OSS™ Orthopedic Salvage System

Proximal Tibial Replacement

Surgical Technique

ZIMMER BIOMET

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This brochure is presented to demonstrate the surgical technique utilized by John A. Abraham, MD; Mr. Lee M. Jeys; Michael D. Miller, MD; Jeffrey R. Kneisl, MD; Robert J. Tait, MD and Edward J. McPherson, MD.

3 cm Replacement Options

RS

Standard

Bodies

5 cm Replacement Options

RS

Standard

Bodies

7 cm Replacement Options

RS

Standard

Bodies

9 cm Replacement Options

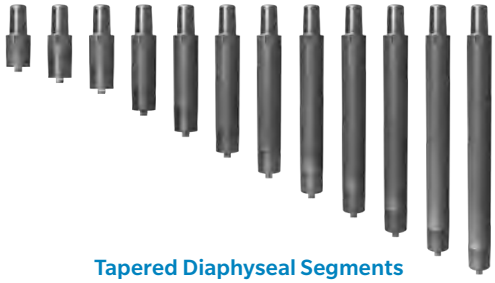
Standard

Standard Elliptical

Greater than 9 cm Replacement Options

RS

Standard



Tapered Diaphyseal Segments

OsseoTi Augments

Stem

Indications for Use

Indications and Contraindications

Effective as of January 1, 2016

INDICATIONS

1. Painful and disabled joint resulting from avascular necrosis, osteoarthritis, rheumatoid arthritis, or traumatic arthritis.
2. Correction of varus, valgus, or posttraumatic deformity.
3. Correction of revision of unsuccessful osteotomy, arthrodesis or previous joint replacement.
4. Ligament deficiencies.
5. Tumor resections.
6. Treatment of non-unions, femoral neck fracture, and trochanteric fractures of the proximal femur with head involvement, unmanageable using other techniques.*
7. Revision of previously failed total joint arthroplasty.
8. Trauma.

These devices are to be used with bone cement unless composed of OsseoTi® titanium alloy (not licensed in Canada) or a proximal femur is indicated for use (USA).

Legacy Biomet OSS Reduced size (RS) components offers a variety of component options for treatment in small adults and adolescents (12-21 years) that require proximal femoral, distal femoral, total femur, or proximal tibial replacement as well as, resurfacing components for the proximal tibia and distal femur (USA).

*Not applicable to Regenerex® Ultra Porous Construct titanium knee augment usage (not licensed in Canada), or any other knee component.

COMPRESS INDICATIONS

The Compress® Segmental Femoral Replacement System is indicated for:

1. Correction of revision of unsuccessful osteotomy, arthrodesis, or previous joint replacement.
2. Tumor resections.
3. Revision of previously failed total joint arthroplasty.
4. Trauma.

The Compress Segmental Femoral Replacement System components are intended for uncemented use.

When components of the Orthopaedic Salvage System are used with legacy Biomet's Compress Segmental Femoral Replacement System, the user should refer to the package insert contained with the Compress components for full prescription information.

CONTRAINDICATIONS

Absolute contraindications include: infection, sepsis, and osteomyelitis. Relative contraindications include: 1) uncooperative patient or patient with neurologic disorders who are incapable of following directions, 2) osteoporosis, 3) metabolic disorders which may impair bone formation, 4) osteomalacia, 5) distant foci of infections which may spread to the implant site, 6) rapid joint destruction, marked bone loss or bone resorption apparent on roentgenogram, 7) vascular insufficiency, muscular atrophy, or neuromuscular disease.

Proximal Tibial Preparation

Pre-Operative Planning

When planning for a proximal tibial replacement utilizing the Orthopedic Salvage System, carefully review the indication and contraindications for use referenced within the package insert located on page 6 of this surgical technique.

To determine the correct implant components and size, utilize the Proximal Tibial Resection Chart 1. Final determination frequently cannot be made until the actual time of surgery, however with appropriate planning a consistent operative plan with alternatives can be formulated.

Chart 1: Proximal Tibial Resection

Resection Length (cm)	Proximal Tibial Component	Tibial Baseplate	Segments (cm)	Segmental Adaper (cm)
3	3 cm Non-Modular			
3	3 cm Sleeve	Long Non-Modular		
3	3 cm Sleeve	Modular w/ Stem		
5	5 cm Non-Modular			
5	5 cm Sleeve	Long Non-Modular		
5	5 cm Sleeve	Modular w/ Stem		
7	7 cm Non-Modular			
7	7 cm Sleeve	Modular w/ Stem		
9	9 cm Modular Elliptical w/ Stem			
9	9 cm Sleeve	Modular w/ Stem		
10	9 cm Modular w/Non-Collared Stem			1
10.5	9 cm Modular w/ Stem			1.5
12	9 cm Modular w/ Stem		3	
13	9 cm Modular w/ Stem		4	
13.5	9 cm Modular w/ Stem		3	1.5
14	9 cm Modular w/ Stem		5	
14.5	9 cm Modular w/ Stem		4	1.5
15	9 cm Modular w/ Stem		3+3	
15.5	9 cm Modular w/ Stem		5	1.5
16	9 cm Modular w/ Stem		7	
16.5	9 cm Modular w/ Stem		3+3	1.5
17	9 cm Modular w/ Stem		4+4	
17.5	9 cm Modular w/ Stem		7	1.5
18	9 cm Modular w/ Stem		9	
18.5	9 cm Modular w/ Stem		4+4	1.5
19	9 cm Modular w/ Stem		5+5	
19.5	9 cm Modular w/ Stem		9	1.5
20	9 cm Modular w/ Stem		11	
20.5	9 cm Modular w/ Stem		5+5	1.5
21	9 cm Modular w/ Stem		5+7	
21.5	9 cm Modular w/ Stem		11	1.5
22	9 cm Modular w/ Stem		13	
22.5	9 cm Modular w/ Stem		5+7	1.5
23	9 cm Modular w/ Stem		7+7	
23.5	9 cm Modular w/ Stem		13	1.5
24	9 cm Modular w/ Stem		15	
24.5	9 cm Modular w/ Stem		7+7	1.5
25	9 cm Modular w/ Stem		7+9	
25.5	9 cm Modular w/ Stem		15	1.5
26	9 cm Modular w/ Stem		17	
26.5	9 cm Modular w/ Stem		7+9	1.5
27	9 cm Modular w/ Stem		9+9	
27.5	9 cm Modular w/ Stem		17	1.5
28	9 cm Modular w/ Stem		19	
28.5	9 cm Modular w/ Stem		9+9	1.5
29	9 cm Modular w/ Stem		9+11	
29.5	9 cm Modular w/ Stem		19	1.5
30	9 cm Modular w/ Stem		21	
30.5	9 cm Modular w/ Stem		9+11	1.5
31	9 cm Modular w/ Stem		11+11	
31.5	9 cm Modular w/ Stem		21	1.5
32	9 cm Modular w/ Stem		23	

