Distal Femoral Resection

Drill and ream the distal femur in the following sequence: (Figure 1)

- I/M .375 diameter drill
- I/M reamer
- I/M rod

Assemble the OSS™ distal femoral resector: (Figure 2)

- OSS™ distal femoral sliding resection gauge
- OSS™ distal resection block single slot

Slide the 5 degree distal cut brick onto the I/M rod.

Set the sliding resection gauge to the “28” level, and position the assembly onto the distal cut brick. Secure with the three captured bone nails (Figures 3–5).
Distal Femoral Resection

Unscrew and remove the sliding resection gauge from the single slot resection block. Remove the I/M rod and resect the distal femur (Figures 6 & 7).

Remove the single slot resection block and reinsert the I/M rod. Position the A/P femoral cut block over the rod shaft and secure with medium bone nails (Figure 8).

Resect the anterior and posterior portions of the distal femur through the respective cut slots (Figure 9).
Canal Preparation
For 90mm Stems

Using the bullet tip reamers, insert to the 90mm stem length etch line located on the reamer shaft and ream sequentially to cortical chatter (Figures 1 & 2).

**Note:** The etch line for the 90mm stem depth includes the boss of the 3cm resurfacing femoral component (Figure 3).

Based on the diameter of the final bullet tip reamer, select the appropriate 90mm stem flare reamer to prepare the canal for the resurfacing femoral boss (Figure 4) as well as the flared portion of the stem:

- 12.5- flare reamer = 8mm thru 12.5mm bullet tip reamers
- 13+ flare reamer = 13mm thru 24mm bullet tip reamers

Ream the canal opening until the entire flat of the 90mm stem flare reamer cutting head rests flush with the resected distal femur (Figures 5 & 6).
Canal Preparation
For 150mm, 225mm and 300mm Stems

Using the bullet tip reamers, insert to the appropriate stem length etch line located on the reamer shaft and ream sequentially to cortical chatter (Figures 1 & 2).

**Note:** The etch line for the 150mm, 225mm and 300mm stem depth includes the boss of the 3cm resurfacing femoral component (Figure 3).

Based on the diameter of the final bullet tip reamer, select the corresponding flare reamer to prepare the canal for the resurfacing femoral boss (Figure 4) as well as the flared portion of the stem.

Ream the canal opening until the entire flat of the flare reamer cutting head rests flush with the resected distal femur (Figures 5 & 6).
Primary Arthroplasty
OSS™ 5cm Resurfacing Distal Femur

Distal Femoral Resection
Canal Preparation

**Note:** All previous steps in preparing a primary 3cm resurfacing distal femur are followed, with the exception of the sliding resection gauge.

Set the sliding resection gauge to the “50” level for a 5cm primary distal femoral resection.
Canal Preparation for 90mm Stems

Using the bullet tip reamers, insert to the 90mm stem length etch line located on the reamer shaft and ream sequentially to cortical chatter (Figures 1 & 2).

**Note:** The etch line for the 90mm stem depth includes the boss of the 3cm resurfacing femoral component (Figure 3).

Based on the diameter of the final bullet tip reamer, select the appropriate 90mm stem flare reamer to prepare the canal for the resurfacing femoral boss (Figure 4) as well as the flared portion of the stem.

- 12.5- flare reamer = 8mm thru 12.5mm bullet tip reamers
- 13+ flare reamer = 13mm thru 24mm bullet tip reamers

Ream the canal opening until the entire flat of the 90mm stem flare reamer cutting head rests flush with the resected distal femur (Figures 5 & 6).
Alternative Option for Distal Resection

Note: At this point, an alternative option may be used to secure the assembled distal resector to the distal femur:

1. Remove the flare reamer (Figure 7).

2. Attach the resection planer insert to the selected stem trial (Figure 8).

3. Insert the stem trial into the prepared femoral canal until the resection planer insert is flush with the resected distal femur (Figures 9 & 10).

4. Proceed using the resection planer insert shaft for both the distal resector and A/P femoral cut block.
Revision Arthroplasty
OSS™ 3cm Resurfacing Distal Femur

Distal Femoral Resection

**Note:** When an existing distal femoral component is in place, it is suggested that 9mm be used as reference for the bone previously resected for that implant.

Slide the 5 degree distal cut brick onto the exposed shaft of either the flare reamer or the planer insert/stem trial assembly.

