eMP™

The ACL-PCL Substituting Knee

Fast Forward™

Optimized Instrument Kits

Surgical Technique *Distal Cut First*

MicroPort Orthopedics

Integrity In Motion™

Table of Contents

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

Please contact your local MicroPort representative for product availability.

Product Information

chapter 1

The eMP™ Knee System (Evolution®) builds on the clinical history of the aMP™ Knee System (Advance®) ball-in-socket design.

Device Description

FEMORAL IMPLANT

- CS/CR and PS options offered in eight sizes, left and right
- CS/CR offered in nonporous and porous-coated options
- 145° constant radius C-curve
- Anatomic, recessed patellar groove with bone conserving preparation and enhanced contact area
- Central pegs to minimize bone removal during downsizing

TIBIAL BASE IMPLANT

- Asymmetric for improved bone coverage
- Enhanced locking mechanism
  o Angled 8° in direction of the incision approach (anterior-medial direction)
  o Lower insertion loads while maintaining strong disassociation loads
- Stem and keel configured for less-invasive surgery

TIBIAL INSERT IMPLANT – CS

- Asymmetric to position mating femur more posterior
- 1-up interchangeability with plus size insert options
- 1-down interchangeability with standard insert
- Soft tissue friendly patellar tendon relief
- 15° of permissible femoral rotation

TIBIAL INSERT IMPLANT – CR

- Asymmetric to position mating femur more posterior
- PCL soft tissue relief angled in the direction of PCL pull
- 1-up, 1-down tibiofemoral sizing interchangeability
- Soft tissue friendly patellar tendon relief
- 15° of permissible femoral rotation

TIBIAL INSERT IMPLANT – PS

- Asymmetric to position mating femur more posterior
- Post and cam engagement around 80° of flexion due to high anterior lip
- 1-up, 1-down tibiofemoral sizing interchangeability
- Soft tissue friendly patellar tendon relief
- 15° permissible internal and external femoral rotation
- Same conformity as CR insert

Indications

The eMP™ Knee System is indicated for use in knee arthroplasty in skeletally mature patients with the following conditions:

1) Noninflammatory degenerative joint disease including osteoarthritis, traumatic arthritis or avascular necrosis;

2) Inflammatory degenerative joint disease including rheumatoid arthritis;

3) Correction of functional deformity;

4) Revision procedures where other treatments or devices have failed; and treatment of fractures that are unmanageable using other techniques.

The eMP™ Knee System Nonporous implants are for cemented use only.

The eMP™ Knee System Porous-Coated implants are for use without bone cement.

Contraindications

Patients should be warned of these contraindications. Contraindications include:

1) Overt infection;

2) Distant foci of infections (which may cause hematogeneous spread to the implant site);

3) Rapid disease progression as manifested by joint destruction or bone absorption apparent on roentgenogram;

4) Skeletally immature patients;

5) Cases where there is inadequate neuromuscular status (eg. prior paralysis, fusion and/or inadequate abductor strength), poor bone stock, or poor skin coverage around the joint that would make the procedure unjustifiable.

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

Warnings and Precautions

NEVER combine components made by different manufacturers.

Preoperative Precautions

The surgeon must evaluate each situation individually based on the patient's clinical presentation in making any decisions regarding implant selection. The surgeon must be thoroughly familiar with the implant, instruments and surgical procedure prior to performing surgery. The surgeon should contact MicroPort for product-specific surgical techniques.

Patient selection should consider the following factors which could lead to increased risk of failure and can be critical to the eventual success of the procedure: the patient's weight, activity level and occupation. Additional conditions presenting increased risk of failure include:

1) Uncooperative patient or patient with neurologic disorders, incapable of following instructions;

2) Marked bone loss, severe osteoporosis, or revision procedures for which an adequate fit of the prosthesis cannot be achieved;

3) Metabolic disorders that may impair bone formation;

4) Osteomalacia;

5) Poor prognosis for good wound healing (eg. decubitus ulcer, end-stage diabetes, severe protein deficiency and/or malnutrition).

The patient should be warned of surgical risks and made aware of possible adverse effects. The patient should be warned that the prosthesis does not replace normal healthy bone, that the prosthesis can break or become damaged as a result of certain activity or trauma, has a finite expected service life and may need to be replaced at some time in the future. The patient should also be advised of other risks that the surgeon believes should be disclosed.

Intraoperative Precautions

Specialized instruments are available and must be used to assure the accurate implantation of prosthetic components. Do not mix instruments from different manufacturers. While rare, breakage of instruments may occur especially with extensive use or excessive force. For this reason, instruments should be examined for wear or damage prior to surgery. Inspect devices prior to use for damage during shipment or storage or any out-of-box defects that might increase the likelihood of fragmentation during a procedure.

Correct selection of the prosthesis is important. The potential for success in knee joint replacement is increased by selection of the proper size, shape, and design of the prosthesis. Knee joint prostheses require careful seating and adequate bone support. Smaller sized implants are intended for patients with small bone and normally slight weight. Such components could be inappropriate for other patients. Physicians are encouraged to use their best medical judgment when choosing the proper implant size regardless of the endosteal area of the bone. Preoperative templates and trial prostheses should also be used to assure proper sizing of prostheses. Use only with mating prosthetic components of appropriate size. Mismatching of components could impede component articulation, leading to wear and possible failure of the component and also contribute to joint laxity.

Cemented Application

Care is to be taken to ensure complete support of all components of the prosthesis embedded in bone cement to prevent stress concentrations that may lead to failure of the device or cement mantle. Complete cleaning including complete removal of bone chips, bone cement fragments, and metallic debris prior to closure of the prosthetic site is critical to prevent accelerated wear of the articular surfaces of the prosthesis.

Non-Cemented Application

Adequate fixation at the time of surgery is critical to the success of the procedure. The femoral components must press fit in the femur, which necessitates precise operative technique and the use of specified instruments. Intraoperative fracture of the femur can occur during seating of the prosthesis. Bone stock must be adequate to support the device.

Modular Components

Modular components must be assembled securely to prevent disassociation. Avoid repeated assembly and disassembly of the modular components that could compromise the locking action of the components. Surgical debris must be cleaned from components before assembly since debris may inhibit the proper fit and interfere with the locking mechanisms of modular components that may lead to early failure of the procedure.

Alignment of Components

Care should be taken to restore the proper joint alignment and to balance ligamentous tension. Malalignment of the joint can cause excessive wear, loosening of the prosthesis, and pain leading to premature revision of one or more of the prosthetic components.

Postoperative Precautions

The patient must be advised of the limitations of the reconstruction and the need for protection of the prosthesis from full weight bearing until adequate fixation and healing have occurred. Excessive activity and trauma affecting the joint replacement have been implicated with failure of the reconstruction by loosening, fracture and/or wear of the prosthetic components. Loosening of the components can result in increased production of wear particles, as well as damage to the bone, making successful revision surgery more difficult.

Periodic, long-term follow-up is recommended to monitor the position and state of the prosthetic components, as well as the condition of the adjoining bone.

Periodic postoperative x-rays are recommended for close comparison with early post-op conditions to detect long term evidence of changes in position, loosening, bending, or cracking of components.

There are inherent risks associated with the use of metallic implants in the MR environment; including component migration, heat induction, and signal interference or distortion near the component(s). Heat induction of metallic implants is a risk related to component geometry and material, as well as the MR power, duration, and pulse sequence. Since MR equipment is not standardized, the severity and likelihood of occurrence are unknown for these implants.

MicroPort Knee Systems have not been evaluated for safety and compatibility in the MR environment. MicroPort Knee Systems have not been tested for heating or migration in the MR environment. Since these devices have not been tested, MicroPort cannot make a recommendation for the use of MRIs with these implants, neither for safety considerations nor imaging accuracy.

These components are passive metallic devices, and as with all passive devices, there is potential for reciprocal interference with certain imaging modalities; including image distortion for MR and X-ray scatter in CT.

Recommendations Regarding Device Fragments:

- Inspect devices immediately upon removal from the patient for any signs of breakage or fragmentation.
- If the device is damaged, retain it to assist with MicroPort's analysis of the event.
- Carefully consider and discuss with the patient (if possible) the risks and benefits of retrieving vs. leaving the fragment in the patient.

- Advise the patient of the nature and safety of unretrieved device fragments including the following information:
    a. The material composition, size, and location of the fragment (if known);
    b. The potential mechanisms for injury, e.g., migration, infection;
    c. Procedures or treatments that should be avoided such as MRI exams in the case of metallic fragments. This may help to reduce the possibility of a serious injury from the fragment.

Adverse Effects Can Include:

1) Osteolysis (progressive bone resorption). Osteolysis can be asymptomatic, and therefore, routine periodic radiographic examination is vital to prevent any serious future complication;

2) Particulate generation leading to increased wear rates necessitating early revision. Soft tissue imbalance leading to excessive wear;

3) Allergic reactions to materials; metal sensitivity that may lead to histological reactions;

4) Delayed wound healing; deep wound infection (early or late) which may necessitate removal of the prosthesis. On rare occasions, arthrodesis of the involved joint or amputation of the limb may be required;

5) A sudden drop in blood pressure intraoperatively due to the use of bone cement;

6) Damage to blood vessels or hematoma;

7) Temporary or permanent nerve damage, peripheral neuropathies and subclinical nerve damage as possible result of surgical trauma resulting in pain or numbness of the affected limb;

8) Cardiovascular disorders including venous thrombosis, pulmonary embolism, or myocardial infarction;

9) Dislocation, migration and/or subluxation of prosthetic components from improper positioning, trauma, loss of fixation and/or muscle and fibrous tissue laxity;

10) Periarticular calcification or ossification, with or without impediment to joint mobility;

11) Varus-valgus deformity;

12) Traumatic arthrosis of the knee from intraoperative positioning of the extremity;

13) Inadequate range of motion due to improper selection or positioning of components, periarticular calcification, flexion contracture;

14) Femoral, tibial or patellar bone or component fracture intraoperatively or postoperatively; fracture by trauma or excessive loading, particularly in the presence of poor bone stock;

15) Undesirable shortening or lengthening of the limb;

16) Aggravated problems of the affected limb or contralateral extremity by leg length discrepancy, excess femoral medialization, or muscle deficiency;

17) Pain.

Surgery Preparation

chapter 2

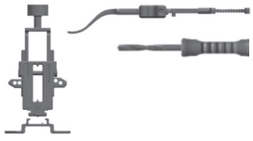
Size specific component part numbers are represented with X's throughout this surgical technique.

A 1.3mm (.05") thick saw blade is recommended for resections.

