Smith+Nephew

SALTO TALARIS◊

Total Ankle Prosthesis

Primary Ankle Replacement
Surgical Technique

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Nota Bene
The following technique is for informational and educational purposes only. It is not intended to serve as medical advice. It is the responsibility of treating physicians to determine and utilize the appropriate products and techniques according to their own clinical judgment for each of their patients. For more information on the product, including its indications for use, contraindications, and product safety information, please refer to the product's label and the Instructions for Use packaged with the product.

Instrumentation Concept

The instrumentation is designed to achieve accurate and reproducible tibiotalar alignment while adapting to various anatomical conditions, depending on the lesions encountered in the ankle or a particular morphotype.

The broad steps of this Primary operative technique can be summarized as follows.

1) Patient Positioning

The patient is placed in a supine position with a bump under ipsilateral hip to reduce external rotation of the extremity.

The heel is placed near the end of the table. A bump under the calf should be used throughout the surgery to keep the heel off the table.

2) Initial Tibial Preparation

The tibial cutting line is first determined using a resection guide to align the cut on the tibia and take into account the geometry and orientation of the tibiotalar joint.

3) Talar Preparation

The talar cut is then refined to approach the resurfacing step in relation to the initial tibial cut.

4) Final Adjustments in the Tibial Implant Position

The mobile-bearing concept has been moved from the implant to the instrumentation at the stage of the trial reduction.

The trial tibial base, featuring a highly polished surface that remains mobile against the resected distal tibia, is allowed to rotate into the proper position, thus self-aligning the prosthesis. After this optimal tibiotalar alignment is achieved, the preparation for the tibial keel and plug are completed.

The SALTO TALARIS Total Ankle Prosthesis 2015 Instrumentation Upgrade (also referred to as 2.1 Instrumentation) helps to ensure proper positioning of the tibial implant in relation to the talar implant.

Preoperative Planning

The preoperative planning for the SALTO TALARIS◊ prosthesis is carried out using three standard weight-bearing radiological views:

- Anterior view;
- Anterior view with 30° internal rotation to expose the tibial-fibular joint space.
- Straight lateral.

Examination of the healthy side should be used for comparison.

Complementary imaging may be requested to:

- Confirm or reject the indication (CT scan examination for talar necrosis, a relative contraindication for prosthetic replacement);
- Discuss the need for an associated procedure (CT scan of the subtalar joint);
- Modify the technical details (assess the anterior deviation of the knee with panoramic X-ray).

Special consideration should be given to two types of pre-existing conditions.

- Malunions responsible for malalignment of the tibia or imbalance of the malleoli, which may require an initial correction.
- Major ligamentous instabilities demonstrated by an examination under stress will require specific intervention (release of the retracted side or possible need for an associated ligamentoplasty on the lengthened side).

1) Key planning elements determined from the anterior view:

- Choice of an implant size that does not impinge with the lateral malleolus;
- Determination of the ideal joint line level accommodating for articular wear.

Comparative images are often necessary to assess the prosthetic joint line, which should be located at the theoretical anatomic joint line. The thickness of the tibial resection depends on this determination.

2) Key planning elements determined from the lateral view:

- Confirmation of the implant size selected from the anterior view;
- Evaluation of the anterior osteophytic margin and assessment of the proposed bone resection required to expose the roof of the pilon;
- Evaluation of talar dome morphology, particularly its degree of convexity;
- Evaluation of talar positioning, which can be centered or retroplaced beneath the pilon. The relative positioning of the tibial and talar components should take into account a possible off-centered location with the understanding that the prosthesis adapts to this position and does not correct it.

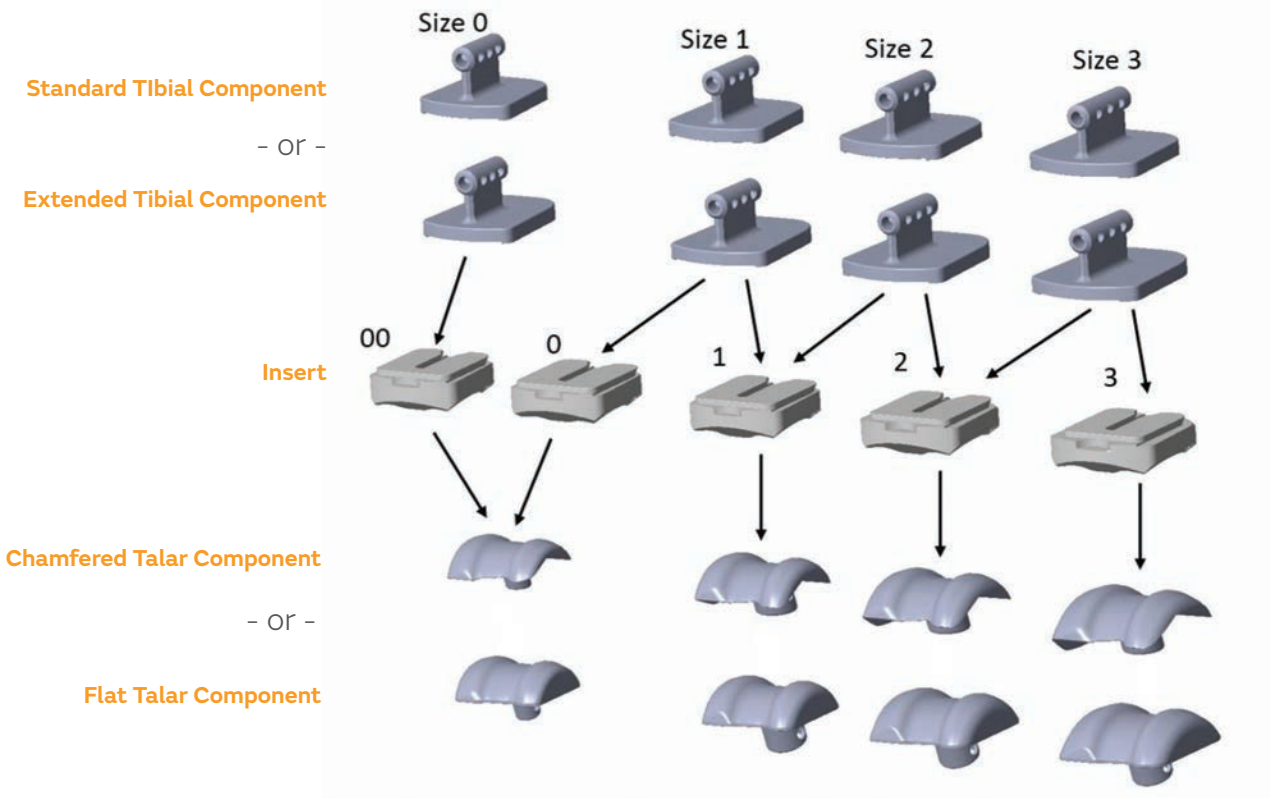
In extreme cases, a pronounced anterior or posterior talar subluxation may preclude implantation of a prosthesis.

General Rules

- The Tibial component size is always the same or one size bigger than the Talar component size.
- The polyethylene insert matches the Talar component size except for the size 0 Talar component which has to be associated with the PE insert size 0 if the Tibia is a size 1 and with a PE insert size 00 if the Tibia is a size 0.

Additional Information

- The tibial implant comes in 8 symmetrical sizes (4 standard and 4 extended) that can all be implanted on either the right or the left ankle.
- The PE insert is clipped onto the tibial base to form a single-block component. The inserts come in 7 thicknesses, from 8 to 17mm (includes thickness of the metallic tibial base + thickness of PE). Unlike the tibial implant, the PE inserts are specific for each side, right and left.
- When the patient's anatomy requires using a size 0 tibial implant, a size 00 insert must be associated with it (available for each side, right and left), whose width and clipping system are compatible with the size 0 tibial implant, and whose curvature corresponds to that of the size 0 talar implant.
- However, when the patient's anatomy presents a tibia requiring size 1, but requires use of a size 0 talar component, the intermediary insert must be size 0, whose width and clipping system are compatible with the size 1 tibial implant, and whose curvature corresponds to those of the size 0 talar implant.
- The talar component comes in 4 side-specific sizes



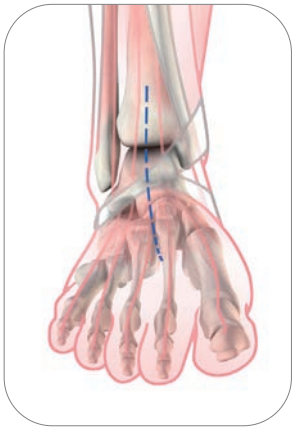


Figure 1
Anterior approach

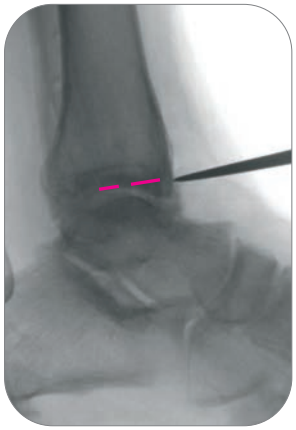


Figure 1a
After gaining exposure to the joint, visualize the level of the tibial plafound

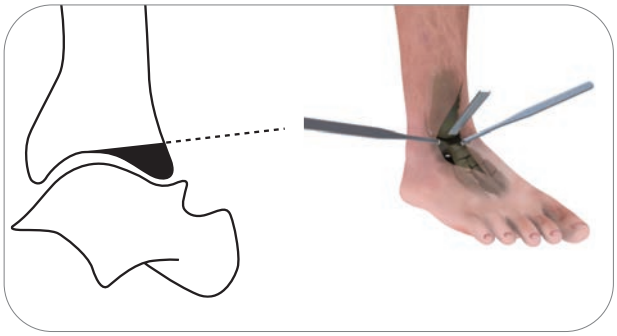


Figure 2

Figure 2a

Surgical technique

Step 1 ▪ Surgical Approach and Exostosectomy of the Distal Tibia

1-1 The ankle is opened with a longitudinal anterior incision, lateral to the anterior tibialis. This allows for an anterior release and broad arthrolysis with resection of all the osteophytes **(Figure 1)**. The top of the dome as well as the angles between the pilon and each of the malleoli can be identified precisely using this incision.

If necessary, release of any malleolar attachments can be carried out simultaneously. The most distal anterior aspect of the tibia and osteophytes are removed with the thin osteotome (provided). This will expose the tibial plafond and provide a precise view of the talar dome. **(Figure 2)**.

Resect until the end of the osteotome reaches the tibial plafond. The osteotome placed into the joint space determines the reference position for placement of the tibial alignment guide (see next step).

Item Used:

Osteotome, Thin: MJU357T

Figure 3

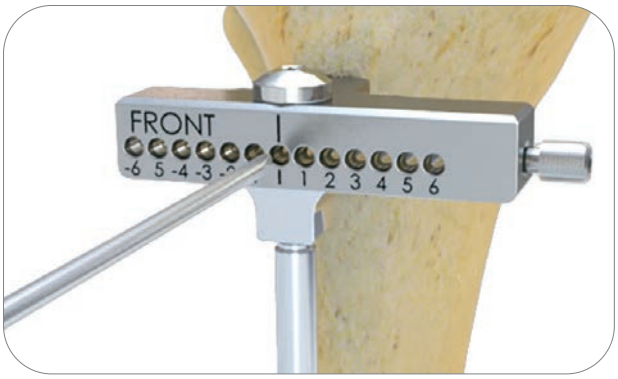


Figure 4

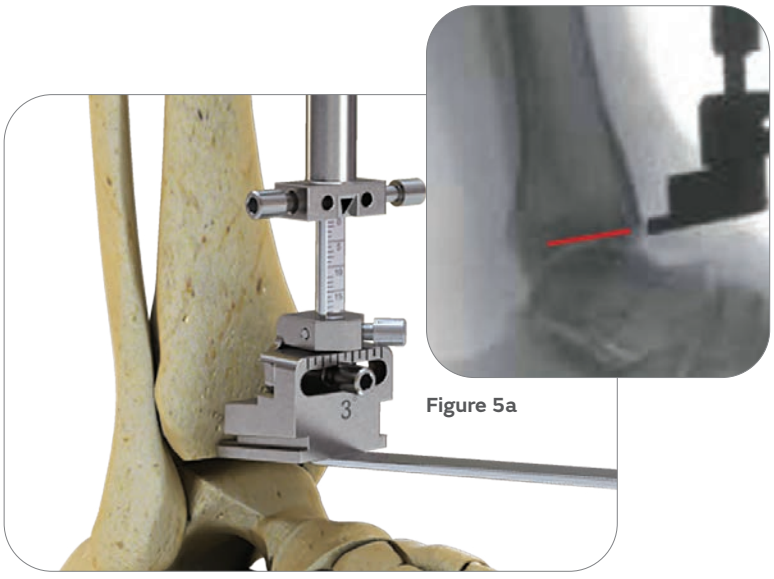


Figure 5a

Figure 5

Step 2 ▪ Positioning the Tibial Alignment Guide

2-1 If the 3 degree cut block is preferred, the 7 degree cut block must be disassembled from the tibial alignment guide and replaced with the 3 degree cut block. While using the flat cut talar component the 3 degree cut block must be used.

The guide should be aligned parallel to the tibia's mechanical axis; this is a determining factor in all the resections performed during the procedure **(Figure 3)**.

First check that all of the guide's set screws are unscrewed.

Drill a 110mm drill tip pin bicortically at the Anterior Tibial Tubercle in the neutral hole **(Figure 4)**, with the alignment guide parallel to the tibial crest.

Align the pin guide to position 0 at the resection level and set this position with the lateral set screw. Position the osteotome in the joint space, so that it will be parallel with the distal plane of the tibial guide **(Figure 5)**.

Next, position the most distal part of the guide on the osteotome. Translation is possible as soon as the central set screw of the tibial alignment guide is loosened. Tighten the central set screw using a screwdriver and remove the osteotome.

Figure 6

Insert a second 110mm drill tip pin distally through the guide's medial hole, positioning the alignment guide's axis in the center of the inferior metaphysis **(Figure 6)**.

The distal flange of the tibial alignment guide should rest at the level of the exostectomy, elevated slightly off the tibial shaft for smooth translation during the height adjustment

The tibial slope positioning block can be changed to a 3° posterior slope from the standard 7° posterior slope if desired. To change the block, remove the set screw holding the tibial slope positioning block in place and replace with the 3° tibial slope positioning block.

Note: At the end of the surgery, the 7° tibial slope positioning block must be reassembled onto the tibial alignment guide and put back in the SALTOPRIMEBOX1. MJU668T, 3° block is separate within the SALTOPRIMEBOX1 and next to the alignment guide.

