stryker

Inbone® II Total Ankle System

Operative technique

Disclaimer

This publication sets forth detailed recommended procedures for using Stryker devices and instruments. It offers guidance that you should heed, but, as with any such technical guide, each surgeon must consider the particular needs of each patient and make appropriate adjustments when and as required.

Important

The patient should be advised that the device cannot and does not replicate a normal healthy bone, that the device can break or become damaged as a result of strenuous activity or trauma and that the device has a finite expected service life.

- Removal or revision of the device may be required sometime in the future.
- Cleaning and sterilization information is provided in the applicable instructions for use.
- Non-sterile devices, including implants and instruments, must be cleaned and sterilized prior to use, in accordance with validated methods.
- Devices that are able to be disassembled should be disassembled prior to point-of-use processing.
- Additionally, devices with movable components that do not facilitate disassembly should be manually articulated during the point-of-use processing step in order to evacuate additional soils.
- Please remember that the compatibility of different product systems has not been tested unless specified otherwise in the product labeling.
- Consult Instructions for Use (www.ifu.stryker.com) for a complete list of potential adverse effects and adverse events, contraindications, warnings and precautions.
- The surgeon must advise patients of surgical risks, and make them aware of adverse effects and alternative treatments.
- An implant whose packaging is open or damaged or whose expiration date has passed must not be used. Every precaution must be taken to ensure sterility when opening the packaging of the implant and during implantation.

Surgeon design team

The Inbone II Total Ankle System was developed in conjunction with:

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Inbone II

Total Ankle System

Contents

Proper surgical procedures and techniques are the responsibility of the medical professional. The following guidelines are furnished for information purposes only. Each surgeon must evaluate the appropriateness of the procedures based on his or her personal medical training and experience. Prior to use of the system, the surgeon should refer to the product package inserts (145283) for complete warnings, precautions, indications, contraindications and adverse effects. Package inserts are also available by contacting the manufacturer. Contact information can be found on the back of this operative technique and the package insert is available on the website listed: wmt.com, under the link for prescribing information.

Please contact your local Stryker representative for product availability.

Product information

Inbone total ankle product information

General product information

Through the advancement of partial and total joint replacement, the surgeon has been provided with a means of restoring mobility, correcting deformity, and reducing pain for many patients. While the prostheses used are largely successful in attaining these goals, it must be recognized that they are manufactured from a variety of materials and that any joint replacement system, therefore, cannot be expected to withstand activity levels and loads as would normal healthy bone. In addition, the system, including the implant/bone interface, will not be as strong, reliable, or durable as a natural human joint.

Ankle joint replacement components consist of a talar dome, a talar stem that attaches to the talar dome with a morse taper, a tibial platform, a four-component tibial stem assembly that attaches to the tibial platform with a morse taper, and an UHMWPE component. Components are available in a variety of sizes and design configurations intended for both primary and revision applications.

In using joint prostheses, the surgeon should be aware of the following:

- The correct selection of the prosthesis is extremely important. The potential for success in joint replacement is increased by selection of the proper size, shape, and design of the prosthesis. Joint prostheses require careful seating and adequate bone support. Surgeons are encouraged to use their best medical judgment when choosing the proper implant size regardless of the endosteal area of the bone. Surgeons must be familiar with the applicable operative techniques and instructions for use for each implant system.
- In selecting patients for total joint replacements, the following factors can be critical to the eventual success of the procedure.

1. Patient's weight. An overweight or obese patient can produce high loads on the prosthesis, which can lead to failure of the prosthesis. This becomes a major consideration when the patient is small boned and a small size prosthesis must be used.
2. Patient's occupation or activity. If the patient is involved in an occupation or activity, which includes substantial walking, running, lifting, or muscle strain, the resultant forces can cause failure of the fixation or the device, or both. The prosthesis will not restore function to the level expected with normal healthy bone, and the patient should not have unrealistic functional expectations.
3. Condition of senility, mental illness, or alcoholism. These conditions, among others, may cause the patient to ignore certain necessary limitations and precautions in the use of the prosthesis, leading to failure or other complications.
4. Foreign body sensitivity. Where material sensitivity is suspected, appropriate tests should be made prior to material selection or implantation.

Product information

Intended use

The Inbone Total Ankle is intended to give a patient limited mobility by reducing pain, restoring alignment and replacing the flexion and extension movement in the ankle joint.

Indications

The Inbone Total Ankle is indicated for patients with ankle joints damaged by severe rheumatoid, post-traumatic, or degenerative arthritis.
The Inbone Total Ankle is additionally indicated for patients with a failed previous ankle surgery.

Contraindications

Contraindications include:

1. Osteomyelitis;
2. Insufficient bone stock or bone quality;
3. Infection at the ankle site or infections at distant sites that could migrate to the ankle;
4. Sepsis;
5. Vascular deficiency in the ankle joint;
6. Skeletally immature patients (patient is less than 21 years of age at the time of surgery);
7. Cases where there is inadequate neuromuscular status (e.g., prior paralysis, fusion and/or inadequate abductor strength), poor skin coverage around the joint which would make the procedure unjustifiable;
8. Neuropathic joints;
9. Excessive loads as caused by activity or patient weight;
10. Patient pregnancy;
11. Severely compromised musculature or neuromuscular function.
12. Uncooperative patient or patient with neurologic disorders, incapable of following instructions.

⚠ WARNING

The licensed healthcare professional should be qualified by appropriate training methods (for example, relevant surgical residency programs).

⚠ WARNING

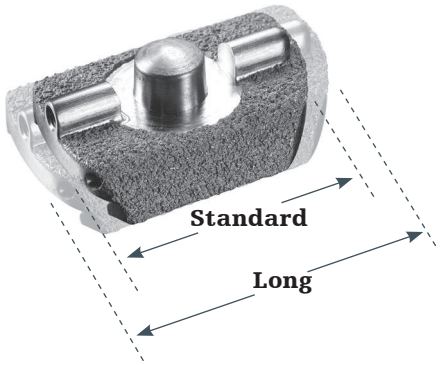
The surgeon must advise patients of surgical risks, and make them aware of adverse effects and alternative treatments.

⚠ WARNING

This device is not intended for subtalar joint fusion or subtalar joint impingement. Please carefully evaluate the anatomy of each patient before implantation.
High levels of activity may increase the risk of adverse events. Surgeons should carefully consider the advisability of ankle replacement in patients with metabolic disorders or pharmacological treatments that impair bone formation or with conditions that may impede wound healing (e.g., end stage diabetes or malnutrition).

Prior to use of the system, the surgeon should refer to the product package insert for complete warnings, precautions, indications, contraindications and adverse effects. Package inserts are also available by contacting the manufacturer. Contact information can be found on the back of this operative technique and the package insert is available on the website listed.

Introduction



Inbone II Total Ankle System

The Inbone II Total Ankle System is the next step in the evolution of the successful Inbone Total Ankle product line. The new system retains all the important design principles (modular tibial stems, thicker poly bearings, and intramedullary guidance) that make the original Inbone Total Ankle System the most advanced total ankle system on the market while introducing such design enhancements as sulcus articulation, additional talar fixation, AP long tibial trays, trial reduction placement of the talar component, and bone removal instrumentation.

Sulcus articulation

The Inbone II Total Ankle System now provides the option of a sulcus articulating geometry between the talar dome and poly insert bearing surface. The design intent is to achieve a balance between increased stability and natural joint motion. The new sulcus design provides twice the coronal plane stability as the Inbone saddle design and can withstand substantially more shear load than the ankle experiences during natural gait without dislocating, providing greater articular stability to treat deformity without over-constraining the joint.[1,2]

In addition, this improved coronal plane stability allows a more generous resection in the medial and lateral gutters, which may improve ankle motion and limit residual ankle pain.

Additional talar fixation

With the addition of two 4mm anterior pegs, the Inbone II sulcus dome now provides three points of fixation in the talus resulting in increased rotational stability of the talar component.

Long tibial trays

The surgeon can now intra-operatively determine the tibial tray component size independently in both the AP and Lateral plane. This will allow the surgeon to optimize Anterior-Posterior tibial coverage without increasing malleoli resection in the AP plane.

References
1. Stauffer RN, Chao EYS, Brewster RC; “Force and Motion Analysis of the Normal, Diseased, and Prosthetic Ankle Joint”; Clin Orthop Rel Res 1977 Sep(127):189-96.
2. Data on file.

Introduction

Trial reduction and talar dome placement

With the addition of fully articulating poly insert trials and talar dome trials, the final placement of the talar component can be optimized anatomically through full trial reduction following tibial tray implantation. This technique enhancement allows the surgeon to accurately place the talar component consistent with the patient's own individual anatomic variations.

Bone removal instrumentation

Additional instrumentation has been designed to assist in the removal of the resected bone, specifically the difficult to remove posterior tibia.

Talar dome trial

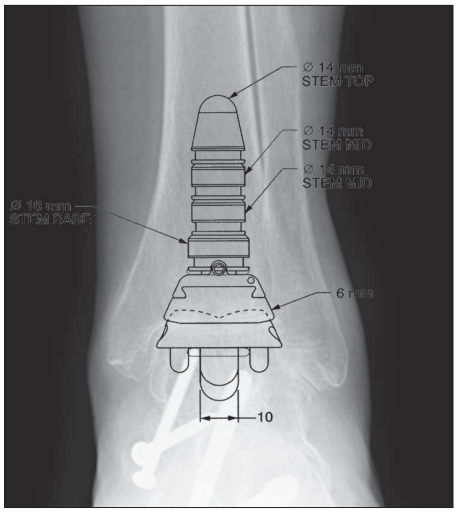
Poly insert trial

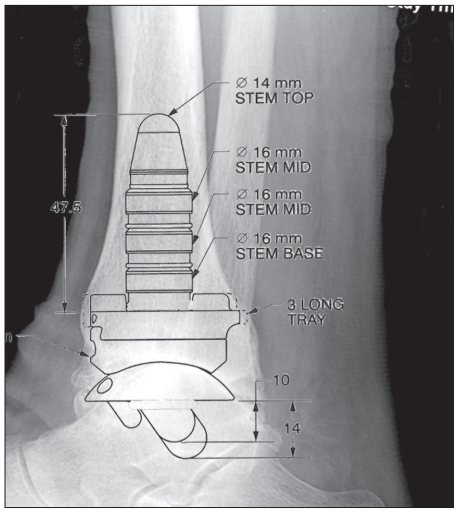
Introduction

Preoperative planning

Preoperative assessment of the appropriate size and position of the tibial and talar components will provide intraoperative guidance for component selection.

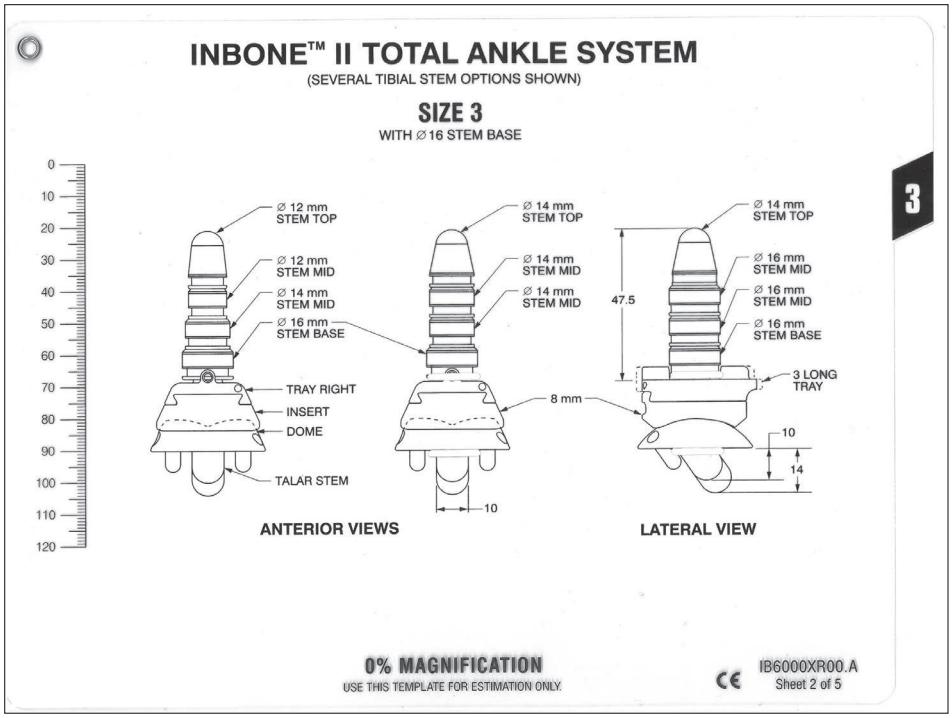
Radiographic overlays for the Inbone II Total Ankle System are available in 0% and 10% magnification, and represent both the AP and lateral profile of the prosthesis.





⚠CAUTION

Preoperative templating is intended for estimation purposes only. Final component size and position should be determined intraoperatively through direct visualization under fluoroscopic assistance.



IB6000XR00 Inbone II Total Ankle X-ray template 0% magnification

IB6000XR10 Inbone II Total Ankle X-ray template 10% magnification

Operative technique

Foot alignment

At the surgeon's discretion, the anterior incision may either be made before the foot is placed into the foot holder, or it may be done after drilling the 6mm pilot hole.

Make the anterior incision approximately 125mm long directly lateral of the tibialis, avoiding the anterior tendons and nerve bundle, exposing the tibia, talus and a portion of the midfoot. Perform any soft tissue/ ligament release if necessary.

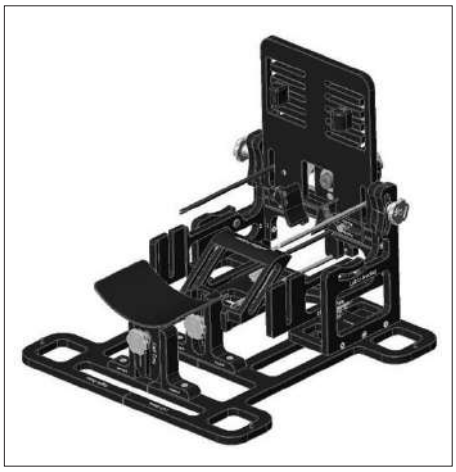
Place the foot in the foot holder with the heel flush against the foot plate.

The initial positioning of the foot requires moving the foot and not the guide rods. Proper initial positioning of the foot will help limit the amount of fluoroscopic adjustment needed.

View at the level of the ML guide rods to ensure that the tibia is parallel to the foot holder. Make appropriate adjustments to the achilles and calf supports to visually position the tibia within the guide rods.

Add padding on both sides of the calf, and secure with stretch gauze wrap (coban). The additional padding on either side of the calf will help prevent tibial movement, which is very important during the drilling operation.

Surgeon may consider a gastroc release or achilles lengthening if patient needs additional dorsiflexion to ensure heel is flat against foot plate.



Foot holder
See chapter 4 for part numbers

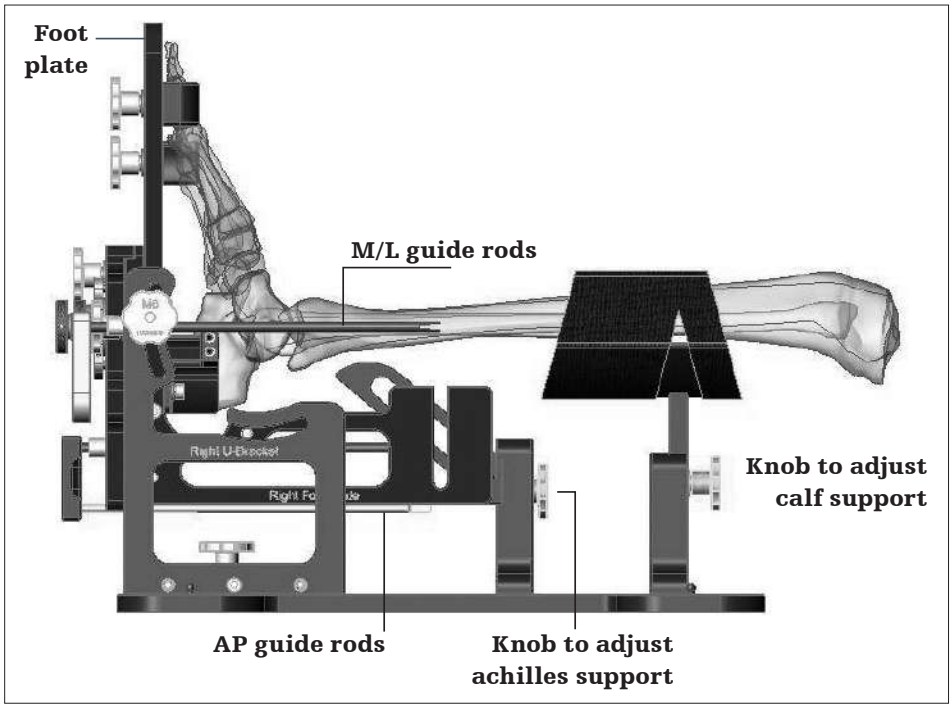


Fig. 1

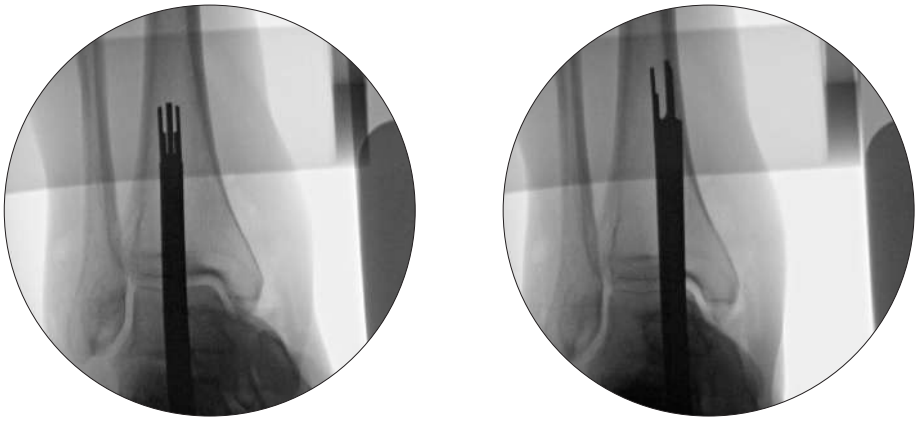
Operative technique

Insert AP rods, and position the C-arm for the AP view. Adjust the C-arm angles until the AP rods are aligned (fig. 2a and 2b). Repeat this rod alignment procedure every time the C-arm or the foot holder is moved in order to establish a valid view. When correctly aligned the guide rods are 6mm in diameter, same as the drill bit.

Do not be concerned at this point if the rod placement in tibia or talus is off-center.
We are only looking for guide rod alignment.

Correct **Incorrect** **Incorrect**

Fig. 2a



Correct **Incorrect**

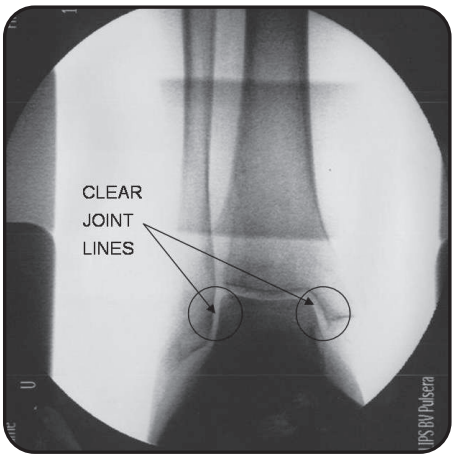
Fig. 2b

Operative technique

With the AP rods correctly aligned adjust the ankle into a mortise view. To obtain the mortise view typically requires rotating the foot with adduction flexion (inwardly) about 10° (figs. 3a and 3b). Adjust the forefoot blocks to secure the forefoot position (fig. 4). Verify correct mortise position with AP fluoro. Secure heel cups and tighten. Wrap the forefoot with stretch gauze (not shown).

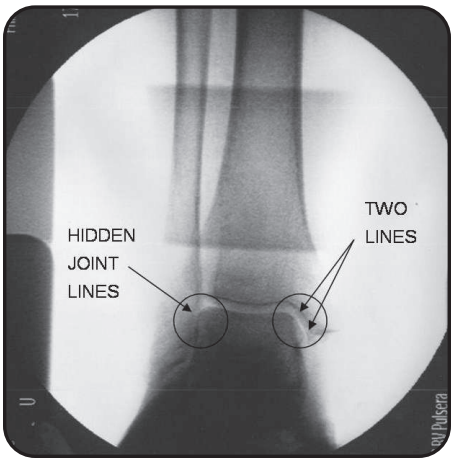
Pin the calcaneus with a 2.4mm steinmann pin (200072) through a heel cup bushing on each side (fig. 5). Using the pin cutter (200427), cut the pins approximately 1.5" long to allow for ML rod clearance.

Please note that at this step the guide rod placement is not necessarily in the center of tibia or talus (fig. 6). In this step we are only concerned with the guide rod alignment and having the mortise view. The guide rod position, relative to the ankle, will be adjusted in the next steps.