9.5 mm (3/8") diameter drill (E5001002)

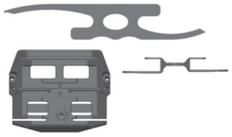
T-handle (E5001001) and IM rod (E5001003) with valgus module (E1101001, E1100357, E1000010)

Ensure proper resection guide is set at appropriate valgus angle and the bushing is rotated with the correct side designation (left or right) facing up.



Sizing caliper (E1100101), caliper feet (E110013X), caliper stylus (E1100112) & 3.2mm drill bit (E1000201)

Ensure the "Left" side is facing out for a left knee. This means the "Right" side is against the resected distal surface. For a right knee, the "Right" side is facing out.



4-in-1 resection guide (E12041XX) with posterior condylar gauge (E1200113) and dual reference "angel wing" gauge (E5001006)

Ensure the 4-in-1 resection guide is set to "0."

3.5mm hex screwdriver (E5001005)

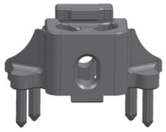
Slaphammer (E5002001) with attached extraction boss (E5002002)

Femoral trial (E130XXXX), patella cap (E13050XX), femoral finishing impactor (E1005101) and handle (E5005001)

Extramedullary tibial alignment guide (E2102001), standard proximal rod (E2102002), adjustment barrel (E2102006), tibial resection crosshead (K004007L or K004007R), and stylus (E2100210)

(IM guide not pictured)

Tibial base trials (E2302XXX), trial base handle (E2001020), and anchoring pins (K0002007)



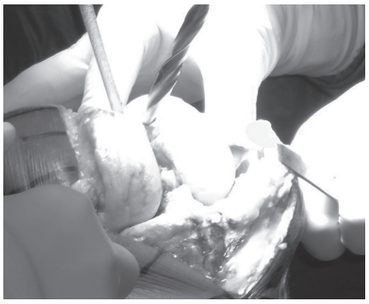
Keel punch tower (E2004028)

Keel punch (E2005XXX) and handle (E2000001)

External alignment guide (E5101002) and drop rod (E5101001)

Surgical Technique

chapter 3



» ***Knee should be in >90° flexion***

Retractors and placement:

» ***"Z" Retractor – superior lateral on femur to lift skin out of way of distal resection guide***

» ***"Z" Retractor – medial on femoral condyle or tibia to protect collateral ligament***

Preparation of the Distal Femur

Starter Hole Preparation
Initiate an opening in the femoral canal with the 9.5 mm (3/8") diameter drill (E5001002). The hole may be placed medial and anterior to the anteromedial corner of the intercondylar notch, in the center of the trochlear groove, or 1 cm (.4") anterior to the PCL origin. | **FIGURE 1**

FIGURE 1

Alignment Rod Insertion
Insert the fluted IM reamer/rod (E5001003) into the femoral canal, being sure to irrigate and aspirate several times to reduce the chance of a fat embolus. Turn the reamer during insertion with the T-handle (E5001001). | **FIGURE 2**

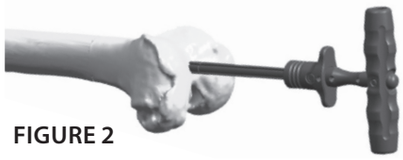


FIGURE 2

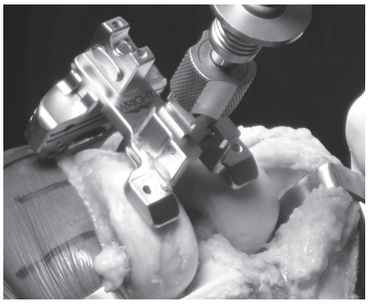
EFFICIENCY SUGGESTION: ***Some surgeons prefer the distal femoral alignment guide (E1101001), valgus bushing (E1100357) and resection guide (E1000010) pre-loaded on the IM rod (E5001003) before it is introduced into the femur. After insertion, the T-handle (E5001001) is maintained on the rod for faster rod removal after the resection block (E12041XX) is pinned.*** | **FIGURE 3**

FIGURE 3

PN E5001002

PN E5001003

PN E5001001



» ***Knee should be in >90° flexion***

» ***"Z" Retractor – Posterior lateral on femur***

» ***Bent Hohmann – Antero-lateral on femoral cortex***

IMPORTANT NOTE: All EVOLUTION® femoral resection slots are designed for use with a .050" (1.3 mm) thick saw blade. Wide 1" (25.4mm) saw blades are recommended for the distal resection.

Distal resection guides are available in 10mm (E1000010) and 10 & 14mm (E1000114). Load the appropriate distal resection guide onto the distal femoral alignment guide (E1101001) and lock them together by pushing the locking button from left to right. | **A IN FIGURE 4** A lock icon will be visible. Insert the distal femoral alignment guide (E1101001) onto the valgus bushing (E1100357). | **FIGURE 4** The valgus bushing (E1100357) has both a "Left" and "Right" side, and has three slots which allow 3°, 5°, or 7° of valgus. Ensure the "Left" side of the bushing is facing up for a left knee, and the "Right" side is facing up for a right knee.

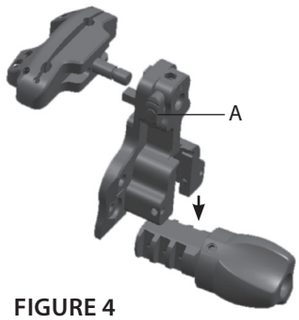


FIGURE 4

Slide the valgus bushing (E1100357) down the IM rod (E5001003) toward the T-handle (E5001001) connection. Insert the fully assembled IM rod into the intramedullary canal until the distal femoral alignment guide (E1101001) rests against the unresected prominent distal condyle. | **FIGURE 5** Although rotation is not critical at this step, the distal femoral alignment guide (E1101001) features two lines which may be aligned with the epicondyles. | **A IN FIGURE 5** Lock the valgus bushing (E1100357) to the IM rod (E5001003) by turning the knob until it is tight. | **B IN FIGURE 5**

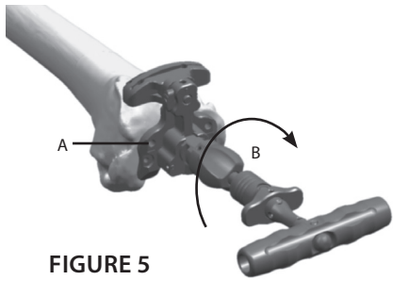


FIGURE 5

PN E1000010

PN E1000114

PN E1101001

PN E1100357

Pin the distal resection guide (E1000XXX) to the anterior cortex with two headless pins through the "STD" holes. These are the most proximal holes on the guide. If the pins are left too proud, they may impinge on the saw and prevent full saw penetration. Push the locking button to detach the resection block and remove the IM rod (E5001003), distal femoral alignment guide (E1101001) and valgus bushing (E1100357). Use of a divergent pin is recommended to prevent the distal resection guide (E1000XXX) from vibrating off the pins during resections. In the absence of a divergent pin, a kocher can be clipped to the pin to provide stability. | **FIGURE 6**

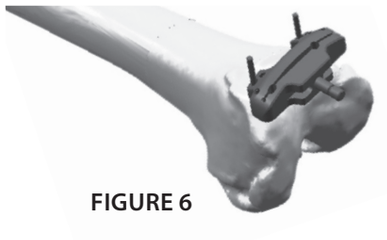
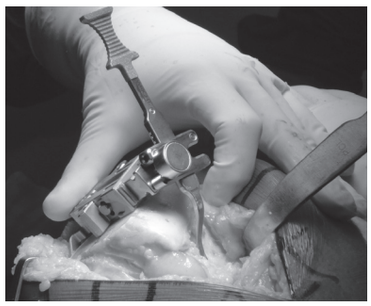


FIGURE 6

NOTE: At this point the proximal tibia may be resected. This allows easier placement of the femoral sizing caliper under the posterior condyles.



- » ***Knee should be in >90° flexion***
- » ***"Z" Retractor – Posterior lateral on femur***
- » ***Bent Hohmann – Antero-lateral on femoral cortex***

Femoral Sizing and Rotation

The caliper must be set for the appropriate knee. For example: If used on a right knee, the "Right" marking must be facing the observer and the "Left" marking should be against the bone. To set the caliper for the opposite knee, remove the posterior feet, rotate the caliper and reinsert the feet. | **FIGURE 7**

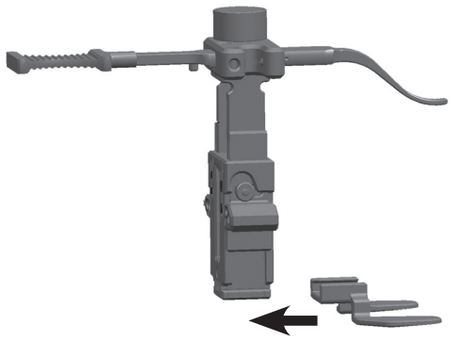


FIGURE 7

Place the sizing caliper (E1100101) flush against the resected distal femur. Adjust the sizer so the posterior feet (E1100133) rest against the posterior condyles. The stylus (E1100112) should be set to the expected femoral size (femoral size is presumed based on preoperative templating) and clipped to the medial side of the caliper. The stylus (E1100112) size markings are read through the hole in the stylus body. | **A IN FIGURE 8**

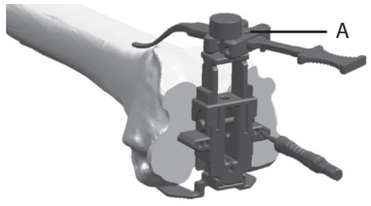


FIGURE 8

Ensure the caliper (E1100101) rests flat on the distal surface. | **FIGURE 9**

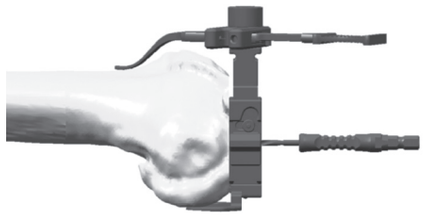


FIGURE 9

The tip of the stylus (E1100112) should touch the most prominent aspect of the anterior cortex just proximal to the lateral anterior condyle. The femoral size is read through the windows in the anterior face of the sizing caliper (E1100101). Sizes are represented by shaded areas. The 4-in-1 resection block (E12041XX) preparation holes are drilled through the 3° holes with the 3.2 mm (1/8") drill bit (E1000201) which features a shoulder at the correct depth. | **A IN FIGURE 10**

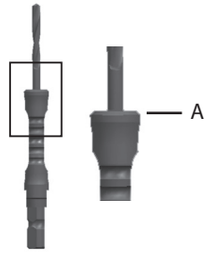
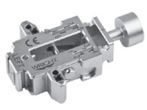


FIGURE 10



PN E1100101

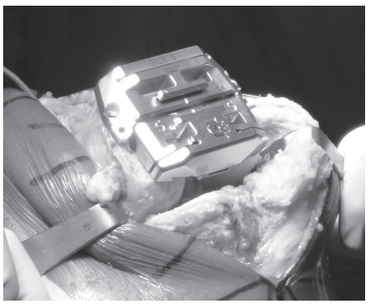
E1100133

PN E1100112

PN E1000201

The preparation of the holes will set 3° of external rotation relative to the posterior condylar axis. In a severe varus or valgus knee, the posterior condylar axis may not be a reliable reference for femoral rotation; instead, rotation may be set visually by referencing the A/P axis or epicondyles. If rotation must be set visually, the caliper (E1100101) features a central window with crosshairs. With the sizing caliper (E1100101) resting on the distal resection, the crosshair may be aligned with the A/P axis or the epicondyles. | **FIGURE 11** Once aligned, the peg holes are drilled through the 0° holes.