Items Used:

Tibial Alignment Guide: MJU333T

Pin, 110mm: LJV527T

Hex Driver, 3.5mm: MLN113T

3 Degree Block, Tibial Alignment: MJU668T

Figure 7

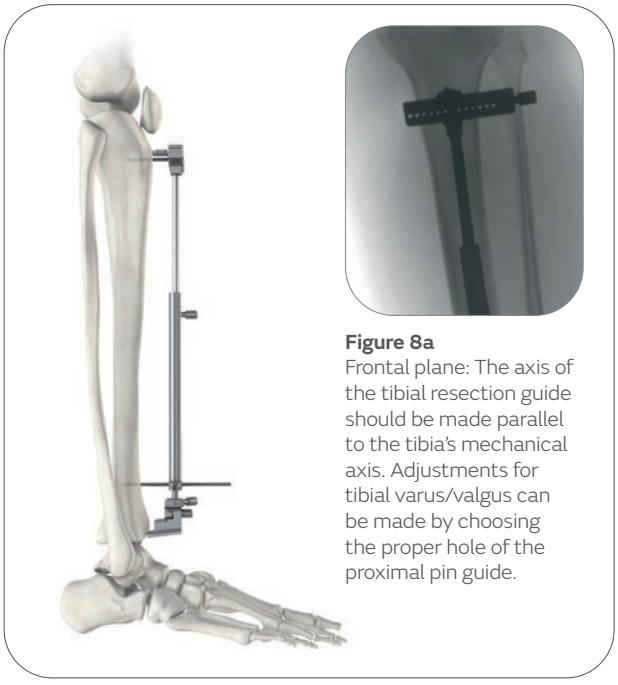


Figure 8a
Frontal plane: The axis of the tibial resection guide should be made parallel to the tibia's mechanical axis. Adjustments for tibial varus/valgus can be made by choosing the proper hole of the proximal pin guide.

Figure 8

Step 3 ▪ Adjusting the Alignment Guide

3-1 Frontal plane: The axis of the tibial cut guide should be made parallel to the tibia's mechanical axis by choosing the proper hole of the proximal pin guide **(Figure 7)**.

Sagittal plane: With both flanges in contact with the tibia, the cut guide is adjusted parallel to the anterior tibial crest **(Figure 8)**.

At this stage, a genu varum or a genu valgum deformation can be corrected by moving the **(Figure 8a)** proximal guide medially or laterally over the pin. This makes it possible to implant the prosthesis strictly perpendicular to the tibial axis. This will compensate for an axis defect, to give greater importance to the horizontal orientation of the tibiotalar joint line.

The timing and degree of this compensation should be discussed for each case (possibility of secondary knee surgery, subtalar joint stiffening in a position that compensates the axis).

Once the guide is positioned in the frontal and sagittal planes, the set-up is finalized by tightening the distal and proximal set screws on the 110mm pins.

Figure 9

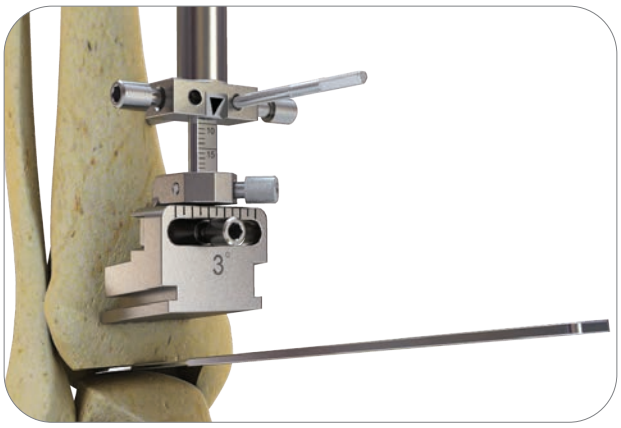


Figure 10

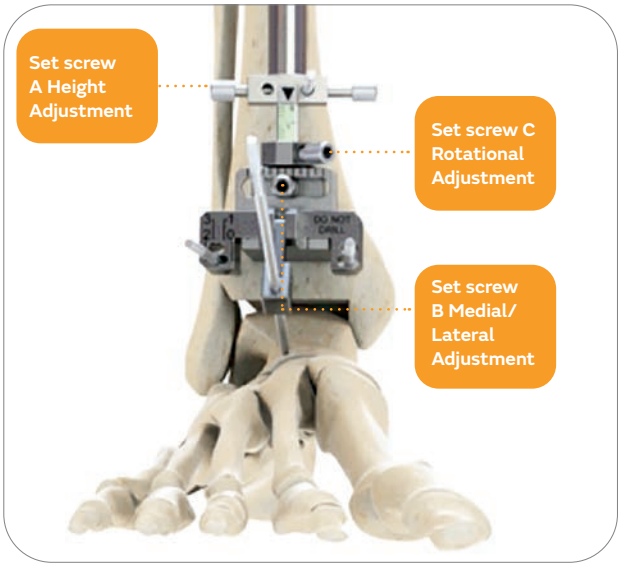


Figure 11

Items Used:

Tibial Alignment Jig: MJU334T

Pins, 75mm and 110mm: LJV526T, LJV527T

Step 4 ▪ Final Adjustment of Cutting Height, Rotation, and Lateral Position Height Adjustment

4-1 The cut level determined during the preoperative plan is transferred to the distal resection guide **(Figure 9)**.

Caution: When determining the cut level during surgery, any significant wear or loss of bone on the tibia must be taken into account. For an unworn tibial plafond, the recommended cut is 9mm above the tibial plafond. This corresponds to adding the thickness of the tibial plate and the smallest thickness of the PE inserts.

4-2 Rotational and mediolateral positioning:
The tibial alignment jig, used for mediolateral and rotational adjustment of the implant, is attached to the tibial alignment guide.

Caution: Since this guide is not a cutting guide, do not drill through the holes. The pins inserted in the holes are used only to verify that the tibial plate is properly positioned. They are inserted in the holes but not drilled.

Adjustments are made as follows:

- The foot must be held in a neutral position through the next steps:
- **Rotational adjustment:** Without drilling, insert a 110mm pin into the guide's adjustable arm. The pin in the adjustable arm should be centered in the joint and also be in line between the 2nd and 3rd metatarsal. **(Figure 11)**.
- Once the rotational position has been determined, tighten the guide's rotational adjustment set screw (Screw C).
- **Mediolateral adjustment:** The tibial implant size planned preoperatively is determined through a series of lateral and medial holes on the guide.

The different implant sizes available (0, 1, 2, and 3) are on the guide; hence the size is determined by inserting, without drilling, two 75mm pins in the medial and lateral holes, and positioning them at the medial and lateral vertical joint spaces (Figure 11). Once the mediolateral position has been adjusted, the guide's mediolateral adjustment set screw (screw B) is firmly tightened with a screwdriver.

4-3 Next remove the pins and tibial jig.

*** Remember, this does not commit you to the selected size.**

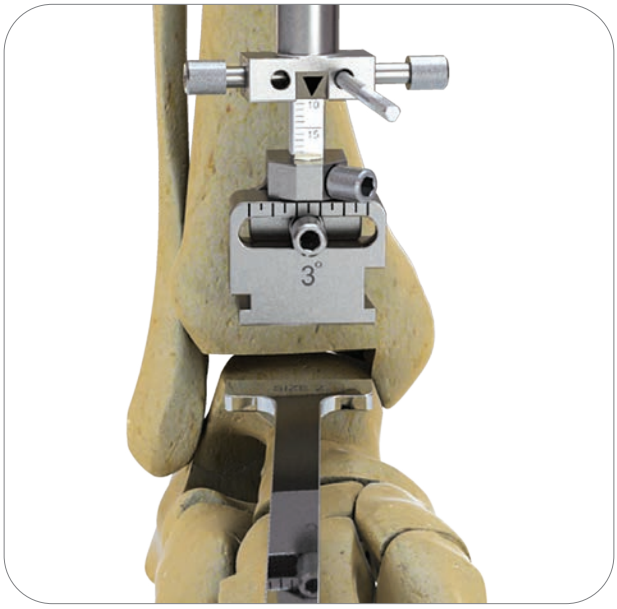


Figure 12

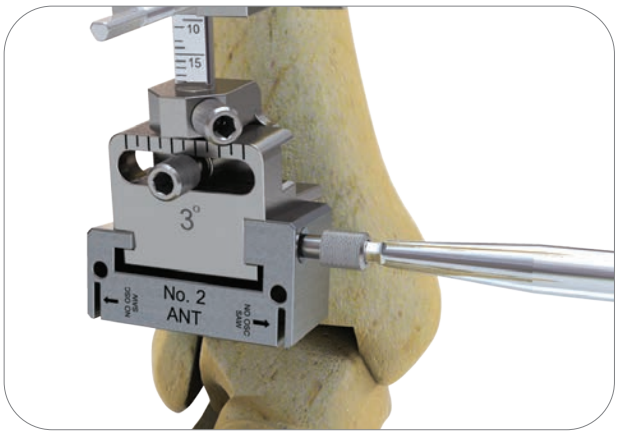


Figure 13: Vertical Slot Tibial Cut Guide

Figure 13a: Vertical Hole Tibial Cut Guide

Step 5 ▪ Preselection of Talar Implant Size

5-1 Before proceeding to resect the tibia to match the tibial and talar sizes, the size of the talar implant selected (preoperatively) can be confirmed.

Two talar gauges are included in the instrumentation for the talar implants.

The talar gauge (0, 1, 2, or 3) selected during the preoperative planning is placed on the first 1/3 of the talar dome **(Figure 12)**. It should have the same width as the talar dome.

As shown in the implant compatibility table (see p. 6), a talar implant that is one size smaller than the tibial implant can be used.

Items Used:

Talar Gauge, Size 0,1: MJU331T

Talar Gauge, Size 2,3: MJU364T

Step 6 ▪ Placing the Cut Guide

6-1 Depending on the size chosen at the preoperative planning stage, and in accordance with the size determined from the tibial alignment jig, choose either the vertical slot or vertical pin hole tibial resection guide No. 0, 1, 2 or 3. This unit is attached to the alignment guide by tightening the set screw **(Figure 13)**.

Caution: Once all the adjustments have been made, and before using the oscillating saw, make sure that the guide is sitting on the anterior tibia and all the set screws have been firmly tightened with the screwdriver provided in the instrumentation. An AP fluoroscopy image may be utilized to ensure proper alignment of the cut guide. A lateral fluoroscopy image can also confirm the level of resection of the tibia.

Figure 13 Items Used:

Vertical Slot Tibial Cut

Guide Sizes 0 - 3:

Size 0: MJU645T

Size 1: MJU646T

Size 2: MJU647T

Size 3: MJU648T

Figure 13a Items Used:

Vertical Hole TIbial Cut

Guide Sizes 0-3:

Size 0: MJU370T

Size 1: MJU371T

Size 2: MJU372T

Size 3: MJU373T

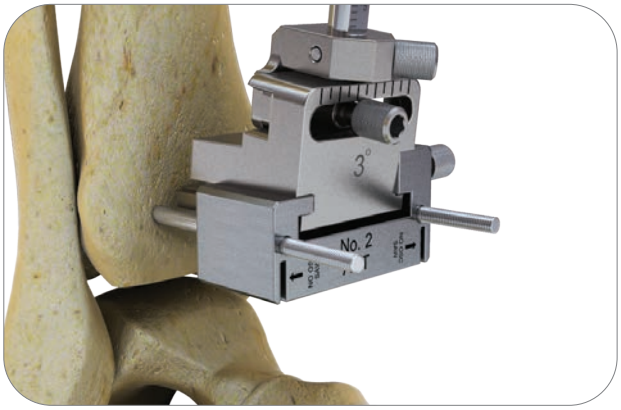


Figure 14

Figure 14a

Step 7 ▪ Preparation for Tibial Bone Cut

Note: If using the vertical slot tibial resection guide, follow Step 7-1. If using the vertical hole tibial resection guide, follow Step 7-2.

Note: If necessary, a pin pusher tool is available and can be used to further advance the pins through the guide after drilling.

7-1 Vertical slot resection guide: In the cut guide, drill in the two proximal holes with two 75mm drill-tip pins. These pins protect the sweep of the oscillating saw blade during the horizontal cut as well as the proximal migration of the reciprocating saw blade during the vertical cuts. **(Figure 14)**.

7-2 Vertical hole resection guide: In the cut guide, drill the two proximal holes with two 75mm drill-tip pins. These pins protect the sweep of the oscillating saw blade during the horizontal cut. Using the drill, 110mm drill-tip pin, or reamer, drill the remaining 4 holes in the tibial cut block. Care should be taken to ensure that all holes are drilled bicortically. **(Figure 14a)**.

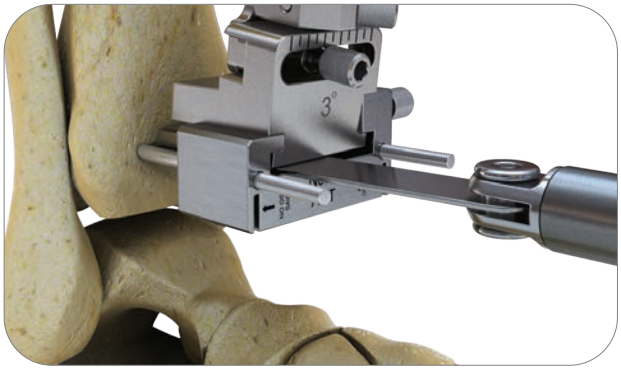


Figure 15

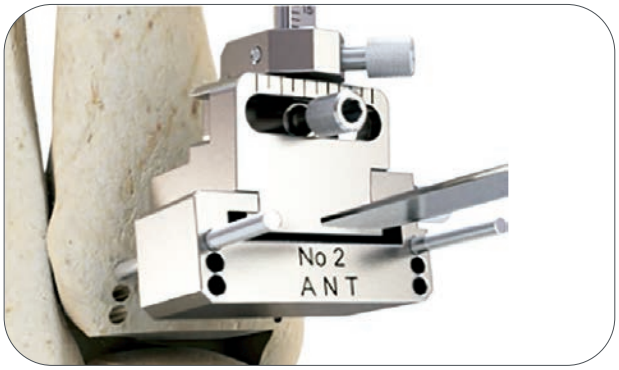


Figure 15a

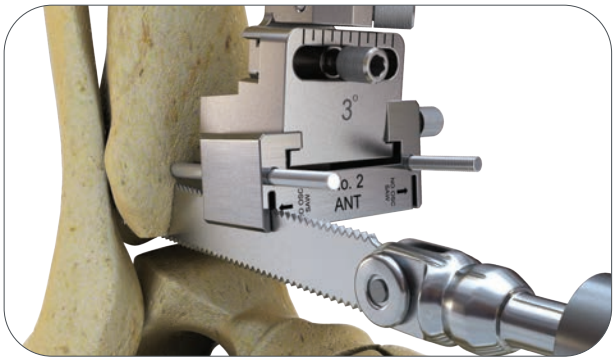


Figure 16

Figure 16a

Step 8 ▪ Tibial Cut

Note: If using the vertical slot tibial resection guide, skip step 8-3. If using the vertical hole tibial resection guide, skip step 8-2.

8-1 The horizontal tibial resection is performed with an oscillating saw blade **(Figure 15, 15a)**, extending carefully to the back, as far as the posterior cortex.

8-2 For the vertical slot resection guide, the vertical resection is performed through the slots on the medial and lateral aspects of the guide with the provided end cutting reciprocating saw. Care needs to be taken to avoid unwanted contact to the talus when using the one-sided or two-sided reciprocating saw. If using the one-sided reciprocating saw, point the teeth distally. The cut should extend up to the pins that are seated in the guide. **(Figure 16)**.

Once the cuts have been made, remove the tibial resection guide and resect the anterior half of the distal bone, which is easily accessible. The remaining posterior resection is easily completed after the talar resection.

8-3 For the vertical pin hole resection guide, the vertical drill holes are connected with the provided osteotome. Once the cuts have been made, remove the tibial resection guide and resect the anterior half of the distal bone, which is easily accessible. The remaining posterior resection is easily completed after the talar resection. At this stage, the goal is to be able to straighten the foot at a right angle below the tibia. **(Figure 16a)**.