Additional options not presented exist if using collared stems or segmental adapters.

Note: Collared stems add 1 cm extramedullary. Segmental adapters add either 1 cm or 1.5 cm extramedullary and adds 30 mm intramedullary.

Figure 1

Figure 2

Figure 3

Proximal Tibial Resection

Measuring the Resection Length

Measure and mark the resection point on the proximal tibia also making a longitudinal rotation reference anterior mark (Figure 1). The reference corresponds with the markings on the trials and implant constructs.

Tibial Osteotomy

Resect the proximal tibia at the reference resection mark (Figure 2 and Figure 3).

Figure 4

Figure 5

Proximal Tibial Canal Preparation

There are two options for preparing the tibial canal for a proximal tibial replacement. Option 1 is use of a proximal tibial sleeve with a long non-modular baseplate or modular baseplate with stem (Figure 4). Option 2 is use of non-modular or modular proximal tibial body (Figure 5).

Note: Only the Standard tibial sleeves are OsseoTi porous metal and can only be used with the optional spiked washers and bolts.

Proximal Tibial Sleeves

Long Non-Modular (3 cm & 5 cm)

Modular with Stem (3, 5, 7, & 9 cm)

Figure 6a

Figure 6b

Proximal Tibial Sleeves with a Long Non-Modular Tibial Baseplate

Reaming

To prepare the tibial canal for a proximal tibial sleeve with a long non-modular tibial baseplate, select the appropriate reamer that corresponds to the Standard or RS long non-modular tibial baseplate. Select the appropriate tibial depth stop corresponding to a 3 cm or 5 cm resection. Attach the depth stop to the tibial sled guide post and align with the tibial canal. Start at full power prior to contacting the tibia and ream to the mechanical stop (Figure 6).

Note: The OsseoTi tibial sleeves can only be used with the sized 63 mm and larger long non-modular tibial baseplates. The RS tibial sleeves can only be used with the RS long non-modular tibial baseplates.

Note: To prepare the distal femur, reference the Distal Femoral Surgical Technique or the Segmental Distal Femoral Surgical Technique.

Long Non-Modular Tibial Reamer
STND Tibial Provisionals Tray 9
RS Tibial Provisionals Tray 11

Long Non-Modular Tibial Trial
STND Tibial Provisionals Tray 9
RS Tibial Provisionals Tray 11

Tibial Sleeve Depth Stop
Tibial Bone Preparation Tray 2

Tibial Sled Guide Post 110018785
Tibial Bone Preparation Tray 2

Figure 7

Figure 8

Trialing

Slide selected 3 cm or 5 cm sleeve trial onto the long non-modular tibial baseplate trial (Figure 7) and insert construct into tibial canal.

Implant Assembly

The 3 cm and 5 cm proximal tibial sleeves can be used in conjunction with the long non-modular tibial baseplate (Figure 8).

Cement the underside of the tibial baseplate and the proximal region of the stem.

Slide on the selected tibial sleeve with firm digital pressure. Clean extruded cement and hold in place until cured.

If using the Standard OsseoTi tibial sleeves, continue to page 23 for optional Spiked Washer and Bolt Assembly.

Long Non-Modular Tibial Trial
STND Tibial Provisionals Tray 9
RS Tibial Provisionals Tray 11

3 and 5 cm Proximal Tibial Sleeve Trials
STND Tibial Provisionals Tray 10
RS Tibial Provisionals Tray 11

Figure 9

Figure 10

Flexible Ream Depth Guide	
3 cm Sleeve	Stem Length + 60 mm
5 cm Sleeve	Stem Length + 40 mm
7 cm Sleeve	Stem Length + 20 mm
9 cm Sleeve	Stem Length

Reamer / Trial / Stem Diameter Example	
Flexible Reamer	11 mm
Trial Stem	11 mm
Straight Porous Stem (implant)	11.5 mm
Cemented Stem (implant)	9 mm

Proximal Tibial Sleeves with a Modular Tibial Baseplate with Stem

Flexible Reaming

After the tibial resection has been made, start power prior to contact and begin with the smallest diameter flexible reamer sequentially reaming in .5 mm increments until light cortical chatter is achieved (Figure 9 and Figure 10).

Flexible ream depth depends on the size of the proximal tibial sleeve and length of stem. Refer to the Flexible Ream Depth Guide chart above for appropriate ream depth.

Reference the chart above for cemented and porous stem diameter preparation.

Note: Reaming over a guide is recommended. The Arcos Flexible Reamers that are designed to prepare for a bowed stem are cannulated to accommodate a guide wire.