FIGURE 11



» ***Curved single-prong Hohmann – Superior-lateral on femoral cortex***

» ***"Z" Retractor – Posterior lateral on femur***

» ***"Z" Retractor – Posterior medial on femur to protect medial collateral ligament***

Anterior and Posterior Resections

NOTE: Take care to protect the collateral ligaments during resections.

Select the 4-in-1 femoral resection block (E12041XX) corresponding to the size indicated by the femoral sizing caliper (E1100101) . Make sure the 4-in-1 femoral resection block (E12041XX) is set to zero at the beginning of the case. Place the pegs on the back of the femoral resection block (E12041XX) into the holes drilled through the sizing caliper (E1100101). The femoral resection blocks (E12041XX) may be used to double-check the femoral size. The width of the resection block (E12041XX) on the step just posterior to the level of the pinholes represents the width of the femoral component. The distance from the top of the posterior slot to the central bottom portion of the guide represents the thickness of the posterior condyles of the implant. | **A IN FIGURE 12**

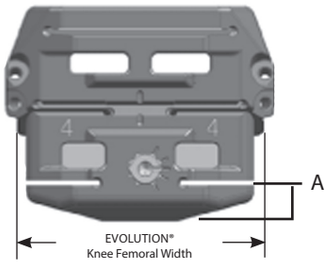


FIGURE 12

PN E12041XX

To ensure appropriate posterior condyle resection, utilize the posterior condylar gauge (E1200113). | **FIGURE 13** The inside of the gauge equals the thickness of the implant posterior condyles (10mm for sizes 1-4; 11mm for sizes 5-8). The thickness of the outside of the gauge equals approximately 2mm more (12mm for sizes 1-4; 13mm for sizes 5-8). It is recommended to remove 2mm more bone than the implant thickness from the medial side during the posterior resection.

FIGURE 13

To ensure an appropriate anterior resection, utilize the dual reference "angel wing" gauge (E5001006). If it appears too much or too little of the posterior condyles are being removed or that there will be anterior notching, the 4-in-1 femoral resection block (E12041XX) may be adjusted up to 2mm (.08") anterior or posterior with the 3.5mm hex head screwdriver (E5001005). Place the screwdriver (E5001005) into the adjustment dial and push the dial inward, then turn the dial in increments of 1mm. | **FIGURE 14**

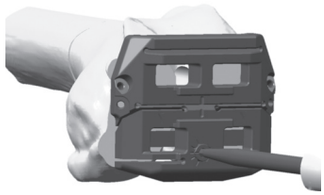


FIGURE 14

PN E1200113

PN E5001006

PN E5001005

Ensure the resection block (E12041XX) rests flat on the distal surface. | **FIGURE 15**

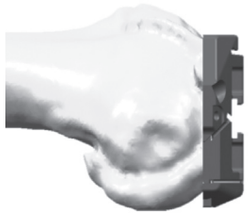


FIGURE 15

Stabilize the block (E12041XX) against the bone using four 3.2 mm (1/8") diameter pins on the medial and lateral sides of the block (E12041XX). | **FIGURE 16** If two pins are preferred, place one pin low and the other high contralaterally. The recommended order of resection is: anterior, posterior, posterior chamfer, anterior chamfer. After resections have been made, the pins are withdrawn, and the block (E12041XX) is removed with the slaphammer (E5002001) and the extraction boss (E5002002). | **FIGURE 17**

FIGURE 16

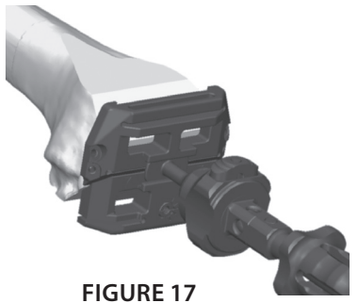


FIGURE 17

Care should be taken to remove posterior condylar osteophytes to avoid impingment with the posterior portion of the tibial component. | **FIGURE 18**

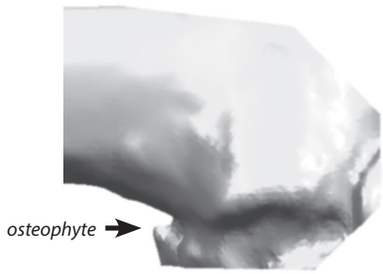


FIGURE 18

PN E5002001

PN E5002002

Tibial Preparation

The EVOLUTION® tibial resection guides are designed for use with a 1.3 mm (.05") thick saw blade.

Extramedullary Tibial Resection

Assemble the extramedullary tibial resection guide by erecting the distal tower portion of the ankle clamp (E2102001) **| FIGURE 19** and inserting the standard proximal rod (E2102002) with the adjustment barrel (E2102006) into the distal tower. Attach the appropriate tibial resection crosshead (K004007R for "right", K004007L for "left") to the proximal rod using the adjustment barrel (E2102006). **| FIGURE 20** For positioning, unlock the barrel (E2102006) by sliding the unlock button down and in to allow for height adjustment. Once the needed height is met, push in the lock button and spin the adjustment barrel (E2102006) to fine tune. The distance between each line on the standard (E2102002) proximal rod is 2mm. Place the ankle clamp (E2102001) around the ankle and position the tibial resection crosshead (K004007X) close to the tibia by sliding the distal tower toward the shaft of the tibia. The varus/valgus alignment of the extramedullary guide may be adjusted to match the tibial axis by using the left – right adjustment feature on the ankle clamp. **| A IN FIGURE 20** Tighten the large distal knob to secure its position.
| B IN FIGURE 20

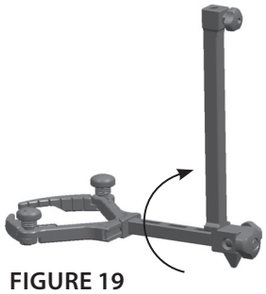


FIGURE 19

FIGURE 20

PN E2102001

PN E2102002

PN E2102006

PN K004007L

PN K004007R

When the vertical axis of the extramedullary tibial resection guide is parallel to the tibial axis, the tibial resection crosshead (K004007X) is set for 3° of posterior slope. For an anatomically sloped resection, place the dual reference gauge (E5001006) or a saw blade in the cutting slot and adjust the long axis of the EM guide by loosening the ankle screw on the right side of the ankle clamp and pulling the distal end of the guide away from the ankle. | **C IN FIGURE 20** Adjust the guide until the cutting slot angle matches the anatomic slope of the tibia. Depress the button on the tibial stylus (E2100210) to place it into one of the holes (medial or lateral) on the resection crosshead (K004007X). | **FIGURE 21**

Generally the stylus is set to resect 2mm from the most deficient side and/or 10mm from the most prominent. The stylus (E2100210) can also be rotated to take 4mm of bone. The number in the upright position represents the resection depth. | **A IN FIGURE 22** Pin the resection guide to the proximal tibia through

FIGURE 21

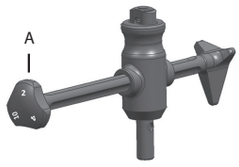


FIGURE 22

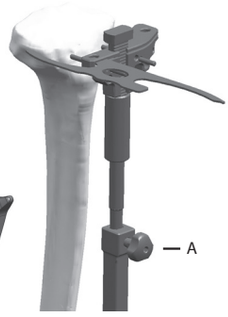


FIGURE 23

the STD holes using headless pins. The dual reference gauge (E2102006) may also be used to check how much bone is to be removed. | **FIGURE 23**

To remove the alignment guide, spin the adjustment barrel (E2102006) to release the resection crosshead (K004007X). Loosen the knob at the top of the distal tower | **A IN FIGURE 23** and raise the proximal rod up to pull out from the crosshead (K004007X). Remove the proximal rod (E2102002) and the ankle clamp (E2102001).

PN E2100210

Varus/valgus angulation can be checked to the ankle using the external alignment guide (E5101002) | **FIGURE 24** or the external alignment guide with slope gauge (E5101000).

FIGURE 24

Once the resection guide is detached from the EM guide, it can be moved distally 2mm if headless pins are used. The top surface of the resection guide can also be used to resect the tibia and is 4 mm proximal to the distal surface of the captured slot. Use of a divergent pin is recommended to prevent the resection block from vibrating off the pins during resections. In the absence of a divergent pin, a kocher can be clipped to the pin to provide stability.

To fold the distal tower of the ankle clamp (E2102001), fully loosen the large distal knob. Hold the left – right adjustment portion to the ankle clamp, slide the distal tower toward the large knob, and fold the distal tower. | **FIGURE 25**

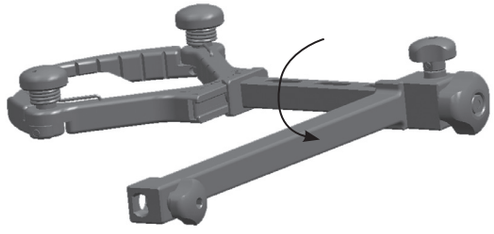


FIGURE 25

PN E5101002

PN E5101001

Flexion/Extension Blocks

Flexion/Extension blocks can be ordered under kit # MP30FKT1.

The flexion/extension gaps are measured following the femoral and tibial resections. With the knee flexed at 90°, insert the 10mm flexion block (E50010XX) into the space between the posterior femoral resection and proximal tibial resection. | **FIGURE 26** If the 10mm spacer block (E50010XX) does not fit in flexion, additional tibial resection or a smaller femoral size may be needed. After the flexion gap has been determined, place the leg in extension. Insert the 10mm extension block (E50010XX) into the space between the distal femoral resection and the proximal tibial resection. | **FIGURE 27** If the 10mm spacer block (E50010XX) does not fit, additional distal femoral bone resection may be required to achieve full extension. The spacer blocks indicate the thickness of the appropriate tibial insert and are available for all insert thicknesses. The thickness of the femoral condyles, tibial base, and tibial insert are built into the spacer block thickness.