8-4 Care should be taken to avoid over penetration of either oscillating or reciprocating saw blade beyond the posterior cortical bone. Be sure to use only the oscillating saw for the horizontal cut and only the reciprocating saw for the vertical cuts.

Caution: Point the saw blade's teeth distally to prevent wear of the cut guide.

Items Used:

Reamer: LJU097T
Pins, 75mm: LJV526T
Pins, 110mm: LJV527T
Saw Blade, Wide, Stryker 7: SAW5945T/SAW6945T
Saw Blade, Wide, Hall Versipower: SAW5947T/SAW6947T
Saw Blade, Wide, Hall Powerpro: SAW5949T/SAW6949T
Recip. Saw Blade, 75mm x 12mm: SAW5950T/SAW6950T
Pin Puller: MJU359T
Reciprocating Saw Blade, 75mm x 8mm: SAW6951T
3mm Drill Bit: DWD060T/LJV528T
Vertical Hole Tibial Cut Guide: MJU370T-373T
Vertical Slot Tibial Cut Guide: MJU645T-648T

FLAT CUT OPTION: Note if using flat cut talar dome, skip to Step 19.

Figure 17

Figure 18

Figure 19

Figure 20

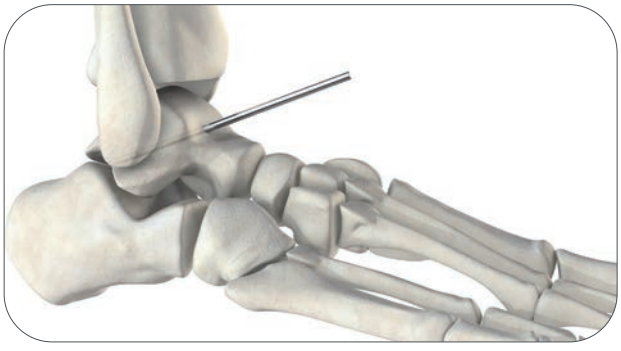


Figure 21

Step 9 ▪ Preparing the Posterior Talar Cut and Inserting the Talar Guide Pin

9-1 The posterior cut of the talus depends on the tibial cut performed earlier. The talar pin guide is positioned on the tibial alignment guide.

Drilling is performed while maintaining the foot in neutral, with no rotation, varus, or valgus. Maintaining a neutral position will prevent rotation of the talus and hold the foot in slight (2-3°) of plantar flexion. Choose a hole in the Talar Pin Guide that allows the pin to enter the talus inferior to the articular surface. **(Figure 17, 18)**.

If using the 2.1 posterior chamfer guide, choose the most distal hole on the talar pin guide.

Drill a 110mm or 75mm drill tip pin 1 cm. Confirm in a lateral view that the pin is pointing to the superior 20% of the posterior facet of the subtalar joint. Continue to advance the pin, drilling just prior to the posterior facet.

9-2 Remove the talar pin guide and tibial alignment guide. The talar pin must remain in the talus and the tibial pins may be removed or left in if desired.

Items Used:

Talar Pin Guide: MJU335T

Pin, 75mm: LJV526T

Pin, 110mm: LJV527T

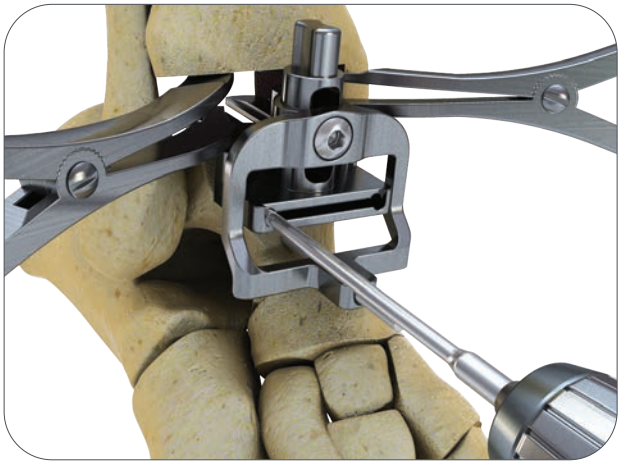


Figure 22

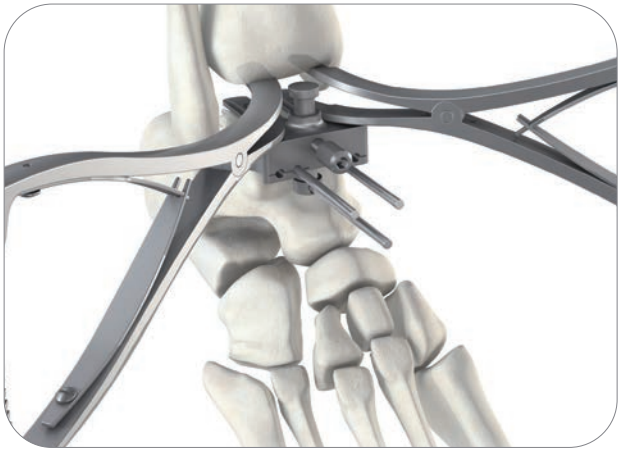


Figure 22a

Step 10 ▪ Setting the Talar Resection Guide and the Talar Pins

Note: Posterior talar resection can be accomplished using either the posterior talar chamfer slot guide or the posterior talar chamfer hole guide. For the slot guide, skip Step 10-3, for the hole guide, skip Step 10-2.

10-1 Two posterior talar dome resection guides are provided, one for size 1, 2, or 3 talar implants and the other for size 0. To take into account any symmetrical or asymmetrical wear of the talar dome, one or two height-compensating paddles should be assembled on the guide selected. Six augments are provided for 1, 2, or 3mm height compensations.

The posterior talar dome resection guide with no height-compensating augments should be used when there is no asymmetrical talar dome wear.

The posterior talar dome resection guide is placed onto the talar pin that has been attached. Two paddles, with or without height compensating augments, are placed on the superior surface of the talar dome. The paddles should rest on the talar dome and under any of the remaining tibial plafond.

The front set screw stabilizes the resection guide position.

Note: Before tightening the front set screw, the guide can also be stabilized using two joint distractors, each leveraged on the paddles on one side and the tibial cut on the other side. In this case, care should be taken to position the leverage point of these lamina spreaders at the upper edges of the talar dome, to prevent the resection guide from bending the talar pin and thereby tipping anteriorly.

10-2 Posterior Chamfer Slot Guide: The two pin holes on either side of the cutting slot should be drilled with the 75mm pins (use pin pusher if needed) to stabilize the guide and protect from the sweep of the oscillating blade. A lateral fluoroscopy image should be taken to ensure that the paddles are positioned on top of the talar dome. **(Figure 22)**.

Once the guide is stabilized the talus can be cut through the guide with the oscillating saw using either the narrow or wide blade depending on the width/size of the talus. Remove the two medial/lateral pins and the cutting guide. Retain the talar pin in the talus.

Figure 23

Figure 23a

10-3 Posterior Chamfer Hole Guide: Drill two 75mm pins through the central holes and 110mm pins through the medial and lateral holes (use the pin pusher if needed). The upper portion of these pins defines where the talar resection will be made. At this stage, one can verify that the pins are properly positioned using lateral fluoroscopy. The pins should exit posteriorly at the inferior part of the joint surface.

With the guide removed, the posterior talar cut is made with the oscillating saw **(Figure 23a)**. To protect the malleoli from the sweep of the saw blade, a set of ribbon retractors are provided in the instrumentation. To follow the planned resection accurately, the saw should cut flush on the surface of the pins. The pins are then withdrawn. Retain the talar pin in the talus.

10-4 At this stage, after the talar dome is resected, the posterior portion of the distal tibial resection can be completed. Any remaining bone may be resected using a saw or removed with rongeurs.

Note: Do not remove the talar pin after this step.

Items Used:

Posterior Chamfer Guide, Size 1,2,3: MJU642T

Posterior Chamfer Guide, Size 0: MJU641T

Joint Distractor Model A, B: MJU345T, MJU346T

Reamer: LJU097T

Pin, 75mm: LJV526T

Saw Blade: SAW5944T or SAW6944T, SAW5946T or SAW6946T, SAW5948T or SAW6948T

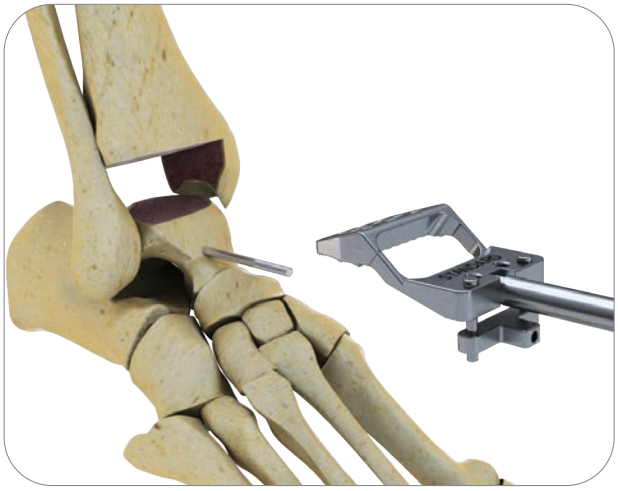


Figure 26

Step 11 ▪ Anterior Talar Chamfer - Placing the Guide

Note: Anterior talar resection can be accomplished using either the 2.1 instrument option or the standard instrumentation. For the 2.1 instrumentation, skip Step 11-3, for the standard instrumentation, skip Step 11-2.

11-1 The anterior chamfer determines the anteroposterior positioning of the talar implant beneath the tibial implant. Remove any osteophytes from the talar neck prior to placing the guide for the anterior chamfer into place. For the 2.1 instrumentation guide, there are two sizes. The standard size and the large size correspond to the size of the talus. Selecting the correct anterior chamfer for the talus will reduce the amount of extra bone removal after reaming.

Assemble the correct size of the anterior chamfer guide to the handle.

The guide for the anterior chamfer is guided into place by inserting the guide onto the same Talar Guide Pin used to position the posterior chamfer cut guide in Step 10. **(Figure 26)**.

Caution: Care must be taken to avoid bicortical drilling or pin penetration of the inferior aspect of the talar neck.

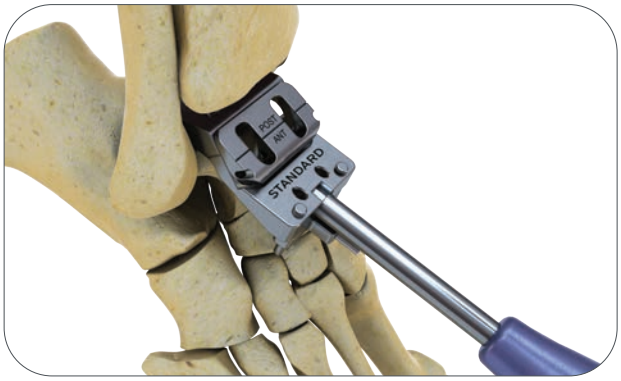


Figure 27

Figure 27a

Figure 28

Figure 28a

11-2 2.1 Instrumentation: Position the guide by using the Talar Position Spacer, inserted into the oblong window of the anterior chamfer guide. **(Figure 27)** Once the spacer is in place, position the foot at 90 degrees in the neutral position. The anterior cortex of the tibia should be tangent to the calibration line on the spacer. **(Figure 28)** If the guide is too far anterior or posterior it must be repositioned to correct the resection level of the talus. One or both of the additional talar pin holes may be used to aid in stabilization of the guide by drilling with a 45mm pin. Use the pin pusher to seat pin fully. Ensure that there is sufficient material so that the pin may be eventually removed.

11-3 Standard instrumentation: First, remove the talar pin. The guide is positioned in two steps. The talar position spacer is inserted in the oblong window. The foot is maintained at 90 degrees in the neutral position. The anterior cortex of the tibia should be tangent to the calibration line on the spacer. If the guide is too far anterior, the talar neck must be exposed using the rongeur until the guide is optimally positioned. To avoid any rotational error, align the sides of the instrument between the second and third metatarsal. Ante or retropositioning of the talar implant would result in poor alignment of the tibial implant, a potential source of premature deterioration. The anterior chamfer guide is then attached using 45mm pins. Use the pin pusher to fully seat pins. Ensure that there is sufficient material so that the pin may be eventually removed.

Items Used:

Anterior Chamfer Guide: MJU336T

Talar Position Plug: MJU337T

Anterior Chamfer Guide, Size 0,1: MJU643T

Talar Position Plug, Size 0,1: MJU644T

Anterior Chamfer Guide, Size 2,3: MJU665T

Talar Position Plug, Size 2,3: MJU666T

3mm Drill: LJV528T/DWD060T

3mm Drill: LJV528T/DWD060T

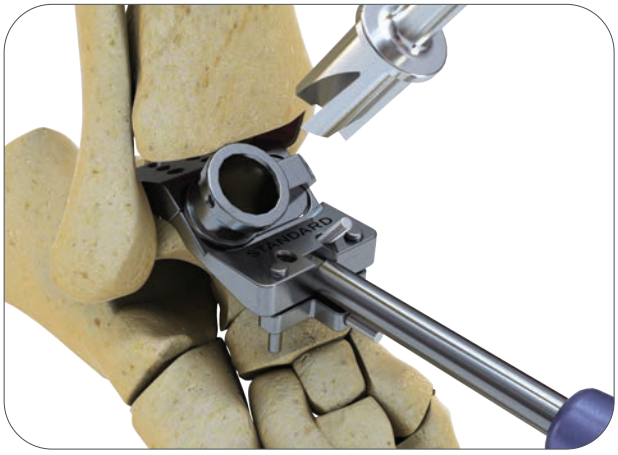


Figure 29

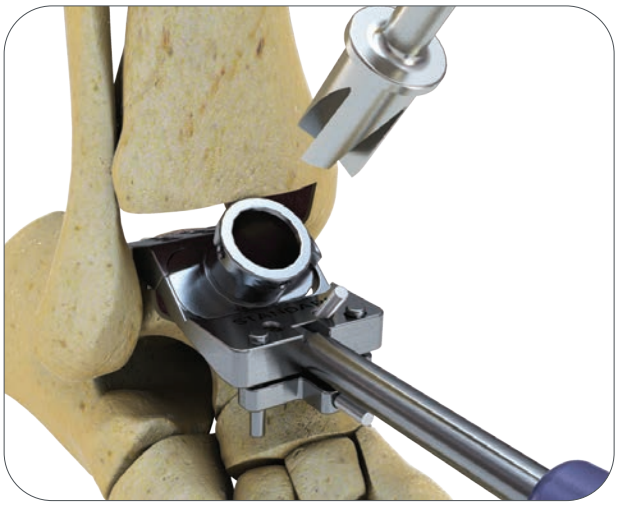


Figure 30

Figure 31

Step 12 ▪ Anterior Talar Chamfer - Reaming

Note: The use of the 2.1 instrumentation anterior chamfer is not recommended if talar dome is badly damaged. Use standard instrument MJU336. **(Figure 31)**.

12-1 The guide can be further stabilized using one or two distractive clamps whose ends fit into the guide's indentations.

The reaming guide is placed onto the anterior chamfer guide and the cut is made using the reamer to the stop in two steps by turning the reaming guide over Rotate the reaming guide 180 degrees and repeat the cut **(Figure 29)**; finishing the resection at the medial and lateral margins requires trimming with a rongeur.