Arcos® Flexible Reamer
Arcos Modular Femoral Revision System
Flexible Reamers Instrument Case

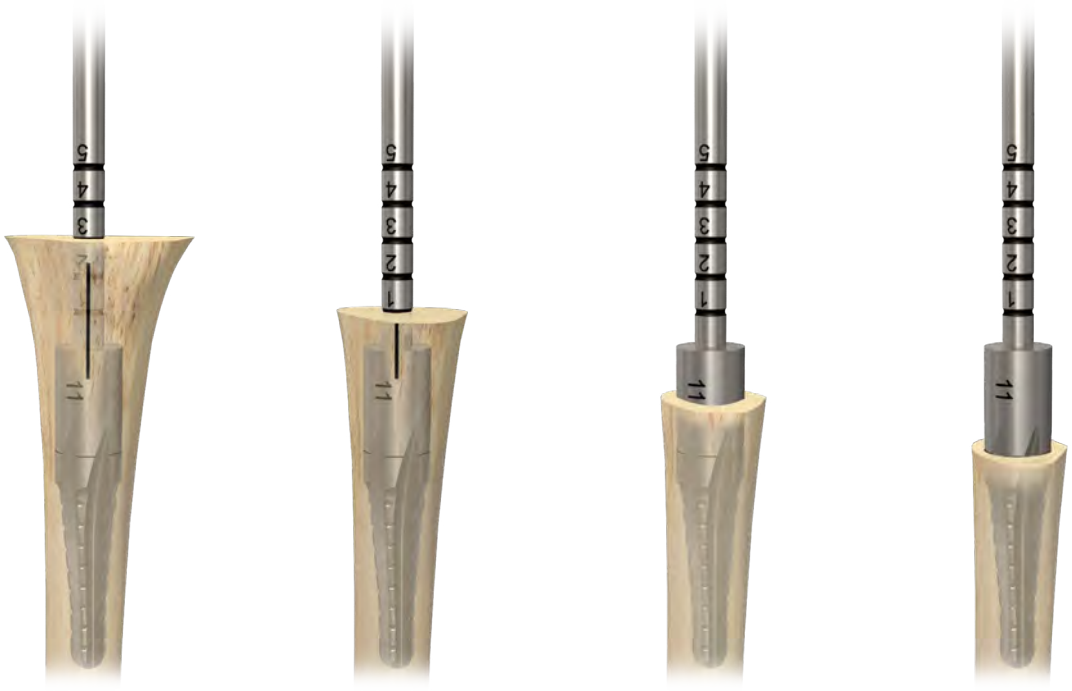


Figure 11

Flare Reaming

Based on the diameter of the final flexible reamer, select the flare reamer of equivalent size. Start at full power prior to contact and ream the canal opening (Figure 11).

The flare ream depth depends on the size of the proximal tibial sleeve. Refer to the Flare Ream Depth Length Guide chart or Figure 11 to determine appropriate ream depth.

Note: If necessary use the resection planer over the flare reamer to plane the resected tibial bone.

Flare Ream Depth Length Guide*	
3 cm Sleeve	Ream to Groove 3
5 cm Sleeve	Ream to Groove 1
7 cm Sleeve	Ream Between Flat and Etch
9 cm Sleeve	Ream to Etch

Flare Reamer
Reamers Tray 3

Figure 12a

Figure 12b

Modular Reaming

Select the appropriate tibial depth stop corresponding to a 3 cm or 5 cm resection. Attach the depth stop to the tibial sled guide post and align with the tibial canal. Using the modular reamer, start at full power prior to contacting the tibia and ream to the mechanical stop (Figure 12a and Figure 12b).

Note: To prepare the distal femur, reference the Distal Femoral Surgical Technique or the Segmental Distal Femoral Surgical Technique.

Modular Tibial Trial
STND Tibial Provisionals Tray 10

Modular Tibial Reamer 32-472660
STND Tibial Provisionals Tray 10

Figure 13

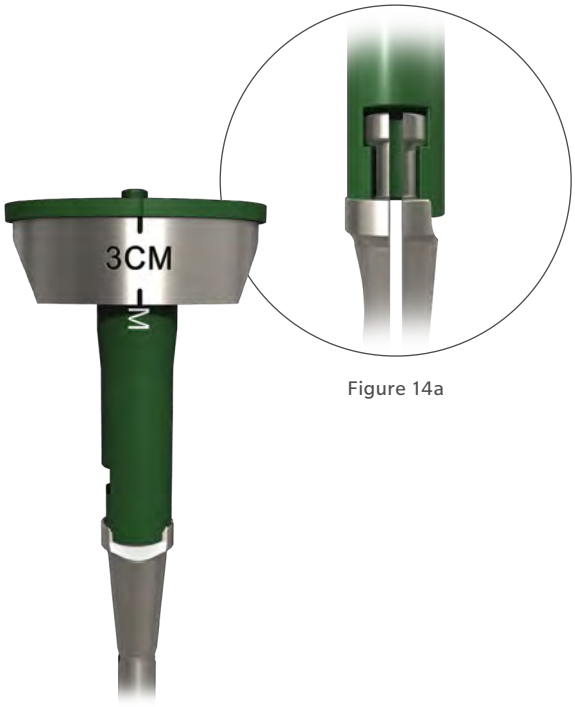


Figure 14a

Figure 14

Trialing

Slide selected sleeve trial onto the modular tibial baseplate trial (Figure 13). Select the appropriate stem trial and connect to the tibial trial (Figure 14). Insert the construct into tibial canal.

