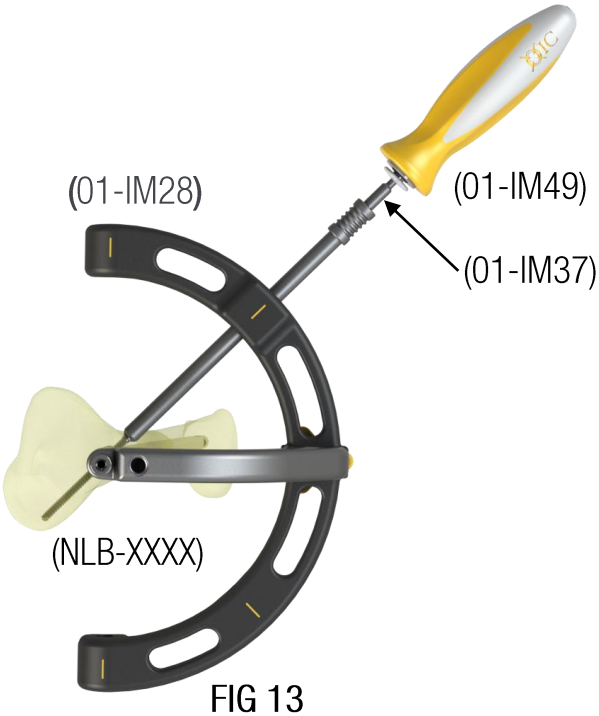


FIG 13

Surgical Technique: Suprapatellar Approach

PATIENT POSITIONING

Patient is placed supine on a radiolucent table. Care is taken to pad all bony prominences. A triangle or bone foam can be utilized for positioning. The positioning should allow the injured leg to be placed in 10-20° of flexion. The image intensifier should be positioned so that AP and lateral views of the knee, tibia and ankle can be easily obtained.

FRACTURE REDUCTION

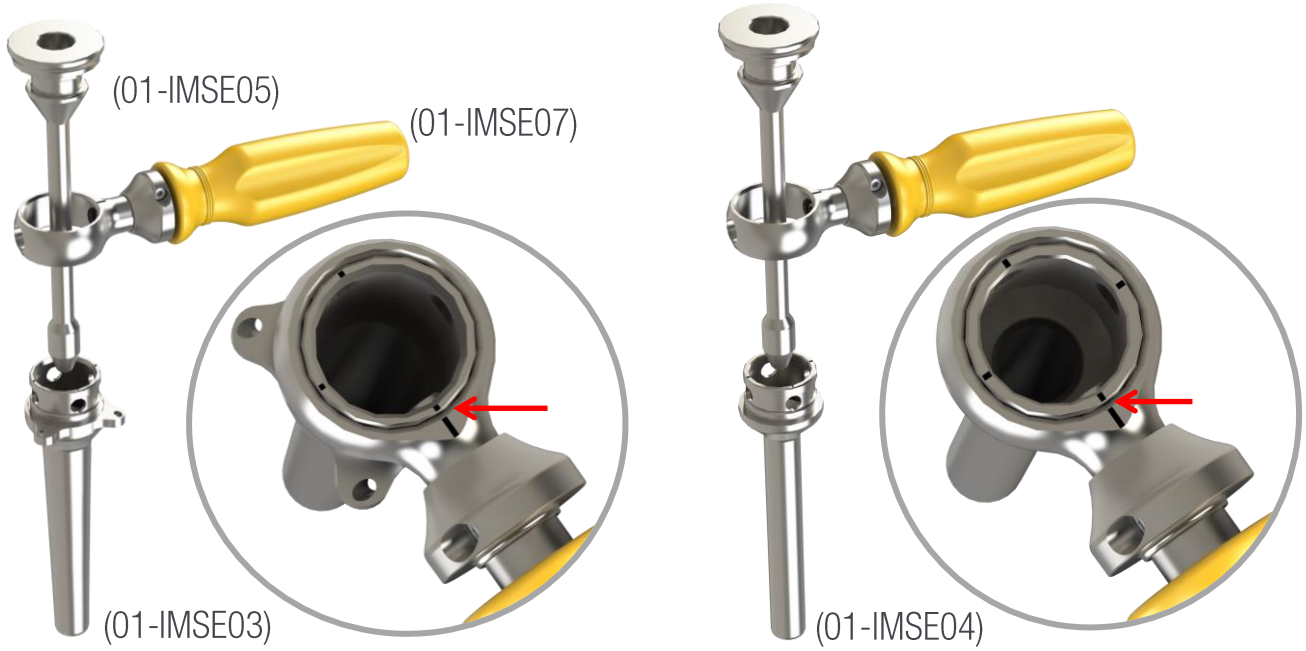
The fracture is reduced by traction and reversal of the mechanism of injury. A pointed reduction clamp can be placed percutaneously to hold oblique fracture patterns. If no holding help is available, use of an external fixator can be of assistance as well. For proximal or unstable segmental patterns, unicortical locking plates can be placed prior to nailing to prevent malreduction.

Surgical Technique: Suprapatellar Approach

INCISION

After sterile preparation and draping, the image intensifier is used to determine incision placement. With the knee in full extension, make a midline skin incision 4cm proximal to the superior pole of the patella. A second deep incision, also longitudinal, splits the quadriceps tendon in its midsubstance, just above its insertion into the patella and enters the knee joint through the suprapatellar pouch. Blunt dissection can be used to loosen the patella in the suprapatellar pouch, allowing the patella to lift off. Displace the patella anteriorly. If index finger cannot fit into the retropatellar space, a lateral or medial retinaculum release is recommended.

Assemble one of the Entry Cannula (01-IMSE03 or 01-IMSE04) to the Entry Cannula Handle (01-IMSE07) by pulling back on the trigger and inserting Cannula into the hole in the handle FIG 14. Release the trigger and rotate the Cannula until it aligns the laser marks and clicks into one of the four locked positions. Place the Guide Pin Entry Trocar (01-IMSE05) through the Cannula and push until it locks.



OPTION A: Tapered Cannula

OPTION B: Straight Cannula

FIG 14

NOTE: Inspect each Entry Cannula as it may become damaged with excessive prior reaming. Any flaws in the tube can lead to damage of the surrounding tendons and tissues.

CAUTION: Use care to avoid damaging the patellofemoral cartilage. The cannula assembly must be used to protect the retropatellar space. When inserting the cannula into the knee joint the Guide Pin Entry Trocar (01-IMSE05) must be securely locked to the cannula via the spring-loaded locking pin within the Cannula Handle. Do not insert the assembly directly with the Guide Pin Adjustment Trocar (01-IMSE06) attached.

PIN PLACEMENT

Insert the handle assembly into the knee joint, using the femoral condyles as a guide for proper placement. While the patella is displaced anteriorly, the assembly should glide between the articular surface of the patella and trochlea of the distal femur and rest securely in the groove. Stop pushing down on the handle assembly when the Guide Pin Entry Trocar reaches the surface of the tibia.

CAUTION: The knee must remain in extension once the handle assembly has been inserted.

The ideal entry point on the AP image is on the medial aspect of the lateral tibial spine FIG 15. On lateral image, the point is just anterior to the articular margin, and inline with both the anterior cortex and intramedullary canal FIG 15. This is the most important part of the surgery as poor entry point can lead to intra-articular damage or fracture malreduction.