If a larger talus size (usually 2 and 3) was selected, use the "Large" anterior chamfer guide (MJU665T). To cut the medial/ lateral sides, first insert the wider anterior chamfer reamer guide (MJU667T) into the anterior guide's window. Ream to a full stop using the Talar reamer (MJU338T). Flip the reamer guide and repeat the reaming step. To finish the center cut, next insert the middle anterior chamfer reamer guide (MJU669T) into the anterior guide's window. Ream to a full stop using the talar reamer. Remove the guides and pins, including the talar pin. Clean up the resection using a rongeurs or saw. If using the standard chamfer guide, select the standard anterior chamfer reaming guide (MJU339T), and position it into the window of the anterior guide. Ream to a full stop using the talar reamer (MJU338T). Flip the reamer guide and repeat the reaming step. Remove the guide and pins. Clean up the resection using rongeurs or saw.

Caution: The reaming guide must be used for reaming.

Items Used:

Anterior Chamfer Guide, Size 0,1: MJU643T
Anterior Chamfer Guide, Size 2,3: MJU665T

Talar Position Plug, Size 0,1: MJU644T

Wider Talar Position Plug, Size 2,3: MJU666T

Holding Clamp: MJU048T

Anterior Chamfer Reaming Guide: MJU339T

Anterior Chamfer Bush, Wide, Step 1,2: MJU667T, MJU669T

Anterior Talar Reamer: MJU338T

Pin Pusher: MJU365T

Pins, 45mm: LJV525T

Handle, Lateral Chamfer Guide: MJU342T

Figure 32

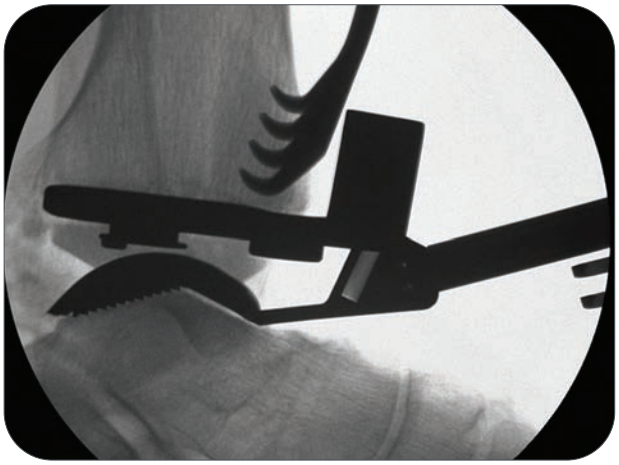


Figure 33

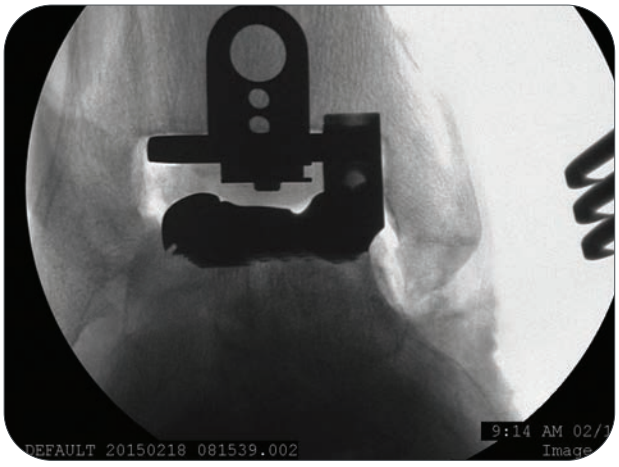


Figure 34

Note: When completing the lateral cut and talar plug using the standard instrumentation, please skip to step 14.

Step 13 ▪ Positioning of the Preliminary Talar Trial, Lateral Cut, Plug Instrument

13-1 Position the Preliminary Talar Trial that best fits the talus while resting on top of the posterior and anterior chamfer cuts. The trial should cover, but not extend past the borders of the cortical wall of the talus both medially or laterally. The size of the talar trial should be the same as or one smaller than the tibial trial.

The Apex of the posterior and anterior chamfer should align with the laser mark on the trial from the surgeon's perspective. At this time a lateral fluoroscopic image can be taken to ensure that the trial matches the anterior and posterior chamfer cuts and that the trial is under the center of the tibial long axis. **(Figure 32)**

At this time it is possible to trial the tibial construct to check for ligamentous congruency by dynamic flexion and extension. See Step 18 for instructions on the assembly of the tibial trial and check positioning with fluoroscopy. The lateral view **(Figure 33)** should show the crest of the talar dome centered under the long axis of the tibia. The A/P view **(Figure 34)** should show the talar trial centered on the talus and in line with the rotation of the ankle mortise.

Once proper position is achieved the trial can be secured with a 45mm pin. Use pin pusher to seat pin fully. Fluoroscopy can be taken again at this time to ensure proper position was maintained during pinning.

Figure 35

Figure 36

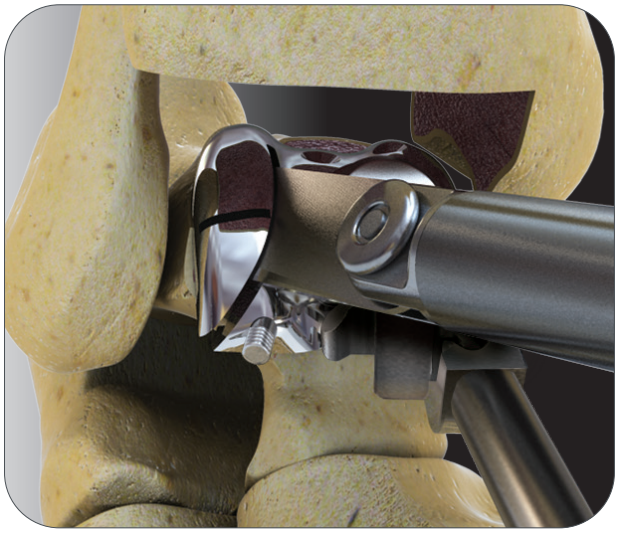


Figure 37

Note: Size 0 Talar preparation: For size 0 talar preparation the size 0 drill Bushing needs to be used along with the 7.9mm drill for the talar plug hole.

For sizes 1, 2, and 3 talar preparation, the Bell Saw Drill Bushing 1,2,3, should be selected. Make sure to drill to a hard stop and insert the fixation plug to its hard stop.

Remove the tibial trial, the insert trial, and the talar trial handle. A joint distractor can be inserted into the joint to maintain position while performing the cut. The appropriate drill bushing is inserted into the trial. The appropriate drill is used to make the cut **(Figure 35)**. Once the cut is achieved the fixation plug is used to maintain the trial position. **(Figure 36)**.

After removing the distractor the lateral chamfer can now be cut through the trial with a narrow oscillating saw or reciprocating blade. A ribbon retractor can be used to protect the lateral malleolus. **(Figure 37)**.

Once the lateral cut is finished the Preliminary Trial can be removed and any remaining cortical bone can be removed from the talus with a rongeur.

Items Used:

Talar Guide/Trail, Size 0, Left: MJU661T

Talar Guide/Trail, Size 1, Left: MJU653T

Talar Guide/Trail, Size 2, Left: MJU655T

Talar Guide/Trail, Size 3, Left: MJU657T

Talar Guide/Trail, Size 0, Right: MJU660T

Talar Guide/Trail, Size 1, Right: MJU652T

Talar Guide/Trail, Size 2, Right: MJU654T

Talar Guide/Trail, Size 3, Right: MJU656T

Handle, Lateral Chamfer Guide: MJU342T

Bell Saw Reamer: MJU344T

Drill Guide, Bell Saw, Size 1,2,3: MJU649T

Drill Bit, Talar Stem, Size 0: MJU362T

Drill Guide, Bell Saw, Size 0: MJU662T

Joint Distractors A and B model: MJU345T/MJU346T

Fixation Plug, Size 0: MJV555T

Extended Tibial Trials, Size 0-3: MJV500T-MJV503T

45mm Pin - LJV525T

Standard Tibial Trials, Size 0-3: MJU380T, MJU384T-MJU386T

Figure 38

Figure 38a

The mediolateral position of the guide should be determined by placing the wing of the bushing just inside the lateral margin of the talus. This bushing can be removed to assess the position of the apex created by the prepared surfaces. The apex should be visible through the center of the hole in the guide.

Position the lateral resection guide congruent to the 2 prepared surfaces. Assess rotation by evaluating the handle of the guide relative to the 2nd or 3rd ray. It is imperative to confirm both the flush posterior positioning and rotation prior to drilling with the bell saw.

Note: Skip this step if the 2.1 instrumentation was used to perform preliminary talar trialing and the lateral cut.

Step 14 ▪ Positioning the Lateral Resection Guide (Talar Size 1, 2 or 3)

14-1 The lateral resection guide is available in two versions: right and left (as indicated on the instrument). The removable handle should be screwed onto the guide.

The plug-shaped mediolateral positioning gauge is inserted in the lateral talar resection guide corresponding to the operated side, with the wing inserted along the guide's groove. The guide is set on the anterior and posterior resected surfaces. The guide's wing is positioned on the resulting ridge at the junction between the anterior chamfer and the posterior resection.

The mediolateral position of the resection guide is optimal when the tip of the wing is aligned on the lateral cortex of the talus **(Figure 38).**

Handle, Lateral Chamfer Guide
Reference : MJU342T

Lateral Chamfer Guide
Right - Reference : MJU341T
Left - Reference : MJU340T

Lateral Chamfer Positioning Plug
Reference : MJU343T

Pin 3mm x 45mm Pins
Reference : LJV525T

Figure 39

Figure 40a
The lateral talar resection guide position is secured with the fixation plug driven completely in. Complete the lateral facet cut. Respect the angle of the guide's lateral cut surface to prevent an over-resection. The guide's handle can be removed to improve access. This completes the talar preparation.

Figure 40

Figure 41

Note: Skip this step if the 2.1 instrumentation was used to perform preliminary talar trialing and the lateral cut.

Step 15 ▪ Drilling the Talar Plug (Talar Size 1, 2 or 3)

15-1 Proper positioning of the guide on the initial resected talar surfaces determines the final talar position.

Once the lateral talar resection guide is secured to the talus, with a 45mm pin and/or distractive clamps, the talar plug is prepared with a bell saw **(Figure 39)**.

Reaming is complete when the bell saw is advanced to the hard stop.

The guide position is secured with the fixation plug driven completely in **(Figure 40)**.

To facilitate the lateral resection, the guide's removable handle can be removed at this stage. The lateral cut on the flat surface is made using the oscillating saw, with the saw blade following the external slope of the guide **(Figure 41)**. The malleolus can be protected with a ribbon retractor.

Bell Saw Reamer
Reference : MJU344T

Fixation Plug, Lateral Chamfer
Reference : MJU012T

Pin, 3mm x 45mm - Reference : LJV525T

Joint Distractors , Model A and B -
Reference : MJU345T and MJU346T

Lateral Chamfer Guides , Left and Right -
Reference : MJU340T and MJU341T

Figure 42

Note: Skip this step if the 2.1 instrumentation was used to perform preliminary talar trialing and the lateral cut.

Step 16 ▪ Precautions When Using a Size 0 for a Lateral Resection

16-1 If the talus size requires using a size 0 (see preselection of talar implant size Step 5), the operative technique requires a specific mediolateral positioning bushing to affix the lateral resection guide. This bushing guides the mediolateral positioning as well as the drilling barrel. This positioning and drilling bushing is inverted depending on the side operated, with the wing on the lateral side.

The resection guide is positioned by aligning the tip of the wing on the lateral cortex of the talus as for sizes 1, 2, and 3.

For a size 0 talar implant, the diameter of the fixation plug is narrower than the standard sizes, and the bell saw is replaced with 7.9mm drill **(Figure 42)**. Leave the 7.9mm drill in place to gain better fixation and make the lateral chamfer cut as described above (do not use the size 0 plug which is only for the 2.1 instrumentation).

Drill Guide, Size 0 Stem
Reference: MJU378T

Drill Bit, 7.9mm -
Reference: MJU353T

Fixation Plug Size 0 -
Reference : MJV555T

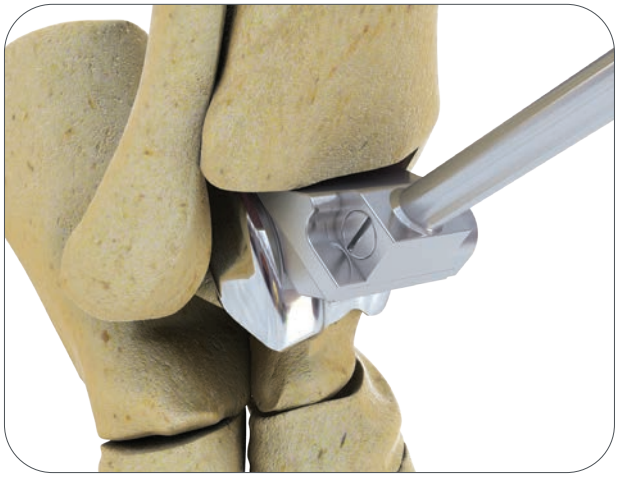


Figure 43

Figure 44

Placing the talar trial implant: The trial implant is impacted with the talar component impactor. Confirm talar position is squarely under the mechanical axis of the tibia.

Step 17 ▪ Placing the Talar Trial Implant

17-1 The talar trial implant corresponding to the operated side and the size that has been chosen beforehand is put in place.

Available for both right and left sides, properly positioning the trial implant is vital to respect the patient's anatomy to help with long-lasting postoperative results. In accordance with talar anatomy, the talar implant is wider anteriorly than posteriorly. The lateral side of the malleolus reproduces the talofibular joint.

The talar trial is inserted in the blind hole that was made previously with the bell saw for sizes 1, 2, and 3, or with the drill for size 0.

The trial implant is impacted with the talar component impactor **(Figure 43)**.

Items Used:

Talar Component Impactor: MJU351

Talar Trial, Size 0,
Right: MJU100T

Talar Trial, Size 1,
Right: MJU101T

Talar Trial, Size 2,
Right: MJU102T

Talar Trial, Size 3, Right: MJU103T

Talar Trial, Size 0, Left: MJU110T

Talar Trial, Size 1, Left: MJU111T

Talar Trial, Size 2, Left: MJU112T

Talar Trial, Size 3, Left: MJU113T

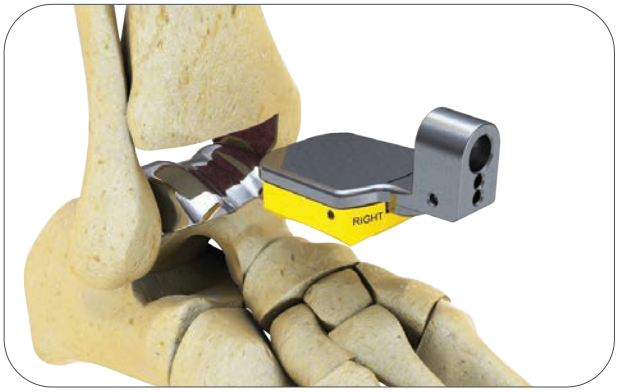


Figure 45

Figure 46

Figure 47

Figure 48

Step 18 ▪ Dynamic Test and Drilling of Tibial Plug

18-1 The plastic trial insert is selected depending on:

- Size and side, which must be identical to the size of the talar implant. A color code is used to simplify this step (see compatibility table, p. 45).
- Thickness: they vary from 8 to 17mm and correspond to the accumulated thicknesses of the metallic base and the PE.