Modular Tibial Trial
STND Tibial Provisionals Tray 10

Modular Tibial Reamer 32-472660
STND Tibial Provisionals Tray 10

Proximal Tibial Sleeve Trial
STND Tibial Provisionals Tray 10
RS Tibial Provisionals Tray 11

Stem Trials
Short Provisional Stems Tray 7
Long Provisional Stems Tray 8

Tibial Sleeve Depth Stop
Tibial Bone Preparation Tray 2

Tibial Sled Guide Post 110018785
Tibial Bone Preparation Tray 2

Implant Assembly

The 3 cm, 5 cm, 7 cm and 9 cm proximal tibial sleeves can be used in conjunction with the modular tibial baseplate with stem (Figure 15).

To impact the modular tibial component with a stem, assemble the impactor onto the impaction base (A). Remove plug inside the taper of the modular tibial baseplate. Vigorously impact using the impactor handle.

After impaction, assemble the large head/small thread locking screw packaged with the stem through the modular tibial baseplate with a 3.5 mm driver (B).

Cement the underside of the tibial baseplate and the proximal region of the stem.

Slide on the selected tibial sleeve with firm digital pressure. Clean extruded cement and hold in place until cured.

The proximal tibial construct is now implanted using contemporary techniques. If using a Standard OsseoTi tibial sleeve, continue to page 23 for optional Spiked Washer and Bolt Assembly.

Figure 15

Impaction Base
General Instruments Tray 12

Femoral/Tibial Impactor Handle 110030073
General Instruments Tray 13

Femoral/Tibial Impactor 110030072
General Instruments Tray 12

3.5 mm Driver (Long or Short)
General Instruments Tray 13

Spiked Washer & Bolt Assembly for Standard Proximal Tibial Sleeves

Figure 16

Figure 17

Bolts and Spiked Washer Assembly for Standard OsseoTi Proximal Tibial Sleeves (optional)

Note: The spiked washers and bolts are only compatible with the Standard OsseoTi proximal tibial sleeves.

Secure the patella tendon over the proximal tibial sleeve (Figure 16).

To prepare for spiked washers and bolts, use a surgical pen to mark the location of the bolt holes of the proximal tibial sleeve on the patella tendon (Figure 17).

Once the patella tendon has been marked, pull back the tendon and drill holes on the markings using the bolt drill.

Note: It is important that the bolt drill does not come in contact with the proximal tibial sleeve when drilling to protect the sleeve from damage.

Bolt Drill 110018811
General Instruments Tray 12

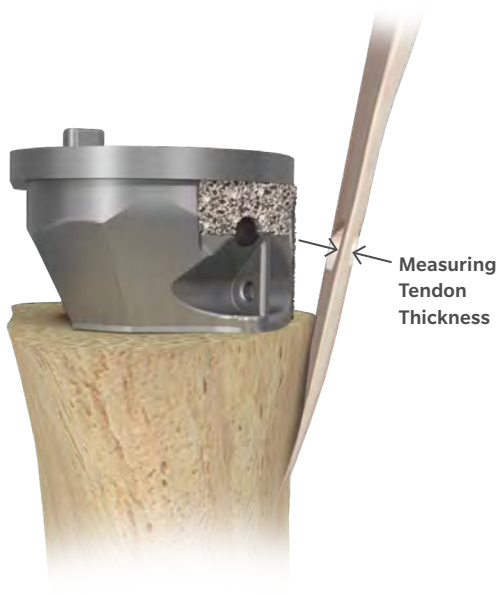


Figure 18

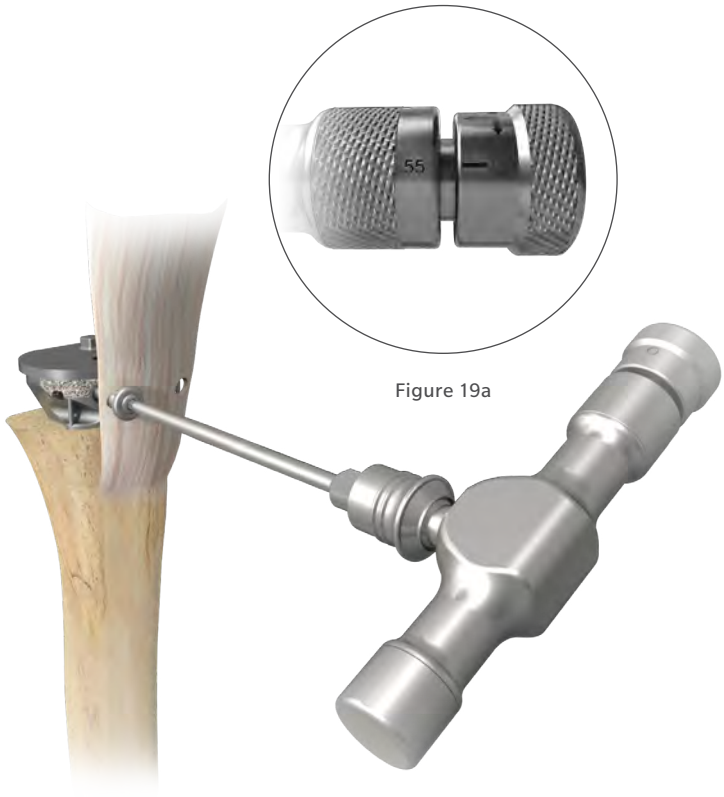


Figure 19a

Figure 19

Bolts and Spiked Washer Assembly for Standard OsseoTi Proximal Tibial Sleeves (optional) (cont.)

Measure the thickness of the tendon at the location of the hole. Select the corresponding bolt size based on the tendon thickness (Figure 18).

For example, if the tendon measures 10 mm thick, select the 10 mm spiked washer bolt.

Thread the bolt and spiked washer into the proximal tibial sleeve using the 3.5 mm hex driver and torque wrench in the torque limiting position of "55" until a "click" is felt and heard (Figure 19 and Figure 19a).