Good Mortise View

Fig. 3a



Poor Mortise View

Fig. 3b

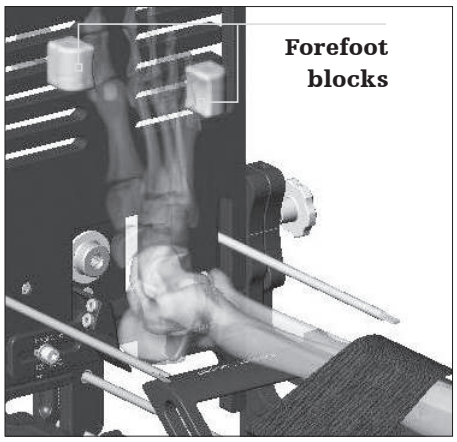


Fig. 4

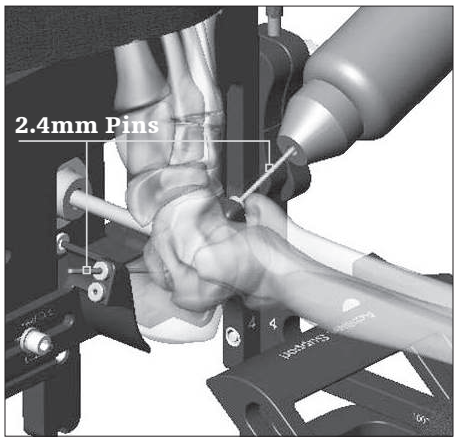


Fig. 5

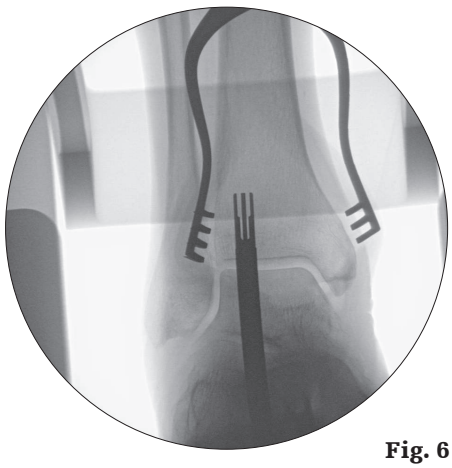


Fig. 6

2.4mm Steinmann pin
200072

Pin cutter
200427

Operative technique

Loosen the ML knob and center the AP rods on the talus via translation of the ML plate (fig. 7a). Verify with fluoro (fig. 7b). Tighten the ML knob.

Loosen the U-bracket knobs and rotate U-bracket until the AP rods are parallel with the centerline of the tibia (figs. 8a and 8b).

Iterations of rotation and translation may be required to reach desired alignment. Verify with fluoro. Tighten the U-bracket knobs.

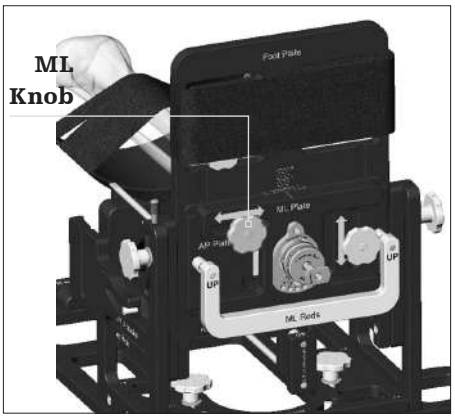


Fig. 7a

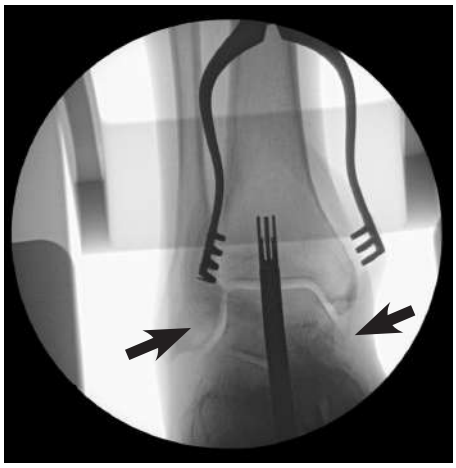


Fig. 7b

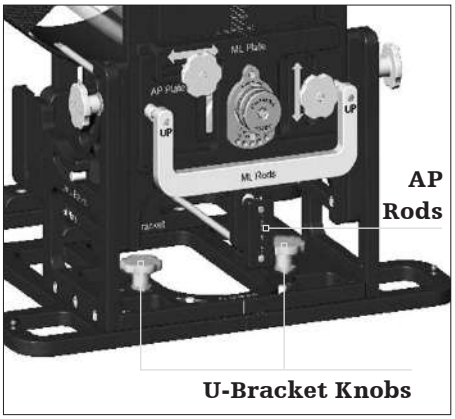


Fig. 8a

Fig. 8b

Operative technique

Rotate the C-arm to a lateral view. Adjust C-arm angles to align the ML guide rods (fig. 9). Check that the joint space is even between the talus and tibia (fig. 10). Re-position the achilles support/ calf tray to adjust the tibia in a proper position, if needed.

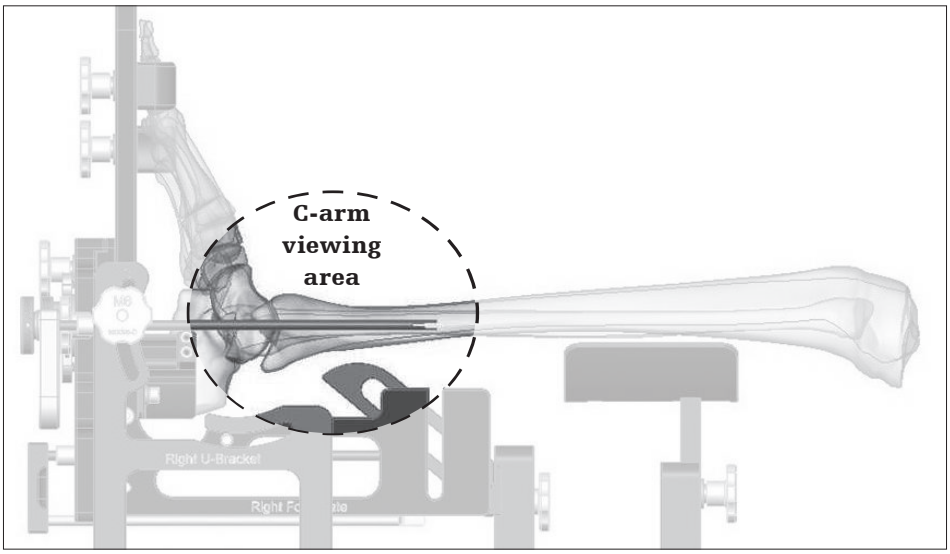


Fig. 9

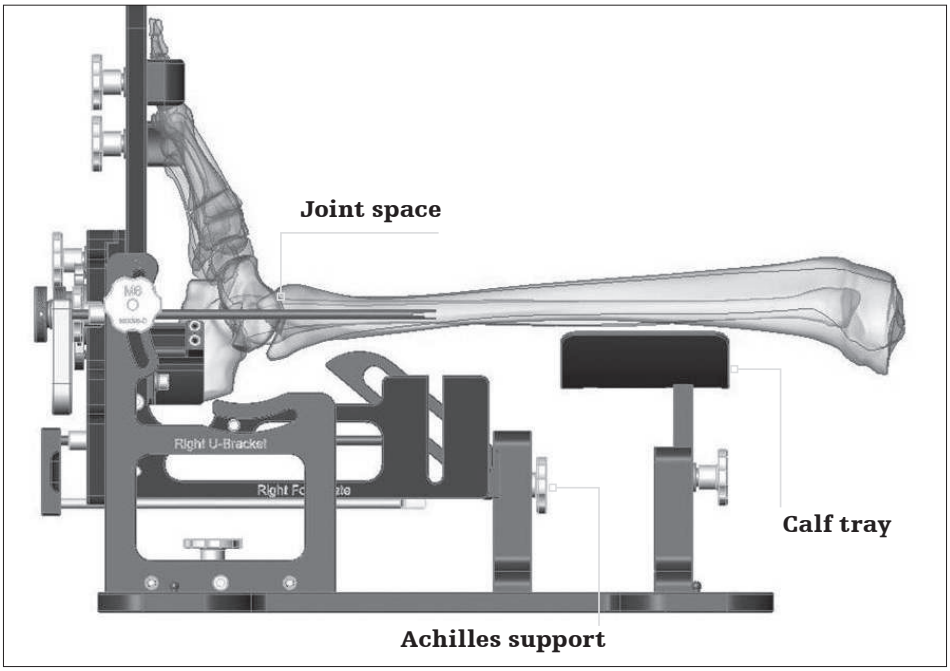


Fig. 10

Operative technique

Loosen the AP knob and center the ML Rods on the talus and tibia (fig. 11a). Verify with fluoro (fig. 11b). Tighten the AP knob.

Loosen the knobs for plantar and dorsiflexion (fig. 12a). Align the ML rods so they are parallel with the centerline of the tibia (fig. 12b). Check with fluoro. Iterations of rotation and translation may be required to reach desired alignment. Tighten the plantar/dorsi knobs. Thread the plantar stop thumb Screw until it contacts the knob.

Rotate C-arm back to the AP view, and align rods. Confirm desired AP alignment. Confirming alignment is very important because adjusting the rotation of the rods moves the foot slightly and may cause misalignment.

NOTICE

The last view should always be the AP view which is more sensitive to misalignment. Stay in AP view to monitor the drilling operation using the fluoro-scan mode (fig. 13).

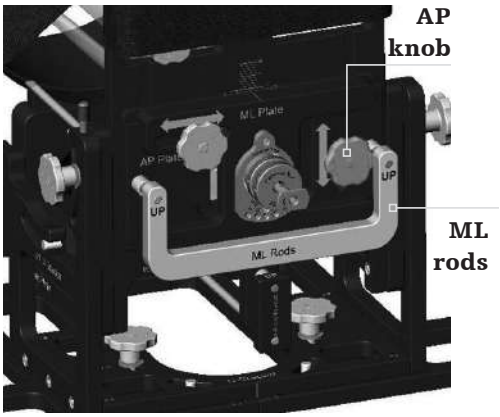


Fig. 11a

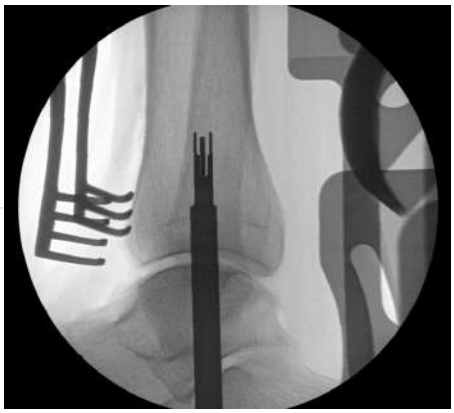


Fig. 11b

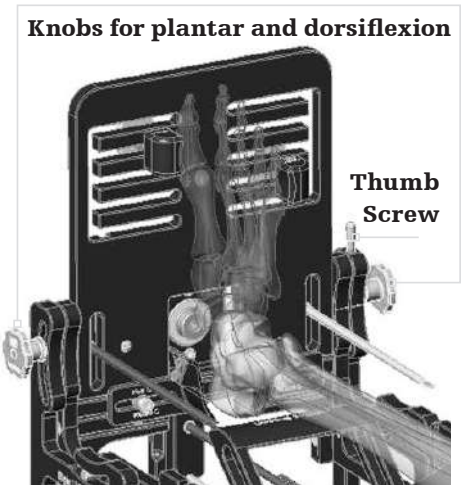


Fig. 12a

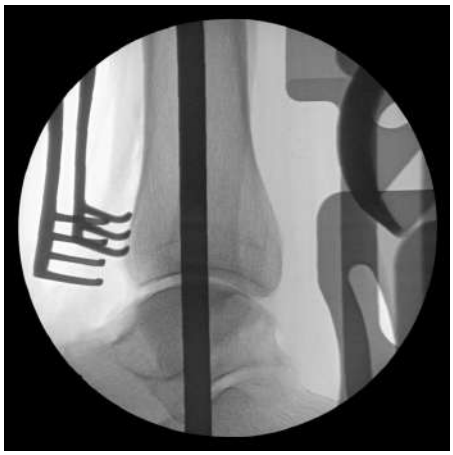


Fig. 12b

Fig. 13

Operative technique

Drill primary hole

Thread the primary bushing (fig. 14). Insert the collet into the ML plate, and lightly screw on the cannula nut. With a skin marker, put ink on the tip of the trocar. Insert the trocar into the cannula and put the tip against the skin to mark the incision point. Remove the primary bushing assembly.

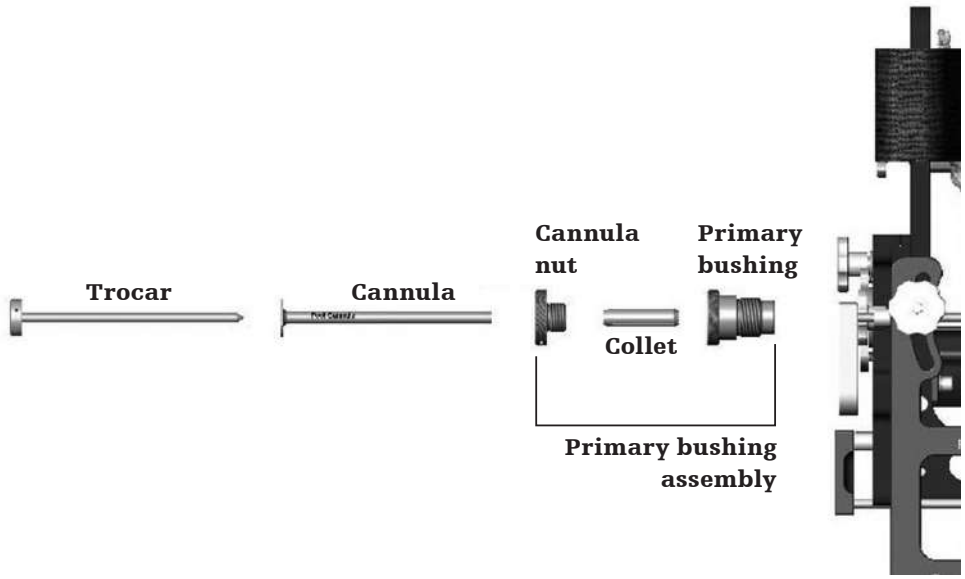


Fig. 14

Primary bushing 200401 | **Collet 200385** | **Cannula nut 20042** | **Cannula 200166** | **Trocar 200099**

Operative technique

Centering on the previously marked spot, insert a #15 scalpel and make a 1cm vertical incision in the bottom of the heel (fig. 15).

NOTICE

The incision will be medial.

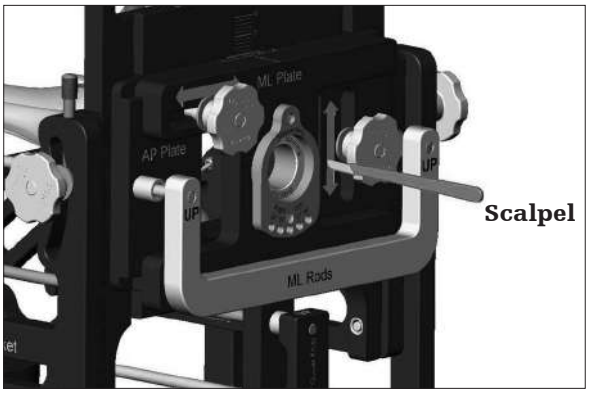


Fig. 15

Thread the primary bushing assembly back into the ML plate (fig. 16). Insert the trocar into the cannula and then insert this assembly into the primary bushing.

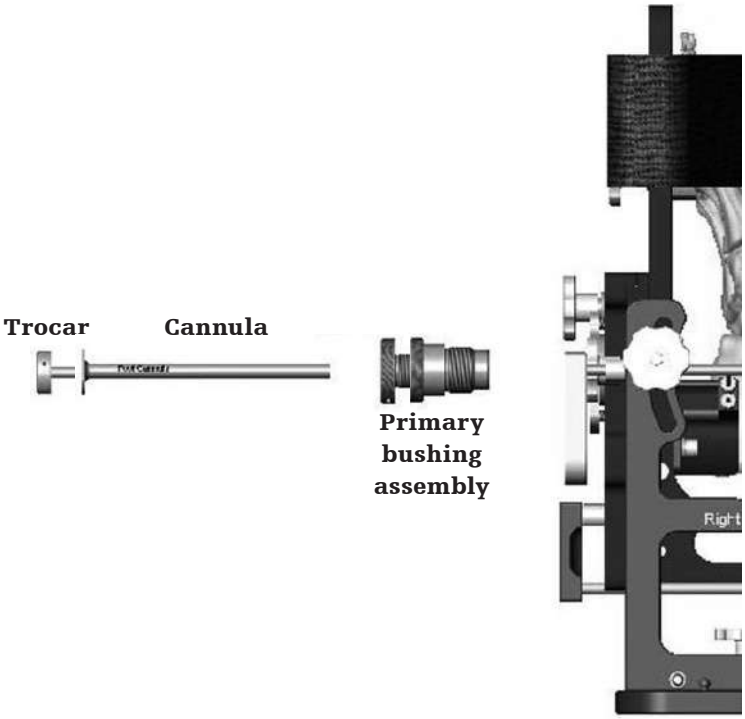


Fig. 16

Operative technique

Push the trocar and the cannula through the soft tissue in the bottom of the foot, rotating the cannula until the assembly lightly contacts the calcaneus. Excessive force between the cannula and the calcaneus may move the foot laterally due to the steep angle of the bone. If this happens, slide the cannula back a half inch, re-align the AP rods, re-install & tighten cannula, and confirm alignment.

Lock the cannula in place with the cannula nut, remove the trocar and verify AP alignment. (fig. 17).

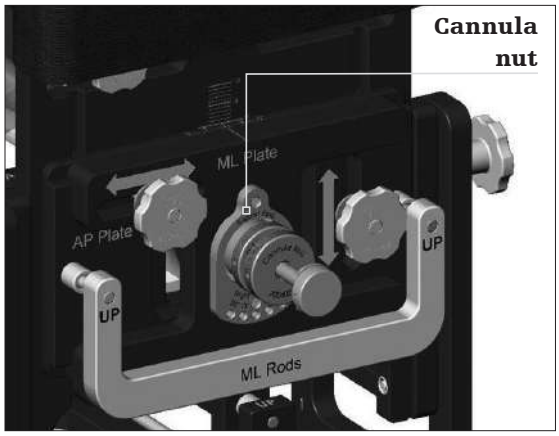


Fig. 17

Operative technique

Insert the 6mm drill bit (200134) into the back of the cannula and advance the drill slowly by peck drilling. This method takes small bites out of the bone and minimizes lateral pressure which can cause the drill to flex and miss the center of the talus.

Using fluoro, verify that the drill follows the path of the rods without veering to either side. In rare cases the drill may veer to the medial side due to the steep angle of the calcaneus. In this rare case only, the drill may be corrected by removing the drill, pulling the bottom foot cannula back ½ inch and re-adjusting the ML plate. Re-insert the bottom foot cannula up to the calcaneus, and again peck drill to correct the hole location.

View the foot in AP live fluoro-mode. With the AP guide rods in the lower portion of the foot, watch that the drill is in line with the Rods (fig.18).

⚠CAUTION

If the drill is off more than 2mm, back out the drill and reposition the rods to correct the alignment. The accuracy of the drilling is critical.

⚠CAUTION

It is important to keep the cannula secure during the duration of the case to protect the soft-tissue and plantar nerve.

Advance the AP rods further up the tibia and again continue to peck drill, ensuring the drill is following the rods (fig. 19).

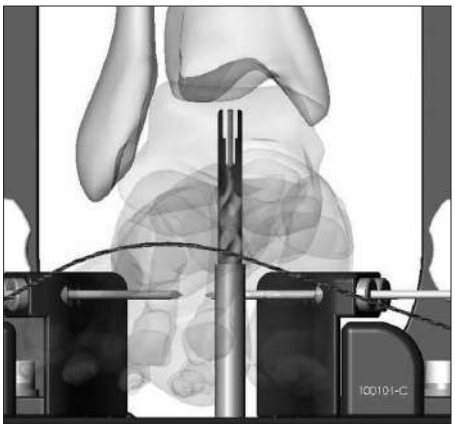


Fig. 18

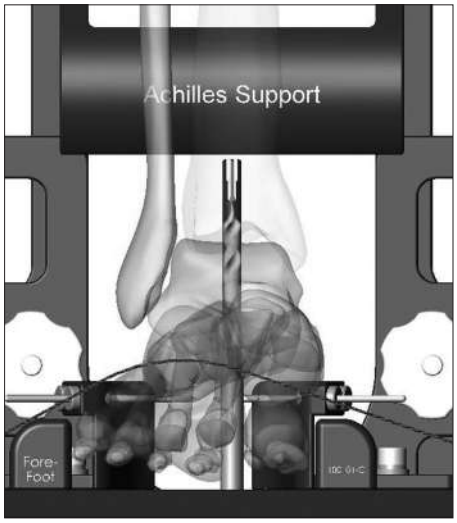


Fig. 19

Once past the cortical bone of the tibia, drill in the intramedullary canal about 5 to 7cm. Leave the drill and cannula in place (fig. 20).

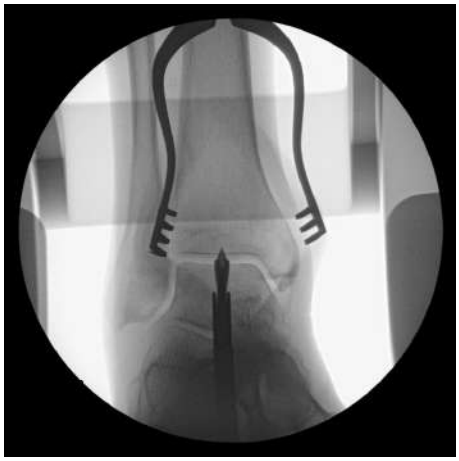


Fig. 20

6mm Drill
200134

Operative technique

Joint space cuts

Install the pre-assembled anterior fixture guide with the appropriate size saw guide (200216002 through 200216006) onto the foot holder, and position the saw guide as close to the ankle as possible. Tighten the knobs (fig. 21).