The trial tibial base is selected to conform to the planned tibial implant size, using either the standard or extended tibial trays.

The trial insert (right or left) is clipped on the trial tibial base forming a monoblock device. A correct orientation system automatically checks that the trial insert is properly oriented on the tibial trial. The tibial base is then inserted between the trial talar implant and the tibia. **(Figure 45)**.

Note: If not enough bone has been resected resulting in the thinnest trial being tight or not fitting, refer to step 18-1a before proceeding.

A dynamic flexion/extension test is performed on the foot to check the joint's kinematics. The tibial trial will naturally find its optimal position in the frontal and sagittal planes as well as in the rotational plane **(Figure 46, 47)**.

At this stage, one must check that the engraved line on the superior surface of the tibial trial (the side in contact with the tibial cut) is aligned with the anterior cortex of the tibia.

If this line simulating the final anterior extremity of the tibial implant is too far anterior, the alignment must be corrected when drilling the tibial plug. On the other hand, if the line is located posterior to the anterior cortex of the tibia, the final tibial implant should be positioned in the same way.

At this point, it is essential to verify that the trial tibial implant base is perfectly placed on the resected tibia.

A lateral fluoroscopy image is taken to confirm that the tibial plate is flush with the distal tibia prior to drilling.

Prepare the tibial keel by drilling a 75mm pin into the distal hole to hold the tibial trial base. Next, drill the proximal

3.0mm hole and leave empty. For the larger proximal hole, use the 7.9mm drill bit and drill to its stop **(Figure 48)**.

Drilling through the tibial base guide gives a 4° angle from the tibial base plate, aiming for a press-fit of the final implant between the keel and the distal cut during impaction.

Consideration must be given to possible adjunct soft tissue balancing procedure at this stage (i.e. Achilles tendon lengthening, ligament release and repair).

Figure 49

Note: Skip to Step 23 if ready for final implants

18-1a If not enough bone has been resected resulting in the trials being tight or not fitting, the 2mm Cut Guide can be inserted to resect 2mm of additional bone from the distal tibia.

Place the 2mm Cut Guide in the joint space with the platform placed firmly against the resected tibial resection. The joint distractor should be used to keep the platform flush to the tibial resection. Pin the 2mm Cut Guide to the distal tibia going through the two proximal holes using the 3mm self-drilling pins. Insert two 75mm pins into the distal medial and lateral holes of the guide to protect against saw excursion.

Take a lateral fluoroscopic image to ensure the platform is flush to the tibial resection. Perform the additional tibial resection extended carefully to the posterior cortex. A 1.27mm thick saw blade is recommended for this. Repeat this process as needed until the minimum amount of bone has been resected. Remove the 2mm Cut Guide and pins after the desired bone is resected. Recheck the resulting gap using the implant trials.

Items Used:

Tibial Trial, Size 0: MJU380T

Tibial Trial, Size 1: MJU384T

Tibial Trial, Size 2: MJU385T

Tibial Trial, Size 3: MJU386T

Drill Bit, 7.9mm: MJU353T

Pin, 45mm: LJV525T

Trial Insert Size 00:

Right: MJU545T to MJU548T

Left MJU555T to MJU558T

Trial Insert PE Size 0:

Right: MJU565T to MJU568T

Left: MJU575T to MJU578T

2mm Cut Guide: MJU011T

Pin, 75mm: LJV526T

Trial Insert PE Size 1:

Right: MJU585T to MJU588T

Left: MJU595T to MJU598T

Trial Insert PE Size 2:

Right: MJU605T to MJU608T

Left: MJU615T to MJU618T

Trial Insert PE Size 3:

Right: MJU625T to MJU628T

Left: MJU635T to MJU638T

Extended Tibial Trials, Size 0-3: MJV500T-MJV503T

Figure 50

Note: Skip this step if using a chamfer cut talar dome.

Step 19 ▪ Preparing the Talar Flat Cut

Note: Install 3 degree cutting block if not already installed.

19-1 The Talar Cutting Guide (item MJU910) is attached to the tibial alignment guide and positioned as close to the talus as possible **(Figure 50)**. Dorsal excision of the talar head with general instrumentation may be necessary prior to attaching the talar cutting guide to achieve proper resection. The set screw is tightened. The proximal end of the tibial alignment guide should be elevated to reduce the cut block to 0mm. This will allow for a level cut with the foot in the neutral position. With the foot in neutral position, the level of resection can be adjusted based on the desired amount of talus to be removed utilizing the height adjustment of the Tibial Alignment Guide. The resection should be at the level of the anterior border of the talar articular surface. Placing a free saw blade through the guide will help to target the resection level. Use a lateral fluoroscopic view to visualize the resection level.

Item Used:

Talar Cut Guide, Flat Cut: MJU910T

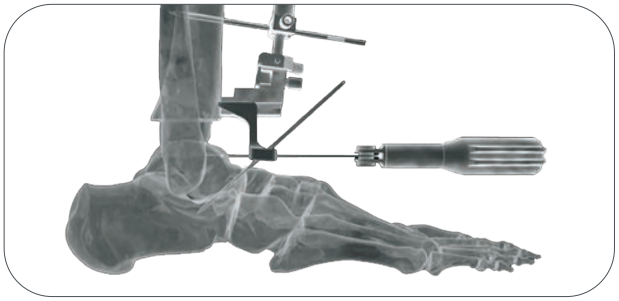


Figure 51

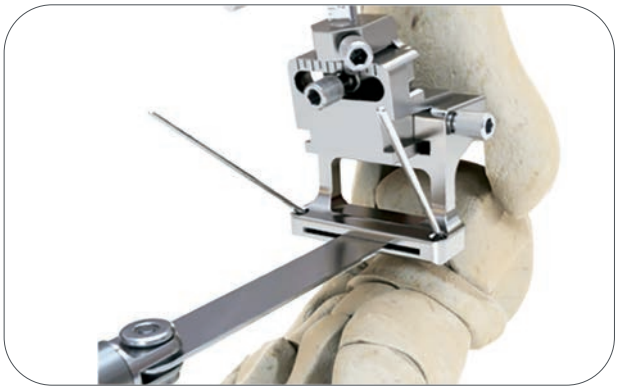


Figure 52

Figure 52a

Note: Skip this step if using a chamfer cut talar dome.

Step 20 ▪ Talar Cut

20-1 A check with lateral fluoroscopy should be done to ensure that the desired amount of resection is taken from the talus **(Figure 51)**.

With the desired resection level determined and the foot in neutral with the tibial alignment guide elevated proximally to remove the posterior slope of the tibial cut block the Talar Cutting Guide is pinned to the talus for stabilization utilizing two 75mm or 110mm pins **(Figure 52)**. Make sure that the foot is not in varus or valgus before setting the pins.

The resection is completed through the Talar Cut Guide utilizing the wide or narrow Oscillating Saw Blade. To protect the malleoli from the sweep of the saw blade, a set of ribbon retractors are provided in the instrumentation. Remove the flat cut talar cut guide, pins and the tibial alignment guide.

Items Used:

Talar Cut Guide, Flat Cut: MJU910T

Pins, 110mm: LJV527T

Saw Blade: SAW5944T/SAW6944T or SAW5946T/SAW6946T or SAW5948T/SAW6948T

Talar Pin Guide: MJU335T

Pin, 75mm: LJV526T

Figure 53

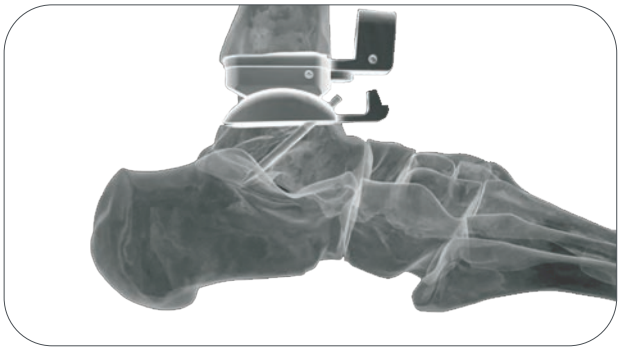


Figure 54

Figure 55

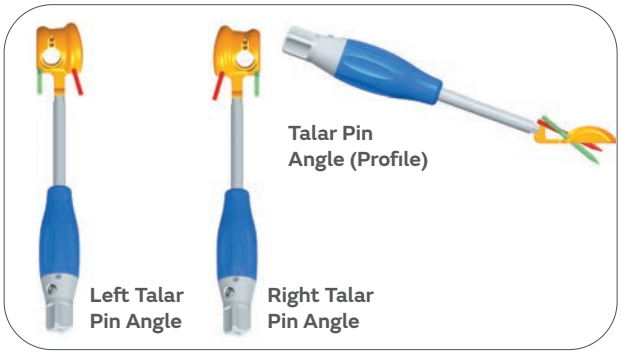


Figure 56

Note: Skip this step if using a chamfer cut talar dome.

Step 21 ▪ Trialing

21-1 With the resection of both the talus and tibia complete, trialing can begin. Insert both the talar trial and the tibial trial with the trial poly insert at the same time **(Figure 53)**.

Note: Pin trajectories when drilling - see **(Figure 56)** for pin trajectories.

Note: If not enough bone has been resected resulting in the thinnest trial being tight or not fitting, refer to step 18-1a before proceeding.

Utilize the handle attached to the talar trial to control rotation and the medial/ lateral positioning between the second and third metatarsal. Check lateral fluoroscopy to ensure that the talar component is centered under the long axis of the tibia **(Figure 54)**.

Once the desired position is achieved, stabilize the talar trial by using two 45mm pins. Use the pin pusher to fully seat pins. **(Figure 55)**.

Items Used:

Talar Trials, Flat Cut: MJV940T, MJU941T-943T, MJV950T, MJU951T-953T

Pins, 45mm: LJV525T

Saw Blade: SAW5944T/SAW6944T or SAW5946T/SAW6946T or SAW5948T/SAW6948T

3mm Drill Bit: DWD060T / LJV528T

Figure 57

Figure 58

Figure 59

Figure 60

Note: Skip this step if using a chamfer cut talar dome.

Step 22 ▪ Final Preparation

22-1a Once the Talar Trial is secured the ankle can be flexed to ensure that the tibial component position is optimized for the patient's own biomechanics **(Figure 57)**. At this stage, one must check that the engraved line on the superior surface of the tibial trial (the side in contact with the tibial cut) is aligned with the anterior cortex of the tibia.

If this line simulating the final anterior extremity of the tibial implant is too far anterior, the alignment must be corrected when drilling the tibial plug. On the other hand, if the line is located posterior to the anterior cortex of the tibia, the final tibial implant should be positioned in the same way.

Note: At this point, it is essential to verify that the tibial trial implant base is perfectly placed on the resected tibia.

A lateral fluoroscopy image is taken to confirm that the tibial plate is flush with the distal tibia prior to drilling.

Prior to drilling, remove the handle from the talar trial. Prepare the tibial keel by drilling a 75mm pin into the distal hole to hold the tibial trial base **(Figure 58)**. Next drill the proximal 3.0mm hole and leave empty. For the larger proximal hole use the 7.9mm drill bit and drill to its stop **(Figure 60)**.

Drilling through the tibial base guide gives a 4° angle from the tibial base plate, aiming for a press-fit of the final implant between the keel and the distal cut during impaction.

22-1b Remove the 75mm pin and tibial trial.

Items Used:

Standard Tibial Trials, Size 0-3:

MJU380T, MJU384T-MJU386T

Drill Bit, 7.9mm: MJU353T

Drill Bit, 3.0mm LJV528T or DWD060T

Pin, 75mm: LJV526T

Extended Tibial Trials, Size 0-3: MJV500T-MJV503T

Figure 61

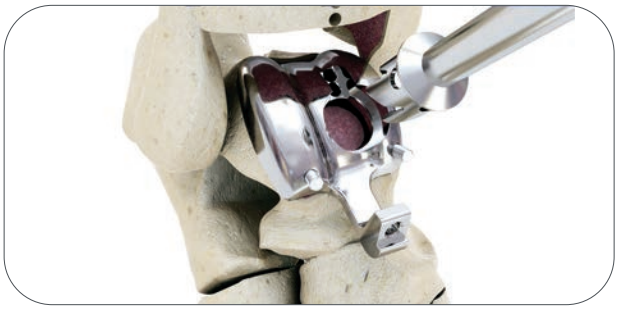


Figure 62

Figure 63

Figure 64

Figure 65

Note: Skip this step if using a chamfer cut talar dome.

Step 22-2 ▪ Final Preparation

22-2 After removing the tibial trial the talar preparation can be finished **(Figure 61)**. The Bell Shaped Reamer (MJU922) is utilized to drill the Bell hole through the talar trial **(Figure 62)**.

Note: For size 0 talar preparation the size 0 drill Bushing (MJU662T) needs to be used along with the size 0 talar drill (MJU362T).

Next, the Drill for the Talar Flange is used to drill the posterior holes through the talar trial **(Figure 63)**.

Note: It may be necessary to complete the tibial keel preparation as seen in Step 23 before reaming and drilling the talar trial as the tibial window allows for easier access to the posterior talar drill holes. The foot will need to be plantar flexed to reach the posterior flange holes.

Then the trial may be removed and the holes of the talar flange connected with the tibial keel osteotome to the approximate depth of the drill holes. (MJU387) **(Figure 64, 65)**.

Items Used:

Bell Saw Reamer, Flat Cut: MJU922T

Drill, Talar Flange, Flat Cut: MJU925T

Osteotome, Tibial Keel: MJU387T

Drill Bit, Size 0, Talar Stem: MJU362T

Drill Guide, Size 0: MJU662T

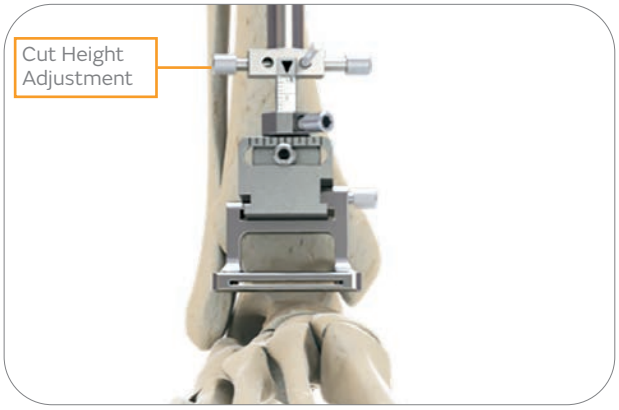


Figure 66

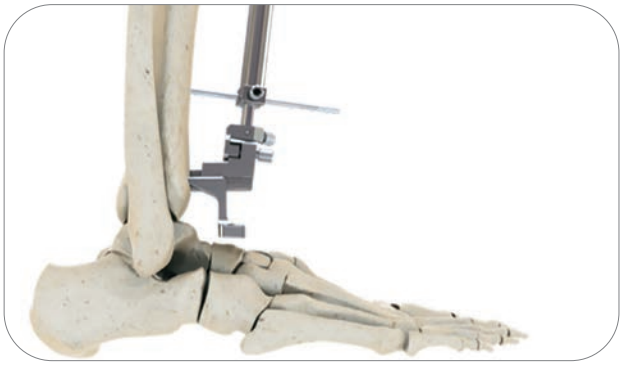


Figure 67

Figure 68

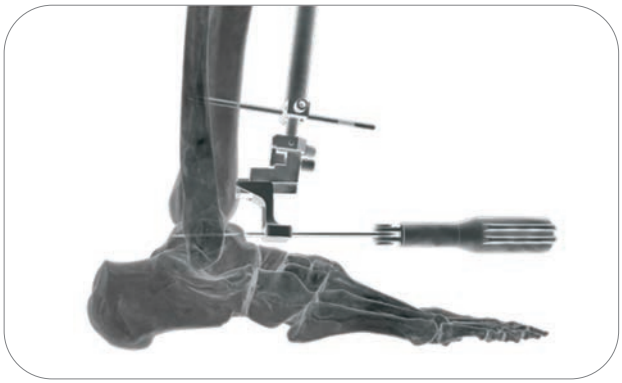


Figure 69

Step 22-3 ▪ Alternate Primary Technique – Cutting the Talus before the Tibia

22-3 The order of steps for the Flat Cut Talar Primary surgical technique may be adjusted to resect the talus before the tibia.