Set the sliding resection gauge to the “20” level, and position the gauge onto the distal cut brick. Secure with the three captured bone nails (Figure 1).

Unscrew and remove the sliding resection gauge from the single slot resection block. Remove the flare reamer or planer insert/stem trial assembly and resect the distal femur (Figure 2).
Distal Femoral Resection

Remove the single slot resection block and reinsert the original shaft option so that the entire flat of the head rests flush with the resected distal femur (Figure 3).

Position the A/P femoral cut block over the shaft and secure with medium bone nails; resect the anterior and posterior portions of the distal femur through the respective cut slots. Remove all instrumentation (Figures 4 & 5).
Canal Preparation
Distal Femoral Resection

**Note:** All previous steps in preparing for a revision 3cm resurfacing distal femur are followed, with the exception of the sliding resection gauge.

Set the sliding resection gauge to the “40” level to prepare the revision distal femur for a 5cm resurfacing component.
Distal Femoral Resection
Canal Preparation

When the amount of distal femoral bone loss is so severe that a complete resection of the distal femur becomes necessary (7cm maximum resection), the following steps are recommended for using the 7cm elliptical segmental distal femur:

Place the elliptical segmental trial adjacent to the bone to be resected (use the remaining distal femur, patella or the articulating surface of the tibial plateau as landmarks for positioning this provisional); make a reference resection mark and a rotation mark with either a cautery device or methylene blue (Figure 1).

Resect the distal femur at the reference resection mark (Figures 2 & 3).

Prepare the femoral canal using incremental bullet tip reamers until cortical contact is achieved (reaming depth is determined by the length of stem to be used: 90mm, 150mm, 225mm, 300mm) (Figure 4).

Based on the diameter of the final bullet tip reamer, select the flare reamer of equivalent size and ream the canal opening to the “depth etch” located on the reamer body (Figures 5–7).
Utilizing the OSS™ Resection Planer

Option One

Leave the flare reamer within the canal and remove the power source.

Place the resection planer over the shaft of the flare reamer and plane the resected distal femur (Figures 1–3).

Figure 1

Figure 2

Figure 3
Utilizing the OSS™ Resection Planer

**Option Two**

Remove the flare reamer and attach the resection planer insert to the stem trial (Figures 1 & 2).

Insert the assembly into the prepared femoral canal until the resection planer insert is flush with the resected distal femoral shaft (Figure 3).

Place the resection planer over the shaft of the resection planer insert and plane the resected distal femur (Figures 4 & 5).
Primary Tibial Resection

A minimal resection (8mm) of the tibial plateau is accomplished via an intramedullary or extramedullary tibial resection guide (the I/M tibial resector is shown).

Drill and ream the tibia in the following sequence:
- I/M 0.375 diameter drill
- I/M reamer
- I/M rod

Set the depth of resection on the cutting block scale to the desired level. Tighten the gold-colored bolt to secure the resection level. Slide the entire assembly onto the I/M rod until the stylus touches the deepest portion of the unaffected tibial condyle. Secure the resection guide to the I/M rod by tightening the anterior silver bolt (Figure 1).

Pin the resection block and release the block from the guide. Remove the I/M rod and resection guide body. Resect the tibial plateau through the slot to create a flat surface perpendicular to the mechanical axis of the lower leg. Remove the cutting guide.

Select the tibial template that provides maximum surface coverage without overhang. Secure the template to the tibial surface (in correct rotational alignment with the tibial tubercle) with medium bone nails. Add the tibial punch guide tower and secure to the template with the anterior thumbscrew (Figure 2).
Revision Tibial Resection

Note: All previous steps in preparing a primary tibia are followed, with the exception being the resection level of the tibial resector.

For a revision tibial resection, a flat clean-up cut of the tibial plateau is accomplished by setting the tibial resector at the “2” level and resecting as usual (Figure 1).

Note: If the I/M rod or a flare reamer is not sufficient in accommodating the tibial resection instrumentation, it may be necessary to perform a free-hand ream with the bullet tip reamers. This will allow the stem trial/resection planer insert assembly to be used with the I/M tibial resector (Figures 2 & 3).
Preparation

Short Non-modular Tibial Base Plate

The tibial starter reamer provides an entry hole into the tibia (Figure 1).

The short spiral reamer achieves the desired depth and diameter for the non-modular eminence of the tibial base plate (Figure 2).

The keel stem punch prepares the tibial plateau to accommodate the anti-rotational keels of the tibial base plate (Figure 3).