Torque Wrench 31-301850
General Instruments Tray 13

3.5 mm Hex Driver 405898
General Instruments Tray 13

Figure 20

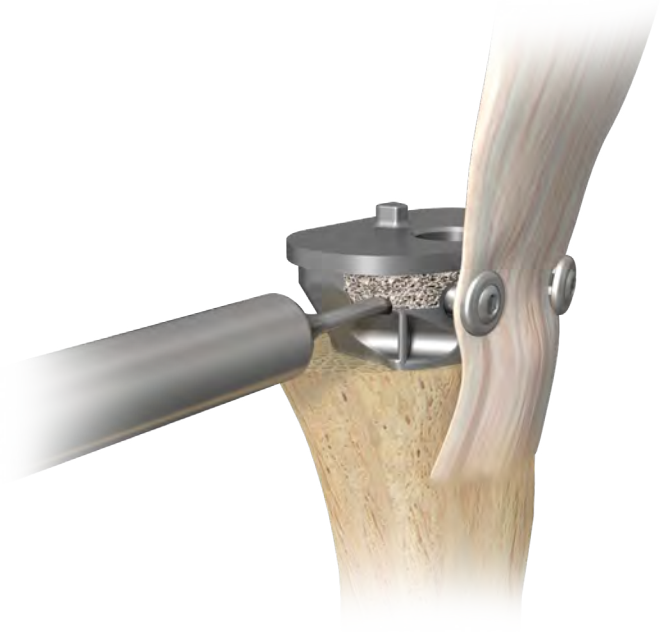


Figure 21

Bolts and Spiked Washer Assembly for Standard OsseoTi Proximal Tibial Sleeves (optional) (cont.)

Using the thread stake, locate the holes on the lateral and medial sides of the OsseoTi proximal tibial sleeves (Figure 20).

Impact the thread stake into the holes to deform the bolt threads in order to prevent the washer and bolt from loosening (Figure 21).

Sutures may be used for securing soft tissue.

Thread Stake 110018810
General Instruments Tray 12

Proximal Tibial Bodies

Less than or Equal to 9 cm Replacement

Greater than 9 cm Replacement

Figure 22

Figure 23

Reamer / Trial / Stem Diameter Example	
Flexible Reamer	11 mm
Trial Stem	11 mm
Splined Stem (implant)	11 mm
Cemented Stem (implant)	9 mm

Flexible Ream Diameter and Depth Length Guide	
3 cm Proximal Body (11 mm)	240 mm
5 cm Proximal Body (9, 11, 13 15 mm)	150 mm
7 cm Proximal Body (9, 11, 13, 15 mm)	150 mm
9 cm Elliptical Proximal Body (All)	Stem Length

Less than or Equal to 9 cm Replacement

Flexible Reaming

Note: If preparing for a modular tibial resection greater than 9 cm, continue to page 34 for canal preparation options.

Start power prior to contact and beginning with the smallest diameter flexible reamer, sequentially ream in .5 mm increments until light cortical chatter is achieved (Figure 22 and Figure 23).

Refer to the Flexible Ream Diameter and Depth Length Guide Chart above for appropriate ream depth.

Note: Reference the chart above for cemented and porous stem diameter preparation.

Note: Reaming over a guide is recommended. The Arcos flexible reamers that are designed to prepare for a bowed stem are cannulated to accommodate a guide wire.

Arcos Flexible Reamer
Arcos Modular Femoral Revision System
Flexible Reamers Instrument Case

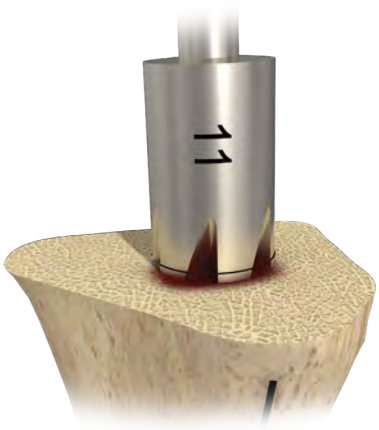


Figure 24

Figure 25

Flare Reaming

Based on the diameter of the final flexible reamer, select the flare reamer of equivalent size. Start power prior to contact and ream the canal opening (Figure 24).

Flare ream depth depends on the size of the non-modular or modular proximal body (Figure 25 and Figure 26). Refer to the Flare Ream Depth Length Guide Chart for appropriate ream depth.

Flare Ream Depth Guide	
3 cm Proximal Body	Flare Ream to Flat
5 cm Proximal Body	Flare Ream to Etch
7 cm Proximal Body	Flare Ream to Etch
9 cm Elliptical Proximal Body	Flare Ream to Etch

Flare Reamer
Reamers Tray 3

Figure 26

Figure 27

Planing the Resection

Place the resection planer over the flare reamer (Figure 26). Start power prior to contact and plane the resection (Figure 27).

Note: To prepare the distal femur, reference the Distal Femoral Surgical Technique or the Segmental Distal Femoral Surgical Technique.

Resection Planer 110018812
Reamers Tray 3

Flare Reamer
Reamers Tray 3

Figure 28

Figure 29

Trialing: 3 cm Non-Modular

No assembly required (Figure 28).

Note: Implant stem is only available in 11 mm x 240 mm.

Trialing: 5 cm and 7 cm Non-Modular

Select the stem trial that corresponds to the last flexible/flare reamer used to prepare the canal. Connect to the proximal tibial trial (Figure 29).

Note: Implant stem sizes are only available in 9 mm, 11 mm, 13 mm, and 15 mm X 150 mm.