The talar cutting guide is attached to the tibial alignment guide **(Figure 66, 67)**. The level of resection of the talus would be determined under lateral fluoroscopy view. By placing a free saw blade through the cutting slot the height of the talar cut can be adjusted proximal or distal by moving the cutting height on the tibial alignment jig **(Figure 69)**.

In cases of a very flat top talus a minimum of resection may be chosen to preserve the talar bone stock. If this is the case the tradeoff would be to resect more from the tibia to make up for the volume of the components. See thickness of the overall construct compared to the amount of bone resected between the talar cut and tibial cut using the Talar Cutting Guide.

Once the talus is resected the tibial cutting guide can be placed on the tibial alignment guide to perform the tibial resection without adjusting the tibial resection level. This is possible as the space allotted in the talar cut guide allows for the same amount of resection required to fit the tibial and talar component construct with an 8mm PE insert.

Figure 70

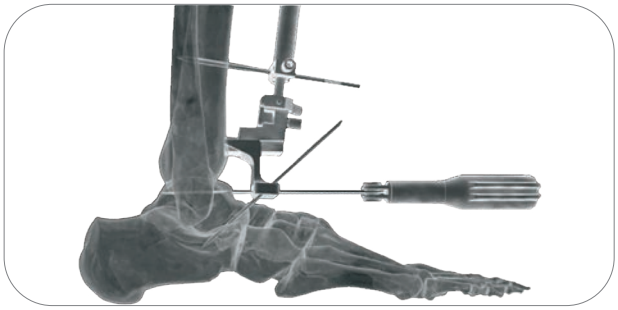


Figure 71

Figure 72

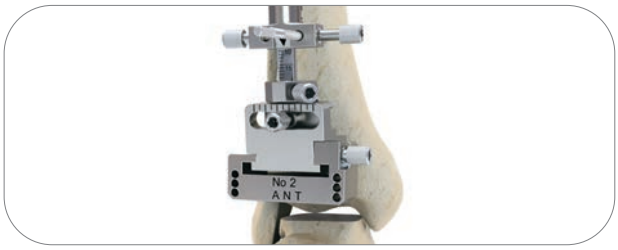


Figure 73

Figure 74

Step 22-3b ▪ Alternate Primary Technique– Cutting the Talus before the Tibia *(continued)*

22-3b Once the desired resection level is determined and the foot is in neutral with the tibial alignment jig at 0mm the talus can be pinned using two 110mm self-drilling pins, fluoroscopy **(Figure 71)**.

After the cut is completed the talar cutting guide is removed and the resected talar dome may be removed. The tibial cutting guide is then attached to the tibial alignment jig.

In cases of extreme ligament laxity the resection level can be adjusted to remove less bone from the tibia.

Items Used:

Talar Cut Guide, Flat Cut: MJU910T

Pins, Self Drilling, 110mm: LJV527T

Recip, Saw Blade, 75mm x 8mm: SAW5950T/SAW6950T

One-sided Recip, Saw Blade,

70mm x 12.5mm, SAW6951T

Step 22-3c ▪ Alternate Primary Technique– Cutting the Talus before the Tibia *(continued)*

22-3c The tibial cutting guide is then attached to the tibial alignment jig **(Figure 72)**.

Tibial preparation can proceed as described in the prior Step 6, 7, and 8 **(Figure 73, 74)**.

In cases of extreme ligament laxity the resection level can be adjusted to remove less bone from the tibia.

Figure 75

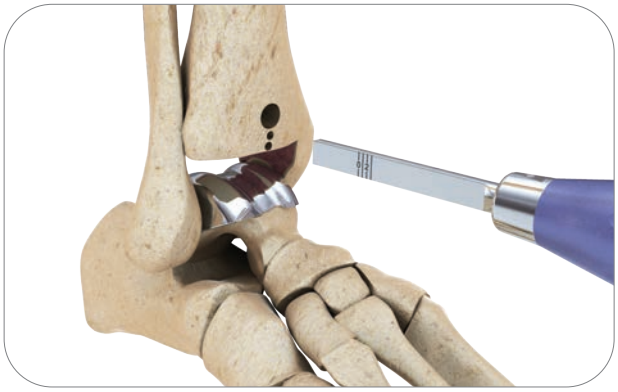


Figure 76

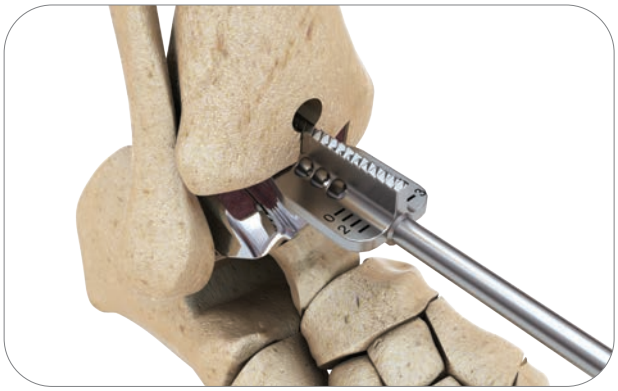


Figure 77

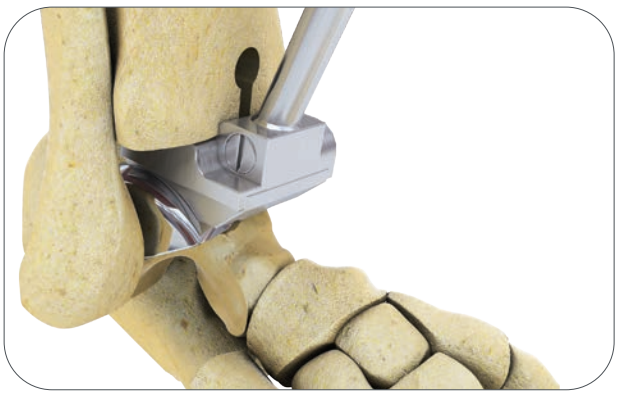


Figure 78

Step 23 ▪ Finishing Touches on the Tibial Keel

Note: When using the graduated osteotome or rasp, the depth markings are accurate for either standard or XL tibial trays.

Remove all trials and pins.

23-1 The tibial holes are rejoined using a small osteotome; then the thickness and depth of the engraved line are checked with the graduated osteotome. **(Figure 76)**.

The distal part of the anterior groove of the tibia is beveled using the rasp, so that the tibial implant lies flush on the resection. **(Figure 77)**.

With the different tibial implant sizes (0, 1, 2 and 3) marked on the upper surface of the rasp, the trimming done in this manner perfectly matches the length of the implant selected.

The talar trial is then withdrawn.

Items Used:

Osteotome, Tibial Keel: MJU387T

Rasp, Tibial Flange: MJU350T

Osteotome, Thin: MJU357T

Step 24 ▪ Placing Final Implants

24-1 Note: The SALTO TALARIS is indicated for cemented use only. Cement must be applied to the bone contact surfaces of the tibial and talar component.

1 - The talar implant is placed first. It is impacted with the talar component impactor **(Figure 78)**.

The size and side selected during the implant trials must be retained.

2 - The final PE and tibial implant form a single-block unit and therefore they should be assembled with the insert assembly press available in the instrument kit.

24-2 Assembly of the insert on the tibial implant

The polyethylene insert is assembled to the tibial implant with the insert assembly press.

The tibial implant is mounted onto the press. Adjust the metal bar on the base of the press to the appropriate poly thickness. The PE insert is positioned on the implant and manually pushed to engage approximately 1/3 of the depth. Close the press arm over the assembly and continue to press down until the PE is fully engaged. The tibial assembly must be visually checked by the operator. Generally, an audible “click” is heard.

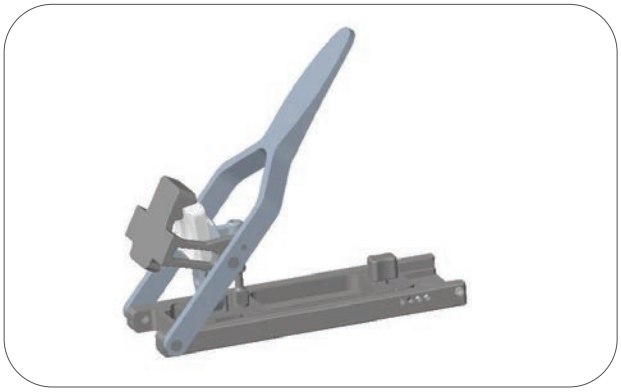


Figure 79

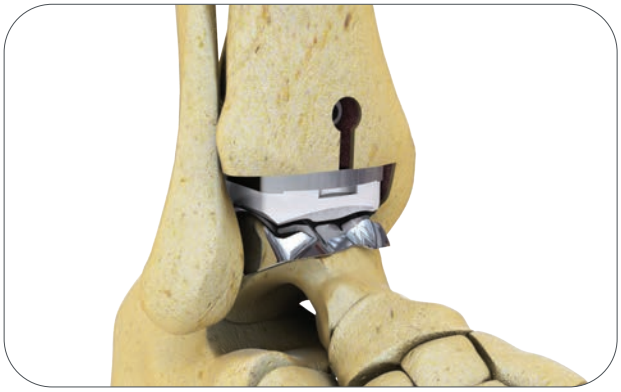


Figure 80

24-3 Using the tibial impactor, grasp the implant assembly between the metallic plug and the central anterior zone of the tibial tray.

The tibial component is impacted until the position of the tibial trial is reproduced.

During tibial implant impaction, maintain good contact between the superior side of the implant and the tibial resection to prevent any risk of a posterior gap between the tibial cut and the implant.

Flexion/Extension movements are applied to check the ankle kinematics. Apply bone graft to the tibial window.

Items Used:

Insert Assembly Press, Primary: MJU663T

Tibial Impactor: MJU361T

Talar Component Impactor: MJU351T

Step 25 ▪ Revising or Removing Implants

25-1 If the implant must be revised, revision should begin by removing the PE insert.

This is disassembled from the tibial base by inserting the insert extractor blade between the base and the PE. A towel clamp holds the PE component for its extraction, after a lever maneuver using the extractor has separated the two components. If necessary, the tibial base can then be removed as follows:

- To precut the bone around the tibial plug, use the osteotomes provided for this purpose in the instrumentation.
- Hook the posterior aspect of the tibial implant with the tibial component extractor.
- Tighten the screw on the tibial extractor to engage the tibial keel.
- Insert the extractor plug by screwing the slap hammer on the tibial extractor.
- Push and pull vigorously with the slap hammer until the implant is fully removed.

The talar implant is separated from the talus with the osteotome.

Items Used:

Tibial Implant Extractor: MJV556T

Osteotome, Thin: MJU357T

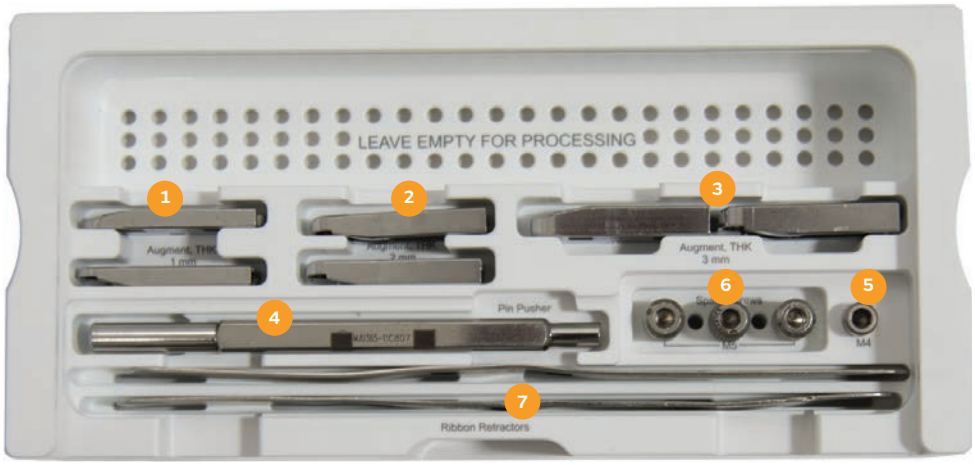
Insert Extractor: MJV545T

Slap Hammer: MJU358T

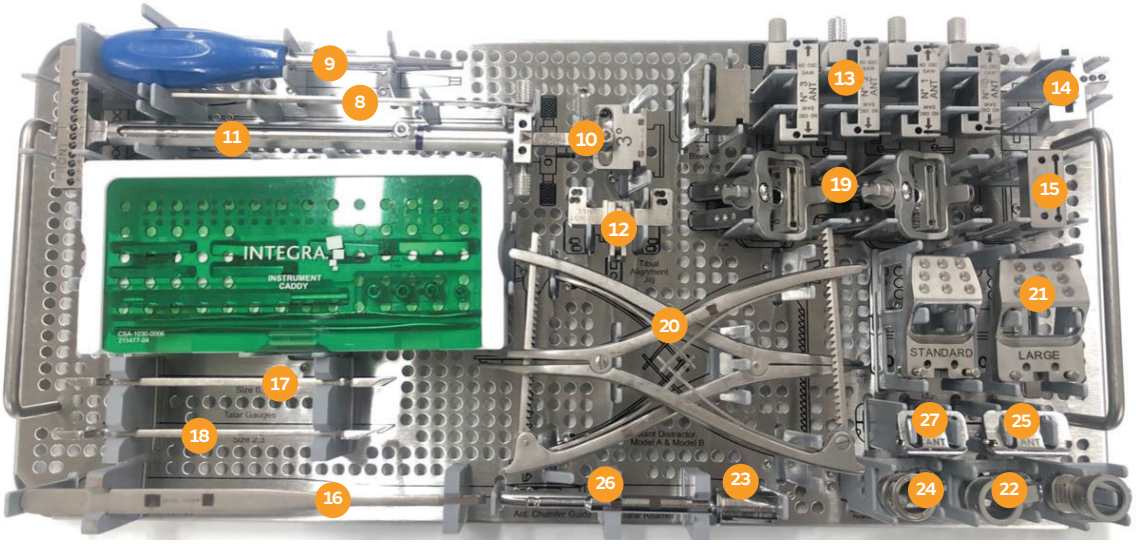
Osteotome, Tibial Barrel, Revision: MJU356T