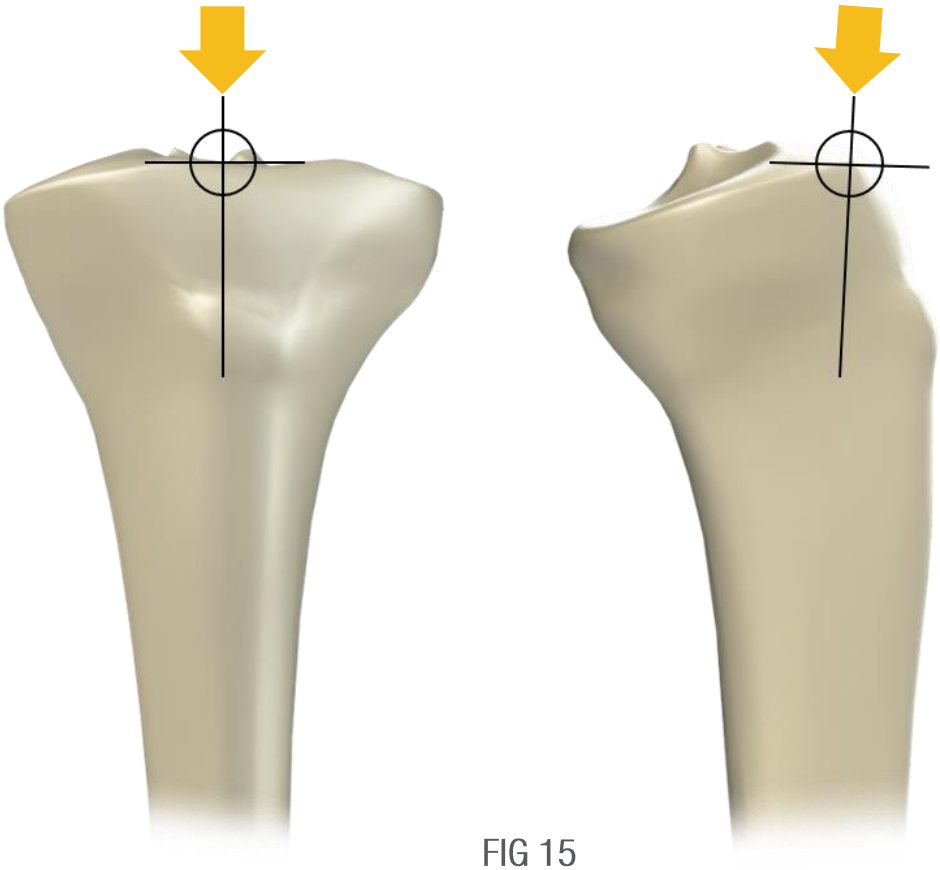


FIG 15

PIN PLACEMENT

Place a 3.2mm Guide Pin (32-400P) through the Guide Pin Entry Trocar (01-IMSE05) and advance to the anterior surface of the tibia FIG 16. Slight adjustment of the knee flexion will provide the ideal starting location for the Guide Pin (32-400P), which is verified on both the A/P and Lateral views. Drive the pin through the starting point into the center of the intramedullary canal.

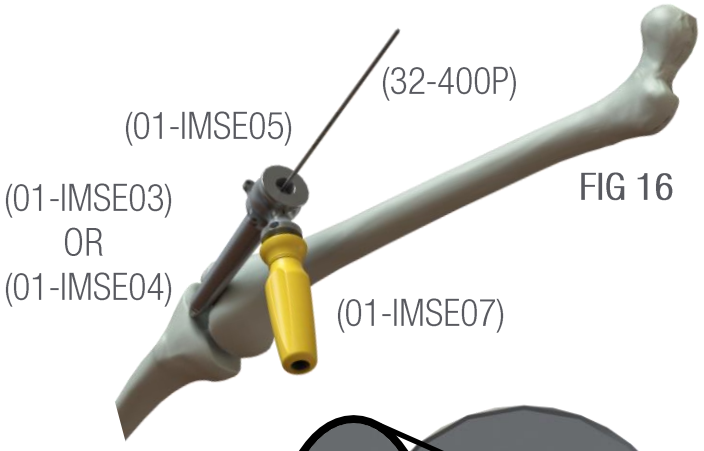


FIG 16

The Guide Pin Adjustment Trocar (01-IMSE06) can be utilized if adjustment to the initial Guide Pin placement is needed FIG 17. Keeping the Entry Cannula (01-IMSE03 or 01-IMSE04) locked to the Entry Handle (01-IMSE07) , partially pull back the trigger to disengage Entry Trocar (01-IMSE05) and replace it with the Adjustment Trocar (01-IMSE06). Slide the proximal end of the first Pin through the center hole and advance it into the assembly until it locks. Rotate it to the desired position and insert a second Pin. After placement of the second Pin, the initial Pin and Adjustment Trocar can be removed.

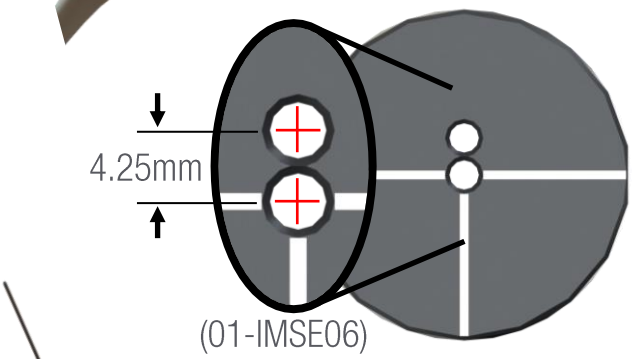


FIG 17

Option A:

Remove the Entry Trocar (01-IMSE05) and ensure the Tapered Cannula (01-IMSE03) is seated on the surface of the Tibia. Use two 3.2mm Guide Pins (32-400P) to anchor the Cannula to the femoral condyles, preventing it from backing out and off the tibia during subsequent steps FIG 18.

Option B:

Remove Entry Trocar (01-IMSE05) and proceed with proximal reaming through the Straight Cannula (01-IMSE04).

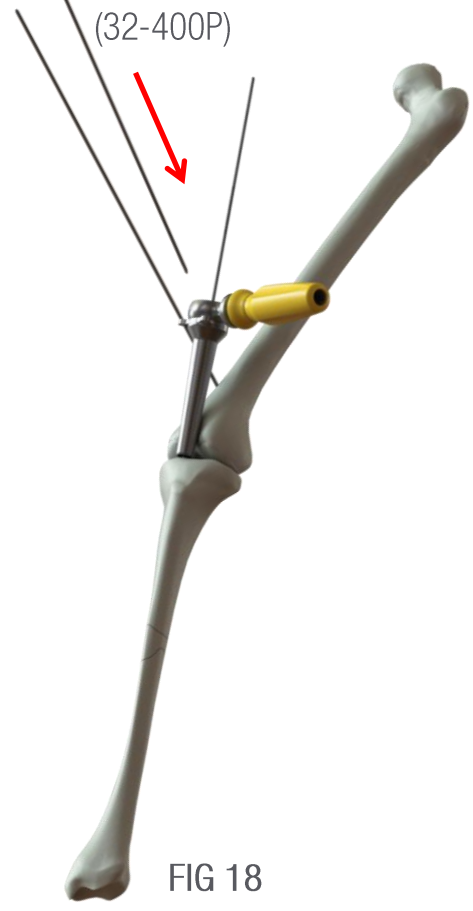


FIG 18

ENTRY PORTAL

Once the Trocar is removed, the entry portal can be made by the Curved Entry Awl (01-IM01) or the Proximal 12.5mm Entry Reamer (01-IM06) passed over the Guide Pin (32-400P) and through the Entry Cannula (01-IMSE03 or 01-IMSE04) FIG 19.