3 cm Proximal Tibial Trial
32-472109
STND Tibial Provisionals Tray 10

5 cm and 7 cm Proximal Tibial Trial
110018675 & 110018676
STND Tibial Provisionals Tray 10

Stem Trials
Short Provisional Stems Tray 7
Long Provisional Stems Tray 8

Figure 30

Figure 31

Trialing: 9 cm Elliptical Modular

Connect the selected stem trial to the 9 cm elliptical proximal tibial trial (Figure 30).

Non-Modular Proximal Tibial Implant Assembly

No assembly required (Figure 31).

The proximal tibial construct is now implanted using contemporary techniques.

Stem Trials
Short Provisional Stems Tray 7
Long Provisional Stems Tray 8

9 cm Elliptical Proximal Tibial Trial 110018678
Standard Tibial Provisionals Tray 10

Implant Assembly: 9 cm of Replacement

To impact the proximal tibial component with a stem, assemble the impactor onto the impaction base (A). Vigorously impact using the impactor handle.

After impaction, assemble the large head/small thread locking screw packaged with the stem, through the proximal tibial component with a 3.5 mm driver (B) (Figure 32).

The proximal tibial construct is now implanted using contemporary techniques.

Cementing the Proximal Tibia

If cementing the stem, insert a cement plug then retrograde fill the canal and pressurize. Carefully clean out any excess cement using a currette or similar instrument.

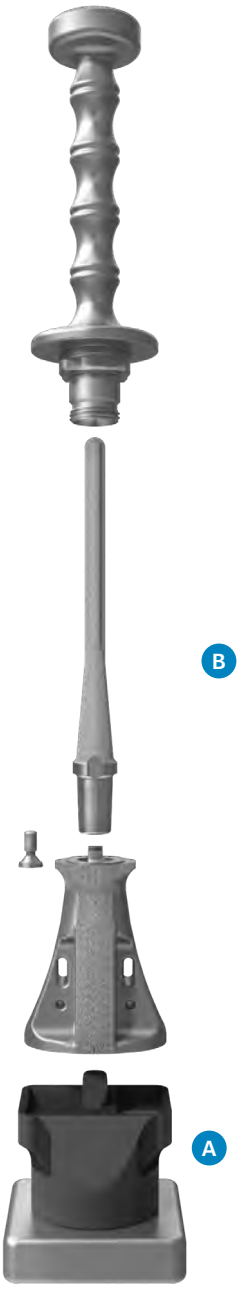


Figure 32

Femoral/Tibial Impactor Handle 110030073
General Instruments Tray 13

Femoral/Tibial Impactor 110030072
General Instruments Tray 12

Impaction Base
General Instruments Tray 12

3.5 mm Driver (Long or Short)
General Instruments Tray 13

	Diaphyseal Segment with Extramedullary Collared Stem or Augment and Non-Collared Stem	Segmental Adapter with Non-Collared Stem	Diaphyseal Segment with Intramedullary Augment and Non-Collared Stem	Collared Splined Stem
				
Flexible Ream Depth	Stem Length	Stem Length + 30 mm	Stem Length + Augment Depth	Stem Length
Flare Ream Depth	Flare to Etch	Flare to Flat	Flare to Flat	n/a
Plane the Resection	Planer	Planer	Planer and Augment Reamer	Splined Reamer

Chart 2: Proximal Tibial Canal Preparation Options for Greater than 9 cm

Greater than 9 cm Replacement

There are four options for preparing the tibial canal for a proximal body replacement greater than 9 cm. Before flexible reaming, reference Chart 2 Proximal Tibial Canal Preparation Options to determine the appropriate option for preparing the femoral canal.

Figure 33

Figure 34

Flexible Reaming

Begin with the smallest diameter flexible reamer and starting at full power prior to contact, sequentially ream in .5 mm increments until light cortical chatter is achieved (Figure 33 and Figure 34).

If preparing the canal for a collared splined stem, proceed to page 39.

Reference the chart below for cemented and porous stem diameter preparation.

Reamer / Trial / Stem Diameter Example	
Flexible Reamer	11 mm
Trial Stem	11 mm
Splined Stem (implant)	11 mm
Cemented Stem (implant)	9 mm

Arcos Flexible Reamer
Arcos Modular Femoral Revision System
Flexible Reamers Instrument Case

Figure 35

Figure 36

Figure 36a

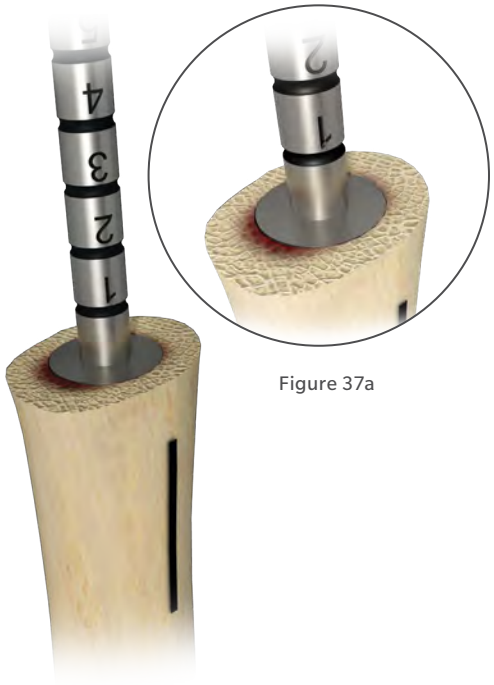


Figure 37

Figure 37a

Flare Reaming

Based on the diameter of the final flexible reamer, select the flare reamer of equivalent size and ream the canal opening (Figure 35, 36, and 37).