Refer to | **FIGURE 28** for more information on flexion/extension gaps.

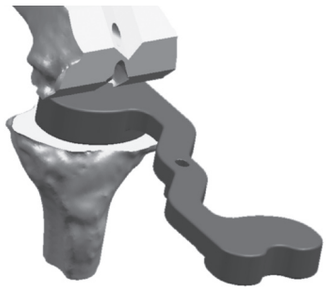


FIGURE 26

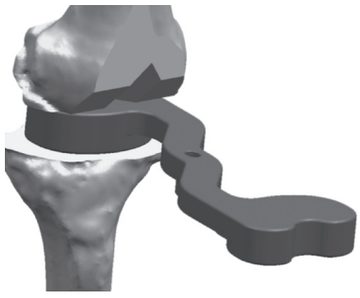
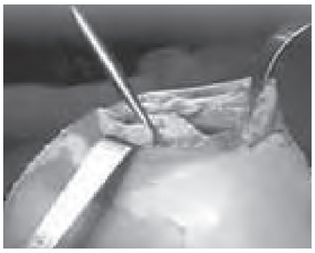


FIGURE 27

FLEXION \ EXTENSION	TIGHT	OK	LOOSE
TIGHT	Downsize poly insert Cut more tibia	Cut more posterior condyle (Resulting in smaller femoral componet)	Cut more posterior condyle (Resulting in smaller femoral componet)
OK	Recut distal femur	No adjustment necessary	Cut more posterior slope and use thicker poly
LOOSE	Recut distal femur and use thicker poly (If necessary)	Change may not be necessary. Ball-in-socket design accommodates for slight laxity in flexion If necessary, recut distal femur and use thicker poly	Change may not be necessary. Ball-in-socket design accommodates for slight laxity in flexion Use thicker poly

FIGURE 28

PN E50010XX



» ***Knee should be placed in 90° of flexion.***

Retractors and placement:

» ***Curved Single Prong Hohmann – on lateral tibia to cover patella and protect soft tissues***

» ***"Z" Retractor – on medial tibia to expose tibia and protect the medial collateral ligament***

» ***Cobb Elevator – subluxes tibia forward***

Tibial Sizing, Keel Preparation, and Trial Reduction

The eMP™ Knee System allows 1-up, 1-down interchangeability.
(See page 27 for interchangeability information.)

Assemble the appropriate trial tibial base (E2302XXX) to the trial base handle (E2001020) and place it against the proximal tibial surface. The alignment rod (E5101001) can be inserted through the handle (E2001020) to check alignment to the ankle. | **A IN FIGURE 29** Align the base (E2302XXX) (generally to the medial one-third of the tibial tubercle). The base (E2302XXX) may be pinned to the tibia using short headed anchoring pins (K0002007) through the holes with vertical lines. | **B IN FIGURE 29**

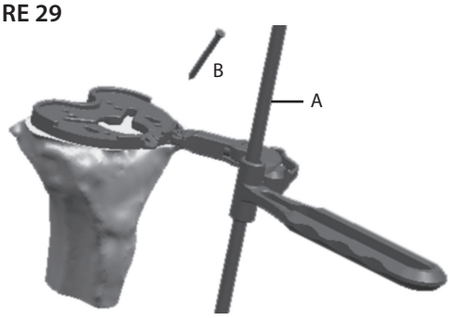


FIGURE 29

Align the four spikes on the keel punch tower (E2004028) with the corresponding holes on the trial base (E2302XXX) and impact the guide with a mallet until the guide is seated on the surface of the trial base (E2302XXX). In the event of hard tibial bone, before punching, prepare the entry hole for the tibial stem using the 15mm (1/2") cemented. Separate reamers are available for sizes 1, 2 and sizes 2+ through 8+. For the size 2+ through 8+ cemented reamer (E2001238), ream to the first line on the reamer for a size 2+, 3 or 4 base, to the second line for a 5 or 6 base, and to the third line for a 6+, 7, 8 or 8+ base. | **FIGURE 30**

FIGURE 30

PN E23020XX

PN E2001020

PN E2001020

PN E2004028

PN E2001238

For leave-in keel punches, assemble the appropriate size keel punch (E2005XXX) to the keel punch handle (E2000001) by pulling back on the trigger mechanism of the handle (E2000001) and inserting it into the opening on the punch (E2005XXX). | **FIGURE 31** The keel punch handle (E2000001) is impacted with a mallet until fully seated and the bottom edge of the handle (E2000001) aligns with the top of the keel tower (E2004028). | **FIGURE 32**

FIGURE 31

FIGURE 32

PN E2005XXX

PN E2000001

The handle (E2000001) is released from the punch (E2005XXX) by pulling back on the handle's trigger mechanism. The keel punch tower (E2004028) is removed with the slaphammer (E5002001) and the extraction boss (E5002002) | **FIGURE 33** (or hook (E5002003) - must be ordered separately if needed), leaving the tibial base and keel punch (E2005XXX). | **FIGURE 34** If desired, the lines on the anterior portion of the trial bases can be marked to aid with alignment of the final tibial base implant.

FIGURE 33

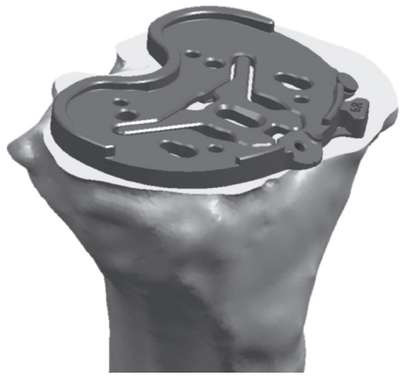


FIGURE 34

Trochlear Groove Resection for CS/CR Femoral Components (Sizes 1-2)

The trochlear groove resection for sizes 3-8 CS/CR femoral components is made through the femoral trial and is performed after the tibial bone has been prepared.

Select the sulcus resection guide (E120100X) corresponding to the size indicated by the sizing caliper (E1100101). Place the sulcus resection guide (E120100X) on the femur. | **FIGURE 35** The width of the distal aspect of the guide (E120100X) is the same M/L width as the femoral implant, and the lateral proximal edge represents the lateral edge of the implant and dictates the final implant location. | **FIGURE 35** Place the guide (E120100X) along the lateral edge of the femur to reproduce the natural Q-angle. Pin the guide using two collared pins. | **FIGURE 36** The trochlear groove should be resected by using a 12.7mm (1/2") sawblade on the angled surface and along the sides of the central portion of the guide (E120100X).

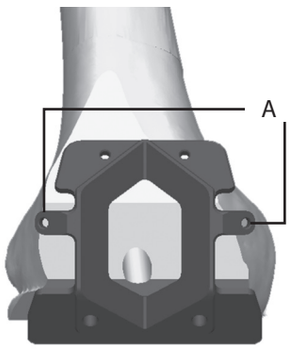
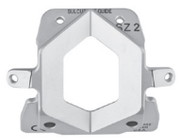


FIGURE 35

FIGURE 36

The peg holes for the implant are prepared during the femoral trialing step. It is not necessary to drill through the 4.8mm (3/16") distal holes on the sulcus guide (E120100X) to prepare final peg holes. If a femoral re-cut is necessary, the 4-in-1 femoral resection guide (E12041XX) cannot be remounted onto the femur due to the 3.2mm (1/8") pegs on the back of the guides (E12041XX).

Refer to page 29 for instructions on re-cutting the distal femur.



PN E120100X

Trochlear Groove Resection for CS/CR Femoral Components (Sizes 3-8)

Impaction of the trial femur is made with the femoral finishing impactor (E1005101). | **FIGURE 37** Resect the trochlear bone using the V-shaped flat on the CS/CR femoral trial as a guide. | **FIGURE 38** Prepare the final peg holes for the implant by drilling the distal holes on the femoral trial with the 4.8mm (3/16") drill bit (E1000301). The bit features a collar at the correct depth. | **FIGURE 39** Femoral trial pins (E1051022) may also be used to prepare for the pegs on the final implant. | **FIGURE 40**

CAUTION: Be careful not to plunge the saw blade past the intended V-shaped trochlear groove resection. This can possibly lead to stress risers on the distal femur and periprosthetic fractures of the bone.

FIGURE 37

FIGURE 38

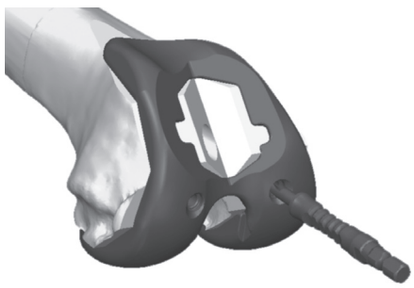


FIGURE 39

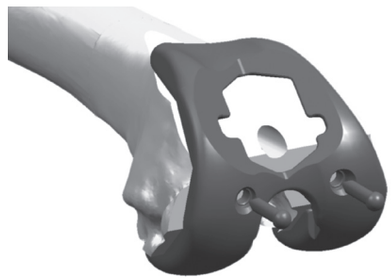


FIGURE 40

PN E130XXXX

PN E5005001

PN E1005101

PN E1000301

PN E1051022

Posterior Stabilized Femoral Housing Resection

If preparing for a posterior stabilized femoral component, a housing resection block (E120510X) is utilized at this point for all size eMP™ implants. Place the appropriate size femoral housing resection guide (E120510X) flush against the anterior and distal bone surfaces. | **FIGURE 41** Pin the guide with two collared pins. | **A IN FIGURE 41** The width of the distal aspect of the guide (E120510X) is the same M/L width as the femoral implant, and the lateral proximal edge represents the lateral edge of the implant and dictates the final implant location. Resect the intercondylar notch using a narrow 12.7mm (1/2") saw blade on the angled surface. It is recommended that the proximal notch surface be prepared before the sides of the notch.

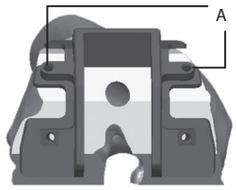


FIGURE 41

The proximal notch resection surface is angled at 14° to match the 14° posteriorly angled housing on the implant. The blade should pass straight anterior to posterior to prevent undercutting the condyle.

Patella Preparation

Choose the appropriate patella resection depth stylus. The 6mm (E4202002) and 8mm (E4202001) resection depth gauge come standard in the patella kit. Attach the resection depth gauge to the top of the resection guide (E4202000). | **A IN FIGURE 42** Position the resection guide (E4202000) jaws parallel to the articular margin and securely clamp the guide to the bone; ensuring the gauge is contacting the apex of the articular surface. | **FIGURE 43** Remove the gauge (E420200X) and make the patellar resection.