Instrumentation

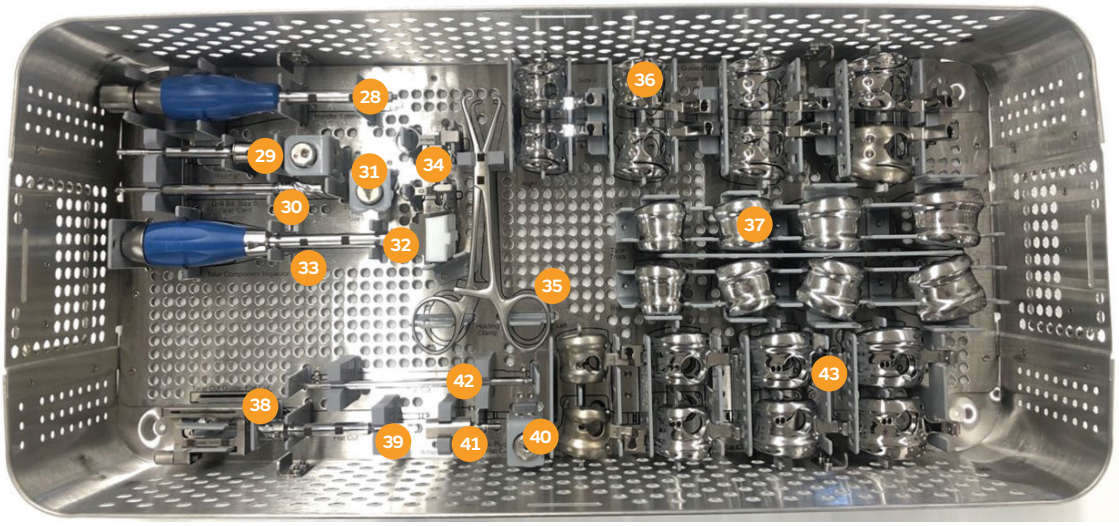
Reference: SALTOPRIMEBOX1



Caddy



Top Tray Contents



Bottom Tray Contents

SALTOPRIMEBOX1: Top Tray Contents

Catalog Number	Description	Size	Item
6 (caddy)	MJU073T	Screw M5	3
5 (caddy)	MJU291T	Screw M4	1
7 (caddy)	MJU086T	SALTO TALARIS°, Ribbon Retractors	2
4 (caddy)	MJU365T	Pin Pusher	1
1 (caddy)	MJU381T	Augment, Thickness 1mm	2
2 (caddy)	MJU382T	Augment, Thickness 2mm	2
3 (caddy)	MJU383T	Augment, Thickness 3mm	2
-	CSA-1030-0005	SALTO TALARIS, Caddy	1
-	CSA-1030-0006	SALTO TALARIS Caddy Lid	1
8	MJU357T	SALTO TALARIS, Osteotome, Thin	1
9	MLN113T	Hex 3,5 screwdriver	1
10	MJU668T	SALTO TALARIS, 3 Degree Block, Tibial Alignment	1
11	MJU333T	Tibial Alignment Guide	1
12	MJU334T	Tibial Alignment Jig	1
13	MJU645T	SALTO TALARIS, Tibial cut guide, Size 0	1
13	MJU646T	SALTO TALARIS, Tibial cut guide, Size 1	1
13	MJU647T	SALTO TALARIS, Tibial cut guide, Size 2	1
13	MJU648T	SALTO TALARIS, Tibial cut guide, Size 3	1
14	MJU335T	Talar Pin Setting Guide	1
15	MJU011T	SALTO TALARIS, 2mm Cut Guide	1
16	MJU085T	Curette	1
17	MJU331T	SALTO TALARIS, Talar Gauge, Size 0/1	1
18	MJU364T	SALTO TALARIS, Talar gauge, Size 2/3	1
19	MJU641T	SALTO TALARIS, Posterior Chamfer Guide, Size 0	1
19	MJU642T	SALTO TALARIS, Posterior Chamfer Guide, Size 1,2,3	1
20	MJU345T	SALTO TALARIS, Joint distractor, Model A	1
20	MJU346T	SALTO TALARIS, Joint distractor, Model B	1
21	MJU643T	SALTO TALARIS, Anterior Chamfer Guide, Size 0,1	1
27	MJU644T	SALTO TALARIS, Talar Position Plug, Size 0,1	1
21	MJU665T	SALTO TALARIS, Anterior Chamfer Guide, Size 2,3	1
25	MJU666T	SALTO TALARIS, Talar Position Plug, Size 2,3	1
23	MJU338T	SALTO TALARIS, Talar Reamer	1
26	MJU366T	Removable Handle	1
24	MJU339T	Anterior chamfer reaming guide	1
22	MJU667T	SALTO TALARIS, Ant Chamfer Bush, wide, step 1	1
22	MJU669T	SALTO TALARIS, Ant Chamfer Bush, wide, step 2	1
-	CSA-1030-0003	SALTO TALARIS, Primary Instrument Tray 1	1

SALTOPRIMEBOX1: Bottom Tray Contents

Catalog Number	Description	Size	Item
28	MJU342T	Removable (Lateral Chamfer) Handle	1
29	MJU344T	SALTO TALARIS, Bell SawReamer	1
30	MJU362T	SALTO TALARIS, Dill Bit, Size 0, Talar Stem	1
31	MJU012T	SALTO TALARIS, Fixation Plug, Lateral Chamfer	1
32	MJV555T	SALTO TALARIS, Fixation Plug, Size 0	1
33	MJU351T	Talar component impactor	1
34	MJU649T	SALTO TALARIS, Drill Guide, Bell Saw, Size 1,2,3	1
34	MJU662T	SALTO TALARIS, Drill Guide, Bell Saw, Size 0	1
35	MJU048T	SALTO TALARIS, Holding Clamp	1
36	MJU660T	SALTO TALARIS, Talar Guide/Trial, Size 0, Right	1
36	MJU661T	SALTO TALARIS, Talar Guide/Trial, Size 0, Left	1
36	MJU652T	SALTO TALARIS, Talar Guide/Trial, Size 1, Right	1
36	MJU653T	SALTO TALARIS, Talar Guide/Trial, Size 1, Left	1
36	MJU654T	SALTO TALARIS, Talar Guide/Trial, Size 2, Right	1
36	MJU655T	SALTO TALARIS, Talar Guide/Trial, Size 2, Left	1
36	MJU656T	SALTO TALARIS, Talar Guide/Trial, Size 3, Right	1
36	MJU657T	SALTO TALARIS, Talar Guide/Trial, Size 3, Left	1
37	MJU100T	SALTO TALARIS, Talar Trial Implant Sz 0 Right	1
37	MJU101T	SALTO TALARIS, Talar Trial Implant Sz 1 Right	1
37	MJU102T	SALTO TALARIS, Talar Trial Implant Sz 2 Right	1
37	MJU103T	SALTO TALARIS, Talar Trial Implant Sz 3 Right	1
37	MJU110T	SALTO TALARIS, Talar Trial Implant Sz 0 Left	1
37	MJU111T	SALTO TALARIS, Talar Trial Implant Sz 1 Left	1
37	MJU112T	SALTO TALARIS, Talar Trial Implant Sz 2 Left	1
37	MJU113T	SALTO TALARIS, Talar Trial Implant Sz 3 Left	1
38	MJU910T	SALTO TALARIS, Talar Cut Guide, Flat Cut	1
39	MJU922T	SALTO TALARIS, Bell Saw Reamer, Flat Cut	1
40	MJU924T	SALTO TALARIS, Talar Plug, Flat Cut	1
41	MJU930T	SALTO TALARIS, Extraction adaptor, Flat Cut	1
42	MJU925T	SALTO TALARIS, Drill, Talar Flange, Flat Cut	1
43	MJV940T	SALTO TALARIS, Talar Trial, Flat Cut, Size 0, Rt	1
43	MJU941T	SALTO TALARIS, Talar Trial, Flat Cut, Size 1, Rt	1
43	MJU942T	SALTO TALARIS, Talar Trial, Flat Cut, Size 2, Rt	1
43	MJU943T	SALTO TALARIS, Talar Trial, Flat Cut, Size 3, Rt	1
43	MJV950T	SALTO TALARIS, Talar Trial, Flat Cut, Size 0, Left	1
43	MJU951T	SALTO TALARIS, Talar Trial, Flat Cut, Size 1, Left	1
43	MJU952T	SALTO TALARIS, Talar Trial, Flat Cut, Size 2, Left	1
43	MJU953T	SALTO TALARIS, Talar Trial, Flat Cut, Size 3, Left	1
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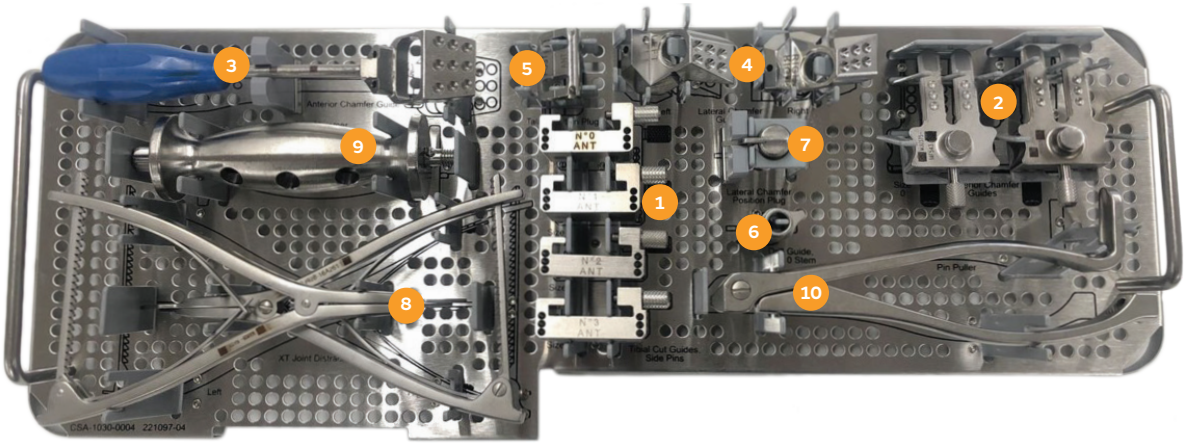
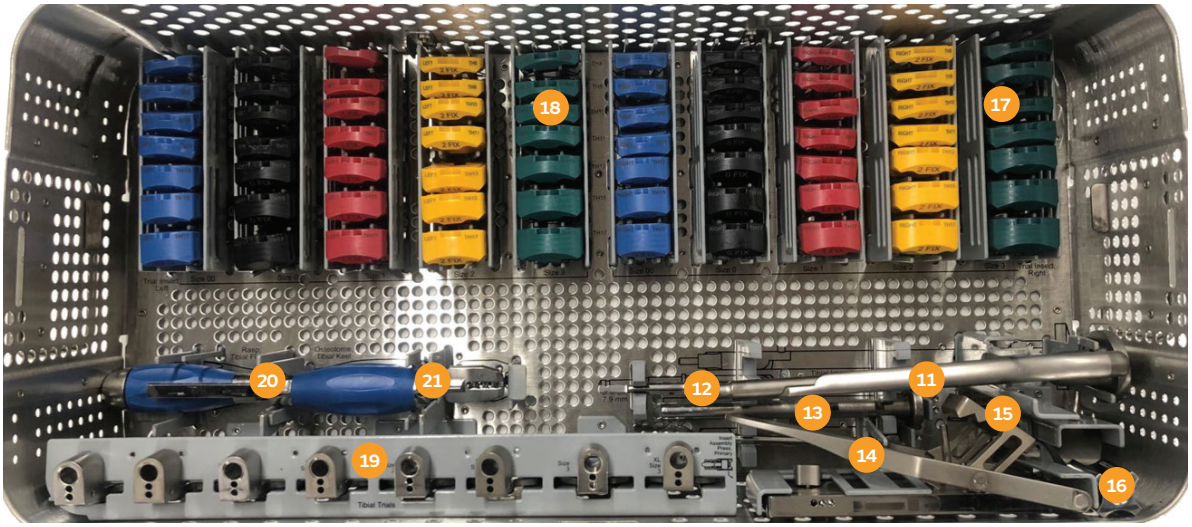
Instrumentation

Reference: SALTOPRIMEBOX2



Top Tray Contents



Bottom Tray Contents

SALTOPRIMEBOX2: Top Tray Contents

Catalog Number	Description	Size	Item
1	MJU370T	Tibial resection guide Size 0	1
1	MJU371T	Tibial resection guide Size 1	1
1	MJU372T	Tibial resection guide Size 2	1
1	MJU373T	Tibial resection guide Size 3	1
2	MJU375T	Posterior Talar Resection Guide, Sz 0	1
2	MJU376T	Posterior Talar Resection Guide, Sz 1/2/3	1
3	MJU336T	Anterior Talar Chamfer Guide	1
4	MJU340T	Left Lateral Chamfer Guide	1
4	MJU341T	Right Lateral Chamfer Guide	1

Catalog Number	Description	Size	Item
5	MJU337T	SALTO TALARIS, Talar position plug	1
6	MJU378T	Size 0 Drilling Guide	1
7	MJU343T	SALTO TALARIS, Lateral Chamfer Position Plug	1
8	MJU928T	Smith+Nephew XT, Joint Distractor, Right	1
8	MJU929T	Smith+Nephew XT, Joint Distractor, Left	1
9	MJU358T	Slap Hammer	1
10	MJU359T	SALTO TALARIS, Pin Puller	1
17	CSA-1030-0004	SALTO TALARIS, Primary Instrument Tray 2	1