Remove the tibial punch guide tower and the template.
Preparation

Long Non-modular Tibial Base Plate

The tibial starter reamer provides an entry hole into the tibia (Figure 1).

The long tapered spiral reamer achieves the desired depth and diameter for the non-modular eminence and stem of the tibial base plate (Figure 2).

The keel stem punch prepares the tibial plateau to accommodate the anti-rotational keels of the tibial base plate (Figure 3).

Remove the tibial punch guide tower and the template.
Preparation

Modular Tibial Base Plate (no stem)

The tibial starter reamer provides an entry hole into the tibia (Figure 1).

The modular spiral reamer achieves the desired depth and diameter for the modular eminence of the tibial base plate (Figure 2).

The keel stem punch prepares the tibial plateau to accommodate the anti-rotational keels of the tibial base plate (Figure 3).

Remove the tibial punch guide tower and the template.
**Preparation**

**Modular Tibial Base Plate with 90mm stem**

**Note:** All previous steps in preparing a modular tibial base plate are followed; the additional steps are required when using a 90mm stem.

After reaming with the modular spiral reamer, select a tibial tower reamer sleeve and a bullet tip reamer (Figures 1 & 2).

- Small tibial tower reamer sleeve is utilized for 8mm thru 12.5mm bullet tip reamers.
- Large tibial tower reamer sleeve is utilized for 13mm thru 20mm bullet tip reamers.

Place the bullet tip reamer into the horizontal insert slot of the tibial tower reamer sleeve and rotate the reamer in a clockwise motion until the reamer is vertical within the reamer sleeve (Figures 3–5).
Preparation
Modular Tibial Base Plate with 90mm Stem (cont’d.)

With the bullet tip reamer positioned within the tibial tower reamer sleeve, place the assembly into the tibial punch guide tower and ream to the 90mm stem etch line located on the shaft of the reamer (etch line must be flush with the recessed shelf within the top of the reamer sleeve) (Figures 2, 6 & 7).

Ream sequentially to cortical chatter and remove the reamer/sleeve assembly.

Select a 90mm tibial tower flare reamer (based on the final bullet tip reamer in the preceding step), to prepare the unique taper flare junction of the 90mm stems.

- **-12.5**: 90mm tibial tower flare reamer is utilized for 9mm thru 12.5mm diameter stems.
- **+13.0**: 90mm tibial tower flare reamer is utilized for 13mm thru 19.5mm diameter stems.
Preparation

Modular Tibial Base Plate
with 150mm straight stem

Note: All previous steps in preparing a modular tibial base plate are followed; the modified steps are required when using a 150mm straight stem.

After reaming with the modular spiral reamer, select a tibial tower reamer sleeve and a bullet tip reamer.

- Small tibial tower reamer sleeve is utilized for 8mm thru 12.5mm bullet tip reamers.
- Large tibial tower reamer sleeve is utilized for 13mm thru 20mm bullet tip reamers.

With the bullet tip reamer locked into the chosen tibial tower reamer sleeve (as shown on pg. 19), place the assembly into the tibial punch guide tower and ream distally until the retaining stop on the reamer comes in contact with the reamer sleeve (Figure 1).

Ream sequentially to cortical chatter and remove reamer sleeve assembly.

Select a tibial tower flare reamer (based on the final bullet tip reamer in the preceding step), to prepare the unique taper flare junction of the 150mm straight stems (Figures 2 & 3).
OSS™ Trial Assembly

Distal Femur

3cm/5cm Resurfacing Femorals
Secure the selected stem trial to the resurfacing distal femoral trial with the 3.5mm short shaft screwdriver (Figure 1).

7cm Elliptical Segmental Femoral
Secure the selected stem trial to the elliptical segmental distal femoral trial with the 3.5mm short shaft screwdriver (Figure 2).

Tibia

Short Non-Modular Tibial Base Plates
No assembly is necessary (Figure 3).

Long Non-Modular Tibial Base Plates
No assembly is necessary (Figure 4).

Modular Tibial Base Plates (no stem)
No assembly in necessary (Figure 5).

Modular Tibial Base Plates (with stem)
Secure the selected stem trial (90mm, 150mm Straight) to the modular tibial base plate with the 3.5mm short shaft screwdriver (Figure 6).
In flexion, insert the assembled trial femoral component and the trial tibial base plate.