Check AP rod alignment (pull the drill back to view the AP rods). Once aligned, remove the AP rods (fig. 22).

Using fluoroscopy, center the upper and lower alignment features on the saw guide to ensure it is perpendicular to the drill. A & B in 23a and 23b. Select a saw guide size that does not cut the fibula. This will also preserve much of the medial malleolus. C in 23a and 23b. Save an AP view of correct saw guide size and positioning for later reference of gutter pin placement. Tighten all knobs.

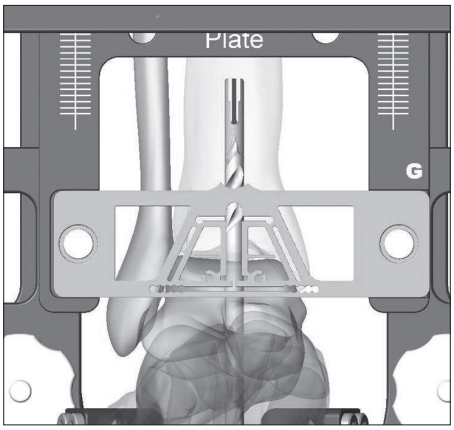


Fig. 21

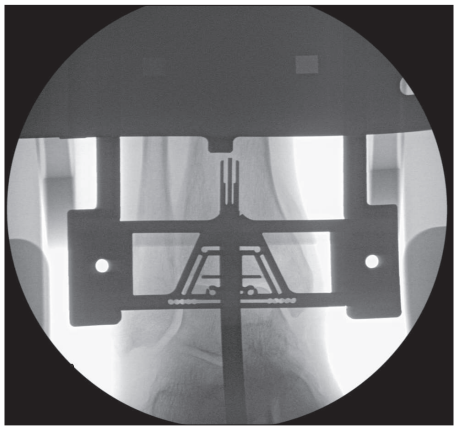


Fig. 22

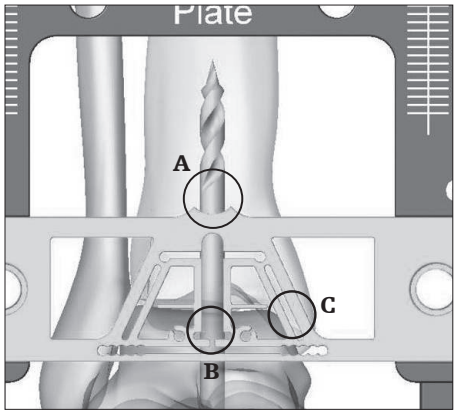


Fig. 23a

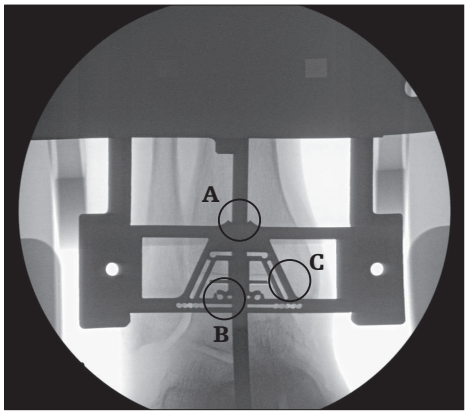
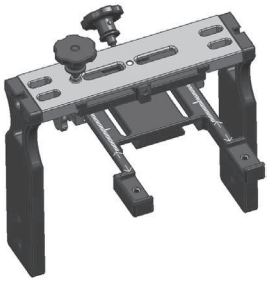
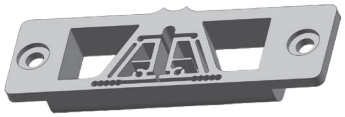


Fig. 23b



(See FA069-109 for assembly instructions)



Saw guide (200216002 through 200216006)

Operative technique

Insert a saw blade into the distal slot and examine the lateral view (figs. 24a and 24b). Position the saw blade to cut the proper amount of talus, approximately 6-8mm for a typical arthritic ankle.

Use two 2.4mm steinmann pins to secure the saw guide to the tibia (top two holes). Secure the talus using the bottom two holes on the sides of the 6mm drill placing the wires bi-cortical in the talus will assist with removal of talus.

Use previously stored AP image to select proper M/L pin holes. In addition to securing the saw guide relative to the bones, the pins act as stops to prevent saw excursion. Insert lateral pin between the talus and fibula. Insert medial pin between talus and medial malleolus. Cut all 6 pins close to the surface of the saw guide.

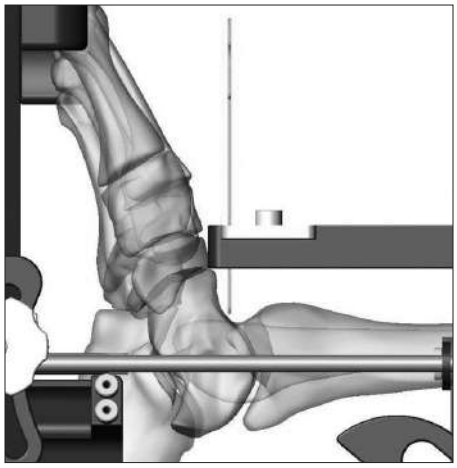
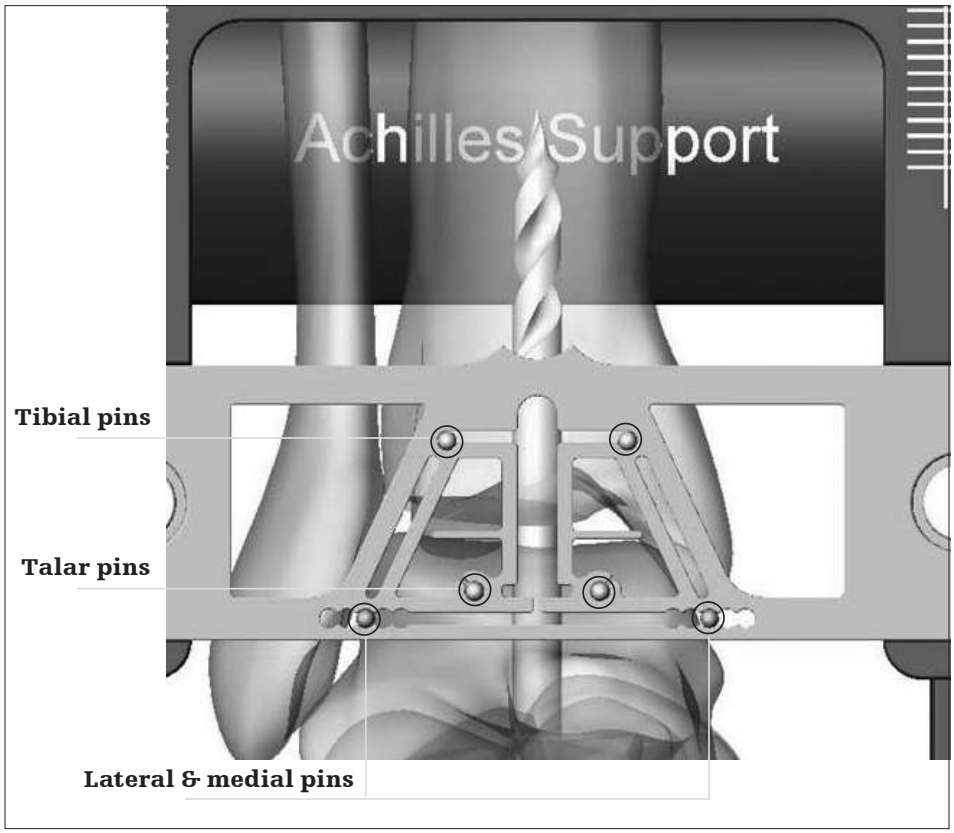


Fig. 24a

Fig. 24b



Operative technique

Install the anti-rotation notch Insert (200290002 through 200290006) into the resection guide (fig. 25). Using the appropriate sized anti-rotation drill (200178002 through 200178006) drill the tibia for the anti-rotation notch (fig. 26).

Be sure to drill bi-cortical.

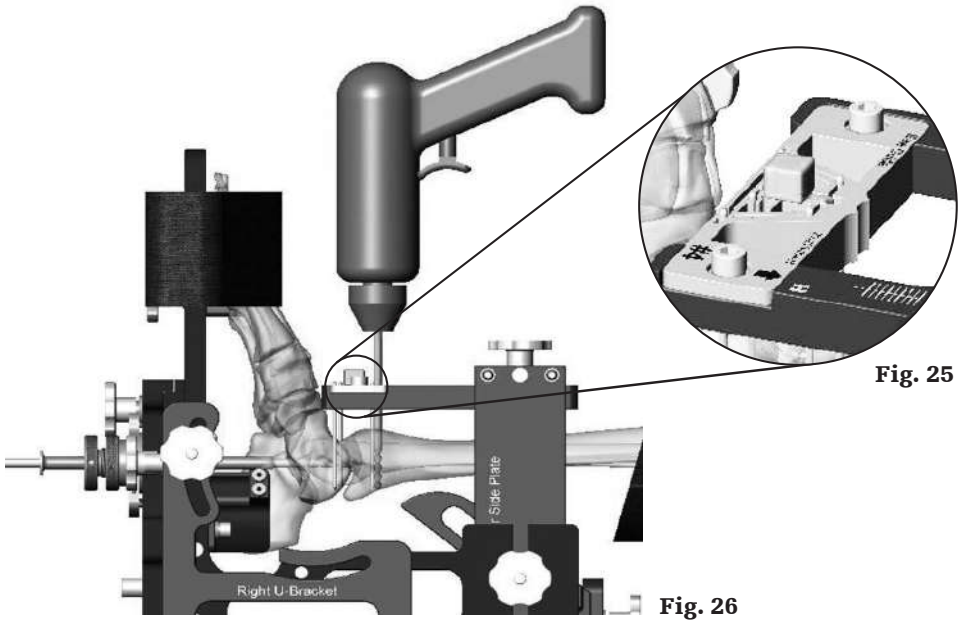


Fig. 25

⚠CAUTION

Surgeon must withdraw the 6mm drill to clear the location of the anti-rotation drill and saw cuts.

Fig. 26

Select the appropriate sized saw blade (200138101S through 200138106S). Two saw blade widths are available. Although wider blades tend to provide more control and cutting accuracy, the narrow blade will be required for the smaller cuts with a size 2 & 3. Make resection through the tibia, talus and medial/lateral slots of the resection guide (figs. 27Aa and 27b). The saw blades must remain parallel to the saw guide during all cuts.

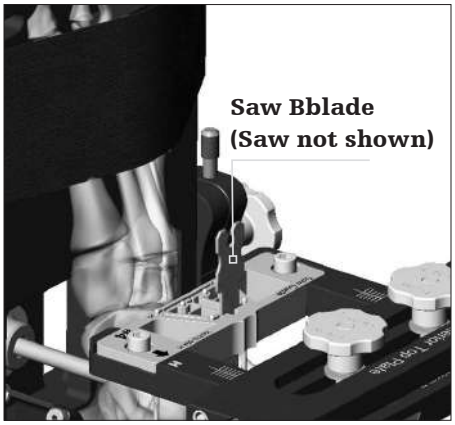


Fig. 27a – Tibia

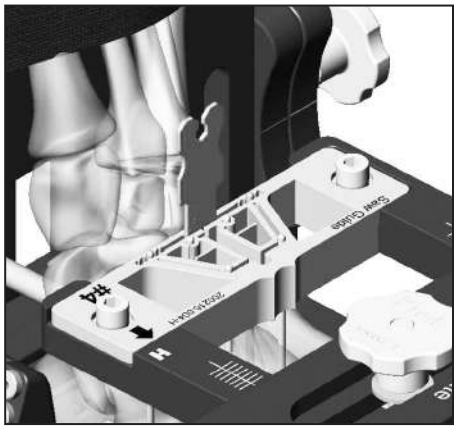


Fig. 27b - Talus

Anti-rotation notch insert
200290002 - 200290006

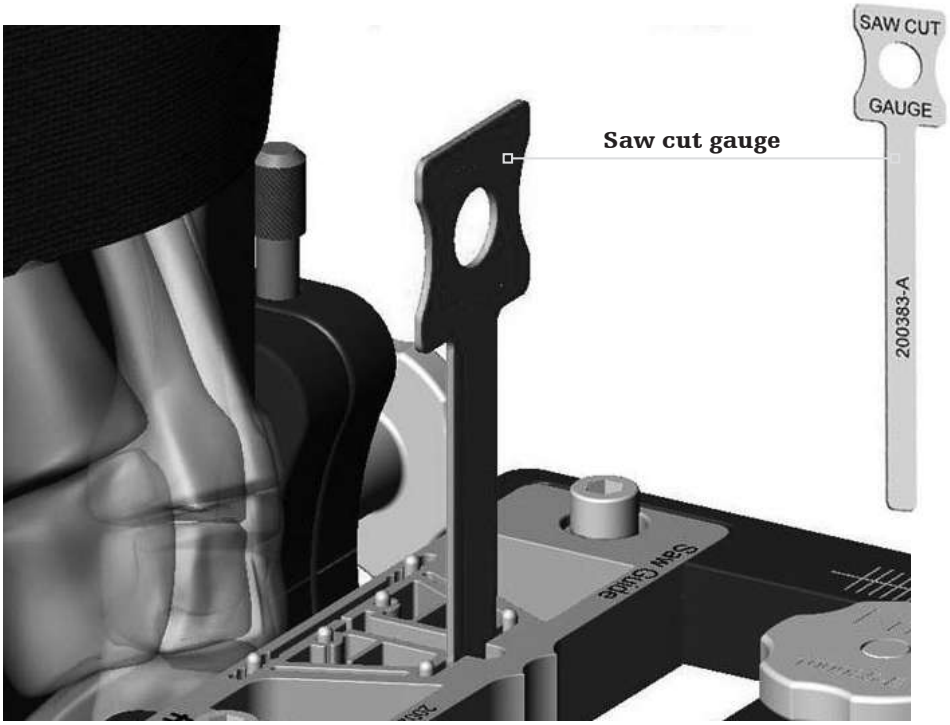
Anti-rotation notch drill
200178002 - 200178006

Saw blades
200138101S - 200138106S

Operative technique

With the saw cut gauge, check that the bone has been cut all the way through. If the saw has reached its maximum depth proceed to the next step. Remove the anterior fixture and saw guide without removing the steinmann pins.

Keep the steinmann pins in the tibia and talus. At the top of the tibial cut, use an osteotome to cut down towards the talus at 60° and remove the anterior section of the tibia (figs. 28a and 28b).



⚠ CAUTION

Illustrations shown without Inbone footholder.

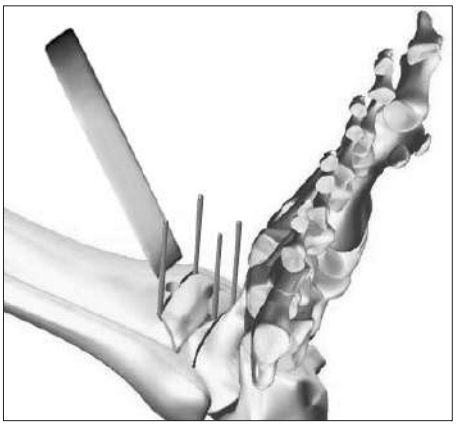


Fig. 28a

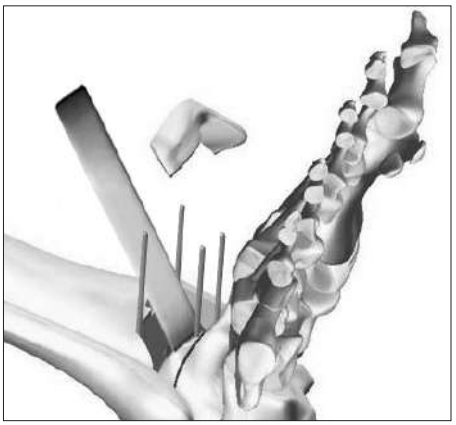


Fig. 28b

Operative technique

Check that your talar resection is complete by using a 1/2 inch osteotome. Complete the cut if necessary and gently lever the resected dome out anteriorly. It can typically be removed in one piece by grabbing the steinmann pins.

To facilitate removal of the remaining posterior tibia, the corner chisel (IB200070) and a mallet can be used to finish off bone cuts in the proximal corners of the resected tibia (figs. 29a and 29b). The corner chisel is laser marked to indicate the anterior to posterior depth of the various size tibial trays.

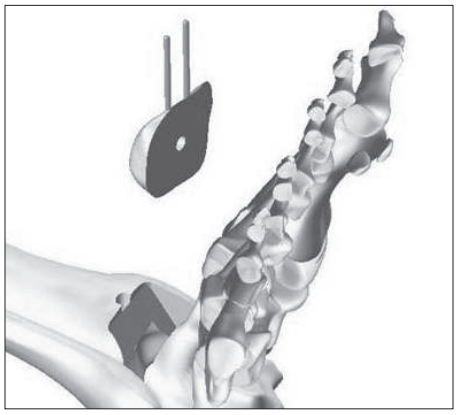


Fig. 29a

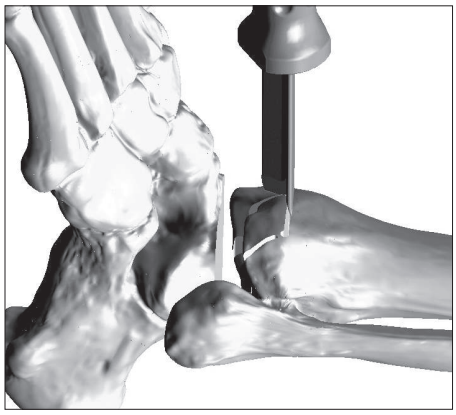


Fig. 29b

⚠CAUTION

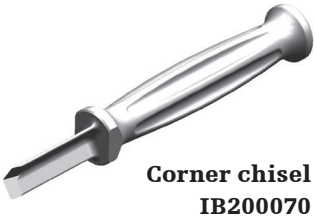
Care must be taken to a that the corner chisel does not penetrate too deeply, as neurovascular injury may occur. Do not rely solely on the depth indications on the chisel to determine resection depth. If unsure, utilize a lateral fluoroscopic image to confirm proper depth of the chisel.

Using a pin driver, insert the bone removal screw (IB200051) into the resected tibial bone. Attach the ratcheting handle (44180025) to the bone removal screw to aid in removing the remaining tibial section through traction (fig. 30).

Fig. 30

NOTICE

Illustrations shown without Inbone footholder.



Corner chisel
IB200070

Ratcheting handle
44180025

Bone removal screw
IB200051

Operative technique

Insert the 90° posterior capsule release tool (IB200050) into the joint space and use to free up the posterior capsule soft tissues attachments to the resected tibia (figs. 31a and 31b).

If necessary, use the appropriate size drill bit to provide additional definition of anti-rotation notch. Take care not to widen the notch. A reciprocating saw or bone rasp may be used to remove excess bone, taking care to follow the previously made cut line. Remove loose bone pieces and irrigate the joint space (fig. 32).

⚠CAUTION

Failure to adequately clean the proximal corners of the tibial resection can lead to improper seating of the Inbone Tibial tray.

NOTICE

Illustrations shown without Inbone footholder.

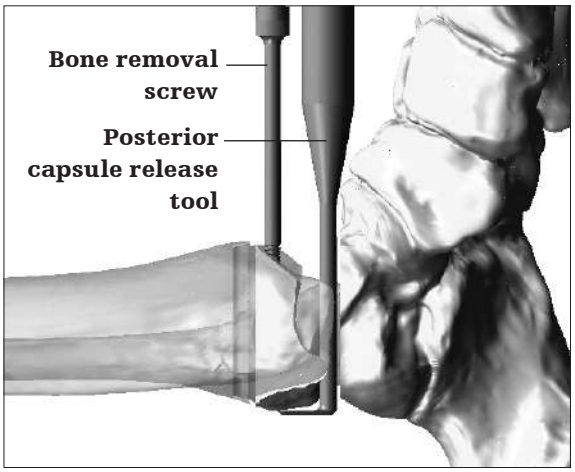


Fig. 31a

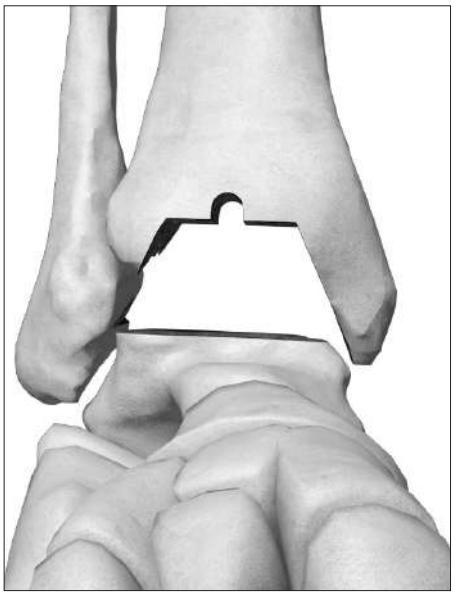


Fig. 32

Fig. 31b

Posterior capsule release tool IB200050

Operative technique

Ream the Tibia

Withdraw the 6mm drill and immediately replace with the reamer drive rod with a jacobs chuck attached.

Select the reamer tip (200046001 through 200046004) diameter based on the size of the desired tibial stem. Use the same size reamer as the desired tibial top and mid stem implants. It is recommended to ream for a 2mm press fit on the tibial base stem if possible.
For instance, if the tibial stem base is 16mm, the reamer size will be 14mm. Using the holding clip (200381001 through 200381004), insert the tibial stem reamer tip. Manually thread the reamer driver to avoid cross threading (figs. 33a and 33b).

⚠CAUTION

Do not use a powered drill to attach the reamer tip. There is a high risk of cross-threading the reamer using a power driver.