To prepare the canal for a collared stem or an EM augment with a non-collared stem, start at full power prior to contact and ream to the etch mark on the flutes (Figure 36a). To prepare the canal for a segmental adapter with a stem or an IM augment with a stem, start at full power prior to contact and ream the flare to the flat of the flute (Figure 37a).

Note: When trialing, select the stem trial corresponding to the last flare reamer used.

Flare Reamer
Reamers Tray 3

Figure 38

Figure 39

Planing the Resection

Place the resection planer over the flare reamer (Figure 38). Start power prior to contact and plane the resection (Figure 39).

Note: To prepare the distal femur, reference the Distal Femoral Surgical Technique or the Segmental Distal Femoral Surgical Technique.

Resection Planer 110018812
Reamers Tray 3

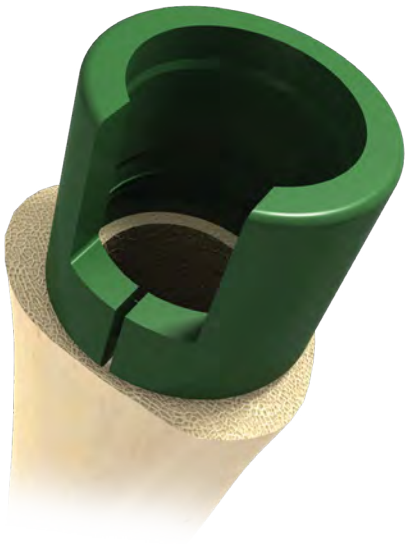


Figure 40

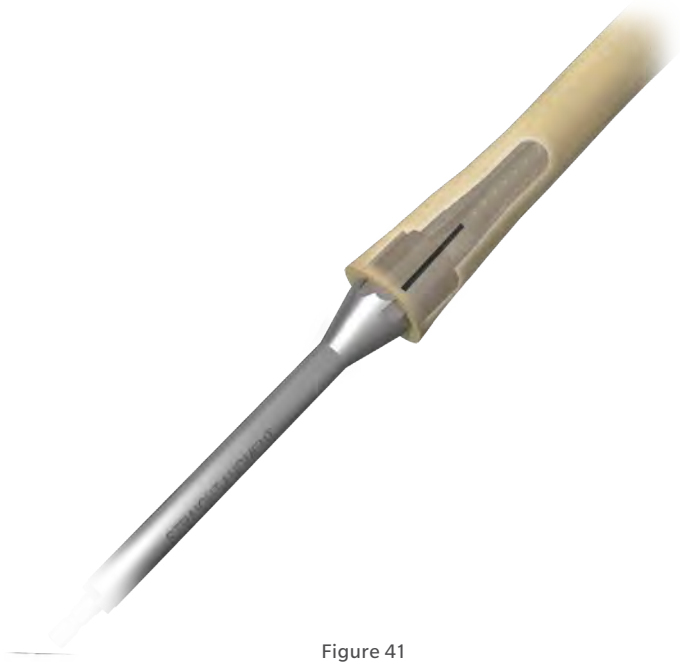


Figure 41

IM Diaphyseal Augment Preparation (optional)

Diaphyseal augments may be placed intra or extramedullary, at the level of the osteotomy. To prepare for intramedullary placement, select augment size and type, based on defect or bone void (Figure 40).

Select the corresponding sized augment reamer. Insert the augment reamer over the flare reamer. Start power and run at full speed prior to the augment reamer contacting the bone. Ream to mechanical stop (Figure 41).

Warning #1: Do not utilize more than one diaphyseal augment per individual diaphyseal segment.

Warning #2: Diaphyseal augments can only be utilized with the following segments which have a corresponding external taper (151836, 151837, 151838, 151839, 151840, 151841, 150842, 151843, 151844, 151845, 151846, and 151847).

Proceed to page 40 for trialing.

Augment Trial
STND Segmental Provisionals Tray 5

Augment Reamers
Femoral Bone Prep Tray 1
STND Segmental Provisionals Tray 5

Figure 42

Figure 43

Collared Splined Stem Bone Preparation (optional)

Select the collared splined stem reamer with integrated planer that corresponds to the final flexible reamer diameter (Figure 42).

Begin at full power prior to contacting bone. Ream to full circumferential contact (Figure 43).

Splined Stem Planer
Reamers Tray 3

Figure 44

Figure 45

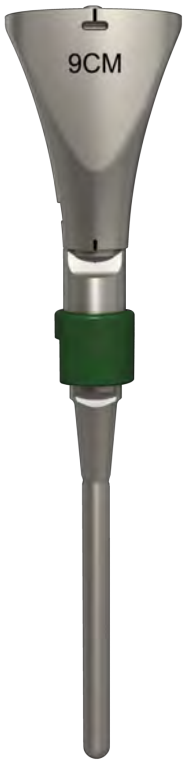


Figure 46

Trialing

Select the quick connect diaphyseal segment trial based on the level of resection. See Proximal Tibial Resection Chart 1 on page 11 for resection levels and segment options.

Attach the augment trial to the segmental trial (Figure 44) and connect to the selected stem trial (Figure 45).

Once everything is connected, rotate the diaphyseal augment trial to capture the stem trial.

Attach to the 9 cm proximal tibial trial (Figure 46) and insert into prepared canal.