Begin with the 12mm tibial bearing trial, positioning it onto the trial tibial base plate so that the eminence protruding from the bottom of the bearing fits within the tibial base plate opening (Figure 1).

Reduce the bearing/base plate assembly into the trial femoral component. Insert the trial axle through the condyles so that the entire construct is fully captured (Figures 2 & 3).

Balance the soft tissue in extension. Select the tibial bearing that allows for full extension, but not more than 8mm of joint distraction with longitudinal traction. Upon confirming fit and interaction of all components, the trials are removed.
**OSS™ Implant Assembly**

When opening the sterile stem implant boxes, make certain to remove and set aside the large-head/small-thread locking screw from the stem. The stems are pre-packaged with the screws threaded into the male tapers: **Do Not Discard** (Figures 1 & 2).

After aligning the stem with the distal femoral component, vigorously impact the taper using the modular impactor and stem holder; secure with the large-head/small-thread locking screw that was set aside (Figure 3–5).

The distal femoral construct is now implanted using contemporary techniques.

If the tibial component requires a modular stem, repeat the taper impaction steps and implant using contemporary techniques.

The patella is prepared, and the Biomet patellar component of choice is utilized.
At this point, the trial tibial bearing may be used with the actual distal femoral and tibial implants to reconfirm the correct tibial bearing thickness.

Position the selected trial tibial bearing onto the tibial base plate so that the eminence protruding from the bottom of the trial bearing (representing the yoke) fits within the tibial base plate opening (Figure 6).

Reduce the bearing/base plate assembly into the femoral component. Insert the trial axle/bushing through the medial condyle to fully capture the femoral component (Figures 7 & 8).

Once the tibial bearing thickness has been finalized, and the trial components removed, two options are available to assemble the remaining auxiliary implants necessary for articulation (lock pin, tibial and femoral bushings, axle, yoke and tibial bearing).
**Option One**

Insert the two polyethylene femoral bushings into the femoral condyle openings from within the intercondylar notch (Figures 1 & 2).

Insert the polyethylene tibial bushing into the tibial base plate (small end first) (Figure 3).

Push the yoke through the underside of the selected polyethylene tibial bearing and place this combination up between the femoral condyles (Figures 4–6).

The axle is inserted (non-slotted end first) into the medial side of the femoral component and through the yoke until the slotted end of the axle is flush with the polyethylene femoral bushing (Figures 7 & 8).
Option One (cont’d.)

Using the axle screwdriver, rotate the axle until the lock pin notch in the axle is aligned with the hole located on the anterior face of the yoke (Figure 9).

Upon correct alignment the polyethylene lock pin is placed onto the lock pin inserter and, using either digital pressure or very light mallet taps, pushed through the anterior hole of the yoke. Inspect the assembly to ensure that the polyethylene lock pin is fully engaged (the anterior portion of the lock pin should be flush with the yoke); extract the lock pin inserter (Figures 10–13).

To articulate the tibial and femoral components, hyperflex the knee with the patella everted and insert the yoke down into the tibial base plate (Figures 14 & 15).

Place the knee in extension and evaluate the soft tissue tension. Closure is accomplished in the standard fashion.
Option Two
Insert the two polyethylene femoral bushings into the femoral condyle openings from within the intercondylar notch (i.e., inside out) (Figures 1 & 2).

Insert the polyethylene tibial bushing (small end first) into the tibial base plate (Figure 3).

Push the yoke through the underside of the selected polyethylene tibial bearing and, while holding the proximal portion of the yoke, insert the assembly into the opening of the tibial base plate (Figures 4–7).
Option Two (cont’d.)

Slide the distal femur onto the tibial component with the proximal portion of the yoke resting between the condyles (Figures 8 & 9).

The axle is inserted (non-slotted end first) into the medial side of the femoral component and through the yoke until the slotted end of the axle is flush with the polyethylene femoral bushing. Using the axle screwdriver, rotate the axle until the lock pin notch in the axle is aligned with the hole located on the anterior face of the yoke (Figures 10 & 11).

Upon correct alignment the polyethylene lock pin is placed onto the lock pin inserter and, using either digital pressure or very light mallet taps, pushed through the anterior hole of the yoke. Inspect the assembly to ensure that the polyethylene lock pin is fully engaged (the anterior portion of the lock pin should be flush with the yoke); extract the lock pin inserter (Figures 12–15).

Place the knee in extension and evaluate the soft tissue tension. Closure is accomplished in the standard fashion.