Ream the tibial IM canal to the depth of the tibial stem construct determined by the number of stem pieces previously templated (5-7cm) (figs. 34a and 34b).
Refer to appendix B for tibial stem height details and recommended reaming depths. Note that the reamer drive rod is marked with a depth indicator that can be viewed through the anterior window.

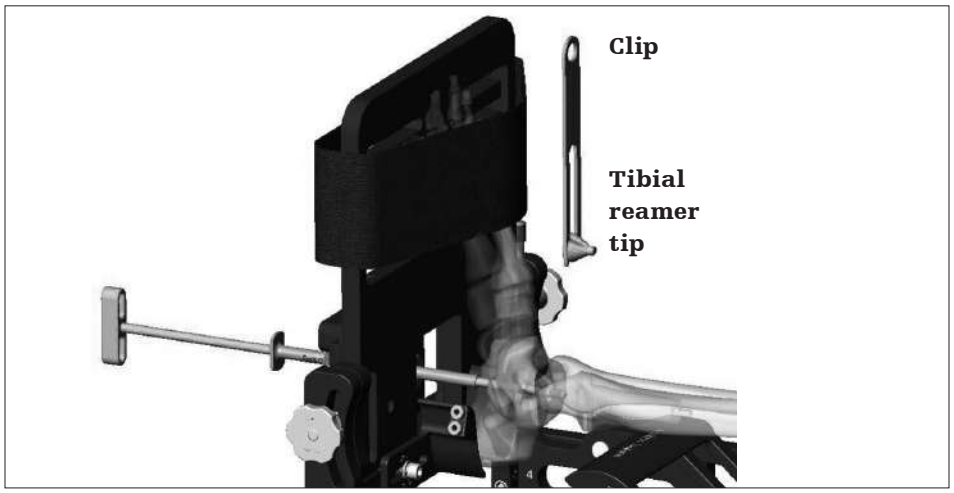


Fig. 33a

Fig. 33b

Fig. 34a

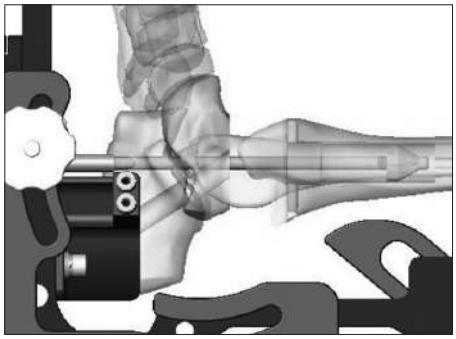


Fig. 34b

Tibial reamer drive Rrods 200089 or 200395 (T-Handle)

Tibial stem clip 200381001 - 200381004

Tibial reamer tip 200046001 - 200046004

Operative technique

Pull the reamer back into the joint space.

⚠CAUTION

Do not reverse the drill rotation while the reamer tip is still in the tibia, as it will become unthreaded and remain in the tibia.

Using the appropriate sized tibial stem wrench (200380001 through 200380004) unthread the reamer tip from the drive rod and remove from the joint space (fig. 35). Repeat the reaming steps for all sizes of reamers required/desired.

⚠CAUTION

It is strongly recommended that the surgeon use irrigation to clean the joint space between reamer sizes.

Leave the reamer drive rod in the foot with tip slightly distal to the surface of the talar resection.

Select the appropriate size tibial tray AP sizer (IB272902 through IB282906) and insert into the resected joint space, using both ends of the sizing tool to determine the optimum AP size tibial tray (standard or long). The strike rod (200085) should be used to fully seat the sizer into the tibial resection.

Utilize a lateral fluoroscopic image to evaluate the coverage (anterior and posterior) of the tibial cortex (fig. 36). It is critical to obtain sagittal plane coverage of the tibia, particularly anteriorly where more load is distributed. Thus, in choosing the correct size, overhang of the prosthesis is permitted if the standard size does not rest upon the tibial cortex.

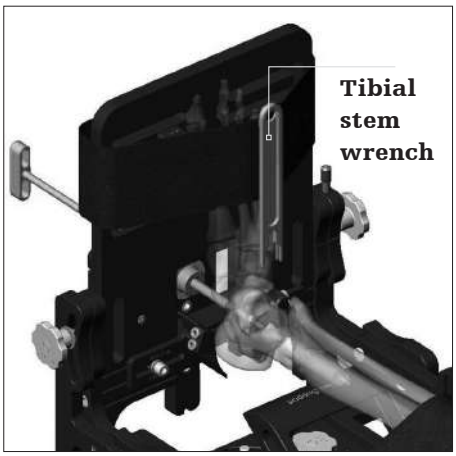


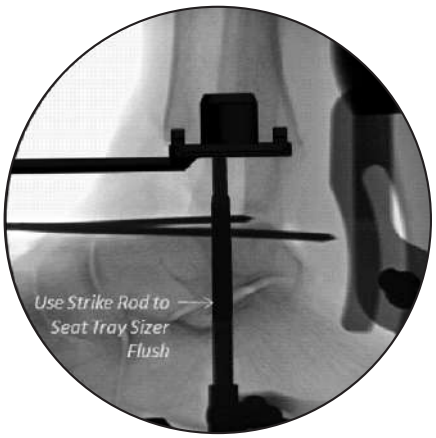
Fig. 35

Tibial stem wrench 200380001 - 200380004

Tibial tray AP sizer IB282902 (left) - IB282906 (right)

Strike rod 200085

The tibial tray AP sizer is also used to check the tibial cut surfaces and ensure that no bone fragments will impede proper positioning of the tibial tray. Remove excess bone as necessary and irrigate.



AP Standard – illustrating undersized coverage

AP Long – illustrating optimal coverageFig. 36

Operative technique

Install tibia stems

In most cases the top tibial stem and first mid stem piece can be pre-assembled and then placed into the joint space. Using the X-drive (200071) and the appropriate sized tibial stem Wrench firmly tighten these two components together on the back table. Orienting the wrench in the distal direction as labeled, slide the wrench onto the mid stem piece with a finger or thumb holding it in place. Introduce the components into the joint space placing the top stem piece into the intramedullary canal of the tibia (fig. 37).

Insert the X-drive through the Cannula and up through the talus (fig. 38).

NOTICE

Illustrations shown without Inbone footholder.

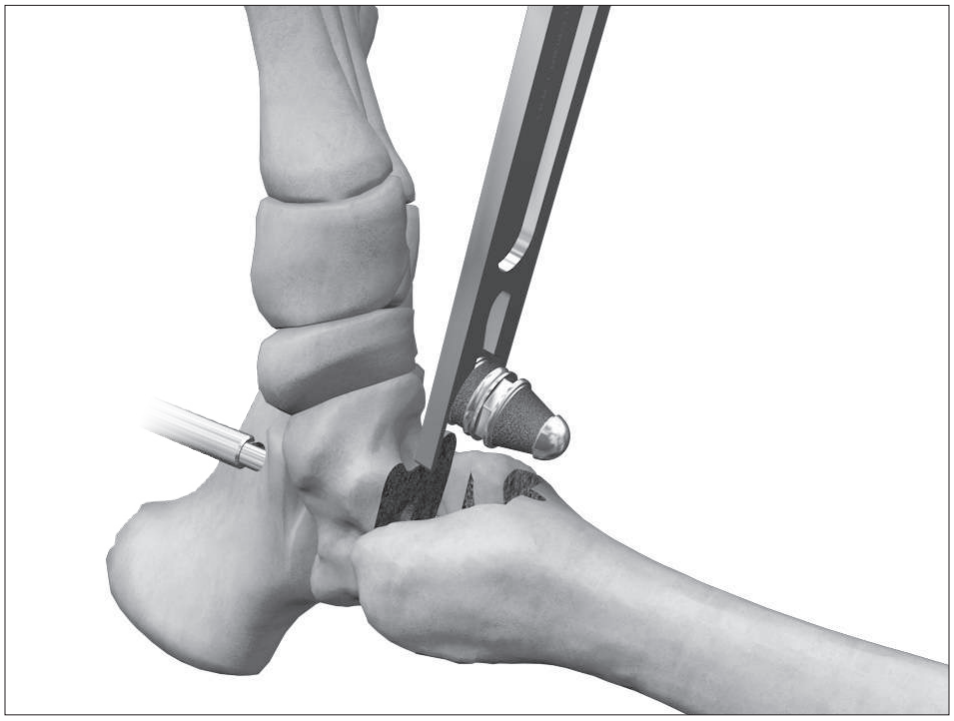


Fig. 37

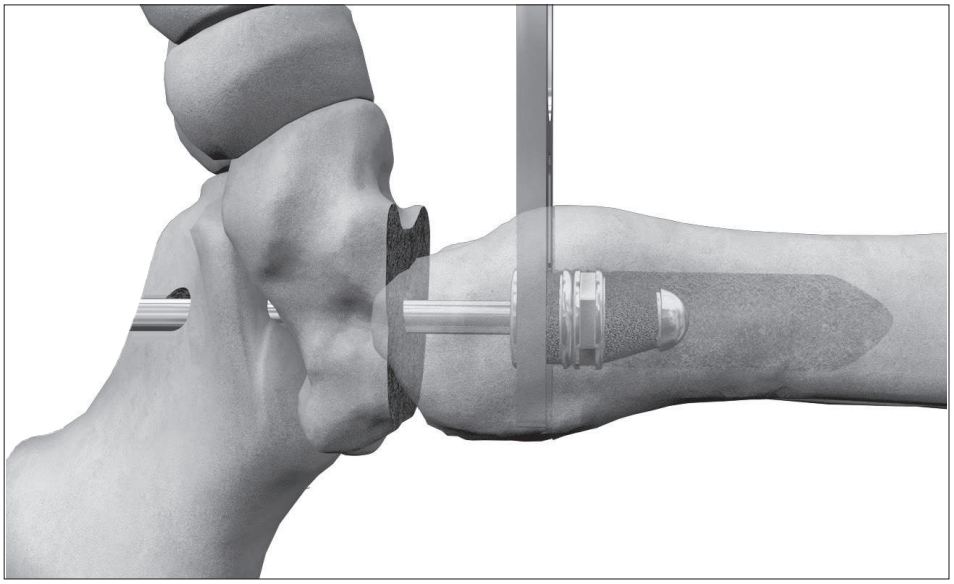


Fig. 38

X-drive
200071

Operative technique

An assistant should hold the wrench while the surgeon installs the next mid stem piece. Insert the next mid stem piece onto the appropriate sized clip, introduce into the joint space and align with the mid stem piece (fig. 39). An assistent may hold on to the wrench and distract the joint to aid insertion of the next piece.

Engage the X-drive and thread the stems firmly together. Move the wrench to the distal Stem piece before pushing the stem up into the tibia.

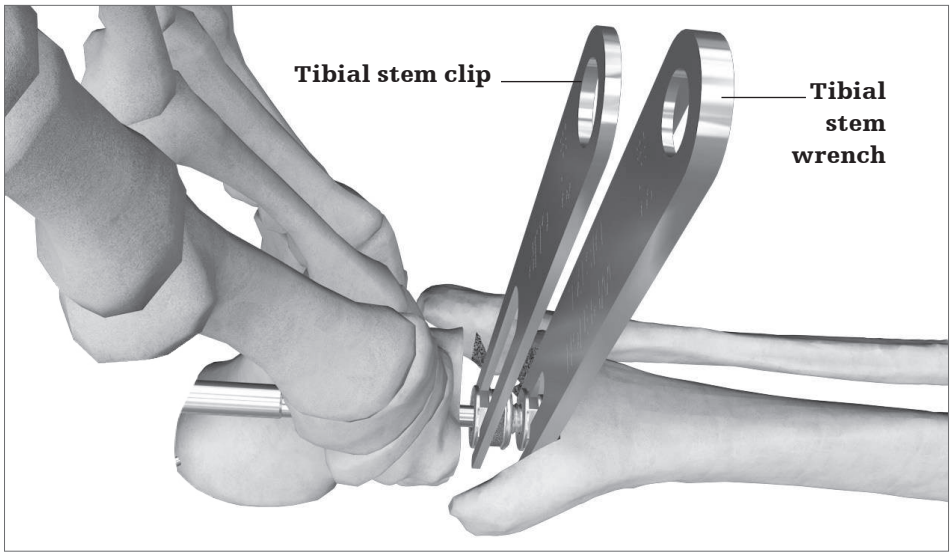


Fig. 39

⚠CAUTION

Always leave the wrench on the distal Stem piece, or the stem construct may be inadvertently pushed up into the tibia. If the stem pieces are inadvertently pushed into the tibia, please see appendix E for stem retrieval instructions.

NOTICE

Illustrations shown without Inbone footholder.

Operative technique

Select the appropriate base stem piece and introduce with a clip. Tightly thread the base stem using the X-Drive. Remove the clip and insert a wrench on the base stem (fig. 40).

NOTICE

Illustrations shown without Inbone footholder.

With the base stem tight, remove the wrench and rotate the stem construct so the morse taper release hole is pointing anteriorly and is in line with the anti-rotation notch. The base stem release hole is used to detach the tibial base stem from the tibial tray in the event of revision. Place the wrench back on the base stem.

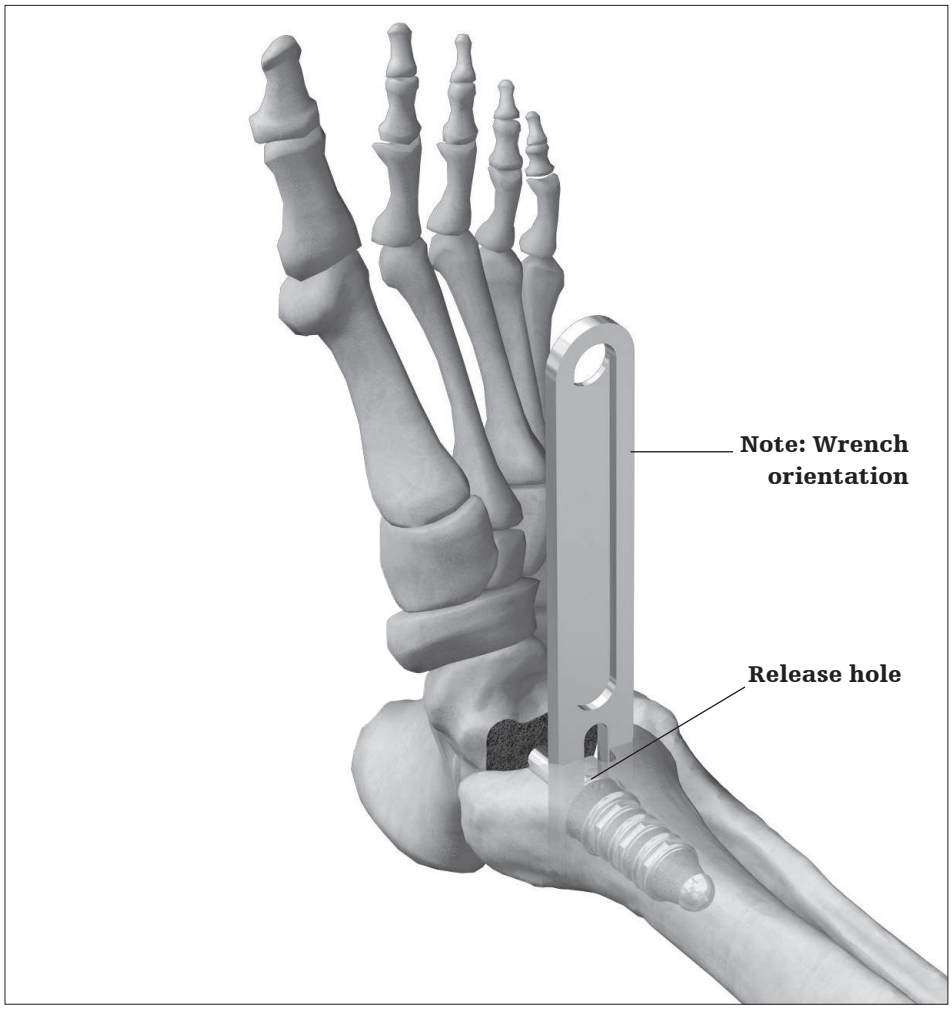


Fig. 40

Operative technique

Irrigate the morse taper surface of the base stem to clean it.

⚠CAUTION

Contamination on the morse taper surfaces can prevent proper seating.

Remove the X-drive and replace with the strike rod. Hold the tibial stem base with the wrench and introduce the tibial tray using the holding tool (200364002 or 200364003). Insert the morse taper into the stem base. Push the strike rod into the small detent on the bottom surface of the tibial tray (fig. 41).

⚠CAUTION

Remove the holding tool before striking the strike rod. Otherwise it can be locked in place.

Holding the tibial stem base firmly, strike the end of the strike rod several times with a mallet to seat the morse taper.

⚠CAUTION

The tibial tray will not seat if the wrench is in the wrong orientation. Wrench is marked “distal” for correct orientation.

Remove the wrench, rethread the holding tool to the tibial tray, and test the morse taper connection by trying to rotate the tibial tray against the stem. If properly engaged, both the stem and tibial tray should move as one unit.

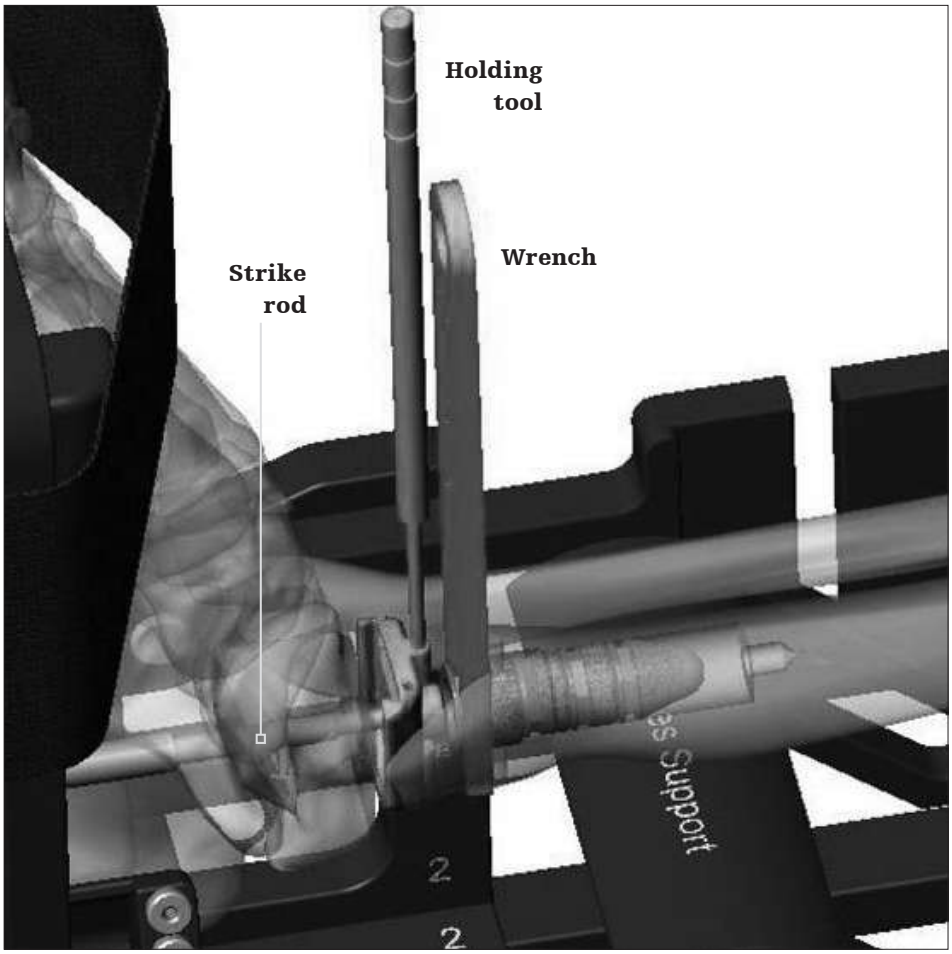


Fig. 41

Holding tool
M4 - 200364003
M3 - 200364002

Operative technique

If choosing to use bone cement, apply it to the top and sidewalls of the tibial tray component.

⚠CAUTION

Be sure not to get any cement on the anterior face or bottom of the tray.

Seat the assembly firmly into the tibia using a mallet and the strike rod. Remove the strike rod and visually check the anterior alignment. Check a lateral fluoroscopic image for proper posterior seating (fig. 42).

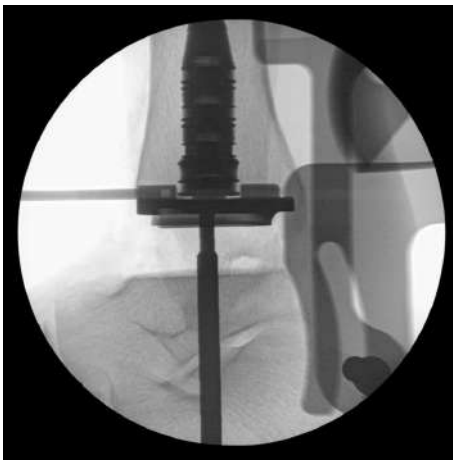


Fig. 42

Operative technique

Verify talar dome size

The surgeon has two options for talar dome implant size at this juncture: either the matching size for the implanted tibial tray, or one size smaller. It is beneficial to assess both sizes under A/P and lateral fluoroscopic images. Please note that the A/P image is critical for sizing the talar component, as the surgeon's goal is to minimize overhang of the talar component, and thus minimize prosthetic impingement in the medial and lateral gutters of the ankle joint.

Release the foot from the foot holder and remove the foot holder from the operating table.