CAUTION: The Curved Entry Awl cannot be inserted through the Straight Entry Cannula.

Care should be taken to direct Reamer or Awl into medullary canal to avoid posterior penetration. After checking position via radiographic imaging, remove the 12.5mm Entry Reamer (01-IM06) and Guide Pin. If using the Tapered Cannula, the Entry Handle can also be removed.

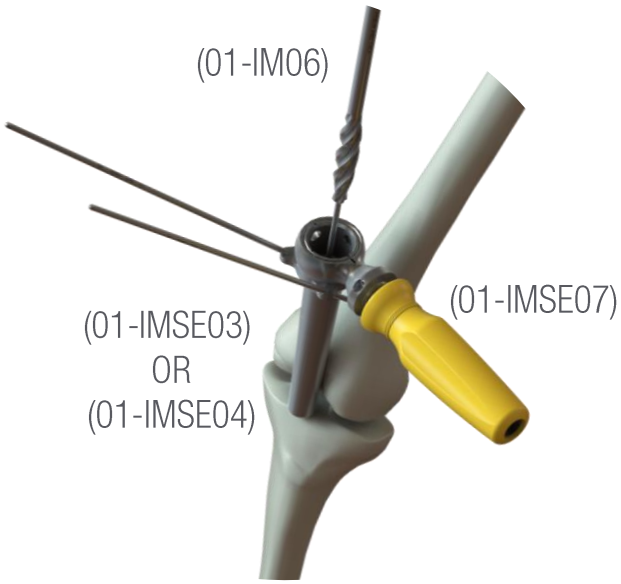


FIG 19

PREPARATION OF MEDULLARY CANAL

The Ball Tip Guide Rod (GW03-1000-S) is then attached to the Guide Rod Gripper (01-IM07). The Guide Rod is passed through the Entry Cannula into the medullary canal and across the fracture site into a center-center position in the ankle in FIG 20. A slight bend can be placed in the Guide Rod to aid in passage and positioning. This should be confirmed on both AP and Lateral fluoroscopic images to ensure correct placement. If needed, the Reduction Tool (01-IM52) can be utilized to facilitate Guide Rod passage beyond the fracture site.

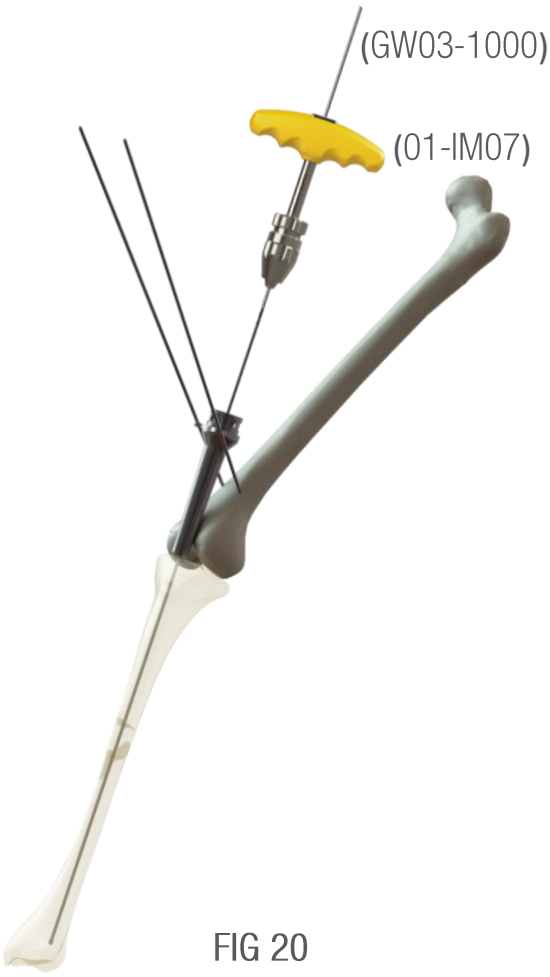


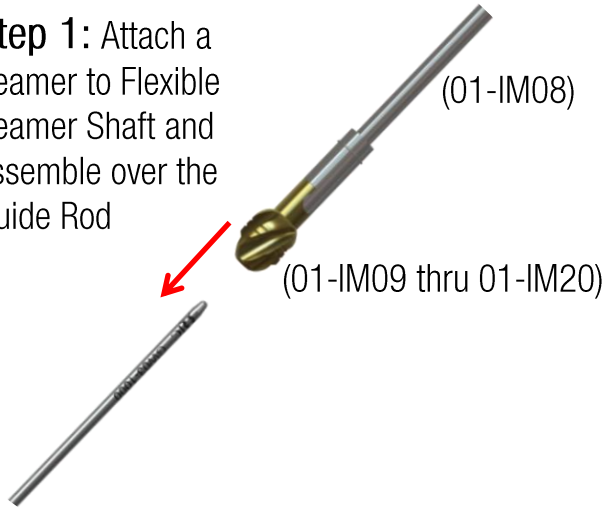
FIG 20

Surgical Technique: Suprapatellar Approach

Reaming – Reamers (01-IM09 thru 01-IM20) are then utilized with the Flexible Reamer Shaft (01-IM08) and the Reamer Shaft Extension (01-IMSE08), starting with the 9mm end-cutting and increasing in 0.5mm increments. The canal should be reamed 1.5mm above the diameter of the nail **FIG 21**. The Obturator (01-IM56) can be utilized to maintain Guide Rod placement during reaming.