FIGURE 42

FIGURE 43

PN E4202002

PN E4202001

PN E4202000

PN E120510X

Attach the single peg (K0031109) or tri-peg (K0031104) drill guide to the patellar clamp (K0031103). | **A IN FIGURE 44** The drill guides have grooves on their surfaces indicating the patellar diameter options. The single peg (E4001015) or tri-peg (E4001035) drill is used to prepare the peg hole(s). The single peg and tri-peg patella componets have the same peg position between sizes and can be easily changed during trial reduction. The patellar implant can be held in place while the cement cures using the parallel patellar clamp (K0031103) and implant seater (E4001008). | **FIGURE 45**

The surgical technique for the patella reaming system (K100KT75) can be found in the Addendum on page 34.

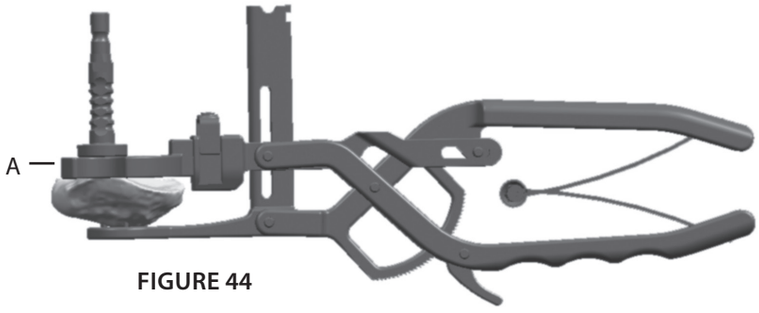


FIGURE 44

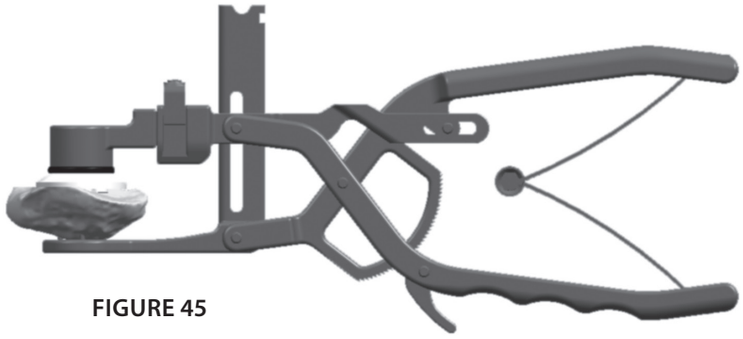


FIGURE 45

PN K0031109

PN K0031104

PN K0031103

PN E4001015

PN E4001035

PN E4001008

Trial Reduction and Implant Insertion

The eMP™ system allows for 1 size mismatch between the femur and tibia for all styles. Refer to the sizing chart below for size interchangeability and see the implant specification charts at the end of this surgical technique for a more detailed look at the options available for use. | **FIGURE 46** Be aware of the size 2+ and 6+ tibial bases; these are required for the articular surface groupings built into this system.

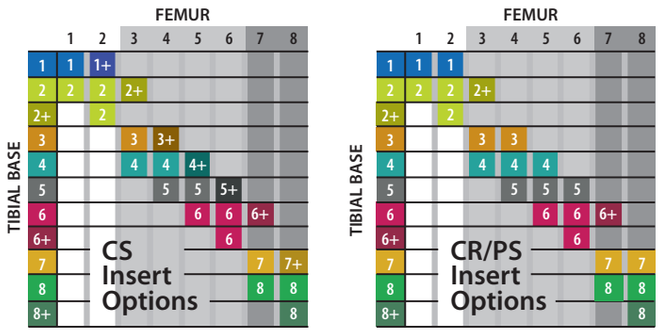


FIGURE 46

Trial Reduction

CS/CR TRIAL REDUCTION

Place the appropriate size CS/CR femoral trial patella cap (E13050XX) on the femoral trial. | **FIGURE 47**

Insert the trial tibial insert (E3XXXXXX) of the appropriate size and thickness onto the trial base (E2302XXX) and complete the trial reduction. | **FIGURE 48**

NOTE: When assembling the tibial insert trial (E3XXXXXX), slightly angle the insert trial with some posterior slope during insertion to clear the anterior lip of the trial base (E2302XXX).

FIGURE 47

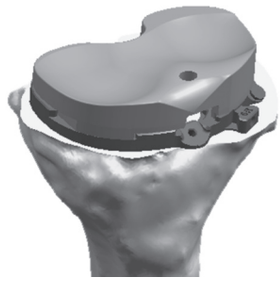


FIGURE 48

PN E13050XX

PN E3XXXXXX

To achieve an insert trial with a thickness of more than 14mm, use the trial insert spacers (E340XXXX) which make 17mm, 20mm and 24mm increments. Trial insert spacers work in conjunction with the size 14mm insert trials.
| **FIGURE 49** Trial inserts (E3XXXXXX) may be assembled in conjunction with the final tibia base implant (ETPKNXXX) to allow the surgeon to continue to trial.

After the trial reduction is complete, remove the femoral trial (E130XXXX), along with the femoral trial pins (E1051022), with the slaphammer (E5002001) by sliding the extraction boss (E5002002) into the slot between the femoral condyles. | **FIGURE 50** During removal, keep one hand on the trial (E130XXXX) to control its extraction.

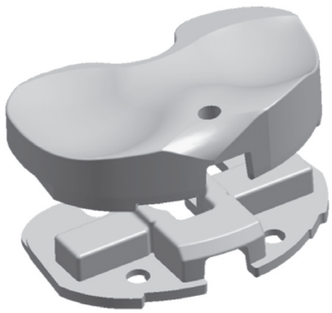


FIGURE 49

FIGURE 50

PN E340XXXX

PN ETPKNXXX

Re-cutting the Distal Femur

Assemble the T-handle (E5001001), IM rod (E5001003), valgus bushing (E1100357), and 10mm distal resection guide (E1000010). Place the 2mm distal recut spacer (E1101007) against the interior face of the distal femoral alignment guide (E1101001). | **FIGURE 51** When utilized, the distal spacer (E1101007) will reduce the distal resection made by 8mm. (For example, it will allow a 2mm distal resection when cutting through the 10mm distal resection slot.) Slide the reamer (E5001003) into the intramedullary canal until the distal spacer (E1101007) contacts the distal femur. | **FIGURE 52** Pin the resection guide (E1000110) in place and remove the IM reamer rod (E5001003), valgus bushing (E1100357) and distal femoral alignment guide (E1101001).

FIGURE 51

FIGURE 52

PN E1101007

Final Implant and Insert Implantation

The recommended order for implantation is left to the discretion of the orthopaedic surgeon.

Femoral Implantation

Final impaction of the femur needs to be performed with the finishing impactor (E1005101). | **FIGURE 53**

FIGURE 53

CAUTION: Use Porous coated femoral components only when there is no need for cement. Use Nonporous coated femoral components only when there is need for cement.

Tibial Base Seating

The tibial finishing impactor (E2005101) may be used to fully impact the tibial implant.

PN E2005101

Tibial Insert Seating

Ensure the posterior and peripheral captures of the tibial base implant (ETPKNXXX) are completely clear of soft tissue and bone. If these captures are not clear, the tibial insert will not be able to seat. The tips of the dual reference "angel wing" gauge (E5001006) are contoured to fit in the lock detail to help clear debris.

Once the cement has cured, the appropriate eMP™ tibial insert may be locked into place. Initial seating is accomplished by pushing the insert as far posterior as possible with hand pressure, paying special attention to engage the medial and lateral dovetails. The 45° insert impactor (E3005101) may be utilized by placing the impactor tip in the anterior slot of the tibial insert at approximately a 45° angle to the tibia base. | **FIGURE 54** While maintaining this 45° angle, apply several strong mallet blows directing the insert posteriorly. After the anterior edge of the insert has been pushed past the anterior capture of the tibial base, it will automatically drop behind the anterior capture and the insert face will be flush against the surface of the tibial base.

FIGURE 54

PN E3005101

Explant Information

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

FEMUR, TIBIA, AND PATELLA COMPONENTS

To remove the components, small osteotomes, power saws, or other surgical instruments may be used to disrupt the bone-cement interface and bone ingrowth into porous coating. Once the components have been removed, rongeurs or small osteotomes as well as other surgical instruments may be used to remove the remaining cement.

INSERT REPLACEMENT

A narrow osteotome may be inserted into the anterior region of the insert to facilitate removal. A hemostat may be used to remove the insert once it is no longer locked to the tibial base. Care must be taken not to scratch or mark any component that is not intended to be removed.

Addendum

chapter 4

Replaceable Plastic Impaction Surfaces

The femoral finishing impactor (E1005101) and tibial finishing impactor (E2005101) have replaceable plastic impaction surfaces. Both can be disassembled by inserting a pin in each hole in the impaction surface and depressing the locking mechanism.
| **FIGURE 55** Slide each impactor pad to the side and pull up to remove.

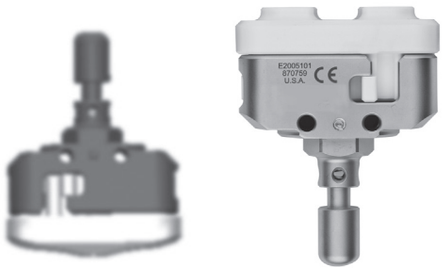


FIGURE 55

aMP™ Patellar Reaming System

The aMP™ Patellar Reamer may be utilized for both recessed and onlay patellar implants.

SIZING THE PATELLA
To determine which patellar implant will be used, compare the patient's patella with the patellar trials. This will help determine how much patellar bone should be removed to replicate patellar anatomy.

REAMER GUIDE CHOICE
Load the appropriate reamer guide into the upper jaw of the patellar clamp (K0031103). | **FIGURE 56** Reamer guides are available in five diameters: 25, 28, 32, 35, 38, 41, and 45mm. The actual diameter of the guide is 2mm larger than the indicated size. The largest possible guide that holds the patella securely should be utilized to ensure complete resurfacing. This will avoid creating a rim of unresurfaced bone around the patella periphery.

The 45mm reamer guide is already labeled as 47mm to reflect its outer diameter.

