MATHYS
European Orthopaedics

Surgical technique

balanSys BICONDYLAR

Combination
leggera instruments

***Preservation** in motion*

Building on our heritage
Moving technology forward
Step by step with our clinical partners
Towards a goal of preserving mobility

***Preservation** in motion*

As a Swiss company, Mathys is committed to this guiding principle and pursues a product portfolio with the goal of further developing traditional philosophies with respect to materials or design in order to address existing clinical challenges. This is reflected in our imagery: traditional Swiss activities in conjunction with continuously evolving sporting equipment.

Table of contents

Remark
Please make yourself familiar with the handling of the instruments, the product-related surgical technique and the warnings, the safety notes as well as the recommendations of the instruction leaflet before using an implant manufactured by Mathys Ltd Bettlach. Make use of the Mathys user training and proceed according to the recommended surgical technique.

Introduction

The objective of total knee arthroplasty is re-establishment of the normal lower-extremity axis, restoration of normal knee function, and reduction of pain.

Mathys balanSys BICONDYLAR implants and instruments are designed to meet the surgeons' demands on prostheses with respect to kinematics, ligament balancing, stability and long-term survival. [1] Since 1997, the balanSys BICONDYLAR system has proven its clinical worth. [2]

With the Swiss-made knee system balanSys, Mathys Ltd Bettlach offers a wide range of components that match the patient's anatomical conditions and the functional requirements of the knee joint.
It consists of a cemented or non-cemented femoral component, a cemented symmetrical tibial tray, and a tibial inlay. A cemented patellar component is optional. For femoral and tibial metal components, a TiNbN-coated option is available.

1 Superior long-term survival for fixed bearing compared with mobile bearing in ligament-balanced total knee arthroplasty. Heesterbeek, P.J.C., van Houten, A.H., Klenk, J.S. et al. Knee Surg Sports Traumatol Arthrosc, online 07 April 2017

2 Data on file at Mathys Ltd Bettlach.

1. Indications and contraindications

Indications

- Painful and/or disabling joint disease of the knee resulting from osteoarthritis, avascular necrosis, inflammatory arthritis or post-traumatic arthritis
- Revision of previous knee replacement

Contraindications

- Local or general infection
- Any soft tissue, ligament, nerve or vessel insufficiency which may create an unacceptable risk of prosthesis instability, prosthesis fixation failure and/or complications in post-operative care
- Compromised bone stock due to bone loss or bone defects and/or insufficient bone substance, which cannot provide adequate support and/or fixation for the prosthesis
- Hypersensitivity to materials used
- Skeletal immaturity
- Genu recurvatum
- Insufficiency of the extensor mechanism
- Progressive neoplastic disease

For further information, please refer to the instructions for use or ask your Mathys representative.

2. Options

2.1 Implant options

Based on the surgeon's preference and the patient's requirements, the surgeon has the choice between a variety of balanSys BICONDYLAR implant options for mobile- and fixed-bearing knee replacements, with or without preservation of the posterior cruciate ligament (PCL).

Mobile bearing: Rotating Platform (RP)

Fixed bearing: Cruciate Retaining (CR), Ultra Congruent (UC), and Posterior Stabilized (PS).

The CR femoral components are to be used with a CR inlay when the PCL is intact, or with either RP or UC inlays when the PCL is sacrificed or deficient and removed. In addition, PS femoral components are to be used with the PS inlays when the PCL is sacrificed or deficient and removed. Tibial inlays are available in standard UHMWPE or in vitamys, the vitamin E stabilized PE.

The intuitive leggera instruments are made for reproducible accurate results.

Preparation of the femur follows tibial resection, using the spacer block or soft-tissue balancing technique. The rotation of the femoral component is determined using the posterior condyles, Whiteside's line, or the epicondyles. With the aim of balancing the extension and flexion gap, the A-P position of the femoral component is measured from the posterior condyles (posterior-referenced).

For sizing and compatibility refer to the chart in chapter 8.1 (page 78).

2.2 Instrument options

With balanSys leggera instruments all balanSys BICONDYLAR implants can be implanted, the surgeon can choose to align the tibia extra-medullarily or intramedullarily and has different options to position the femur. In addition to this soft tissue balancing combination technique, Mathys provides also the bone oriented technique for balanSys BICONDYLAR implants.

leggera instruments are compatible with 1.27 mm (0,05 inch) saw blades. For saw blades distributed by Mathys refer to the brochure 336.030.032 «Sterile Sawblades».