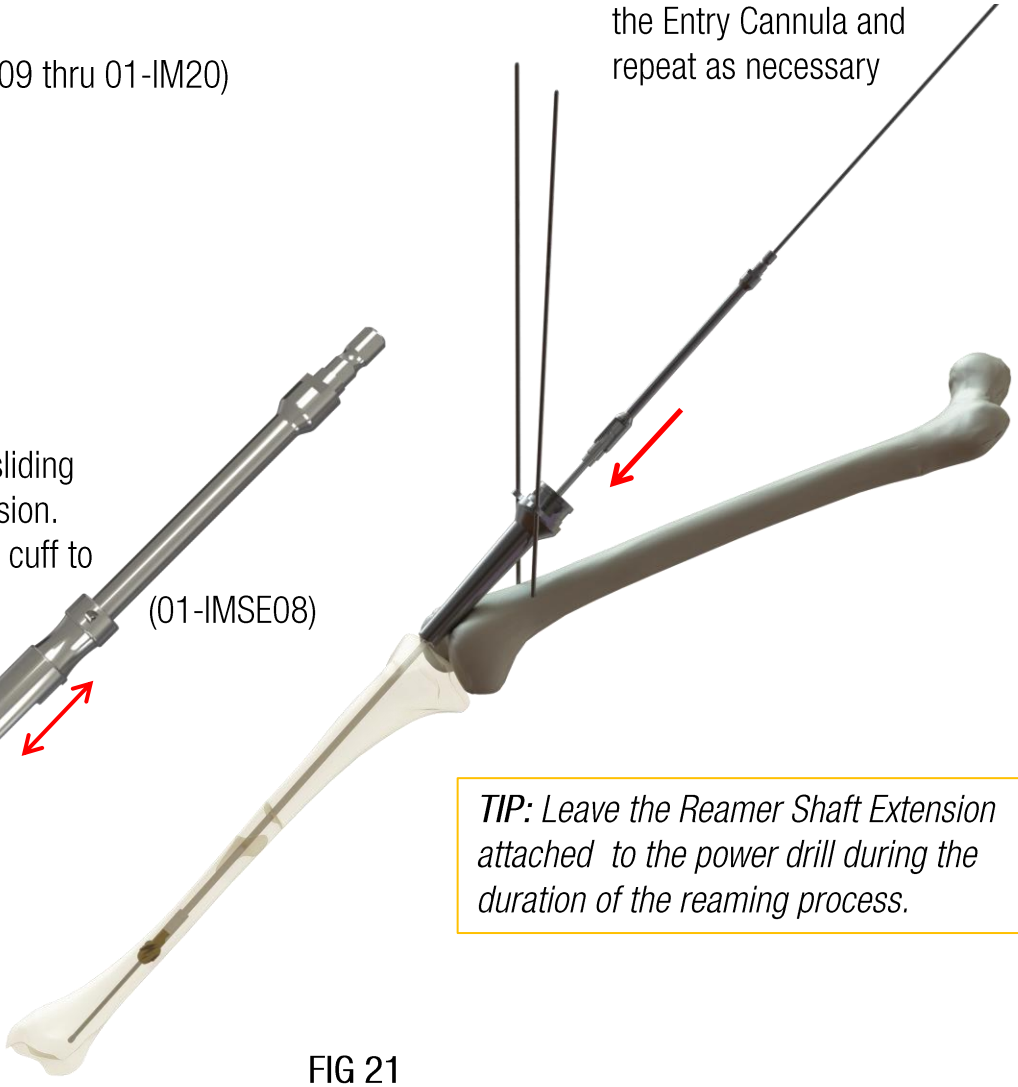
CAUTION: 13mm (01-IM17) is the largest reamer Ø that can be passed through the Entry Cannulas.

Step 1: Attach a Reamer to Flexible Reamer Shaft and assemble over the Guide Rod



Step 2: Attach Reamer Shaft Extension to Reamer Shaft by sliding cuff up on Reamer Shaft Extension. Insert Reamer Shaft and return cuff to original position. Continue the assembly over the Guide Rod

Step 3: Ream through the Entry Cannula and repeat as necessary



TIP: Leave the Reamer Shaft Extension attached to the power drill during the duration of the reaming process.

FIG 21

NAIL MEASUREMENT

Measuring the nail length can be done pre- or post-reaming. If measuring post-reaming, care should be taken ensure that the Nail Depth gauge is not inside the entry hole for an accurate reading, which can be verified under fluoroscopy. The Nail Depth gauge (01-IM02) is utilized to determine the appropriate nail length off the scribed mark on The Guide Rod, as seen in FIG 22. The gauge is passed over the Guide Rod, through the Entry Cannula and up to the cortex. The appropriate nail length is chosen to the nearest 20mm increment of sizes available.

CAUTION: An excessively long nail can lead to intra-articular hardware and a short nail can increase the possibility of periprosthetic fracture.

ASSEMBLING THE TIBIA HANDLE TO THE NAIL

To ensure proper nail orientation, align the "A" on the nail with the "A" on the Extended Tibia Guide Handle (01-IMSE01). Attach the selected nail by securing it with the Extended Tibia Nail Guide Bolt (01-IMSE02) and tightening it with the Guide Bolt Driver (01-IM29). Ensure that the notches fit well, and no cross threading occurs. Using the Slotted Mallet (01-IM31) as a wrench, attach the Impactor (01-IM30) to the Extended Guide Handle FIG 23.

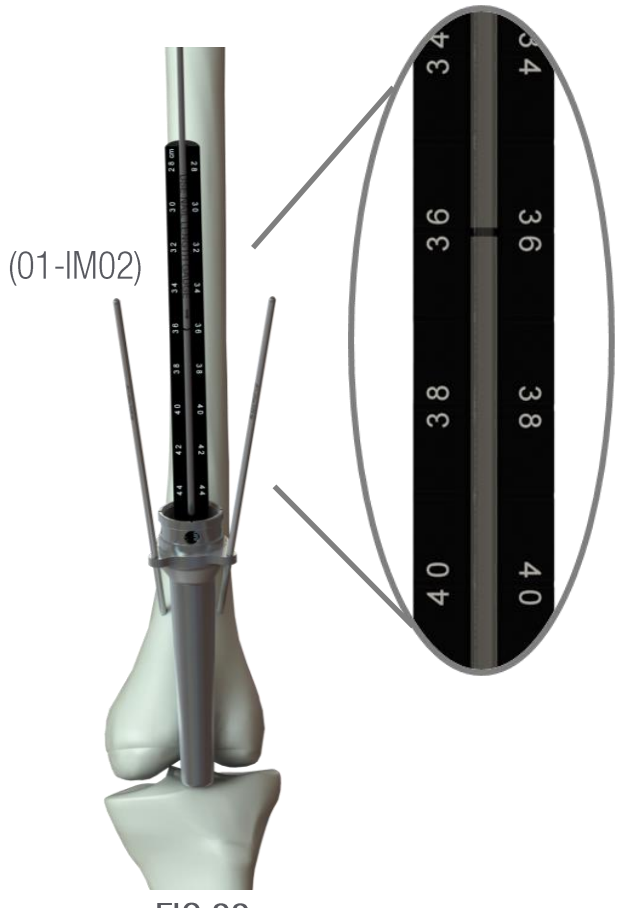


FIG 22

FIG 23

NAIL INSERTION

Option A:

Introduce the Extended Tibia Guide Handle and nail assembly over the Ball Tip Guide Rod and through the Tapered Cannula.

Option B:

Remove the Straight Entry Cannula and Cannula Handle. Introduce the assembled nail and Tibia Guide Handle over the Ball Tip Guide Rod and carefully advance the nail through the joint.

The nail should be inserted by hand into the proximal tibia. It can then be advanced with the Slotted Mallet (01-IM31), hitting only on the metal Impactor (01-IM30). Additional reaming of the intramedullary canal may be indicated if excessive force is required to insert the nail. Monitor the progression of the nail down the canal, especially as the nail is passing through or near the fracture site FIG 24.

Ideal nail depth is to the level of the physeal scar. If malreduction occurs, blocking or poller screws can be used according to standard techniques. Proximally, care should be taken to ensure that the nail is not proud and sunk at least 2mm below the chondral surface. If compression or dynamic locking is desired, it is recommended to countersink the nail to avoid implant prominence.