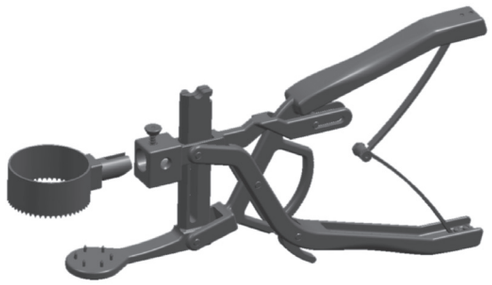


FIGURE 56

PN K0031103

PN E42000XX

Clamp the patella ensuring the basket is positioned to remove the greatest surface area of bone. Feed the reamer driver (K0031101) through the outrigger (K0031102). | **A IN FIGURE 57** Insert the corresponding reamer (E42001XX) into the reamer driver (K0031101) by retracting the spring-loaded locking collet on the driver (K0031101). | **B IN FIGURE 57** Attach the outrigger (K0031102) to the patellar clamp (K0031103) with the locking lever. | **A IN FIGURE 58** Lower the reamer until it is contacting the patellar surface.

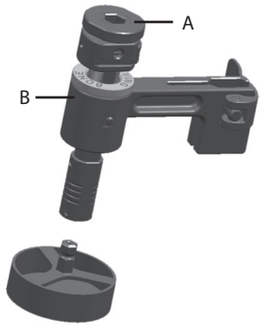


FIGURE 57

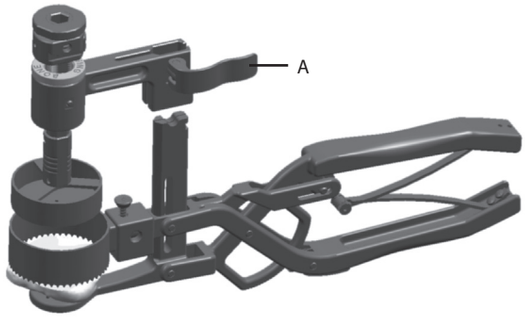


FIGURE 58

The onlay reaming depth stop (K0031105) may be utilized to control how much bone is removed during reaming, or how much bone remains after reaming. The depth stop (K0031105) offers bone resection amounts of 2, 7, 8, 9, 10, or 11mm | **FIGURE 59** or retention of 12, 13, 14, 15 or 16mm of bone after resection. | **FIGURE 60**

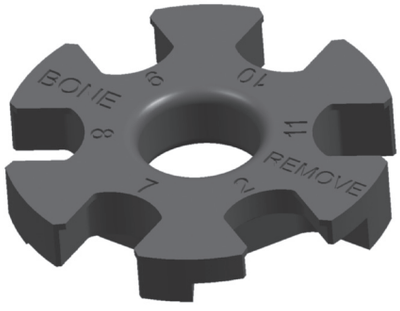


FIGURE 59

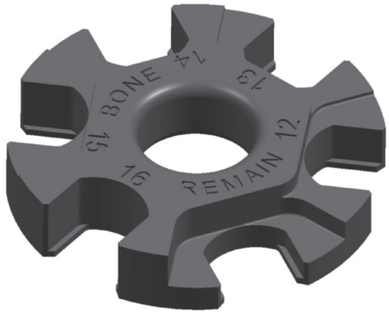


FIGURE 60

PN K0031101

PN E42001XX

PN K0031102

PN K0031105

SETTING THE BONE RESECTION

To control the amount of bone reamed from the patellar surface, orient the onlay reaming depth stop (K0031105) with the "Bone Remove" side up. Generally, the amount of bone removed correlates to the thickness of the expected patellar implant thickness. | **FIGURE 61** Identify the notch which correlates to the required amount of bone resection. Each notch features rails which must be inserted into the proximal slots on the reamer driver (K0031101). Rotate the reamer driver (K0031101) until the depth resection button is facing the onlay reaming depth stop (K0031105). | **FIGURE 62** Insert the depth stop into the driver until the depth stop depresses the button; this will allow the depth stop gauge and the depth resection stop to be lowered. Lower the depth stop until it contacts the plastic "Bone Resection" collet. | **FIGURE 63**

Remove the depth stop.

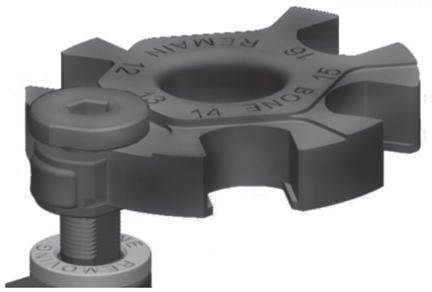


FIGURE 61

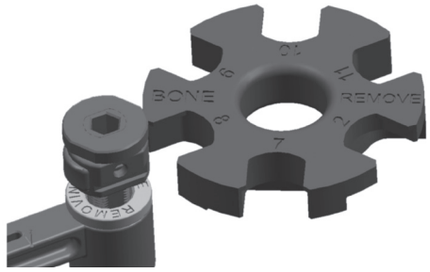


FIGURE 62

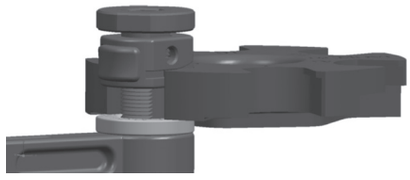


FIGURE 63

When preparing for a recessed patellar implant, a recessed depth gauge (E4201002) is available. | **FIGURE 64**

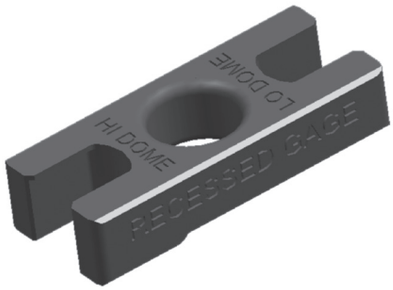


FIGURE 64

SETTING THE AMOUNT OF BONE RETAINED

To ensure a specified patellar bone thickness after patellar reaming, orient the onlay reaming depth stop (K0031105) with the "Bone Remain" side up. Identify the notch which correlates to the required amount of bone resection. Each notch features rails which must be inserted into the proximal slots on the reamer driver (K0031101). Rotate the reamer driver (K0031101) until the depth resection button is facing the onlay reaming depth stop (K0031105). Insert the depth stop into the driver until the depth stop depresses the button; this will allow the depth stop guide and the depth resection stop to be raised. Raise the depth stop until it contacts the top of the reamer driver (K0031101). | **FIGURE 65** Remove the depth stop.

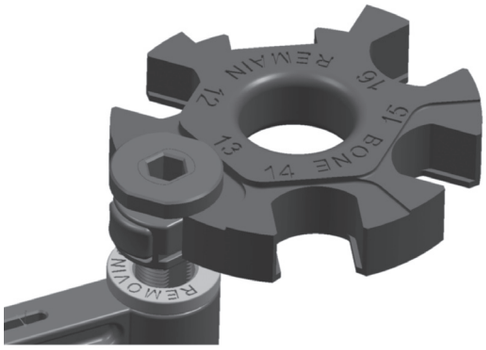


FIGURE 65

PN E4201002

Load the power driver shaft (K0031206) into a powered reamer. Insert the hexagonal end of the driver shaft (K0031206) into the end of the reamer driver (K0031101). | **A IN FIGURE 66** While reaming, apply downward pressure until the stop no longer allows progression. | **FIGURE 67**

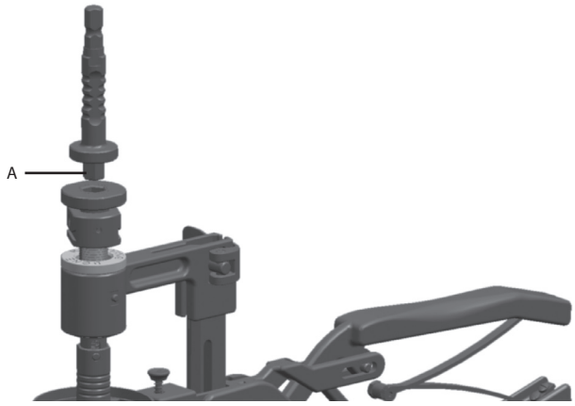


FIGURE 66

FIGURE 67

PN K0031206

Release the locking lever to remove the clamp outrigger assembly. Loosen the clamp and remove the reamer basket. For an onlay patella, insert the peg endmill guide (K0031109 for single peg, K0031104 for tri-peg) into the patellar clamp. **| A IN FIGURE 68** Load the peg drill (K0031108 for single peg, K0031107 for tri-peg) into a powered reamer and drill the patellar bone to accept the implant pegs. The single peg and tri-peg patella componets have the same peg position between sizes and can be easily changed during trial reduction.

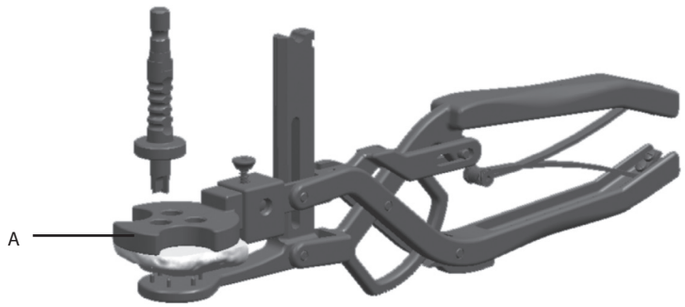


FIGURE 68

For final patellar implantation, the implant seater (K0031120) may be inserted into the patellar clamp (K0031103) and used to maintain force between the patellar implant and host bone. **| FIGURE 69**