Perform a thorough gutter debridement. The surgeon must be certain that there is no residual bone impinging between the talus and the medial fibula and lateral tibia. The talus must now be completely independent of the remaining ankle joint, free to rotate into its anatomic center of rotation, as well as translate to establish a position beneath the tibial tray. To achieve this, a generous debridement may be necessary.

Select the appropriate size talar dome trial (IB220901-905) and talar dome holding tool (IB200010) and assemble.

Assess overhang of the talar dome trial in both the A/P and lateral planes. Choose the talar dome that allows the most congruous coverage of the talar cut line.

Size-matched talar dome trial showing medial and lateral talar overhang

One size smaller Talar Dome Trial showing optimal coverage of the resected talus

Talar dome trials IB220901-905

Talar dome trial holding tool IB200010

Operative technique

Trial reduction

Holding tool to trial attachment

To attach the holding tool to the corresponding trial component, insert the tip of the tool into the keyed slot and turn 90° counter-clockwise to lock the connection. (figs. 43a and 43b).

To remove the holding tool turn the handle 90° clockwise and remove.

Using the poly insert trial holding tool (IB200110) install the appropriate size poly insert trial (IB202106-6520) into the tibial tray. The locking tab of the poly insert trial should engage the tibial tray (fig. 44a).

Using the talar dome trial holding tool introduce the appropriate size talar dome trial into the joint space (fig. 44b).

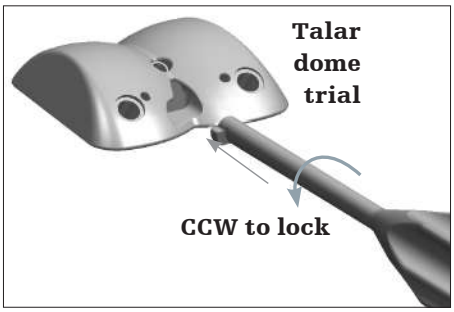


Fig. 43a

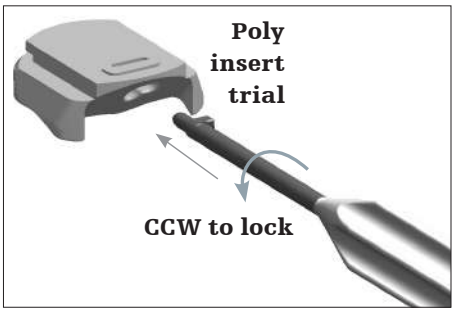


Fig. 43b

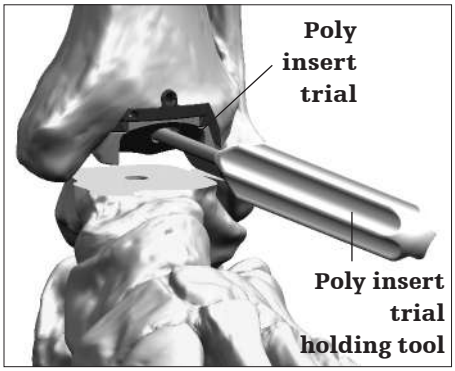


Fig. 44a

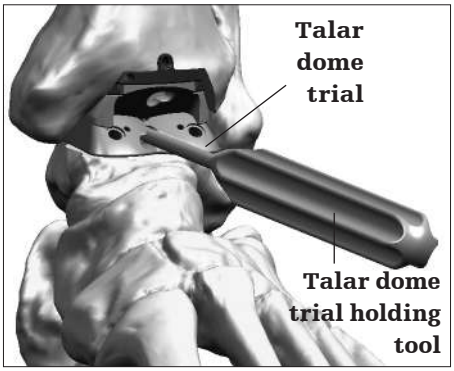
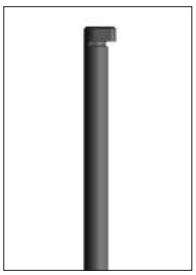


Fig. 44b

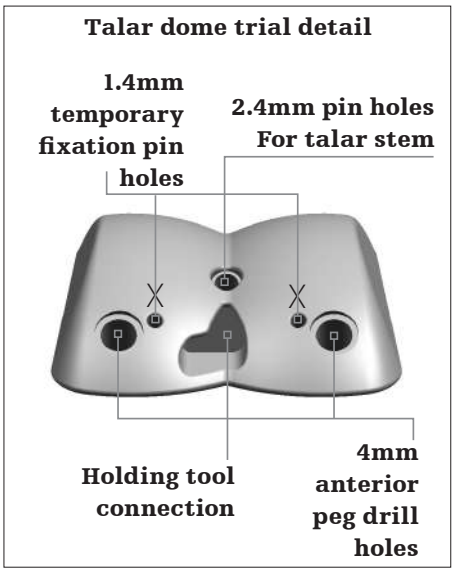
Training note for trial holding tools

There are two different trial holding tools in the instrument set: one for the talar dome trials (silver handle) and one for the poly insert trials (gold handle). In addition to having different colored handles, the two instruments also have slightly different designed tips.



Talar dome trial holding tool

Poly insert trial holding tool



Poly insert trials
IB202106-6520

Poly insert trial holding tool
IB200110

Operative technique

Polyethylene thickness

While the final polyethylene thickness does not have to be definitively chosen during the trial phase, it is important to have what is perceived to be the appropriate size trial poly to accurately determine the placement of the talar component. The trial poly used for the reduction should fit appropriately to determine the center of rotation of the talar component; therefore, trialing multiple size polys may be necessary. Note that after insertion of the final talar dome, the height of the poly can be reassessed.

In order to determine proper polyethylene height the following factors must be considered:

- Smooth range of motion of the ankle without anterior or posterior impingement.
- Ligaments are tensioned both medially and laterally without over-tensioning. Over-tensioning is noted when the trial talar component tilts following trial poly insertion. Alternatively, with range of motion, the talar component becomes incongruent with the trial poly, which can identify too much tension on the ankle replacement. Over-tensioned joints may cause increased polyethylene wear, and should be avoided.
- Stress the ankle joint into varus and valgus. The trial components should not tilt.
- The trial poly should engage the sulcus in the talar dome trial without allowing medial/lateral translation.

Operative technique

Under lateral plane fluoroscopy ensure the posterior portion of the talar component is resting on the posterior portion of the patient's residual talus (establish congruence) (fig. 45).

While holding the talus in this position, use a marking pen to mark the anterior portion of the talar component with reference to the patient's residual talus.

Be sure to observe the talar component with reference to the line on the residual talus previously drawn. This will ensure the talar component does not migrate anteriorly during the range of motion.

To accurately perform the range of motion, place some axial compression of the components to maintain position, and flex and extend the ankle. The surgeon will observe the talar component rotating into the anatomic position for this particular patient. Note that the surgeon must not only be cognizant of the talar position in the lateral plane, but must simultaneously maintain medial/lateral coverage as evidenced by the previous A/P plane fluoroscopic views.

Once talar dome trial has settled into optimum anatomical position, install two 1.4mm pins (500036) through the talar dome trial to temporarily hold it in place (fig. 46).

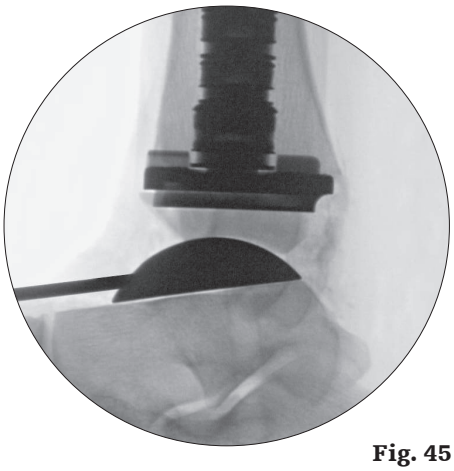


Fig. 45

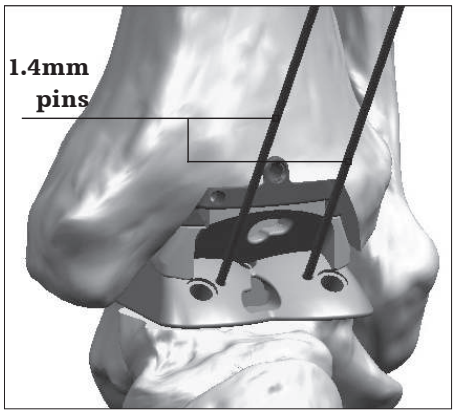
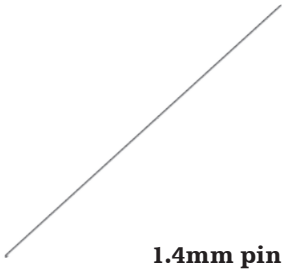


Fig. 46

Note that with the talar component pinned in position, the surgeon should once again place the ankle through a range of motion to ensure tibio-talar articular congruence.
Also, confirm through lateral fluoroscopy that the prosthesis did not shift anteriorly.



1.4mm pin
500036

Operative technique

Using the 4mm anterior peg Drill (IB200020), drill a hole through the medial and lateral openings in the talar dome trial. The drill has a hard stop designed to set the appropriate drilling depth in the talus for the talar dome anterior pegs (fig. 47).

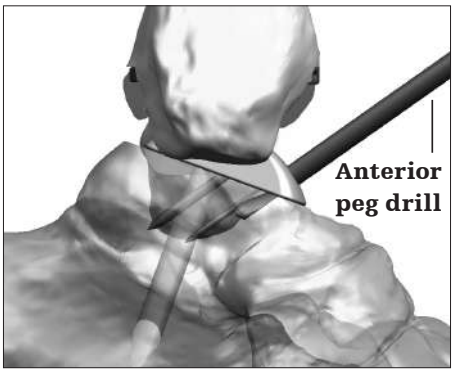


Fig. 47

Use the poly insert trial holding tool to remove the poly insert trial. Foot may be plantarflexed to aid in removal of poly insert trial (figs. 48a and 48b).

⚠CAUTION

The poly insert trial has a small locking tab that engages the tibial tray. To remove poly insert trial be sure to first pull down on the holding tool to disengage tab before pulling out.

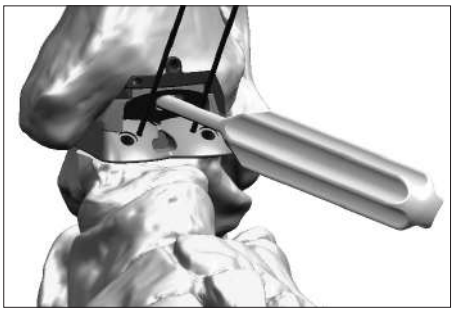


Fig. 48a

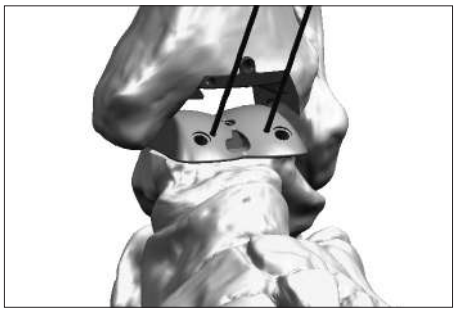
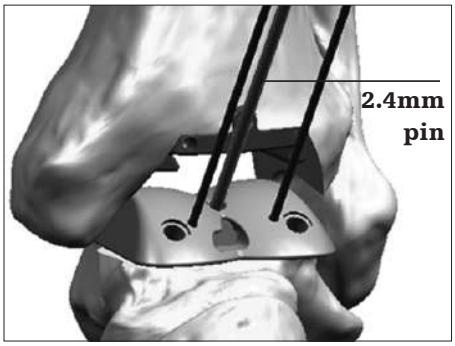


Fig. 48b

Install a 2.4mm steinmann pin through the center of the talar dome trial to the depth of the selected talar stem sing a lateral view to verify depth. Be certain that the talar dome trial is sitting flush with the cut line of the talus before placing this pin (fig. 49).



Remove 1.4mm pins and use the talar dome trial holding tool to slide talar dome trial off the remaining 2.4mm pin. The foot may be plantarflexed to aid in removal of talar dome trial.

4mm Anterior peg drill IB200020

NOTICE

Do not ream the talar dome anterior pegs when implanting the saddle style dome. (Saddle design does not have this feature).

Operative technique

Ream for talar stem

Install the appropriate length talar stem reamer (10mm-200432010 or 14mm-200432014) over the pin and ream to the depth of the selected talar stem (fig. 50). The reamer has a hard stop designed to set the appropriate reaming depth (fig. 51). Optionally, use a lateral fluoroscopic view to verify depth.

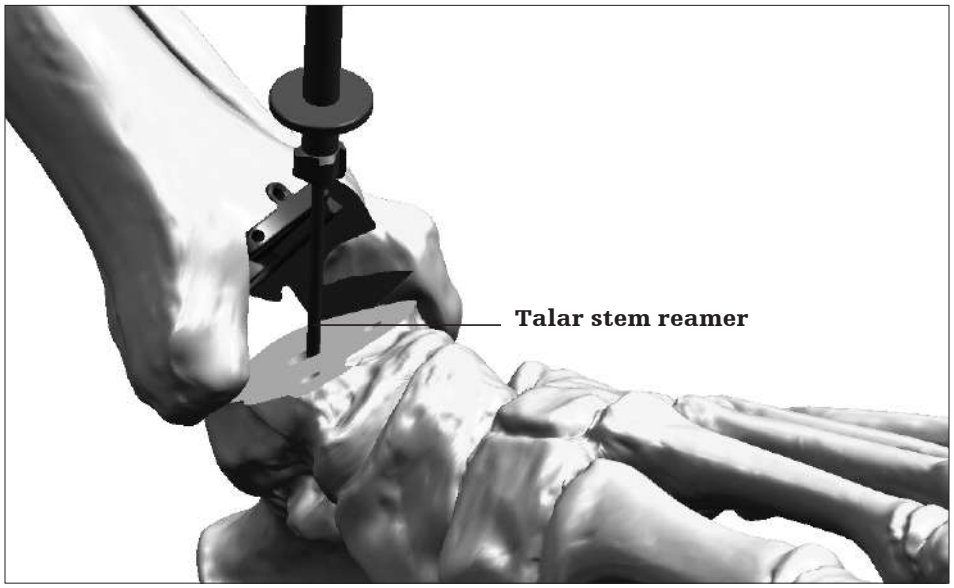


Fig. 50

⚠CAUTION

The talar stem is not intended for subtalar fusion or subtalar joint impingement. Please carefully evaluate the anatomy of each patient before implantation.

Remove the reamer and steinmann pin.

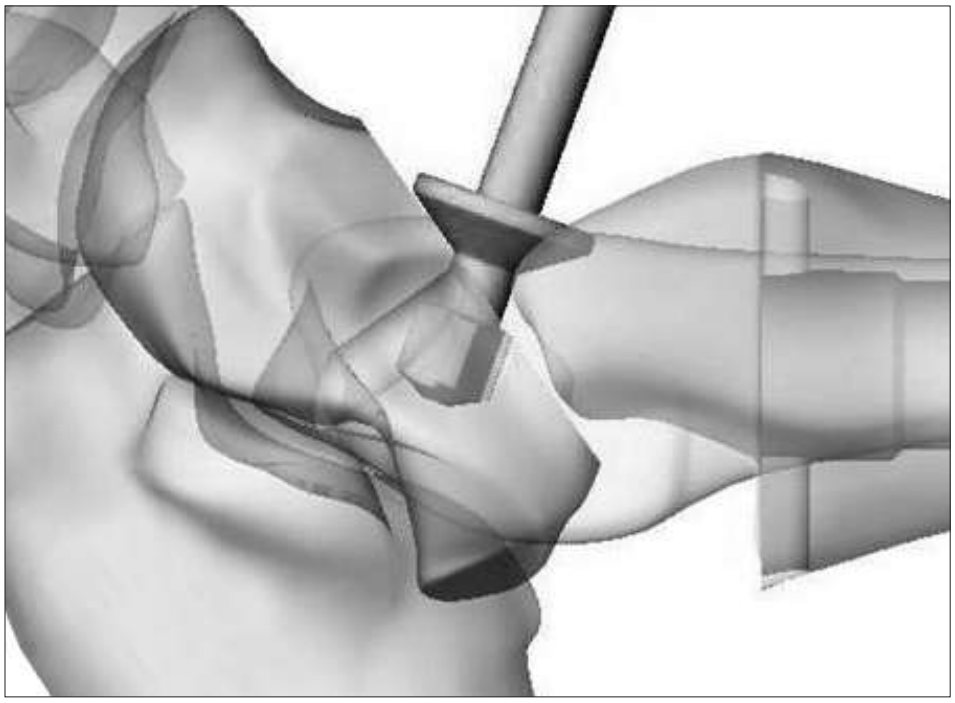


Fig. 51

Talar stem reamers
(10mm-200432010)
(14mm-200432014)

Operative technique

Assemble talar stem

Insert the appropriate sized talar stem into the bottom of the talar dome (Fig. 52, aligning the oblong post and matching the oblong hole in the Talar Stem). Talar stem and anterior pegs should be parallel.

Insert the talar stem and talar dome assembly into the strike block (IB200060) (fig. 53).

Align the dome strike tool (IB200030 and IB200031) on the talar dome and with a mallet, hit the top of the strike tool 2-3 times to fully seat the talar stem (fig. 54).

Fig. 52

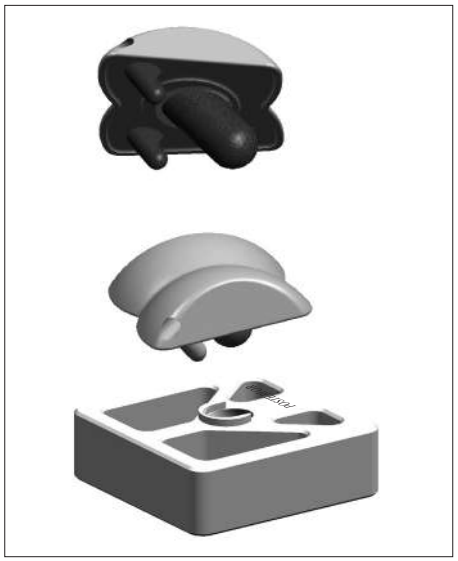


Fig. 53

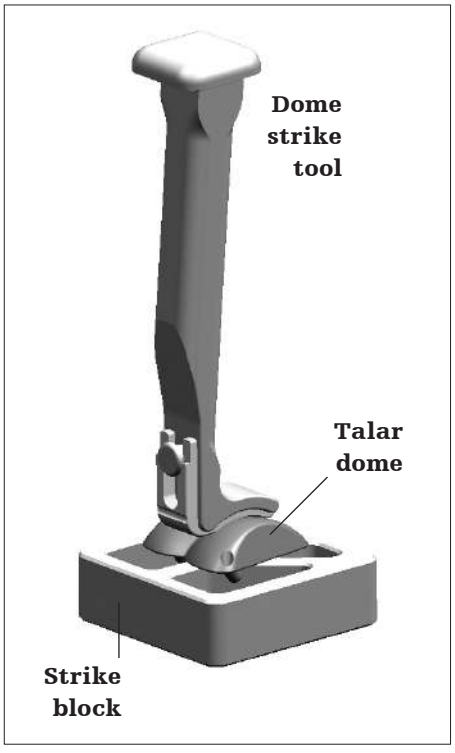


Fig. 54

Strike Block
IB200060

Dome strike
(Pre-assembled with dome strike tip)
IB200030
IB200031

Operative technique

Install talar dome

Place the foot in plantar flexion and insert the blue tray insert (200419002 through 200419006) into the tibial tray to protect the talar dome surface during installation. If choosing to use bone cement, apply it to the bottom surface of the talar dome. Using the M4 holding tool, insert the talar dome, aligning the talar stem and pegs with the prepared holes in the talus (fig. 55). Once the talar dome is aligned, remove the tray insert.

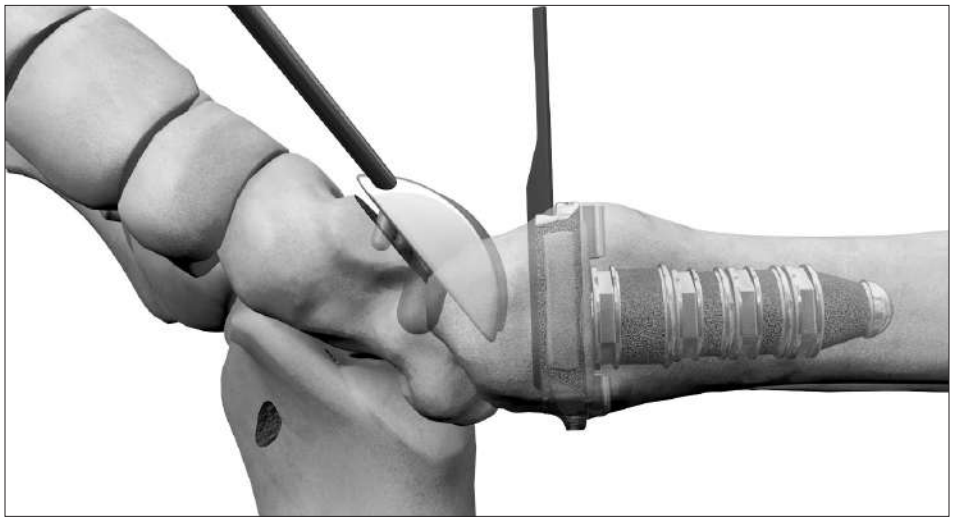


Fig. 55

Align the dome strike tool on the talar dome and with a mallet, hit the top of the strike tool to fully seat the talar dome (fig. 56). Utilize a lateral fluoroscopic image to ensure that the talar dome is fully seated. If the talar dome is difficult to fully seat in hard bone, it may be advisable to remove the talar dome and increase the diameter of the anterior peg holes slightly with the 4mm drill.