Remove the Ball Tip Guide Rod.

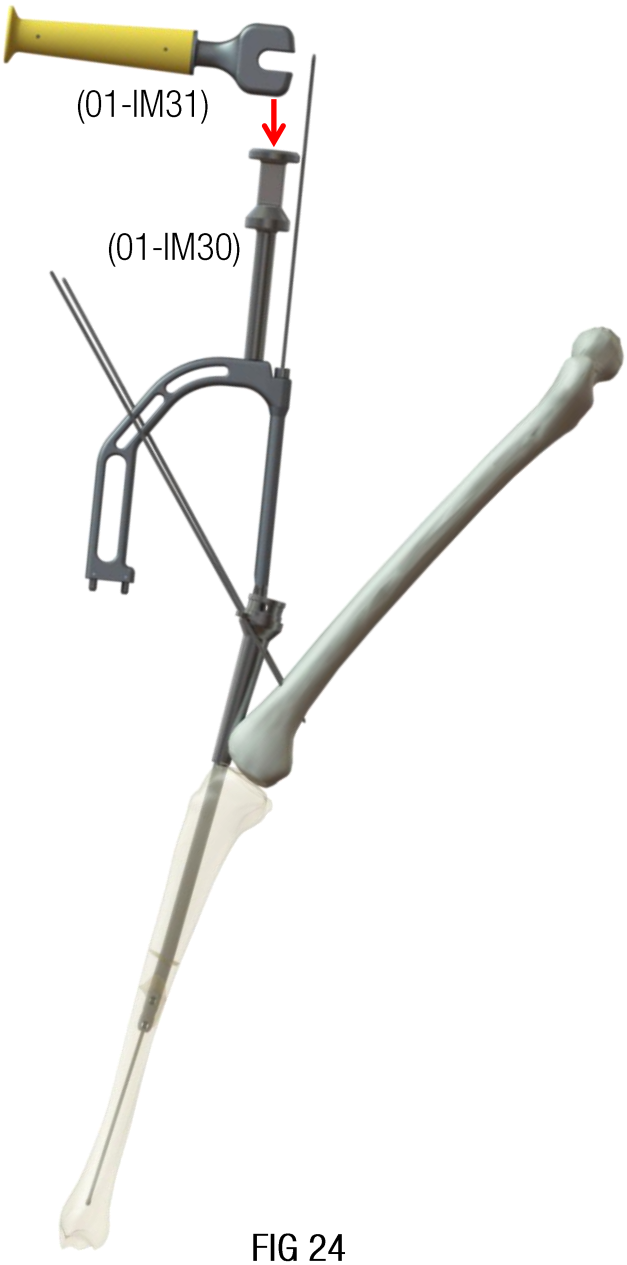


FIG 24

PROXIMAL CROSS LOCK SCREW INSERTION

Once nail has been inserted to the desired depth, remove the Impactor and attach the Proximal Targeting Guide (01-IM28) to the Extended Guide Handle FIG 25. Three proximal options are available and can be used at the surgeon's discretion.

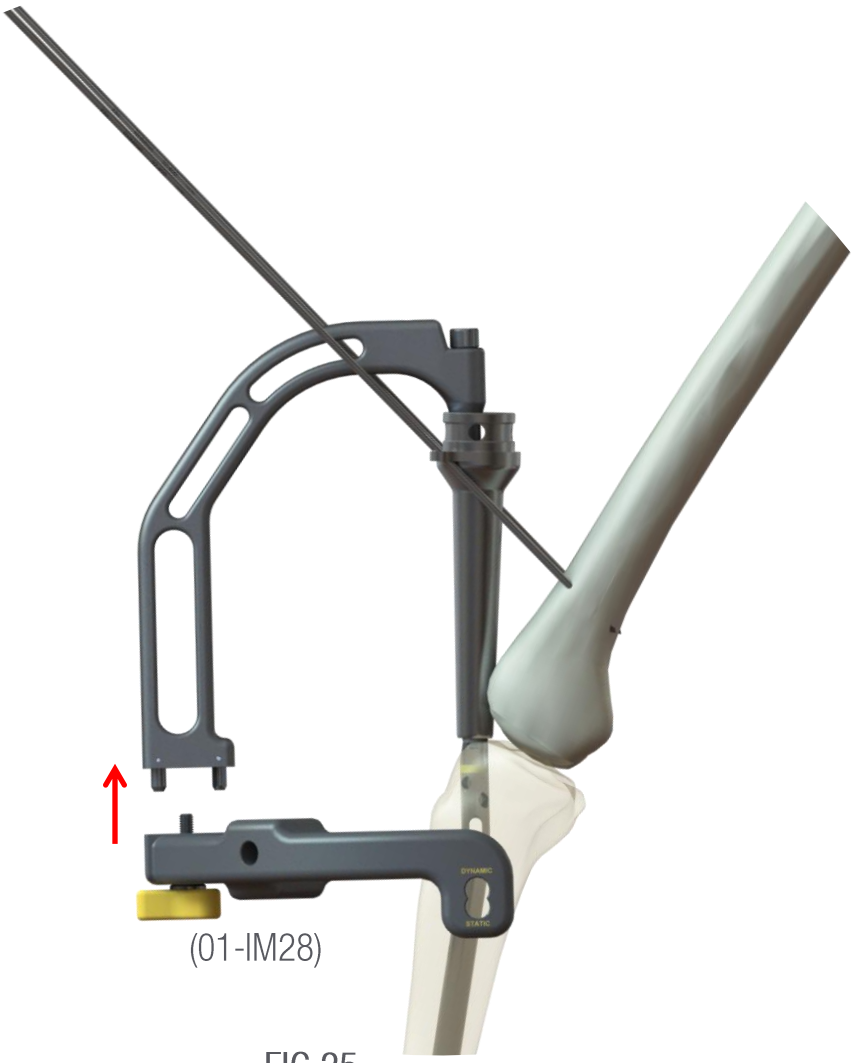


FIG 25

Each screw can be placed using the Tissue Protection Sleeve (01-IM32), the Drill Sleeve (01-IM34) and the Trocar (01-IM33). Once the assembly is advanced to the bone through a small incision, the Trocar is removed. The drill is placed through the Drill Sleeve and the screw length measured off the Long Calibrated Drill Bit (DR42-330C). Alternatively, the Depth Gauge (01-IM51) can be used to measure screw length. The Drill Sleeve is then removed, and the correctly sized Cross Lock Screw is inserted through the Tissue Protection Sleeve using the AO Connect Handle (01-IM49) and the 3.5mm Long Hex Driver (01-IM37).

Surgical Technique: Distal Screw Insertion

DISTAL CROSS LOCK SCREW INSERTION

Distal cross locking is recommended for all fracture patterns. The OIC Tibia Nail has several distal screw locking options. One, two or three screws can be used based on surgeon preference and must be inserted utilizing the free hand technique. The most important step in this process is to ensure accurate position of the image intensifier so that “perfect circles” are visualized prior to drilling. The screw hole is drilled with the Short 4.2mm Drill Bit (DR42-155) and screw length measured with the Depth Gauge (01-IM51) FIG 26. The appropriate screw can then be inserted using the AO Connect Handle and Short 3.5mm Hex Driver (01-IM50) FIG 27.