3. Aim of the intervention and surgical approach

- Intraoperative correction of axial deviations in the frontal plane of the leg along the mechanical axis, where the joint line should be orthogonal to this axis
- Reconstruction of the physiological axis ratios
- Prosthesis-related kinematics:
  – physiological joint line
  – sufficient medial and lateral stability in extension and flexion
  – correctly centred and balanced patellofemoral joint
  – free movement: from maximal extension to maximal possible flexion

The choice of approach is dependent on the axial malposition (varus/valgus).

4. Patient preparation

The surgery is carried out on patients under general or spinal anaesthesia, while an adequate muscle relaxation is being required.

Postoperative pain is reduced without the use of a tourniquet. If it is necessary to apply a tourniquet, it should be placed on the proximal thigh and inflated with the knee in hyperflexion. That will keep the maximal portion of the quadriceps below the level of the tourniquet.

Place the patient in supine position.

Flex the knee into a 90° position.

Use a supporting roll on the table and a lateral support to facilitate extension and flexion of the leg.

5. Preoperative planning

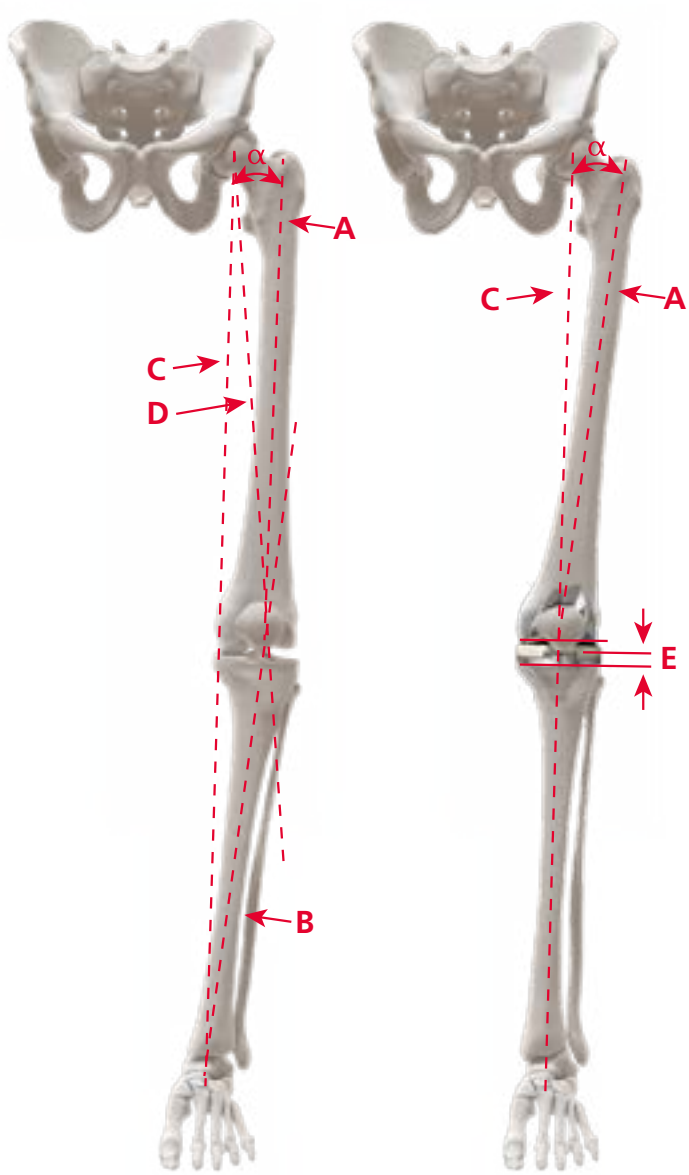
The preoperative planning comprises the indication, evaluation, and preparation that are important for the success of the surgery.

Preoperative radiographies are essential for surgical planning. Radiographies of the knee in two views are recommended: A single-leg stance radiography in the anterior-posterior (A-P) plane, and a lateral radiography of the knee joint in 90° flexion or in extension. In addition, a long-leg radiography with loading of both legs is needed. It is useful to have a «skyline» or «sunrise» view of the patella in 40° flexion as well.

Radiographies are needed to identify and quantify deformities and bone defects as well as osteophytes. Using planning templates, the size of the femoral and tibial prosthesis can be initially determined. Long-leg radiographies help to detect deviations of the axis and deformities in the diaphyseal area of the femur and the tibia. Long-leg radiographies help also to determine whether intramedullary alignment can be performed. Furthermore, the mechanical and anatomical axes of the leg can be plotted, and the femoral angle can be determined (see graphic on page 9). This angle varies depending on morphology. The femoral angle must be known for the definition of the femoral distal cut. This is transferred to the bone resection by the leggera Angle Guide.