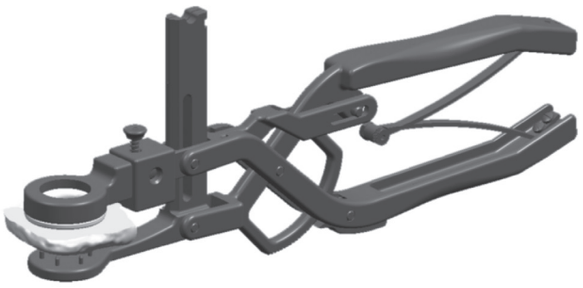


FIGURE 69

PN K0031109

PN K0031104

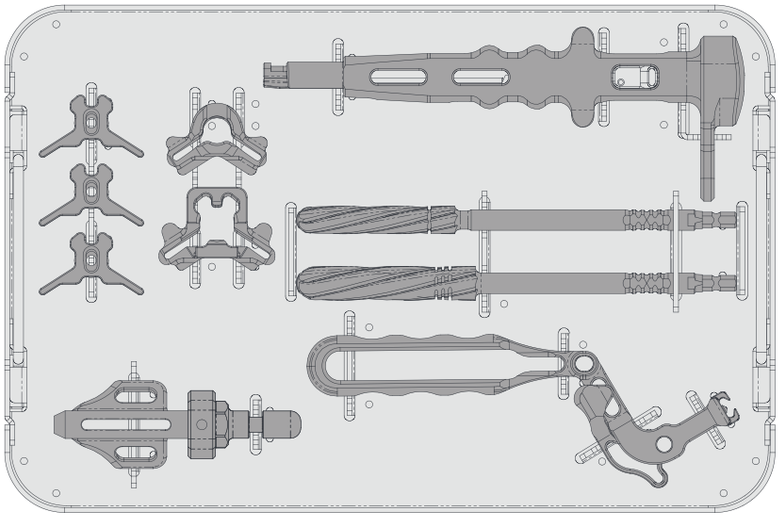
PN K0031108

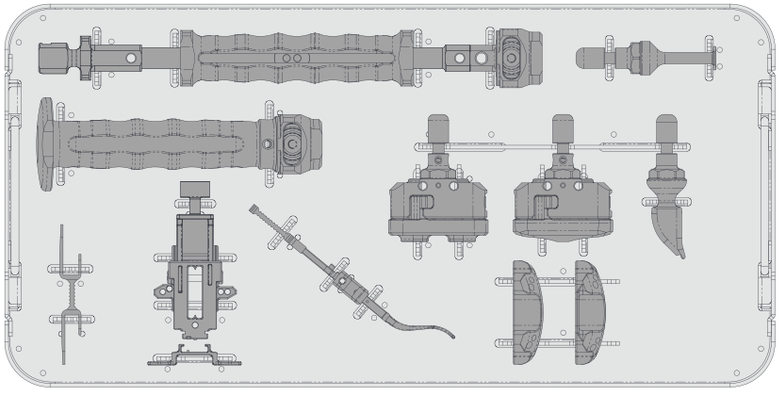
PN K0031107

PN K0031120

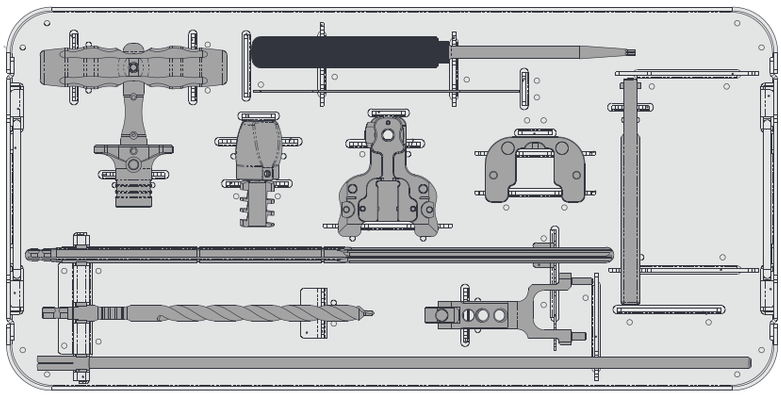
Instrument Kit Information

chapter 5

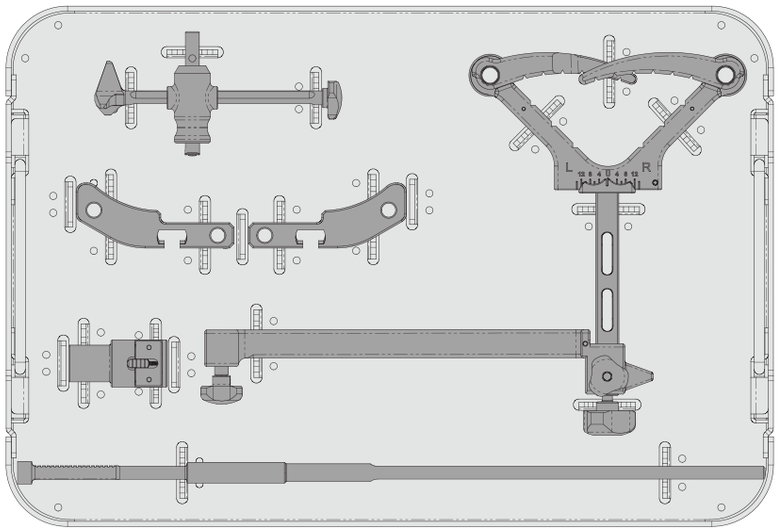




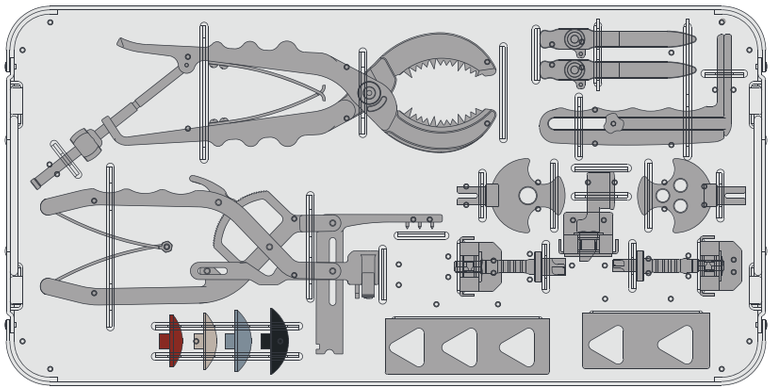
MP30NKT1 - eMP™ Core Instrument Kit



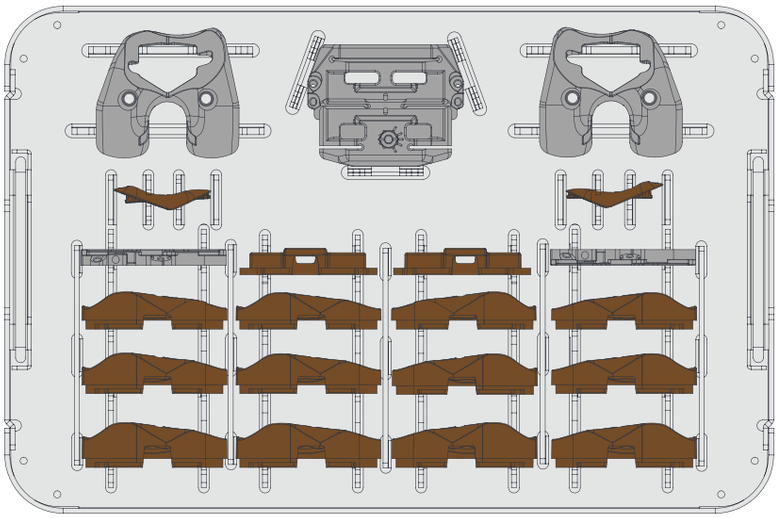
MPC00KT1 - Core Medial-Pivot Instrument Kit



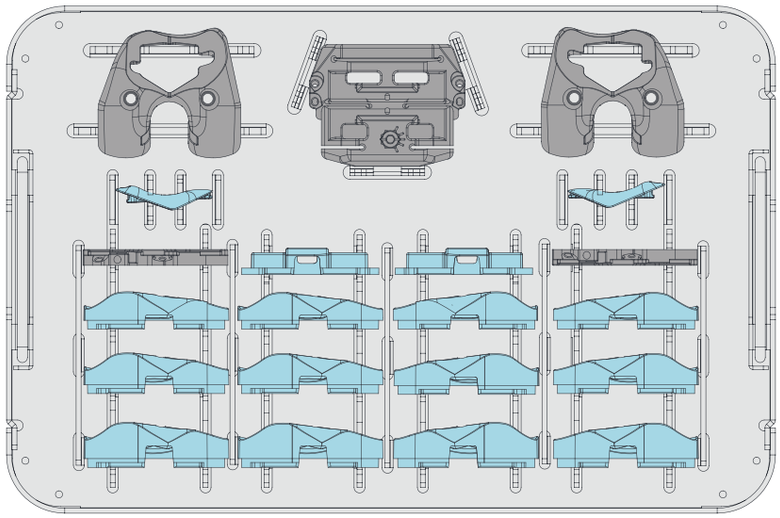
MPEMKT1 - Core Medial-Pivot EM Resection Guide Instrument Kit



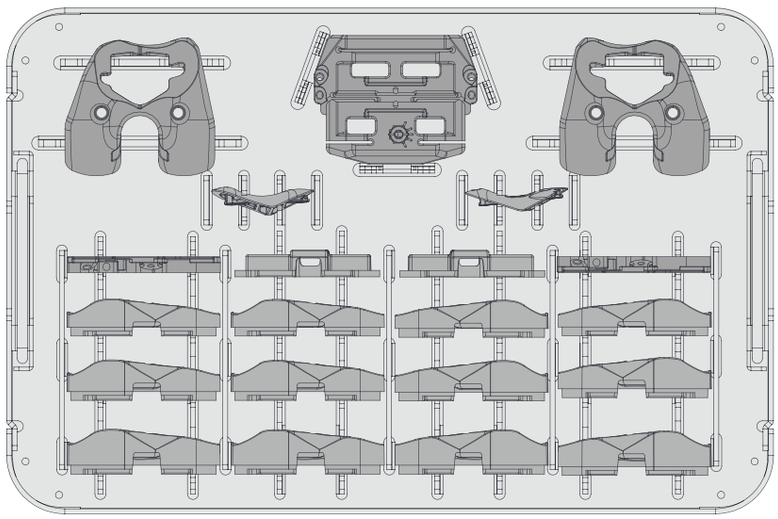
MPPATKT1 - Core Medial-Pivot Patellar Preparation Kit



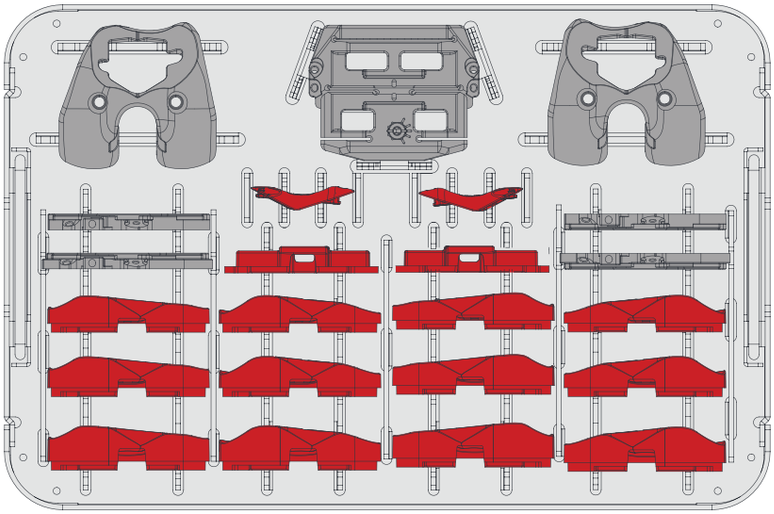
MP30CKT3 - eMP™ CS, Size 3 Instrument Kit