Once all hardware is in place, the Targeting Guide is removed with the Guide Bolt Driver and layered wound closure is performed FIG 28 .

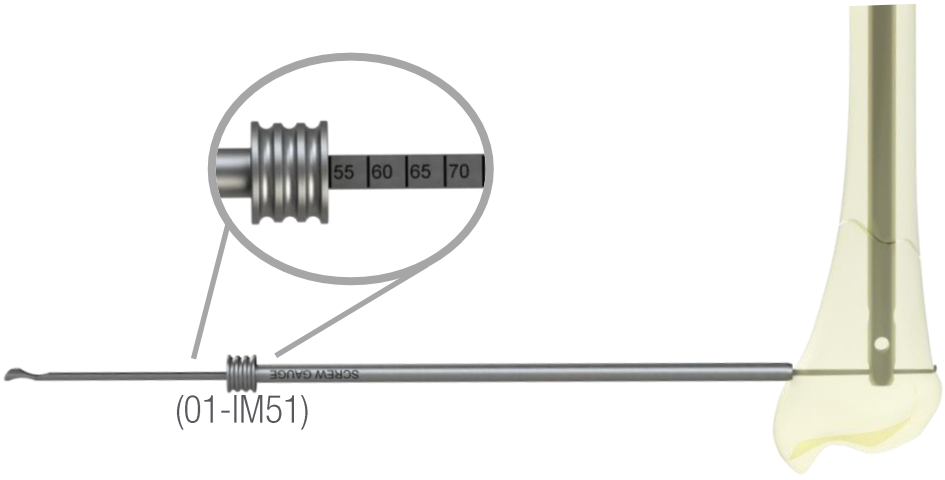


FIG 26

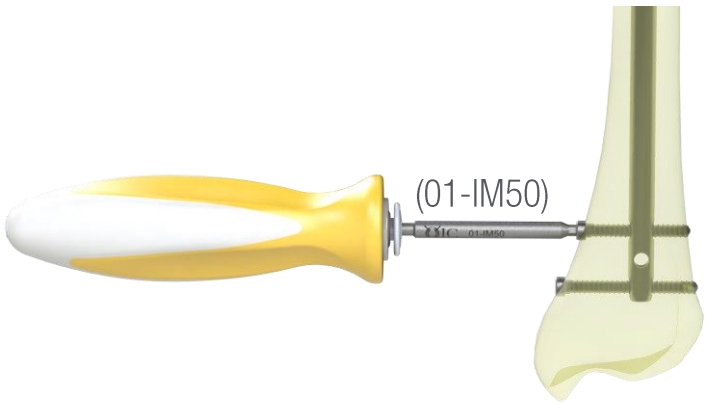


FIG 27

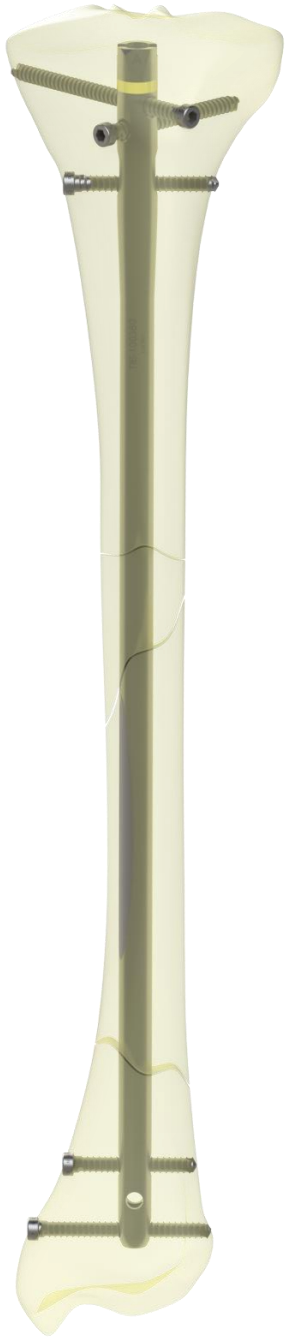


FIG 28

Surgical Technique: Distal Screw Insertion

NAIL EXTRACTION

At times nail extraction is indicated and can be accomplished via previous incisions. Remove the distal and proximal cross lock screw(s). If bony overgrowth has occurred, this should be removed with a curette or through osteotomes.

Insert the Tibia Nail Extraction Bolt (01-IM48) into the proximal end of the nail FIG 29. Once solid connection has been established, screw the Impactor to the Extraction Bolt and remove the with the Slotted Mallet FIG 30. If more back-slapping distance is needed to remove the nail, the Long Impactor (01-IM58) can be utilized.

NOTE: The Long Impactor is in the OIC Nail Extraction Set.