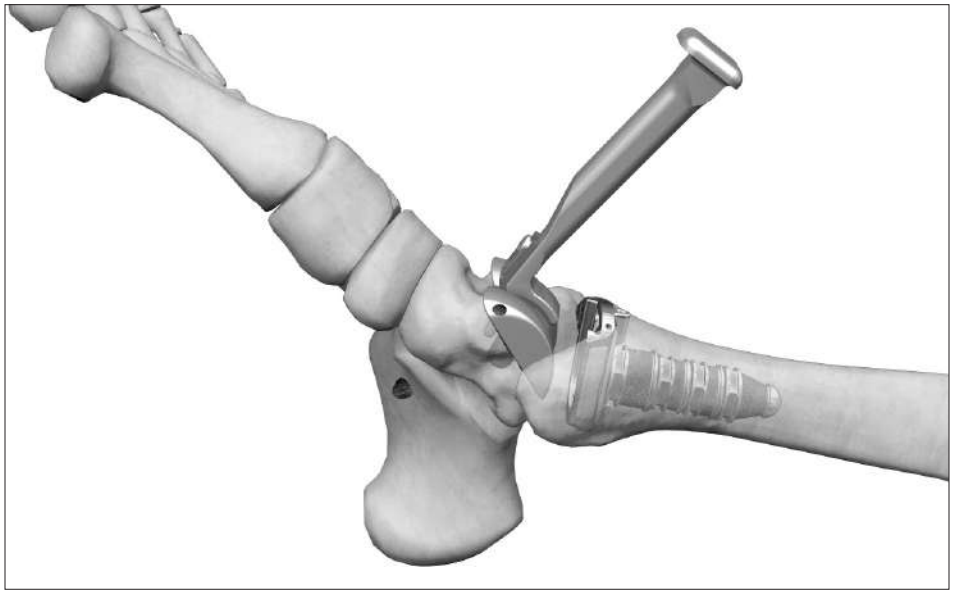


Fig. 56

Tray insert
200419002-200419006

Operative technique

Install poly insert

Select the appropriate size poly insertion tool (1000600102 through 100063106) and plunger block (200277002-006). Place a nut insert (200422) into the pocket of the poly insertion tool. Position the plunger block at the back of the tool and retain with the appropriate jack screw (200289 or ib200040) (fig. 57). Jack screw must match the tibial tray, e.g. Size 3 long tibial tray requires the use of the long jack screw. Long jack screw is gold colored and standard jack screw is silver.

Select proper size poly insert and slide into the dovetail of the insertion tool. The anterior face of the poly insert (indentation) must face the plunger.

Install the appropriate attachment screw (200329101 through 200329103) into the anti-rotation notch of the tibial tray (fig. 58).

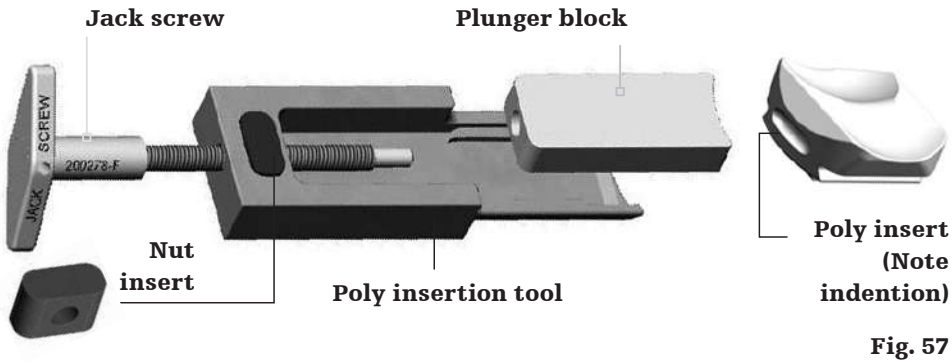


Fig. 57

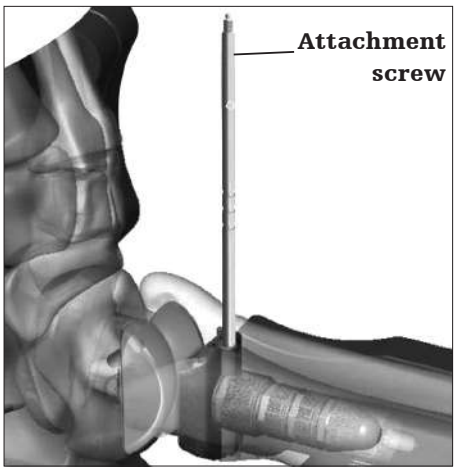
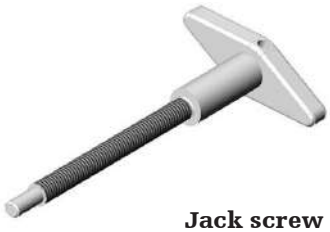


Fig. 58

Nut insert
200422

Attachment screw
Size 1 & 2: 200329101
Size 3 & 4: 200329102
Size 5: 200329103

Plunger block
200277002-006



Jack screw
Standard: 200278
Long: IB200040

Poly insertion tool
Left: 100063102-100063106
Right: 1000600102-1000600106

Attachment nut
200329201

Operative technique

Slide the poly insertion tool assembly over the attachment screw and align flush with the anterior surface of the tibial tray. Thread the attachment nut onto the attachment screw to lock the poly insertion tool to the tibial tray (fig. 59).

Turn the jack screw to advance the poly insert into the tibial tray.

⚠CAUTION

To prevent incomplete seating of the poly insert, properly irrigate the tibial tray prior to poly insertion.

Apply slight "reaction force" as necessary to keep insertion tool at 90° to tibia (fig. 60).

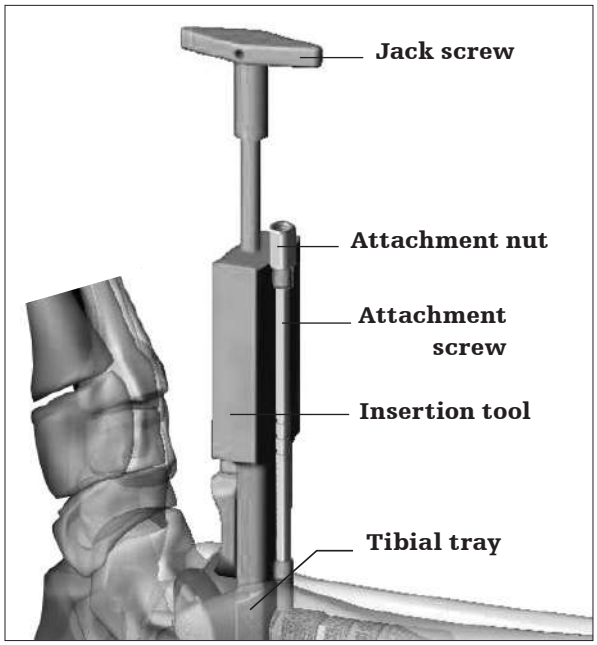


Fig. 59

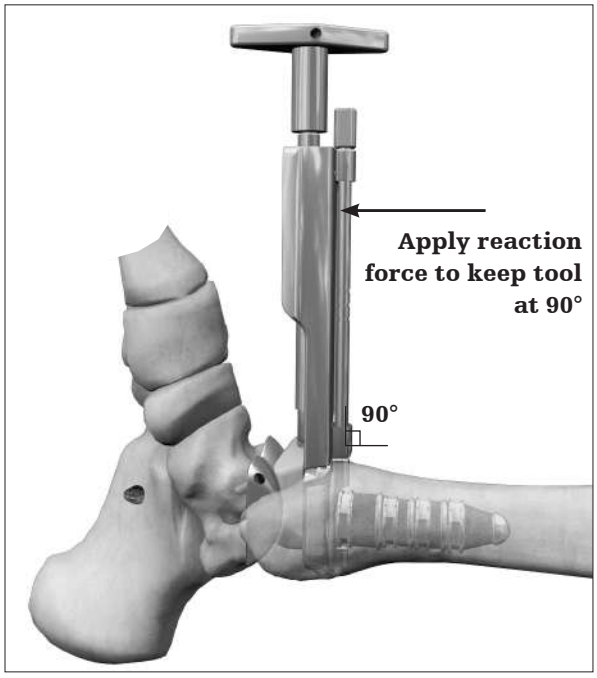


Fig. 60

Operative technique

Continue turning the jack screw until it bottoms out, then remove the insertion tool (fig. 61).

Select the poly impact tool (200286). At a 60° angle give the poly impact tool a final tap to fully seat the poly insert. Check that the poly is fully seated.

Take final ap & lateral fluoro images for record keeping (figs. 62a and 62b).

Final procedures

Check for proper articulation.

Close the wound.

Cast the foot in a slight dorsiflexion position.

Keep the foot non-weight bearing for 6 weeks.

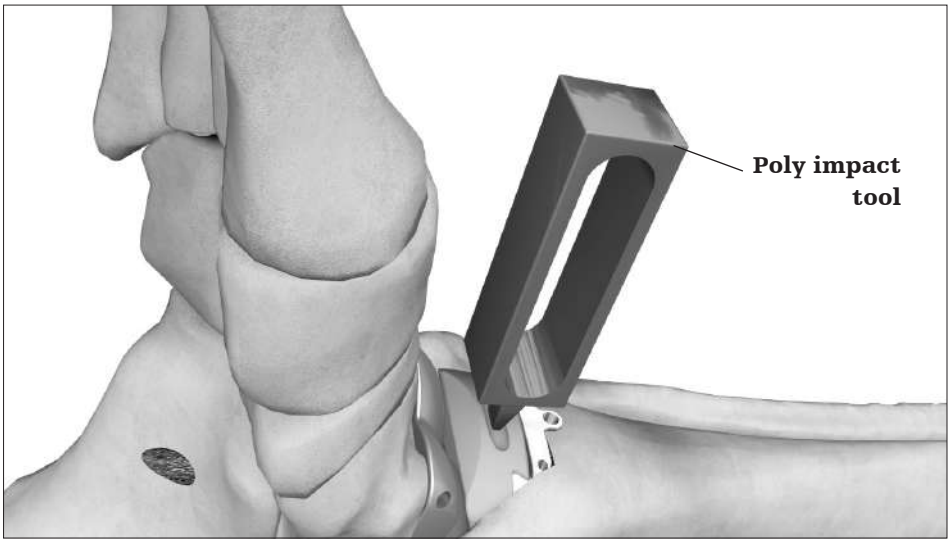


Fig. 61

Fig. 62A

Fig. 62B

Poly impact tool
200286

Operative technique

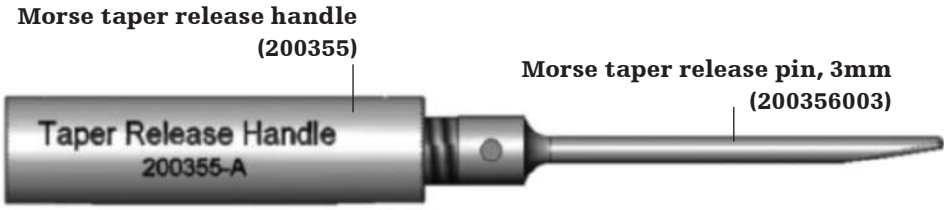
Morse taper release

Thread morse taper release pin (200356003) into morse taper release handle (200355).

Insert tip of the morse taper release pin into the morse taper release hole of the implant.

Angled surface of the release pin should face distally.

Holding the implant firmly, strike the end of the morse taper release handle with a mallet until the morse taper becomes unseated (fig. 63).

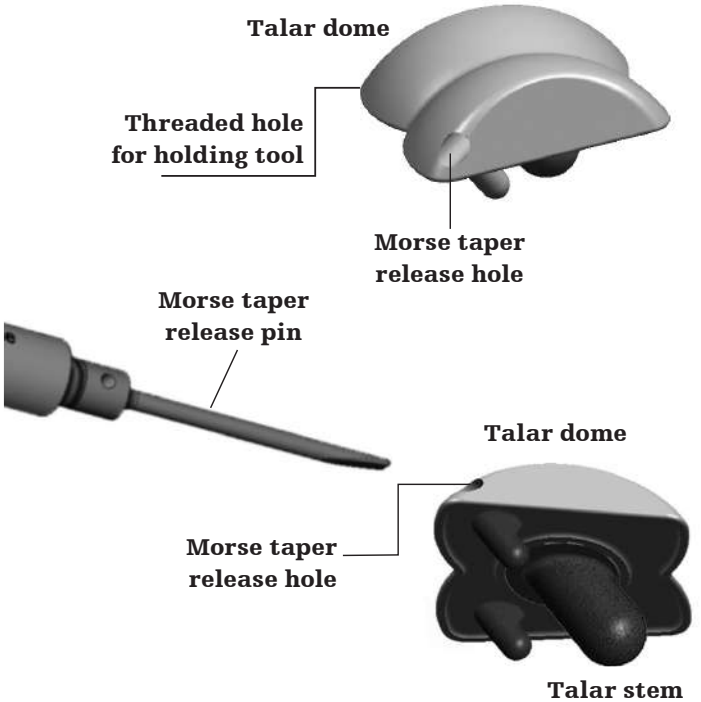


(Assembled Tool) **Fig. 63**

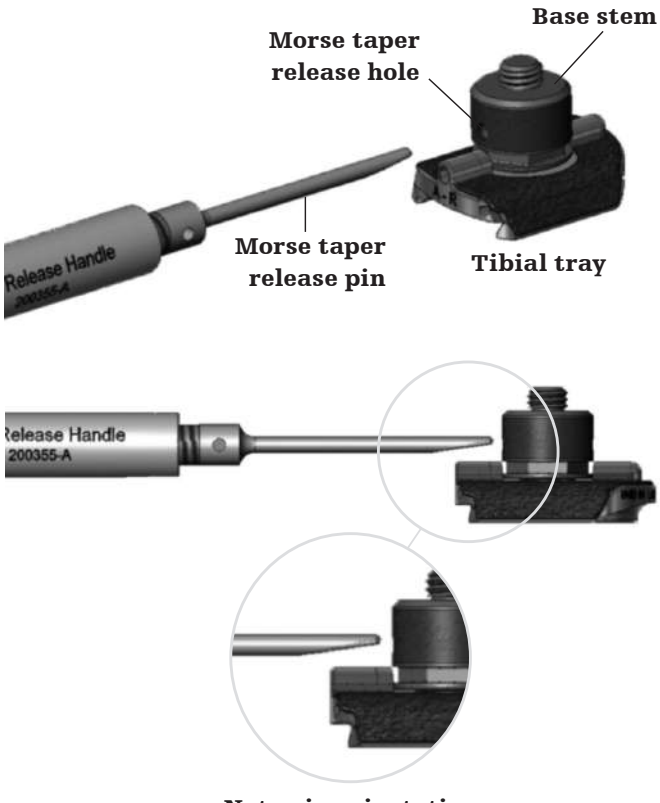
⚠CAUTION

Release pin must be inserted into the talar dome from anterior to posterior to disengage taper. Failure to do so could result in pin becoming permanently jammed.

Talar dome



Tibial tray



Operative technique

Explant information

Insert replacement

To remove the poly insert, first install two large diameter threaded steinmann pins into the anterior face of the implant. With a pair of pliers pull distally on the steinmann pins in attempt to unlock the insert from the tibial tray. A narrow osteotome may be inserted into the anterior region of the insert to facilitate removal. A hemostat may be used to remove the insert once it is no longer locked to the tibial base. Care must be taken not to scratch or mar any component that is not intended to be removed.

Tibia and talar components

To remove the components, small osteotomes, power saws, or other surgical instruments may be used to disrupt the bone-cement interface. Care must be exhibited to save remaining bone stock as well as to prevent fracture. Once the components have been removed, rongeurs or small osteotomes as well as other surgical instruments may be used to remove the remaining cement.

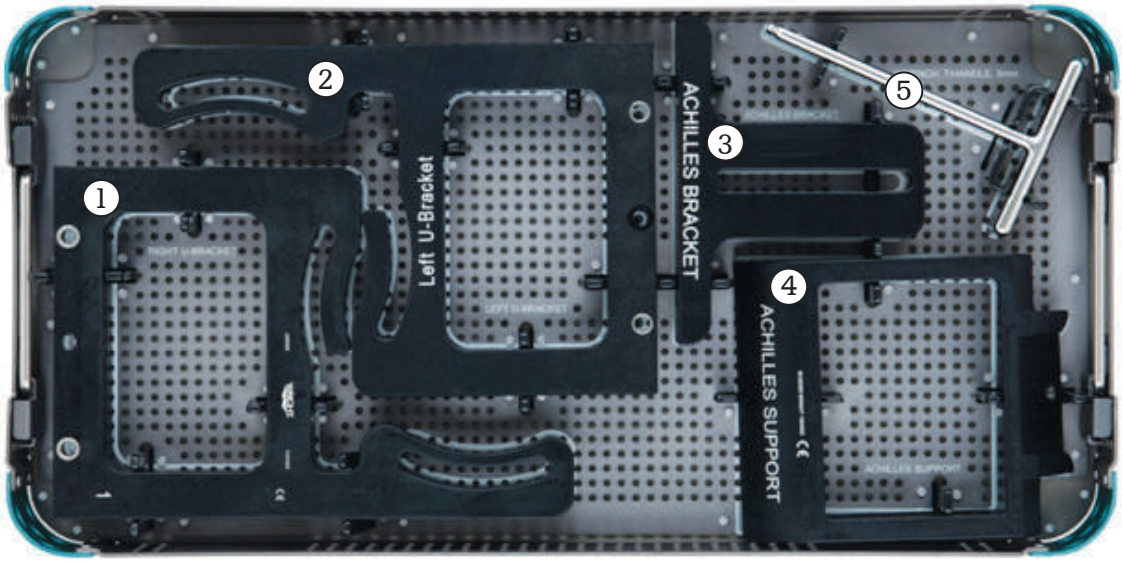
If the removal of the implant is required due to revision or failure of the device, the surgeon should contact the manufacturer using the contact information located on the back cover of this operative technique to receive instructions for returning the explanted device to the manufacturer for investigation.

Postoperative management

Postoperative care is the responsibility of the medical professional.

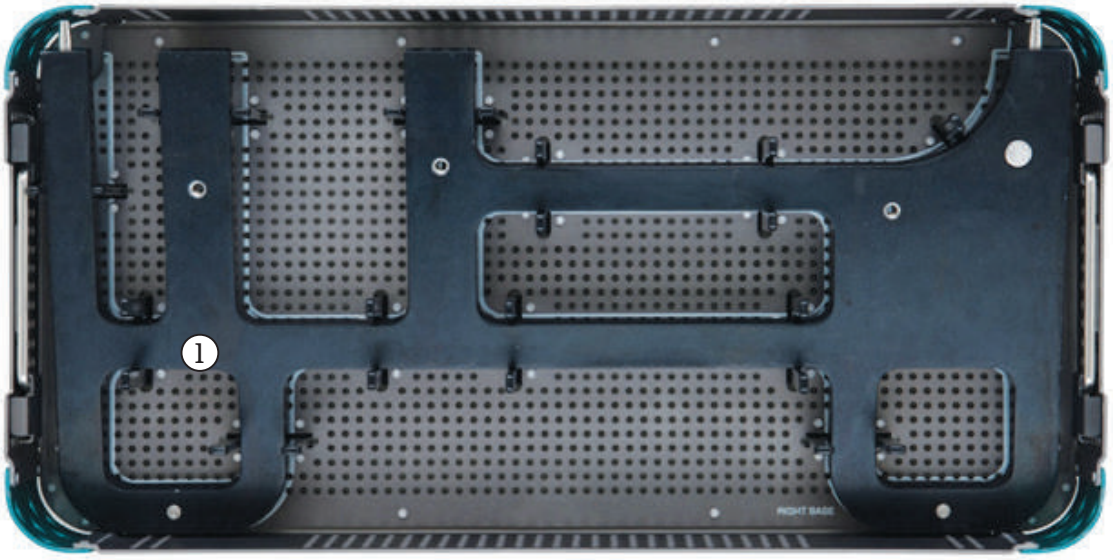
Inbone II instrumentation

IBT2KIT1 Inbone II Case 1, Tray 1



1. Right U-bracket (100080)
2. Left U-bracket (1000081)
3. Achilles bracket (200412)
4. Achilles support (ib100099)
5. T-handle wrench, 5mm (200433)

IBT2KIT1 Inbone II Case 1, Tray 2



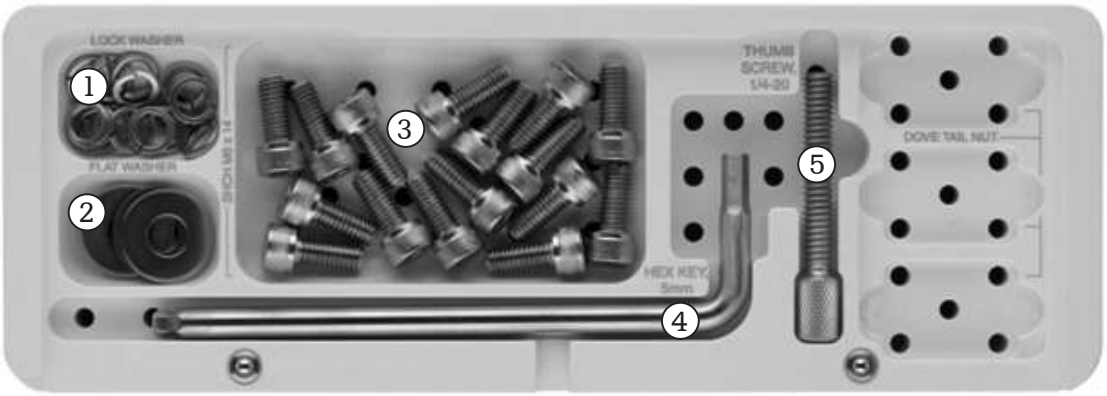
1. Right base (1000082)