Diaphyseal Segmental Trial
Proximal/Total Femoral Tray 15

Augment Trial
STND Segmental Provisionals Tray 5

Stem Trials
Short Provisional Stems Tray 7
Long Provisional Stems Tray 8

9 cm Proximal Tibial Trial
STND Tibial Provisionals Tray 10
RS Tibial Provisionals Tray 11

Figure 47

Figure 48

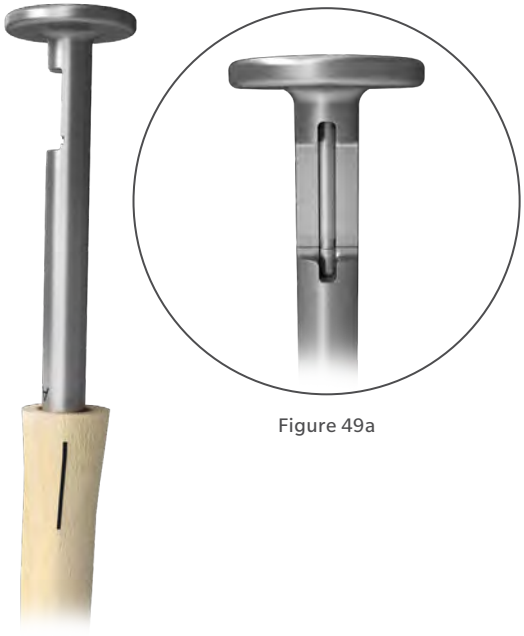


Figure 49

Figure 49a

Stem Removal

If the proximal tibial trial is difficult to remove by hand, begin by separating the proximal tibial/segment and augment trial construct from the stem trial. Insert the stem trial extractor onto the stem trial (Figure 47).

Align the anterior witness marks and turn clockwise. Insert the stem trial extractor rod to prevent the stem trial from separating from the stem trial extractor (Figure 48, 49 and 49a).

Thread slide hammer into the stem trial extractor to remove.

Slide Hammer 31-473621
General Instruments Tray 14

Stem Trial Extractor 110024532
General Instruments Tray 14

	Small Head / Small Thread Locking Screw	Large Head / Small Thread Locking Screw	Large Head / Large Thread Locking Screw	Stacking Adapter
				
Packaged with	Segments	Stem	Segments	Packaged Separately

Chart 3: Locking Screw Chart

Implant Assembly Screw Packaging Information

Before assembling the implants together, it is important to note which screws are used and how they are packaged. Depending on the type of construct assembled, some screws may or may not be utilized.

Diaphyseal segments are packaged with both a small head/small thread locking screw and a large head/ large thread locking screw.

Stems are packaged with a large head/small thread locking screw.

The stacking adapter is packaged separately.

Implant Assembly Step 1

Augment Assembly

To impact the diaphyseal segment with an augment, insert the taper sleeve into the diaphyseal impactor and thread onto the impaction base (B). Thread the augment impactor onto the impaction handle (A). Vigorously impact using the impaction handle (Figure 50).

Warning #1: Do not utilize more than one diaphyseal augment per individual diaphyseal segment.

Warning #2: Diaphyseal augments can only be utilized with the following segments which have a corresponding external taper (151836, 151837, 151838, 151839, 151840, 151841, 150842, 151843, 151844, 151845, 151846, and 151847).

Figure 50

Impaction Base
General Instruments Tray 12

Taper Sleeve
General Instruments Tray 12

Impaction Handle
General Instruments Tray 12

Augment Impactor
General Instruments Tray 12

Diaphyseal Impactor
General Instruments Tray 12

Implant Assembly Step 2

Stem Assembly

To impact the diaphyseal segment with a stem, use the assembled impaction base (B). Vigorously impact using the impaction handle (A).

Make certain to locate and discard the large head/small thread locking screw packaged with the stem as it will not be used.

After impaction, secure the construct with the small head/small thread locking screw packaged with the segment through the diaphyseal segment (C) with the 3.5 mm driver (Figure 51).

Do not discard the large head/large thread locking screw packaged with the segment if directly impacting the segment/stem construct to a distal femoral component as it is needed to secure the final construct.

Discard the large head/large thread locking screw packaged with the segment if stacking a second diaphyseal segment to the segment/stem construct (Step 3).

Figure 51

Taper Sleeve
General Instruments Tray 12

Diaphyseal Impactor
General Instruments Tray 12

Femoral/Tibial Impactor Handle
110030073
General Instruments Tray 13

Impaction Base
General Instruments Tray 12

3.5 mm Driver (Long or Short)
General Instruments Tray 13

Implant Assembly Step 3

Stacking a Second Segment

If not utilizing a second diaphyseal segment, proceed to Step 4: Proximal Tibial Body.

BEFORE impacting a second diaphyseal segment, thread the stacking adapter into the male taper of the diaphyseal segment/stem construct with the axle driver (A). The stacking adapter is packaged separately.

To impact the diaphyseal segment with the diaphyseal segment/stem construct, use the assembled impaction base (B). Vigorously impact using the impaction handle (C).

After the second diaphyseal segment is impacted with the diaphyseal segment/stem construct, secure with the small head/small thread locking screw through the diaphyseal segment (D) with a 3.5 mm driver. Screw is packaged with the second diaphyseal segment (Figure 52).

Figure 52

Axle Driver CP461009
General Instruments Tray 13

Femoral/Tibial Impactor Handle 110030073
General Instruments Tray 13

Taper Sleeve
General Instruments Tray 12

Diaphyseal Impactor
General Instruments Tray 12

Impaction Base
General Instruments Tray 12

3.5 mm Driver (Long or Short)
General Instruments Tray 13

Figure 53

Implant Assembly Step 4

Proximal Tibial Body Assembly

To impact the proximal tibial body with a stem construct, assemble the impactor onto the impaction base (B). Vigorously impact using the impactor handle (A).

Secure the construct with a large head/large thread locking screw packaged with the segment (C) (Figure 53).

The proximal tibial construct is now implanted using contemporary techniques.

Impaction Base
General Instruments Tray 12

Femoral/Tibial Impactor Handle
110030073
General Instruments Tray 13

Femoral/Tibial Impactor
110030072
General Instruments Tray 12

3.5 mm Driver (Long or Short)
General Instruments Tray 13

Notes

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