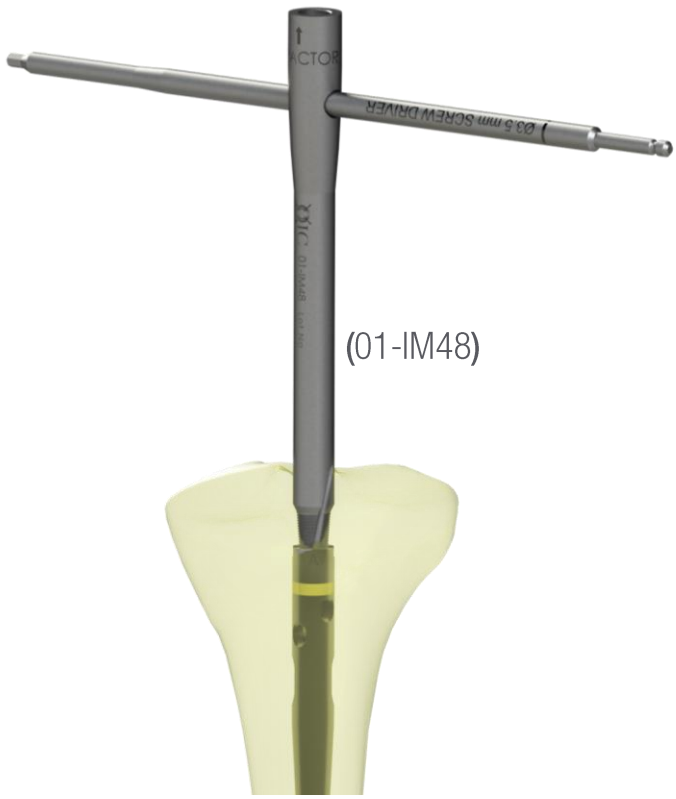


FIG 29

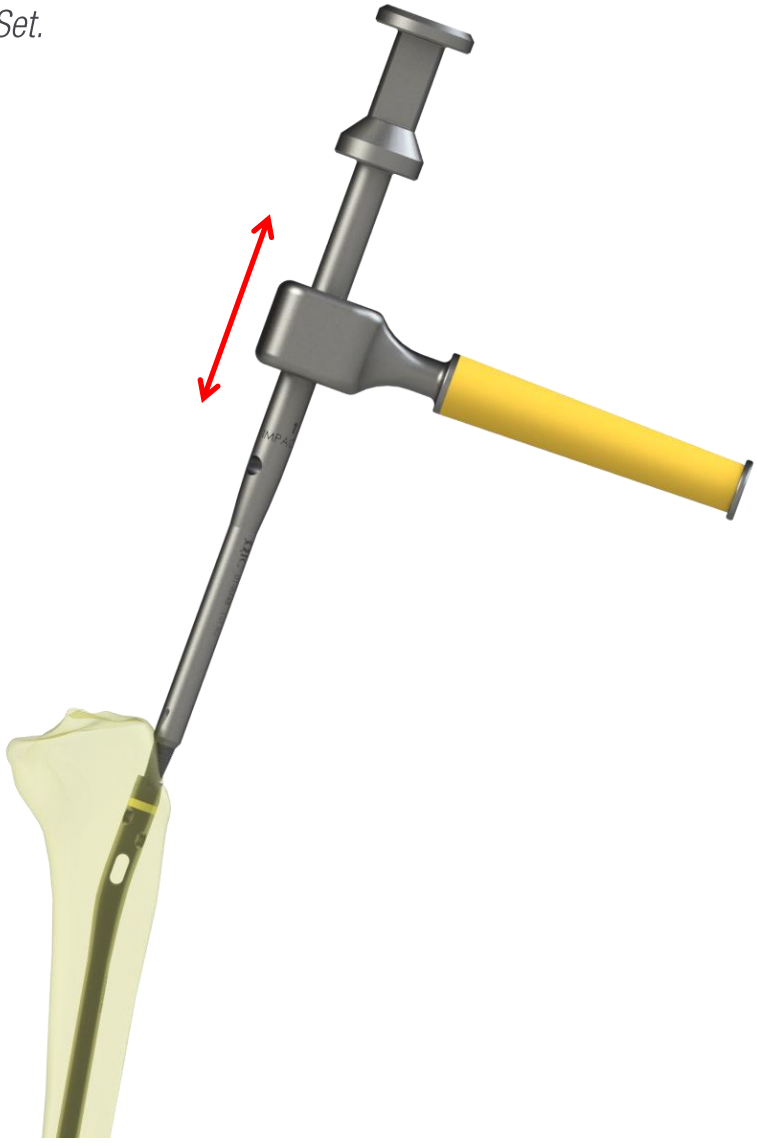
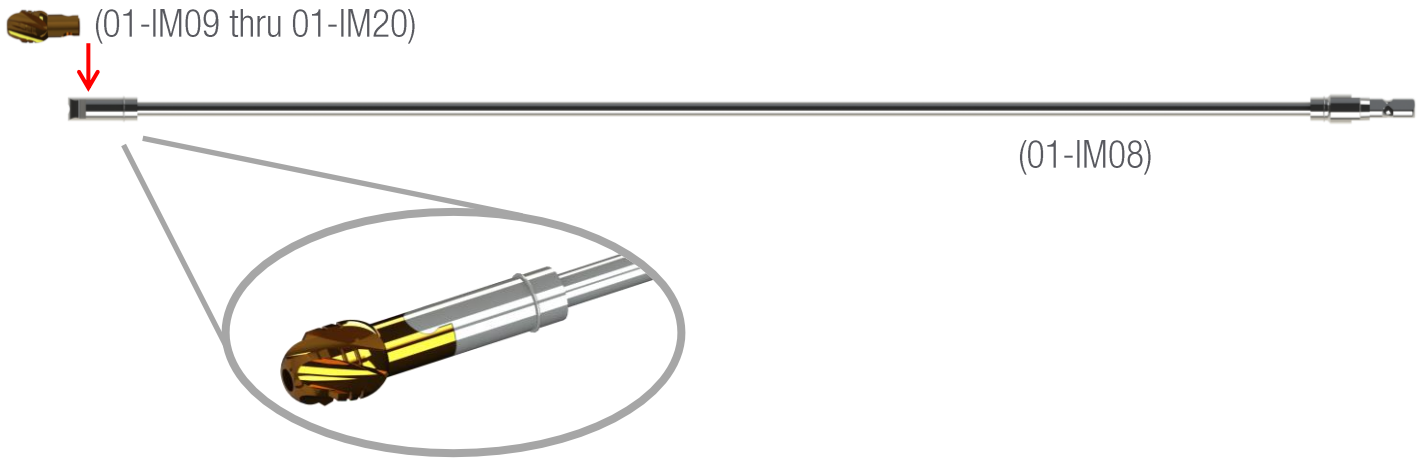