Inbone II instrumentation

IBT2KIT1 Inbone II Case 1, Tray 3

1. Left base (100083)

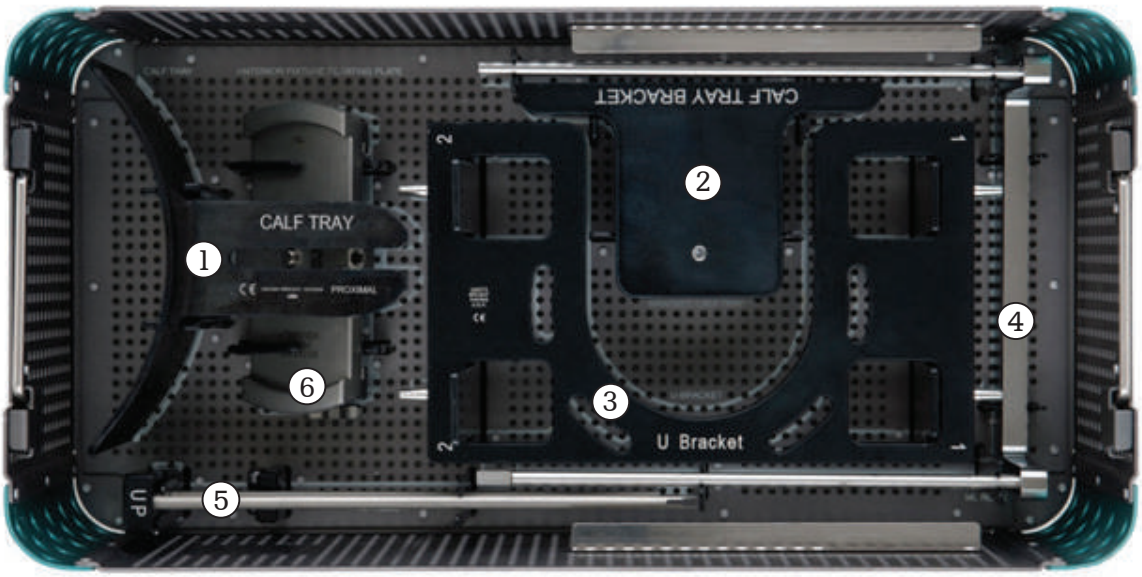
Caddy



1. Lock washer, M6 (200415)
2. Washer, M6 (200413)
3. Screws, M6 (200043014)
4. Hex key, 5mm (200343)
5. Thumb screw, ¼-20 (200416)

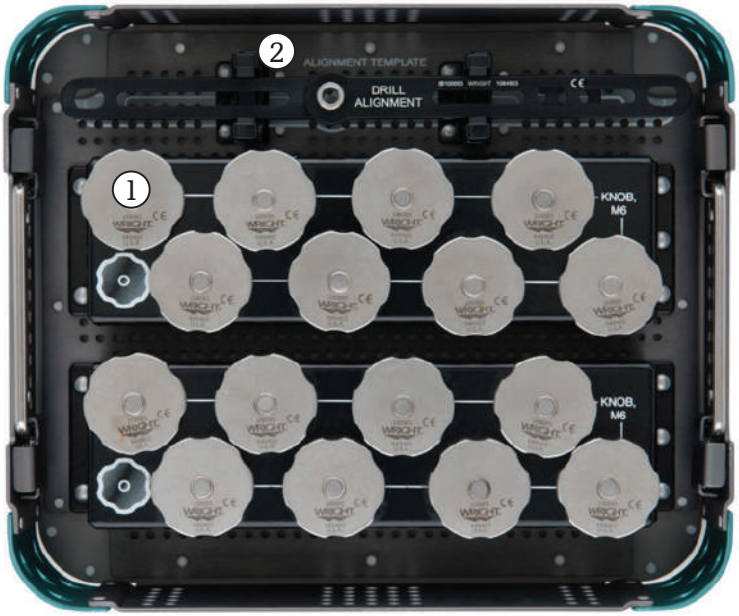
Inbone II instrumentation

IBT2KIT1 Inbone II Case 2, Tray 1



1. Calf tray (200304)
2. Calf bracket (IB100102)
3. U-bracket (100073)
4. ML rods (IB100064)
5. AP rods (100057)
6. Anterior adjusting rotating plate (IB100033)

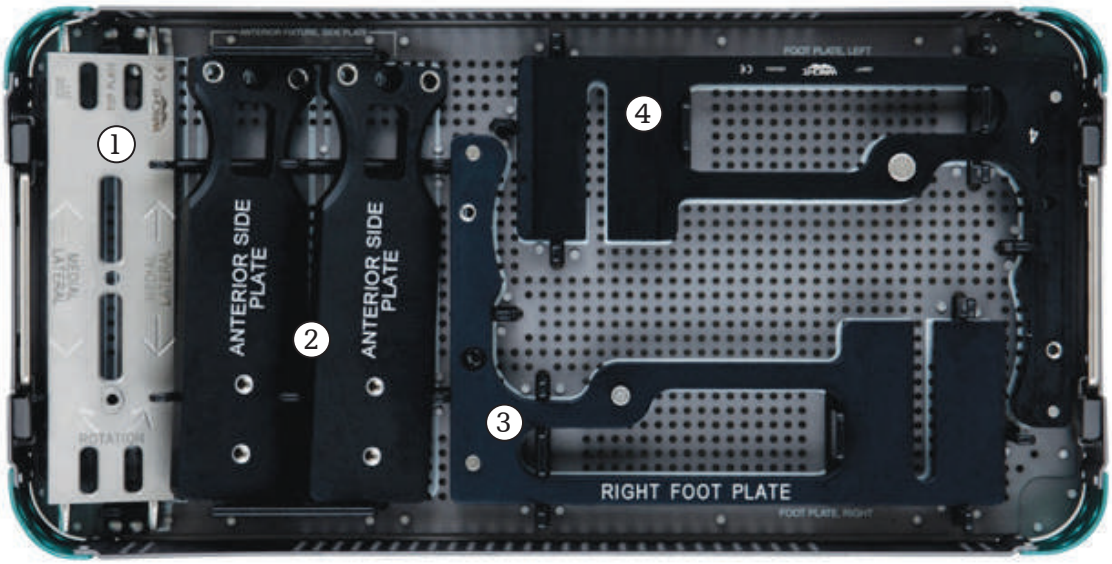
IBT2KIT1 Inbone II Case 2, Tray 2



1. Knob, M6 (100085)
2. Alignment template (IB100093)

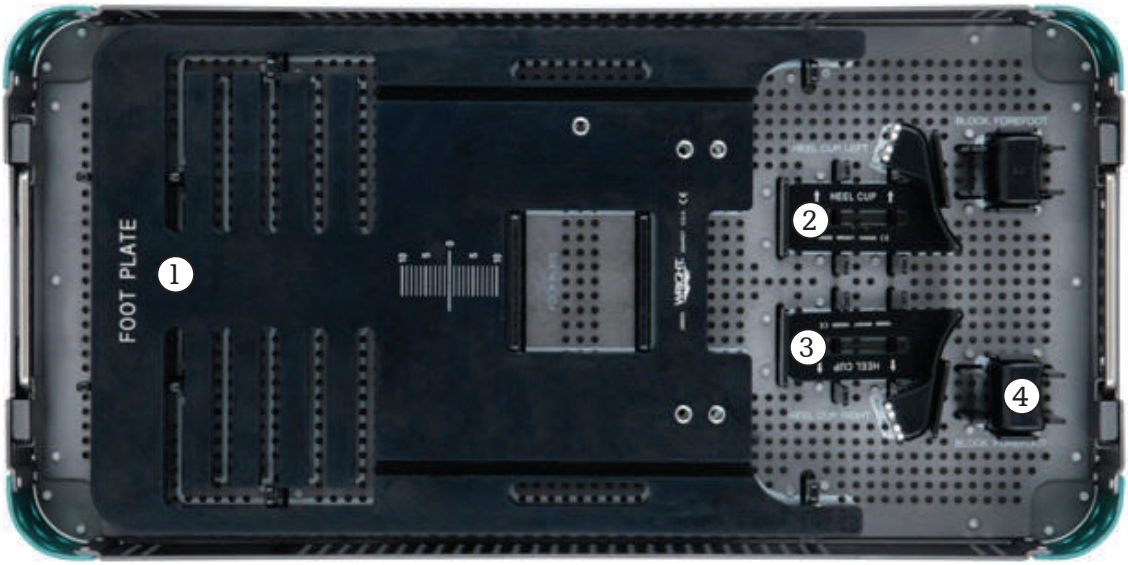
Inbone II instrumentation

IBT2KIT1 Inbone II Case 3, Tray 1



1. ANT fixture top plate (IB100035)
2. ANT fixture side plate (IB100036)
3. Foot plate, right (100098)
4. Foot plate, left (100097)

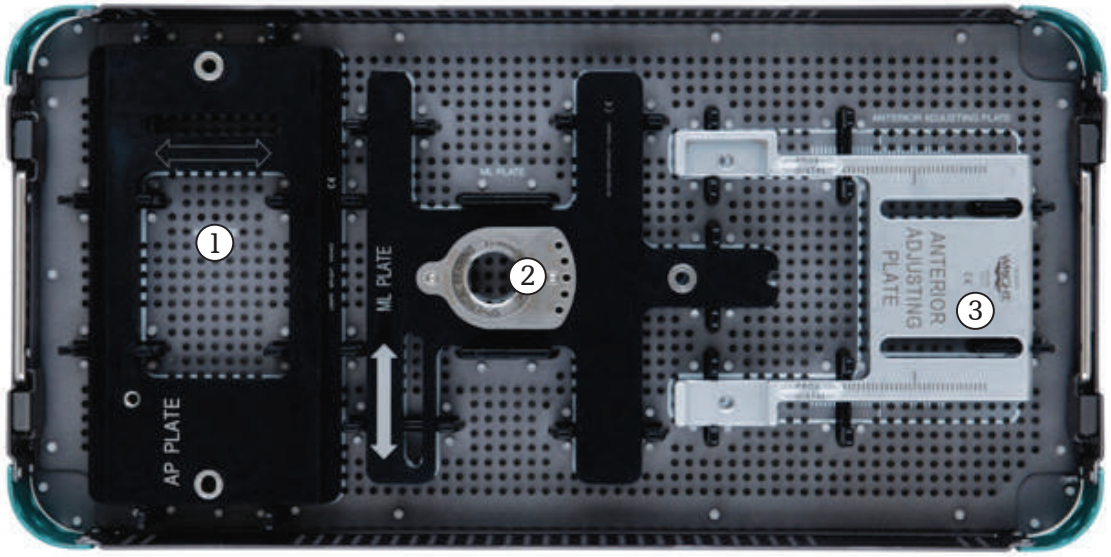
IBT2KIT1 Inbone II Case 3, Tray 2



1. Foot plate (100096)
2. Heel cup, left (100088)
3. Heel cup, right (100089)
4. Block, forefoot (100101)

Inbone II instrumentation

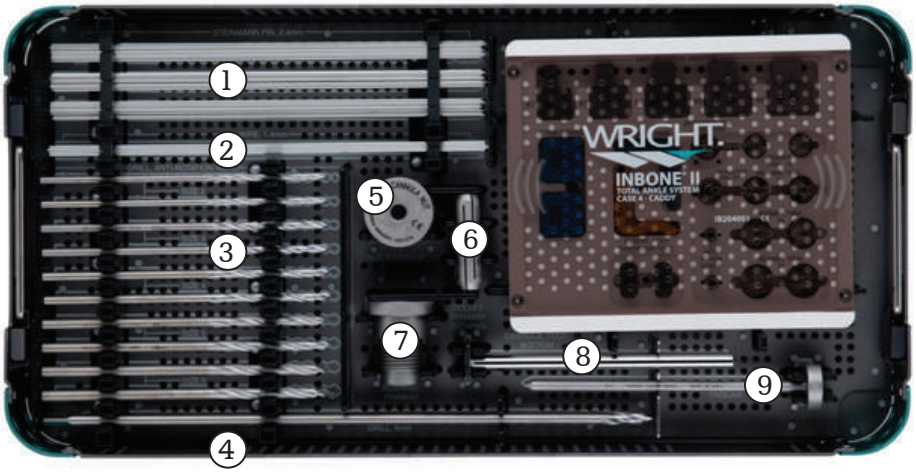
IBT2KIT1 Inbone II Case 3, Tray 3



1. AP plate (100095)
2. ML plate (IB100094)
3. Anterior adjusting plate (IB100032)

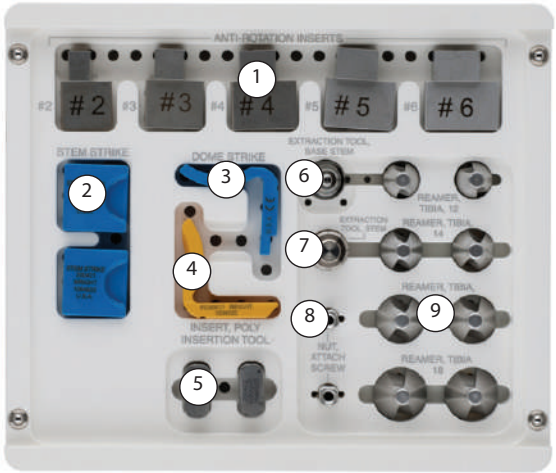
Inbone II instrumentation

IBT2KIT1 Inbone II Case 5, Tray 1



1. Steinmann Ppin, 2.4mm (200072)
2. K-wire, 1.4mm x 228mm (500036)
3. Drill, anti-rotation (200178002 through 200178006)
4. Drill, 6mm (200134)
5. Nut, cannula (200402)
6. Collet primary bushing (200385)
7. Primary bushing (200401)
8. Cannula, foot, bottom (200166)
9. Trocar (200099)

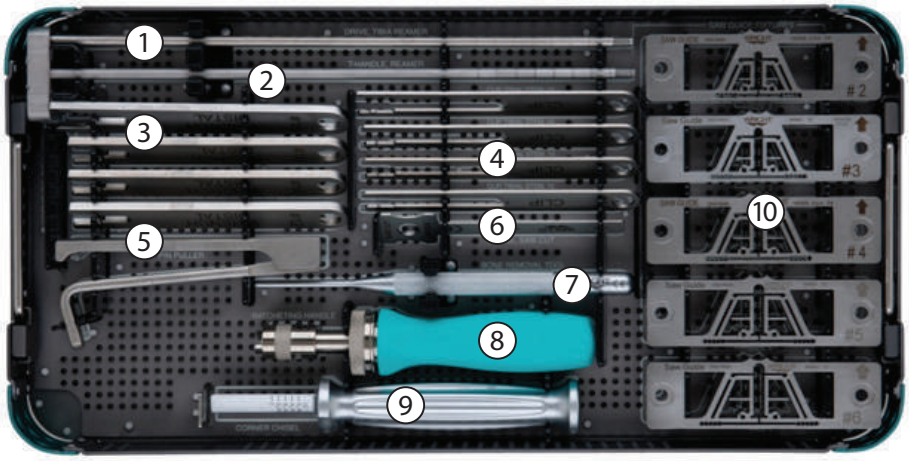
Caddy



1. Anti-rotation insert (200290002 through 200290006)
2. Stem strike (blue) (200421)
3. Dome strike, saddle (blue) (IB200032)
4. Dome strike, sulcus (yellow) (IB200031)
5. Poly insertion tool (200422)
6. Extraction tool, base stem (200428)
7. Extraction tool, mid/top stem (200102)
8. Nut, attach screw (200329201)
9. Reamer, tibia (200046001 through 200046004)

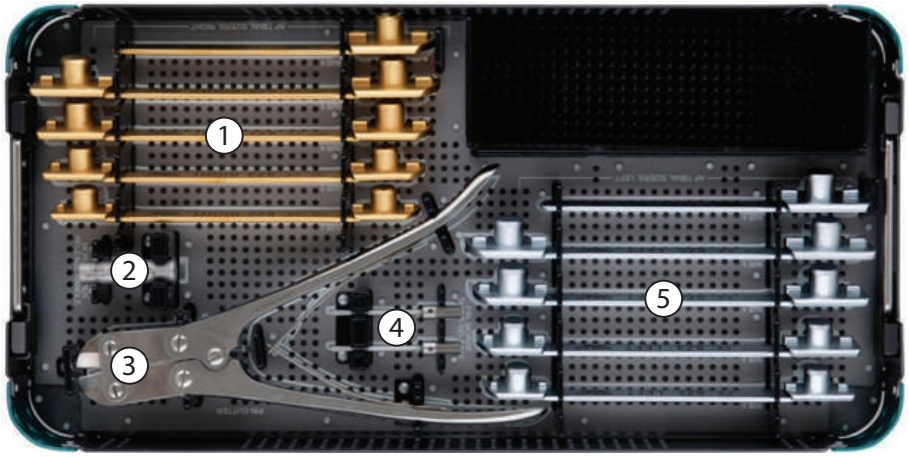
Inbone II instrumentation

IBT2KIT1 Inbone II Case 4, Tray 1



1. Drive, tibia reamer (200089)
2. T-handle, reamer (200395)
3. Wrench, tibia stem (200380001 through 200380004)
4. Clip, tibia stem (200381001 through 200381004)
5. Pin puller (18770140)
6. Gauge, saw cut (200383)
7. Posterior capsule release tool (IB200050)
8. Quick connect ratcheting handle (44180025)
9. Corner chisel (IB200070)
10. Saw guide fixture (200216002 through 200216006)

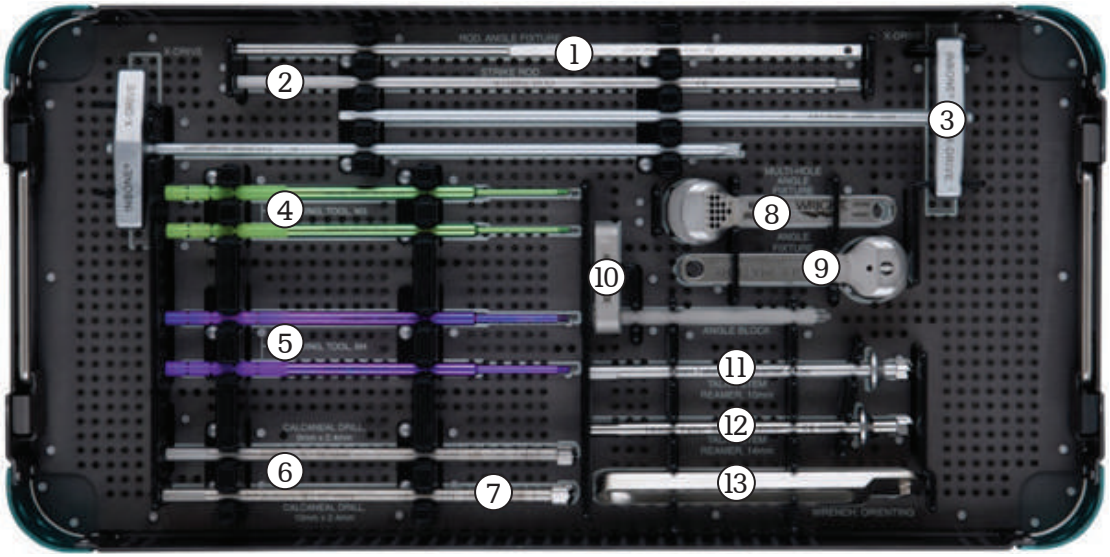
IBT2KIT1 Inbone II Case 4, Tray 3



1. Tibial tray AP sizers right (IB282902 through IB282906)
2. Morse taper release handle (200355)
3. Pin cutter, 3.2mm (200427)
4. Pin, morse taper release (200356003)
5. Tibial tray AP sizers, left (IB272902 through IB272906)

Inbone II instrumentation

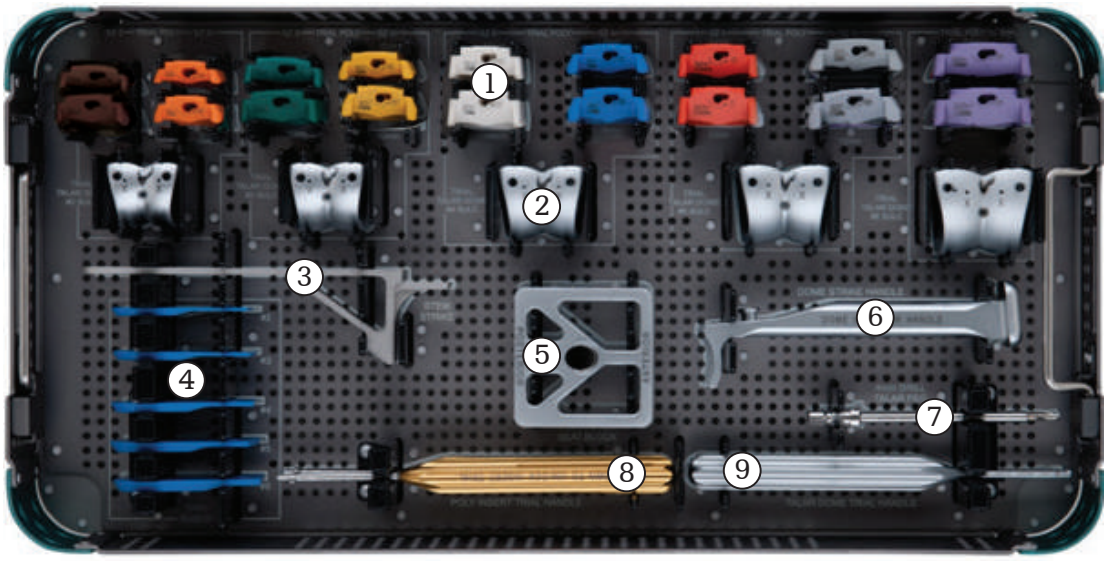
IBT2KIT1 Inbone II Case 5, Tray 1



1. Rod, angle fixture (200404)
2. Strike rod (200085)
3. X-drive (200071)
4. Holding, tool, M3 (200364002)
5. Holding, tool, M4 (200364003)
6. Calcaneal drill, 9mm x 2.4mm (200424009)
7. Calcaneal drill, 10mm x 2.4mm (200424010)
8. Multi-hole angle fixture (200349)
9. Angle fixture (200403)
10. Angle block (100104)
11. Talar reamer, 10mm (200432010)
12. Talar reamer, 14mm (200432014)
13. Wrench, orienting (200230)