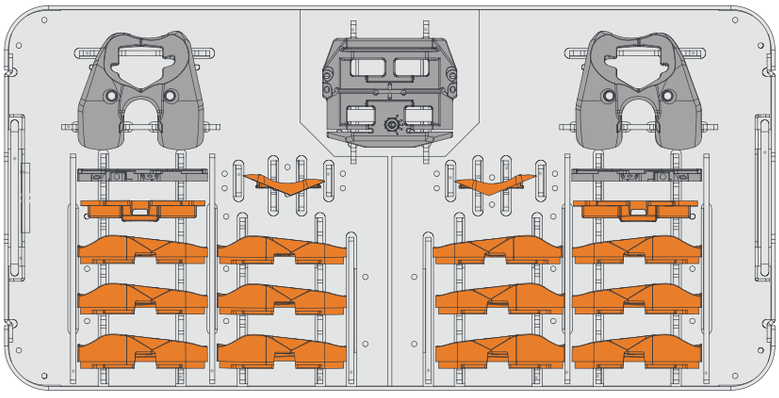
MP30CKT4 - eMP™ CS, Size 4 Instrument Kit



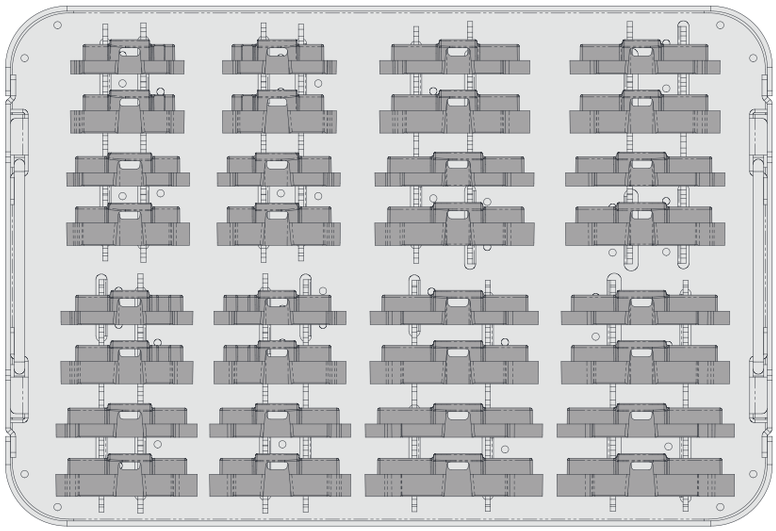
MP30CKT5 - eMP™ CS, Size 5 Instrument Kit



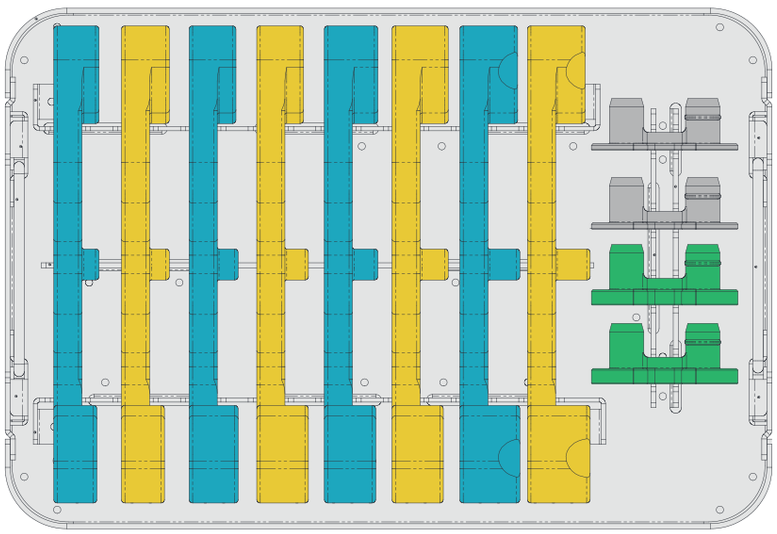
MP30CKT6 - eMP™ CS, Size 6 Instrument Kit



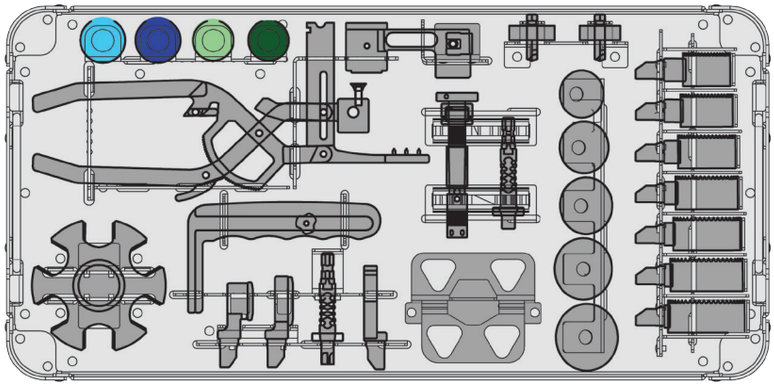
MP30CKT7 - eMP™ CS, Size 7 Instrument Kit



MP304KT1 - eMP™ 20/24 MM Insert Instrument Kit



MP30FKT1 - eMP™ Flexion/ Extension Block Instrument Kit



K100KT75 - Patella Reaming Kit

CR Insert Trial Instrument Kits:

MP30RKT1 - eMP™ CR, Sizes 1-2 Instrument Kit

MP30RKT2 - eMP™ CR, Sizes 3-6 Instrument Kit

MP30RKT3 - eMP™ CR, Sizes 7-8 Instrument Kit

PS Instrument Kits:

MP30PKT1 - eMP™ PS, Size 1 Instrument Kit

MP30PKT2 - eMP™ PS, Size 2 Instrument Kit

MP30PKT3 - eMP™ PS, Size 3 Instrument Kit

MP30PKT4 - eMP™ PS, Size 4 Instrument Kit

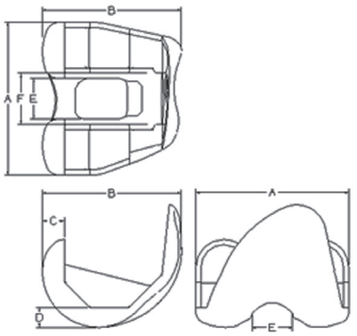
MP30PKT5 - eMP™ PS, Size 5 Instrument Kit

MP30PKT6 - eMP™ PS, Size 6 Instrument Kit

MP30PKT7 - eMP™ PS, Size 7 Instrument Kit

MP30PKT8 - eMP™ PS, Size 8 Instrument Kit

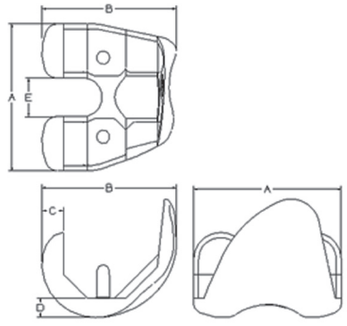
Implant Dimensions



EVOLUTION®
MP PS Femoral Components
EFPSN(X)P(L/R)

Size	A	B	C	D	E	F (PS Only)
1	59	51	10	9	16	20
2	61	54	10	9	16	20
3	64	57	10	9	18	22
4	66	60	10	9	18	22
5	70	64	11	9	18	22
6	73	68	11	9	18	22
7	77	72	11	9	20	25
8	80	76	11	9	20	25

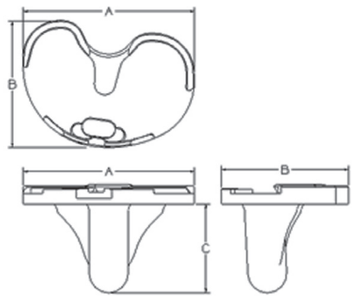
Dimensions are in mm



EVOLUTION®
MP CS/CR Femoral Components
EFSRN(X)P(L/R)
EFSRP(X)P(L/R)

Size	A	B	C	D	E
1	59	51	10	9	16
2	61	54	10	9	16
3	64	57	10	9	18
4	66	60	10	9	18
5	70	64	11	9	18
6	73	68	11	9	18
7	77	72	11	9	20
8	80	76	11	9	20

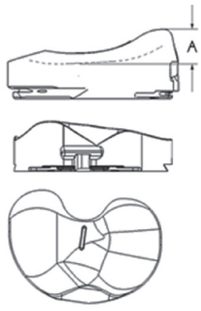
Dimensions are in mm



EVOLUTION®
MP Tibial Base Components
ETPKN(X)S(L/R)
ETPKN(X)P(L/R)

Size	A	B	C
1	54	40	31
2	58	43	31
2+	62	46	34
3	62	46	34
4	66	49	34
5	70	52	38
6	74	55	38
6+	78	58	41
7	78	58	41
8	82	61	41
8+	86	64	41

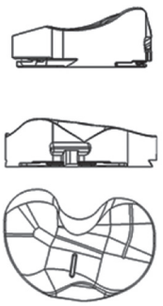
Dimensions are in mm



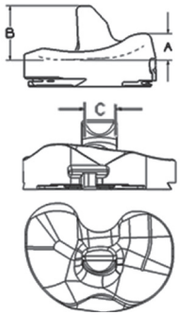
EVOLUTION® MP CS Insert
(Available Thicknesses 10, 12, 14, 17, 20, 24mm)
EIS(X)S(T)(L/R)
EIS(X)P(T)(L/R)

CS	A
1	11
1+	11
2	11
2+	11
3	11
3+	11
4	11
4+	11
5	11
5+	11
6	11
6+	11
7	11
7+	11
8	12

Dimensions are in mm



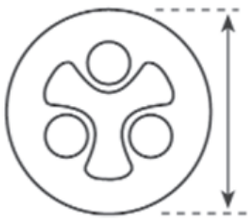
EVOLUTION® MP CR Insert
Available Thicknesses
10, 12, 14, 17mm
EIC(X)S(T)(L/R)
EIC(X)P(T)(L/R)



EVOLUTION® MP PS Insert
Available Thicknesses
10, 12, 14, 17, 20, 24mm
EIP(X)S(T)(L/R)
EIP(X)P(T)(L/R)

CR/PS	A	B	C (PS Only)
1	9	19	14
2	9	19	14
2+	9	20	16
3	9	20	16
4	9	20	16
5	9	21	16
6	10	22	16
6+	10	23	19
7	10	23	19
8	11	24	19

Dimensions are in mm



ADVANCE®
Patella Components
KPONTP(X)
KPON(X)(SP/TP)

Size (Diameter)	Single Peg	Tripeg	Thickness (mm)
25	•	n/a	7 or 9
26	n/a	•	8
28	•	n/a	7 or 9
29	n/a	•	8
32	•	•	8
35	•	•	8
38	•	•	10
41	•	•	11

Dimensions are in mm

(X)	Size
(T)	Thickness
(L/R)	Left/Right

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+31 20 545 01 00

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