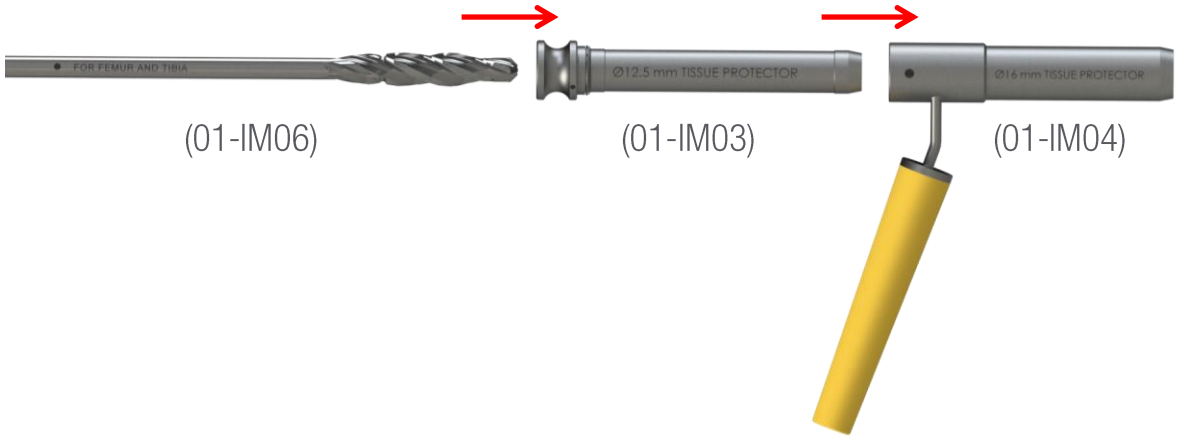
FIG 30

Assembly and Disassembly

FLEXIBLE REAMER SHAFT ASSEMBLY



ENTRY REAMER TISSUE PROTECTOR ASSEMBLY

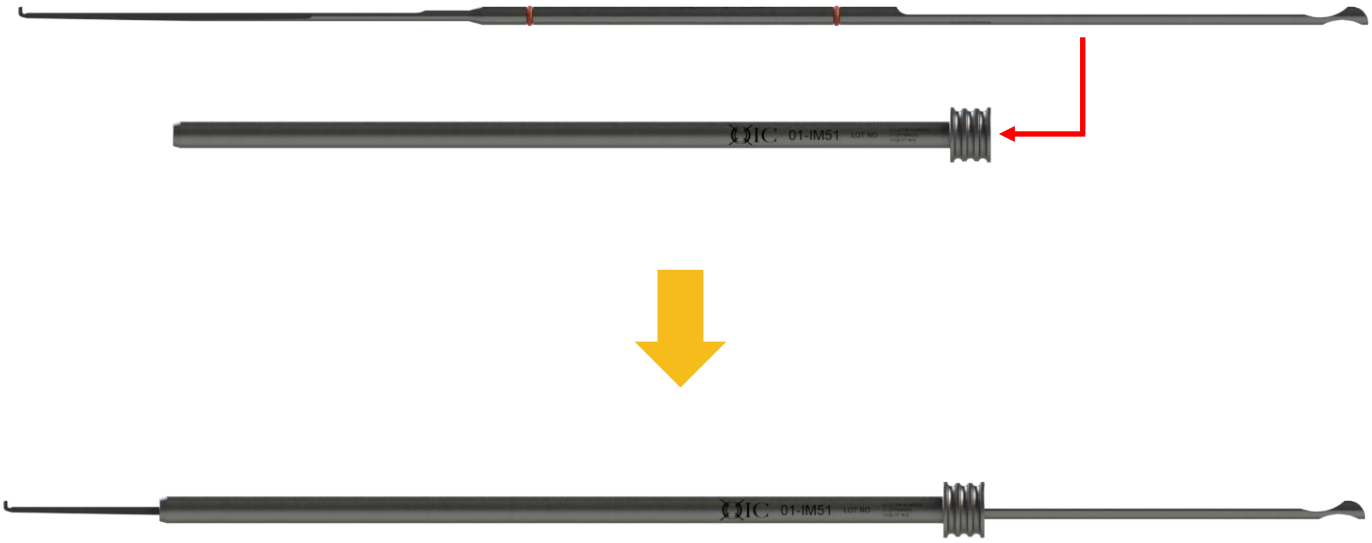


Assembly and Disassembly

DRILL TISSUE PROTECTOR ASSEMBLY

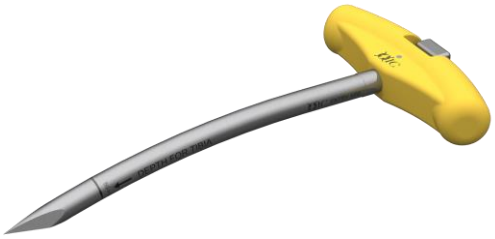
(01-IM33) (01-IM34) (01-IM32)

01-IM51: SCREW GAUGE



REUSABLE INSTRUMENTS

Catalog Information

01-IM01	Curved Awl	
01-IM02	Nail Length Gauge	
01-IM03	16mm Tissue Protector	
01-IM04	12.5mm Tissue Protector	
01-IM06	12.5mm Proximal Reamer	
01-IM07	Guide Rod Gripper	
01-IM08	Flexible Reamer Shaft	
01-IM09 THRU 01-IM20	Reamer Heads	

REUSABLE INSTRUMENTS (Cont.)

Catalog Information

01-IM26	Tibia Guide Bolt	
01-IM27	Tibia Handle	
01-IM28	Tibia Drop	
01-IM29	Guide Bolt Driver	
01-IM30	Impactor	
01-IM31	Slotted Mallet	
01-IM32	Tissue Protector Sleeve	
01-IM33	Sleeve Trocar	
01-IM34	Drill Sleeve	

REUSABLE INSTRUMENTS (Cont.)

Catalog Information

01-IM37	3.5mm Long Screw Driver	
01-IM48	Tibia Nail Extraction Bolt	
01-IM49	AO Connect Handle	
01-IM50	3.5mm Short Screw Driver	
01-IM51	Screw Gauge	
01-IM56	Obturator	
01-IM58	Long Impactor	 (Located in OIC Extraction Set)

SEMI-EXTENDED SPECIFIC INSTRUMENTS

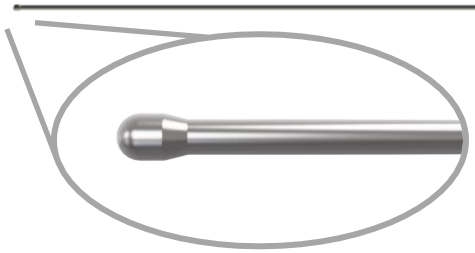
Catalog Information

01-IMSE01	Extended Tibia Guide Handle	
01-IMSE02	Extended Tibia Guide Bolt	
01-IMSE03	Tapered Entry Cannula	
01-IMSE04	Straight Entry Cannula	
01-IMSE05	Guide Pin Entry Trocar	
01-IMSE06	Guide Pin Adjustment Trocar	
01-IMSE07	Entry Cannula Handle	
01-IMSE08	Reamer Shaft Extension	

DISPOSABLE INSTRUMENTS

Catalog Information

32-400P	Guide Pin
DR42-330C	Long Calibrated Drill Bit
DR42-200	Short Drill Bit
GW03-1000-S	Ball Tip Guide Rod (sold separately)



IMPLANTS

TIBIA NAILS

PART #	DIAMETER X LENGTH	PART #	DIAMETER X LENGTH	PART #	DIAMETER X LENGTH
TIB-090280	9mm x 280mm	TIB-100300	10mm x 300mm	TIB-115300	11.5mm x 300mm
TIB-090300	9mm x 300mm	TIB-100310	10mm x 310mm	TIB-110310	11.5mm x 310mm
TIB-090310	9mm x 310mm	TIB-100320	10mm x 320mm	TIB-115320	11.5mm x 320mm
TIB-090320	9mm x 320mm	TIB-100330	10mm x 330mm	TIB-110330	11.5mm x 330mm
TIB-090330	9mm x 330mm	TIB-100340	10mm x 340mm	TIB-115340	11.5mm x 340mm
TIB-090340	9mm x 340mm	TIB-100350	10mm x 350mm	TIB-110350	11.5mm x 350mm
TIB-090350	9mm x 350mm	TIB-100360	10mm x 360mm	TIB-115360	11.5mm x 360mm
TIB-090360	9mm x 360mm	TIB-100380	10mm x 380mm	TIB-115380	11.5mm x 380mm
TIB-090380	9mm x 380mm	TIB-100400	10mm x 400mm	TIB-115400	11.5mm x 400mm
TIB-090400	9mm x 400mm	TIB-100420	10mm x 420mm	TIB-115420	11.5mm x 420mm
TIB-090420	9mm x 420mm				

IMPLANTS

Catalog Information

CROSS LOCK SCREWS			
PART #	SHAFT DIA x LENGTH	PART #	SHAFT DIA x LENGTH
NLB-5025	5mm x 25mm	NLB-5055	5mm x 55mm
NLB-5027	5mm x 27.5mm	NLB-5060	5mm x 60mm
NLB-5030	5mm x 30mm	NLB-5065	5mm x 65mm
NLB-5032	5mm x 32.5mm	NLB-5070	5mm x 70mm
NLB-5035	5mm x 35mm	NLB-5075	5mm x 75mm
NLB-5037	5mm x 37.5mm	NLB-5080	5mm x 80mm
NLB-5040	5mm x 40mm	NLB-5085	5mm x 85mm
NLB-5042	5mm x 42.5mm	NLB-5090	5mm x 90mm
NLB-5045	5mm x 45mm	NLB-5095	5mm x 95mm
NLB-5047	5mm x 47.5mm	NLB-50100	5mm x 100mm
NLB-5050	5mm x 50mm		

CAUTION: FEDERAL LAW RESTRICTS THIS DEVICE TO SALE BY OR ON THE ORDER OF A PHYSICIAN

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