Inbone II instrumentation

IBT2KIT1 Inbone II Case 5, Tray 2



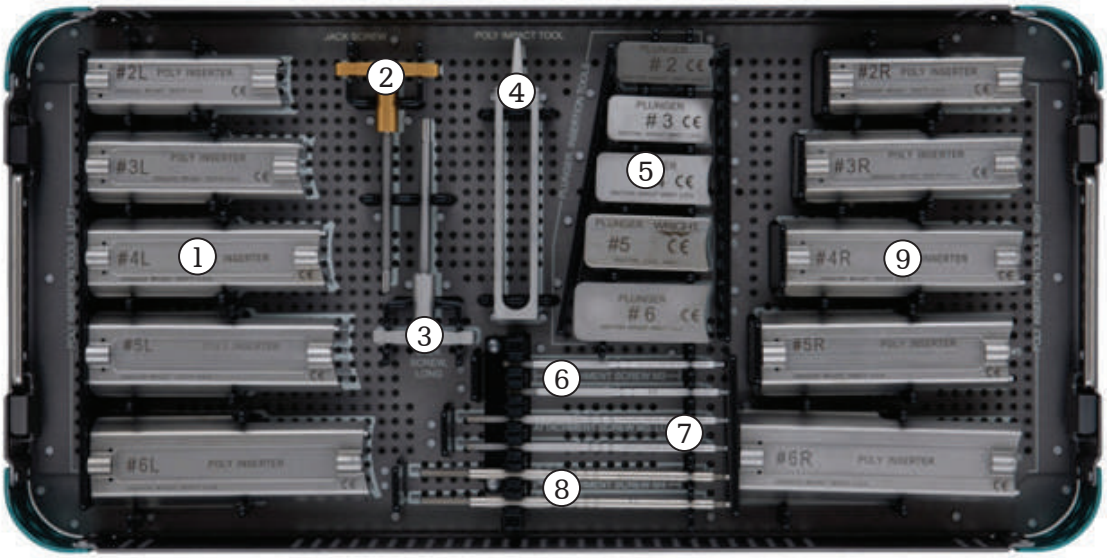
1. Poly insert trials

Size 1+ 6mm poly trial (IB202106)
Size 1+ 8mm poly trial (IB202108)
Size 2 6mm poly trial (IB202206)
Size 2 8mm poly trial (IB202208)
Size 2+ 8mm poly trial (IB203208)
Size 2+ 10mm poly trial (IB203210)
Size 3 8mm poly trial (IB203308)
Size 3 10mm poly trial (IB203310)
Size 3+ 10mm poly trial (IB204310)
Size 3+ 12mm poly trial (IB204312)
Size 4 9mm poly trial (IB204409)
Size 4 11mm poly triall (IB204411)
Size 4+ 10mm poly trial (IB205410)
Size 4+ 12mm poly trial (IB205412)
Size 5 9mm poly triall (IB205509)
Size 5 11mm poly trial (IB205511)
Size 5+ 10mm poly trial (IB206510)
Size 5+ 12mm poly trial (IB206512)

2. Talar Dome Trials (IB220901 through IB220906)
3. Stem Strike (200344)
4. Tray Insert (200419002 through 200419006)
5. Seat Block (IB200060)
6. Dome Strike Handle (IB200030)
7. Talar Peg Drill, 4mm (IB200020)
8. Poly Insert Trial Handle (IB200110)
9. Talar Dome Trial Handle (IB200010)

Inbone II instrumentation

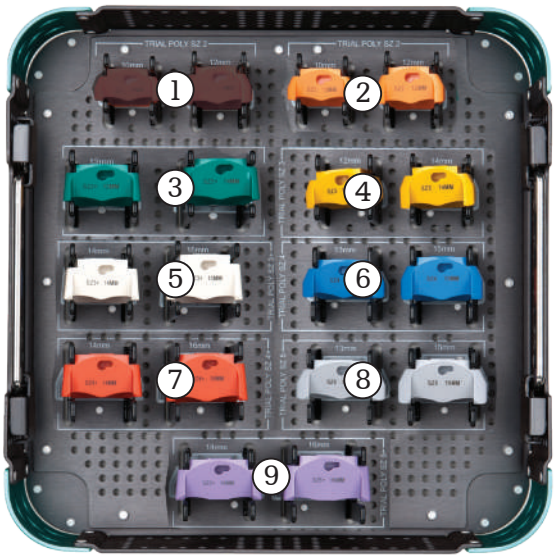
IBT2KIT1 Inbone II Case 5, Tray 3



1. Poly insert tool - left (100063102 through 100063106)
2. Jack screw, long (IB200040)
3. Jack screw (200278)
4. Poly impact tool (200286)
5. Plunger insert tool (200277002 through 200277004, 200277105 & 200277006)
6. Attachment screw, M3 (200329101)
7. Attachment screw, long, M3 (200329102)
6. Attachment screw, M3 (200329101)
7. Attachment screw, Long, M3 (200329102)
8. Attachment screw, M4 (200329103)
9. Poly insert tool - right (100060102 through 100060106

Inbone II instrumentation

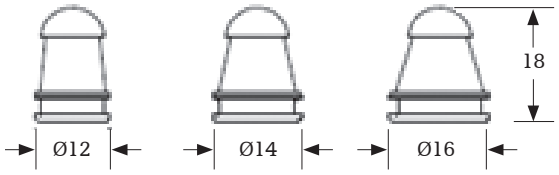
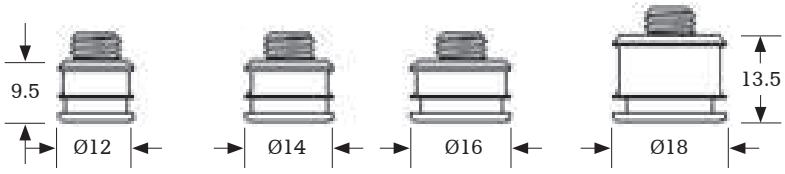
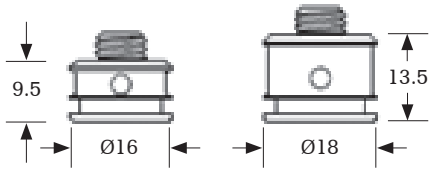
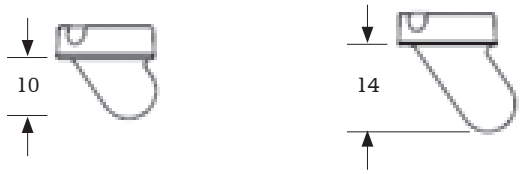
IBT2KIT1 Inbone II Case 5, Tray 2



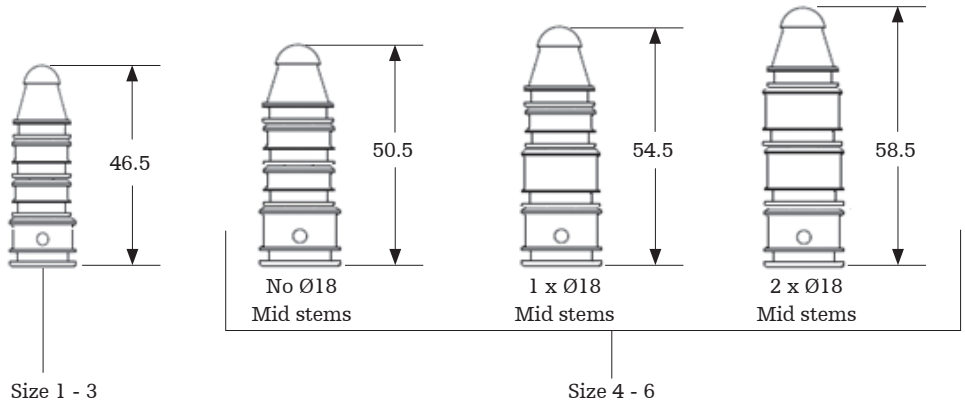
1. Size 1+ 10mm poly trial (IB202110)
   Size 1+ 12mm poly trial (IB202112)
2. Size 2 10mm poly trial (IB202210)
   Size 2 12mm poly trial (IB202212)
3. Size 2+ 12mm poly trial (IB203212)
   Size 2+ 14mm poly trial (IB203214)
4. Size 3 12mm poly trial (IB203312)
   Size 3 14mm poly trial (IB203314)
5. Size 3+ 14mm poly trial (IB204314)
   Size 3+ 16mm poly trial (IB204316)
6. Size 4 13mm poly trial (IB204413)
   Size 4 15mm poly trial (IB204415)
7. Size 4+ 14mm poly trial (IB205414)
   Size 4+ 16mm poly trial (IB205416)
8. Size 5 13mm poly trial (IB205513)
   Size 5 15mm poly trial (IB205515)
9. Size 5+ 14mm poly trial (IB206514)
   Size 5+ 16mm poly trial (IB206516)

Implant specifications

Stem component specifications

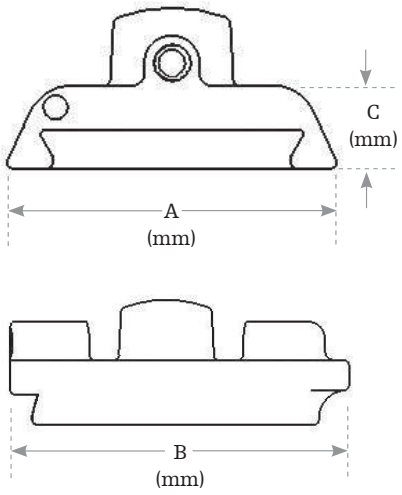
Implant	Options	
 Top stem (Diameter)		
 Mid stem (Diameter)		
 Base stem (Diameter)		Exclusive fit Size #2, #3 - 16mm only Size #4, #5, #6 - 18mm only
 Talar stem (Diameter)		

Stem component specifications



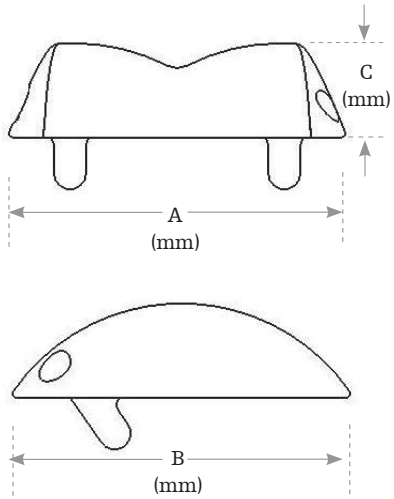
Implant specifications

Inbone tibial component



Size	A	B	C
2	26	32	7
2 long	26	36	7
3	28	36	7.5
3 long	28	39	7.5
4	31	39	8
4 long	31	42	8
5	34	42	9
5 long	34	46	9
6	37	46	10

Inbone sulcus talar component



Size	A	B	C
1	30	32	10
2	33	34	10
3	36	36	10
4	39	39	11
5	42	42	12

System components

Inbone tibial stems plasma coated

Ref #	Description
200011901	Top stem, 14mm, plasma coated
200011902	Top stem, 16mm, plasma coated
200011904	Top stem, 12mm, plasma coated
200010901	Mid stem, 14mm, plasma coated
200010902	Mid stem, 16mm, plasma coated
200010903	Mid stem, 18mm, plasma coated
200010904	Mid stem, 12mm, plasma coated
200009901	Base stem, 16mm, plasma coated
200009902	Base stem, 18mm, plasma coated

Tibial stems smooth coated

Ref #	Description
200012904	Top stem, 12mm, smooth
200012901	Top stem, 14mm, smooth
200012902	Top stem, 16mm, smooth
200014904	Mid stem, 12mm, smooth
200014901	Mid stem, 14mm, smooth
200014902	Mid stem, 16mm, smooth
200014903	Mid stem, 18mm, smooth

Standard tibial trays

Ref #	Description
200252902	Size #2, left
200252903	Size #3, left
200252904	Size #4, left
200252905	Size #5, left
200252906	Size #6, left
200222902	Size #2, right
200222903	Size #3, right
200222904	Size #4, right
200222905	Size #5, right
200222906	Size #6, right

Long tibial trays

Ref #	Description
220252902	Size #2 long, left
220252903	Size #3 long, left
220252904	Size #4 long, left
220252905	Size #5 long, left
220222902	Size #2 long, right
220222903	Size #3 long, right
220222904	Size #4 long, right
220222905	Size #5 long, right

Contact Stryker if material content information is required.

System components

Sulcus talar dome

Ref #	Description
220220901	Size #1, right & left
220220902	Size #2, right & left
220220903	Size #3, right & left
220220904	Size #4, right & left
220220905	Size #5, right & left

Talar stem

Ref #	Description
200347901	10mm long
200347902	14mm long

Sulcus poly insert

Ref #	Description
220222106E	Size #1+, 6mm thick, right & left
220222108E	Size #1+, 8mm thick, right & left
220222206E	Size #2, 6mm thick, right & left
220222208E	Size #2, 8mm thick, right & left
220222210E	Size #2, 10mm thick, right & left
220222212E	Size #2, 12mm thick, right & left
220223308E	Size #3, 8mm thick, right & left
220223310E	Size #3, 10mm thick, right & left
220223312E	Size #3, 12mm thick, right & left
220223314E	Size #3, 14mm thick, right & left
220224409E	Size #4, 9mm thick, right & left
220224411E	Size #4, 11mm thick, right & left
220224413E	Size #4, 13mm thick, right & left
220224415E	Size #4, 15mm thick, right & left
220225509E	Size #5, 9mm thick, right & left
220225511E	Size #5, 11mm thick, right & left
220225513E	Size #5, 13mm thick, right & left
220225515E	Size #5, 15mm thick, right & left

System components

Sulcus plus-size poly insert

Ref #	Description
220222110E	Size 1+ plus, 10mm thick, right & left
220222112E	Size 1+ plus, 12mm thick, right & left
220223208E	Size #2 plus, 8mm thick, right & left
220223210E	Size #2 plus, 10mm thick, right & left
220223212E	Size #2 plus, 12mm thick, right & left
220223214E	Size #2 plus, 14mm thick, right & left
220224310E	Size #3 plus, 10mm thick, right & left
220224312E	Size #3 plus, 12mm thick, right & left
220224314E	Size #3 plus, 14mm thick, right & left
220224316E	Size #3 plus, 16mm thick, right & left
220225410E	Size #4 plus, 10mm thick, right & left
220225412E	Size #4 plus, 12mm thick, right & left
220225414E	Size #4 plus, 14mm thick, right & left
220225416E	Size #4 plus, 16mm thick, right & left
220226510E	Size #5 plus, 10mm thick, right & left
220226512E	Size #5 plus, 12mm thick, right & left
220226514E	Size #5 plus, 14mm thick, right & left
220226516E	Size #5 plus, 16mm thick, right & left

Accessories

Ref #	Description
200178002	Drill, size 2 anti-rotation notch
200178003	Drill, size 3 anti-rotation notch
200178004	Drill, size 4 anti-rotation notch
200178005	Drill, size 5 anti-rotation notch
200178006	Drill, size 6 anti-rotation notch
200134	Drill, 6mm
200072	2.4mm steinmann pin
500036	1.4mm k-wire
IB200051	Bone removal screw
200138101S	Saw blade stryker narrow
200138102S	Saw blade stryker wide
200138103S	Saw blade hall/linvatec narrow
200138104S	Saw blade hall/linvatec wide
200138105S	Saw blade stryker system 6 narrow
200138106S	Saw blade stryker system 6 wide
200138107S	Saw blade stryker system 7 narrow
200138108S	Saw blade stryker system 8 wide

System components

Large revision polys

Ref #	Description
220222114E	Inbone poly SZ 1+ 14mm sulcus total ankle
220222116E	Inbone poly SZ 1+ 16mm sulcus total ankle
220222214E	Inbone poly SZ 2 14mm sulcus total ankle
220222216E	Inbone poly SZ 2 16mm sulcus total ankle
220223216E	Inbone poly SZ 2+ 16mm sulcus total ankle
220223218E	Inbone poly SZ 2+ 18mm sulcus total ankle
220223316E	Inbone poly SZ 3 16mm sulcus total ankle
220223318E	Inbone poly SZ 3 18mm sulcus total ankle
220224318E	Inbone poly SZ 3+ 18mm sulcus total ankle
220224320E	Inbone poly SZ 3+ 20mm sulcus total ankle
220224417E	Inbone poly SZ 4 17mm sulcus total ankle
220224419E	Inbone poly SZ 4 19mm sulcus total ankle
220225418E	Inbone poly SZ 4+ 18mm sulcus total ankle
220225420E	Inbone poly SZ 4+ 20mm sulcus total ankle
220225517E	Inbone poly SZ 5 17mm sulcus total ankle
220225519E	Inbone poly SZ 5 19mm sulcus total ankle
220226518E	Inbone poly SZ 5+ 18mm sulcus total ankle
220226520E	Inbone poly SZ 5+ 20mm sulcus total ankle

Stem retrieval

Retrieving a base stem piece from the tibia

Insert the T-handle reamer through the bottom of the foot and thread the base stem extraction tool in the open joint space (fig. 64). A size 14 clip is used to introduce the base stem extraction tool. Once it is threaded onto the reamer replace the clip with a size 14 wrench to tighten (fig. 65).

Remove the wrench and push the extraction tool up in the tibia until contact is made with the base stem piece. Continue to turn the T-handle clockwise to engage the threads of the base stem piece (fig. 66). Once threads are engaged, pull out the stem construct until the base stem is visible in the joint space (fig.67).

Place the appropriate size wrench on the base stem and turn the T-handle counter-clockwise to disengage the extraction tool from the base stem. Leaving the wrench on the base stem push the stem construct back into the tibia (fig. 68). Use the size 14 wrench to remove the extraction tool from the T-handle reamer (fig. 69).

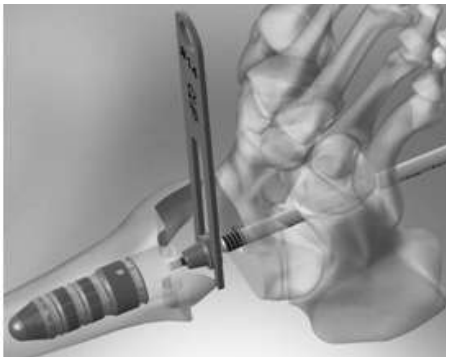


Fig. 64

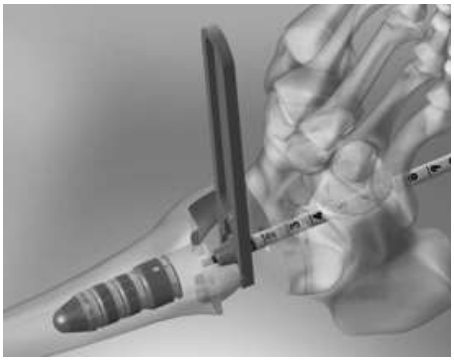


Fig. 65

Fig. 66

Fig. 67

Fig. 68

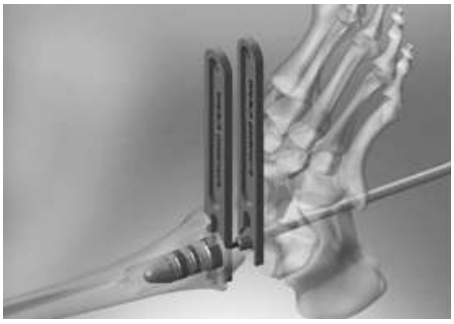


Fig. 69

Select these tools:

Tibial stem clip #14
200381001 - 200381004

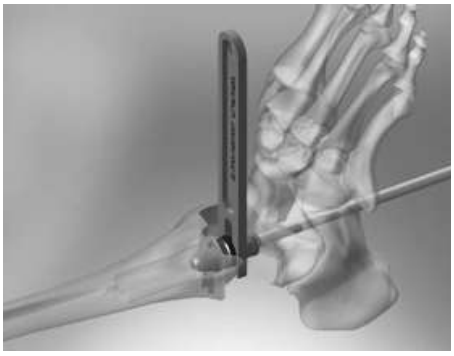
Tibial stem wrench #14
200380001 - 200380004

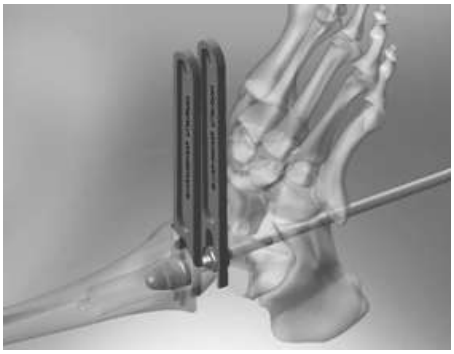
Base stem extraction tool 200428

Tibial T-handle reamer drive rod 200395

Retrieving a mid or top stem piece from the tibia

Follow the exact steps detailed on previous page for removing the base stem piece, substituting the mid/top stem extraction tool (#200102) for the base stem extraction tool (#200428).





Mid/top stem extraction tool 200102

Notes

Notes

Notes

Notes

stryker

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The products listed above are CE marked.

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CE 2797

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