SALTOPRIMEBOX2: Bottom Tray Contents

Catalog Number	Description	Size	Item
17	MJU545T	SALTO TALARIS°, Trial Insert, Size 00, Right, TH8	1
17	MJU546T	SALTO TALARIS, Trial Insert, Size 00, Right, TH9	1
17	MJU547T	SALTO TALARIS, Trial Insert, Size 00, Right, TH10	1
17	MJU548T	SALTO TALARIS, Trial Insert, Size 00, Right, TH11	1
17	MJV412T	SALTO TALARIS, Trial Insert, Size 00, Right, TH13	1
17	MJV413T	SALTO TALARIS, Trial Insert, Size 00, Right, TH15	1
17	MJV414T	SALTO TALARIS, Trial Insert, Size 00, Right, TH17	1
18	MJU555T	SALTO TALARIS, Trial Insert, Size 00, Left, TH8	1
18	MJU556T	SALTO TALARIS, Trial Insert, Size 00, Left, TH9	1
18	MJU557T	SALTO TALARIS, Trial Insert, Size 00, Left, TH10	1
18	MJU558T	SALTO TALARIS, Trial Insert, Size 00, Left, TH11	1
18	MJV422T	SALTO TALARIS, Trial Insert, Size 00, Left, TH13	1
18	MJV423T	SALTO TALARIS, Trial Insert, Size 00, Left, TH15	1
18	MJV424T	SALTO TALARIS, Trial Insert, Size 00, Left, TH17	1
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17	MJU566T	SALTO TALARIS, Trial Insert, Size 0, Right, TH9	1
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18	MJU575T	SALTO TALARIS, Trial Insert, Size 0, Left, TH8	1
18	MJU576T	SALTO TALARIS, Trial Insert, Size 0, Left, TH9	1
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18	MJU619T	SALTO TALARIS, Trial Insert, Size 2, Left, TH13	1
18	MJU620T	SALTO TALARIS, Trial Insert, Size 2, Left, TH15	1
18	MJU621T	SALTO TALARIS, Trial Insert, Size 2, Left, TH17	1
17	MJU625T	SALTO TALARIS, Trial Insert, Size 3, Right, TH8	1
17	MJU626T	SALTO TALARIS, Trial Insert, Size 3, Right, TH9	1
17	MJU627T	SALTO TALARIS, Trial Insert, Size 3, Right, TH10	1
17	MJU628T	SALTO TALARIS, Trial Insert, Size 3, Right, TH11	1
17	MJU629T	SALTO TALARIS, Trial Insert, Size 3, Right, TH13	1
17	MJU630T	SALTO TALARIS, Trial Insert, Size 3, Right, TH15	1
17	MJU631T	SALTO TALARIS, Trial Insert, Size 3, Right, TH17	1
18	MJU635T	SALTO TALARIS, Trial Insert, Size 3, Left, TH8	1
18	MJU636T	SALTO TALARIS, Trial Insert, Size 3, Left, TH9	1
18	MJU637T	SALTO TALARIS, Trial Insert, Size 3, Left, TH10	1
18	MJU638T	SALTO TALARIS, Trial Insert, Size 3, Left, TH11	1
18	MJU639T	SALTO TALARIS, Trial Insert, Size 3, Left, TH13	1
18	MJU740T	SALTO TALARIS, Trial Insert, Size 3, Left, TH15	1
18	MJU741T	SALTO TALARIS, Trial Insert, Size 3, Left, TH17	1
19	MJU380T	SALTO TALARIS, Tibial Trial, Size 0	1
19	MJU384T	SALTO TALARIS, Tibial Trial, Size 1	1
19	MJU385T	SALTO TALARIS, Tibial Trial, Size 2	1
19	MJU386T	SALTO TALARIS, Tibial Trial, Size 3	1
19	MJV500T	SALTO TALARIS, Tibial Trial, XL, Size 0	1
19	MJV501T	SALTO TALARIS, Tibial Trial, XL, Size 1	1
19	MJV502T	SALTO TALARIS, Tibial Trial, XL, Size 2	1
19	MJV503T	SALTO TALARIS, Tibial Trial, XL, Size 3	1
20	MJU387T	Tibial Keel Graduated Osteotome	1
21	MJU350T	Rasp	1
12	MJU353T	SALTO TALARIS, Drill Bit, 7.9mm	1
13	MJU356T	Tibial Plug Revision Osteotome	1
14	MJV545T	SALTO TALARIS, Insert Extractor	1
11	MJU361T	SALTO TALARIS, Tibial impactor	1
15	MJV549T	Insert Assembly Bench Press	1
16	MJV556T	Tibial implant extractor	1
-	CSA-1030-0002	SALTO TALARIS, Primary Instrument Case 2	1

Implants

Tibial Components: CoCr

Reference	Size
LJU220T	Size 0
LJU221T	Size 1
LJU222T	Size 2
LJU223T	Size 3

Extended Tibial Components: CoCr

Reference	Size
LJU990T	Size 0
LJU991T	Size 1
LJU992T	Size 2
LJU993T	Size 3

Talar Implants: CoCr

Reference - Left	Reference - Right	Size
LJU210T	LJU200T	Size 0
LJU211T	LJU201T	Size 1
LJU212T	LJU202T	Size 2
LJU213T	LJU203T	Size 3

Flat Cut Talar Components: CoCr

Reference - Left	Reference - Right	Size
LJU820T	LJU810T	Size 0
LJU821T	LJU811T	Size 1
LJU822T	LJU812T	Size 2
LJU823T	LJU813T	Size 3

Size 00 Fixed Inserts

Insert	Reference
Insert, Size 00, Right, TH8	LJU408T
Insert, Size 00, Right, TH9	LJU409T
Insert, Size 00, Right, TH10	LJU410T
Insert, Size 00, Right, TH11	LJU411T
Insert, Size 00, Right, TH13	LJU412T
Insert, Size 00, Right, TH15	LJU413T
Insert, Size 00, Right, TH17	LJU414T
Insert, Size 00, Left, TH8	LJU418T
Insert, Size 00, Left, TH9	LJU419T
Insert, Size 00, Left, TH10	LJU420T
Insert, Size 00, Left, TH11	LJU421T
Insert, Size 00, Left, TH13	LJU422T
Insert, Size 00, Left, TH15	LJU423T
Insert, Size 00, Left, TH17	LJU424T

Size 0 Fixed Inserts

Insert	Reference
Insert, Size 0, Left, TH8	LJU225T
Insert, Size 0, Left, TH9	LJU226T
Insert, Size 0, Left, TH10	LJU227T
Insert, Size 0, Left, TH11	LJU228T
Insert, Size 0, Left, TH13	LJU229T
Insert, Size 0, Left, TH15	LJU230T
Insert, Size 0, Left, TH17	LJU231T
Insert, Size 0, Right, TH8	LJU215T
Insert, Size 0, Right, TH9	LJU216T
Insert, Size 0, Right, TH10	LJU217T
Insert, Size 0, Right, TH11	LJU218T
Insert, Size 0, Right, TH13	LJV219T
Insert, Size 0, Right, TH15	LJV220T
Insert, Size 0, Right, TH17	LJV221T

Size 1 Fixed Inserts

Insert	Reference
Insert, Size 1, Right, TH8	LJU235T
Insert, Size 1, Right, TH9	LJU236T
Insert, Size 1, Right, TH10	LJU237T
Insert, Size 1, Right, TH11	LJU238T
Insert, Size 1, Right, TH13	LJU239T
Insert, Size 1, Right, TH15	LJU240T
Insert, Size 1, Right, TH17	LJU241T
Insert, Size 1, Left, TH8	LJU245T
Insert, Size 1, Left, TH9	LJU246T
Insert, Size 1, Left, TH10	LJU247T
Insert, Size 1, Left, TH11	LJU248T
Insert, Size 1, Left, TH13	LJU249T
Insert, Size 1, Left, TH15	LJU250T
Insert, Size 1, Left, TH17	LJU251T

Size 2 Fixed Inserts

Insert	Reference
Insert, Size 2, Right, TH8	LJU255T
Insert, Size 2, Right, TH9	LJU256T
Insert, Size 2, Right, TH10	LJU257T
Insert, Size 2, Right, TH11	LJU258T
Insert, Size 2, Right, TH13	LJU259T
Insert, Size 2, Right, TH15	LJU260T
Insert, Size 2, Right, TH17	LJU261T
Insert, Size 2, Left, TH8	LJU265T
Insert, Size 2, Left, TH9	LJU266T
Insert, Size 2, Left, TH10	LJU267T
Insert, Size 2, Left, TH11	LJU268T
Insert, Size 2, Left, TH13	LJU269T
Insert, Size 2, Left, TH15	LJU270T
Insert, Size 2, Left, TH17	LJU271T

Size 3 Fixed Inserts

Insert	Reference
Insert, Size 3, Right, TH8	LJU275T
Insert, Size 3, Right, TH9	LJU276T
Insert, Size 3, Right, TH10	LJU277T
Insert, Size 3, Right, TH11	LJU278T
Insert, Size 3, Right, TH13	LJU279T
Insert, Size 3, Right, TH15	LJU280T
Insert, Size 3, Right, TH17	LJU281T
Insert, Size 3, Left, TH8	LJU285T
Insert, Size 3, Left, TH9	LJU286T
Insert, Size 3, Left, TH10	LJU287T
Insert, Size 3, Left, TH11	LJU288T
Insert, Size 3, Left, TH13	LJU289T
Insert, Size 3, Left, TH15	LJU290T
Insert, Size 3, Left, TH17	LJU291T

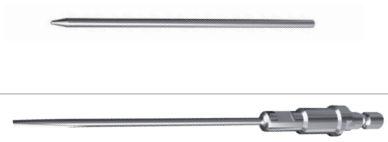
Disposables – Sterile Single Use Only

Saw Blades

S+N Number	SAW5944T/ SAW6944T	SAW5945T/ SAW6945T	SAW5946T/ SAW6946T	SAW5947T/ SAW6947T	SAW5948T/ SAW6948T	SAW5949T/ SAW6949T	SAW5950T/ SAW6950T	SAW6951T
Depth	70.0mm	85.0mm	80.0mm	90.0mm	75.0mm	90.0mm	70.0mm	70.0mm
Width	13.0mm	21.0mm	13.0mm	21.0mm	13.0mm	21.0mm	12.5mm	12.5mm
Mtl Thk	1.24mm	1.24mm	1.24mm	1.24mm	1.24mm	1.24mm		
Cut Thk	1.27mm	1.27mm	1.27mm	1.27mm	1.27mm	1.27mm	0.94mm	0.94mm
Hub	Stryker System 7	Stryker System 7	Hall Versipower	Hall Versipower	Hall Power Pro	Hall Power Pro	Brasseler	Brasseler

Pin Pack: LJV529T Includes:

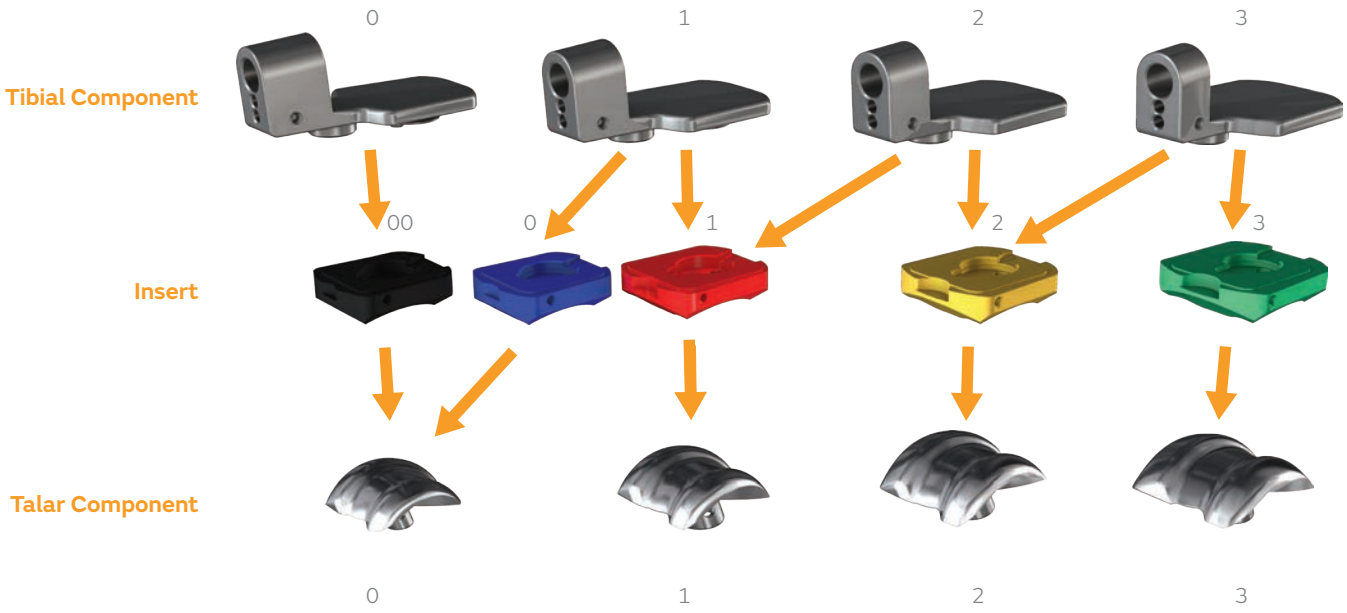
Description	Reference
3 x 110mm Self-drilling Pins	LJV527T
5 x 75mm Self-drilling Pins	LJV526T
3 x 45mm Self-drilling Pins	LJV525T
Reamer	LJU097T



Drill Bit

Description	Reference
LJV528T	3mm Diameter x 135mm Length
DWD060T	3mm Diameter x 220mm Length

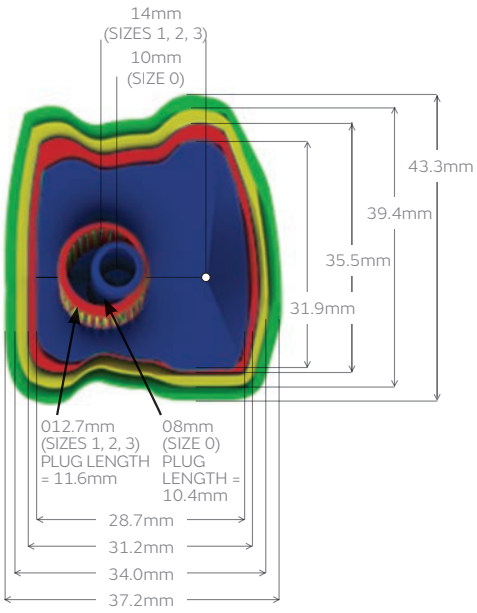
Compatibility Table



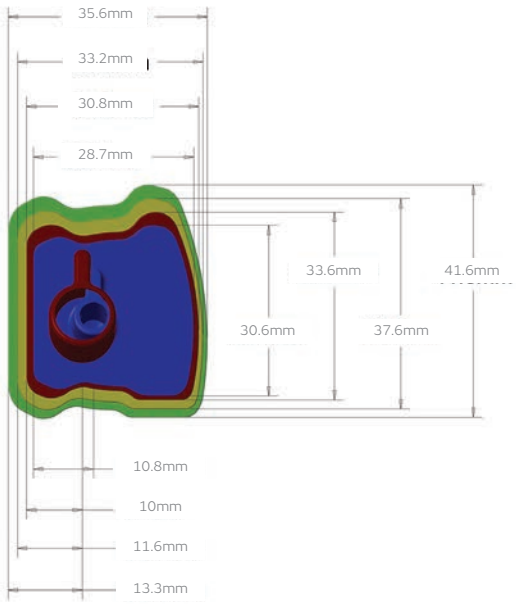
*Flat cut trial not pictured - sizing compatibility is the same.

Component Comparison Chart

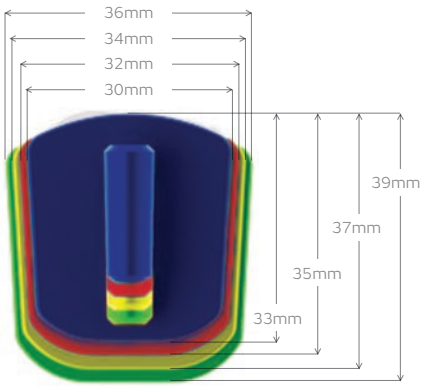
Size 0 Size 1 Size 2 Size 3



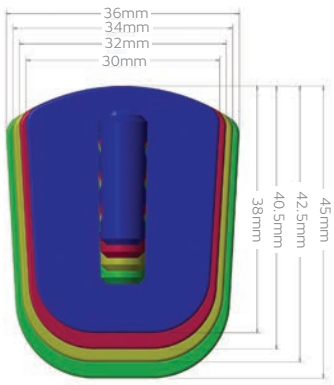
Chamfer Talar Dome



Flat Cut Talar Dome



Standard Tibial Trays



Extended Tibial Trays

Notes

Surgical Technique
Smith+Nephew does not provide medical advice and does not recommend this or any other surgical technique for use on a specific patient. The surgeon who performs any implant procedure is responsible for determining and using the appropriate techniques for implanting the device in each patient.

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31765 V2 LC-04-1030-0012 REVG 11/22

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Austin, TX 78758 | USA

References
1. Cracchiolo A, DeOrio JK. Design features of current total ankle replacements: Implants and instrumentation. J Am Acad Orthop Surg. 2008;16(9):530-40