The entry point for the tibial and femoral extra- or intramedullary alignment guide is determined by extending the line of the anatomical axes of the tibia and the femur. Usually, the entry point is located slightly medially to the eminentia intercondylaris or to the apex of the intercondylar notch, respectively.

On the long-leg radiography, the extent of tibial resection can be determined as well. In this way, the required magnitude of the medial and lateral bone resection can be assessed. This is especially important in case of extensive bone defects, in order to avoid excessively resection.



Examination of the A-P long-leg radiography in the following manner:

1. Draw the anatomical axis of the femur (**A**) on the radiography. If the femur is excessively curved, a line representing the intramedullary alignment should be drawn instead of the line **A**.
2. Draw a line from the center of the femoral head to the center of the knee: Mechanical axis **D**.
3. The angle between the anatomical axis and the mechanical axis (femoral valgus angle α) is specific for each patient and determines the degrees to be set on the Angle Guide (see figure 25).
4. Draw the axis of the tibia (**B**), and determine the tibial resection plane (**E**) perpendicular to **B**. Take care to prevent too extensive resection in the case of tibial defects.
5. Preoperative determination of component size and resection depth using the radiography templates in the A-P and lateral planes.
6. After the resection, the mechanical axis of the leg (**C**) should coincide with lines **D** and **B**.

A Anatomical axis of the femur
B Axis of the tibia
C Mechanical axis of the leg
D Mechanical axis of the femur
E Resection depth of the tibia (mm)
α Femoral valgus angle

6. Surgical technique

6.1 Overview of the surgical technique

1. Tibial resection

Application of the Tibial Reference System parallel to the anterior tibial cortex and alignment. Adjustment of the posterior slope. Determination of the joint line and fixation of the Tibial Reference System.

> Page 13

Adjustment of the resection depth.
Tibial osteotomy.
Determination of the tibial plateau size.

Remark
Place retractors to protect ligaments during tibial resection.

> Page 16

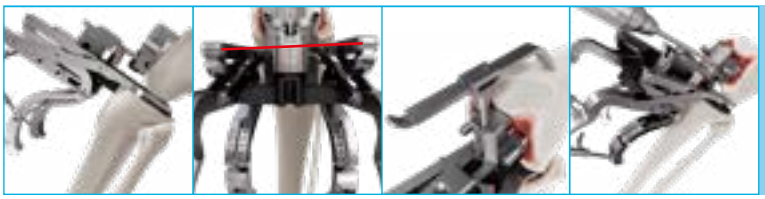
2. Femoral resection

Opening of the intramedullary canal and insertion of the Intramedullary Rod. Fixation of the Distal Femoral Cutting Block.
Distal Osteotomy

> Page 20

Insertion of the Tensor and Application of 150–180 Newton in full extension.
Adjustment of the desired PE Inlay thickness.

> Page 25



The knee must be flexed in 90°. Insertion of the Tensor and application of 80–100 Newton.
Drilling of two holes for the 4in1 Cutting Block.

> Page 27

Insertion of the 4in1 Cutting Block. Control of the planned resection depth.
Optional: Adjustment of the A-P position. Anterior and posterior femoral osteotomies with the chamfer cuts.

> Page 32

Verification of the flexion gap.

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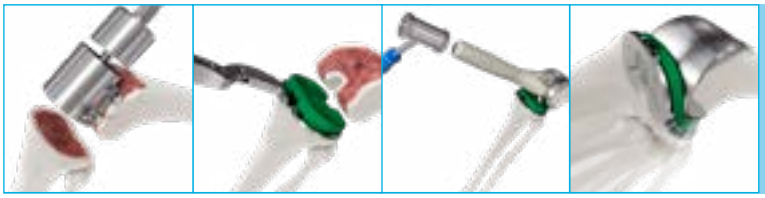
3. Preparation and implantation balanSys CR, UC and RP



Preparation of trochlea groove. Insertion of Tibial Template and Trial PE Inlay. Insertion of Trial Femur. Trial reduction of the knee joint.

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Preparation of the femoral anchor pins.
Preparation of the tibial medullary space.
Preparation of the fins.

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Insertion of balanSys Tibial Plateau.
Impaction of balanSys Tibial Plateau.

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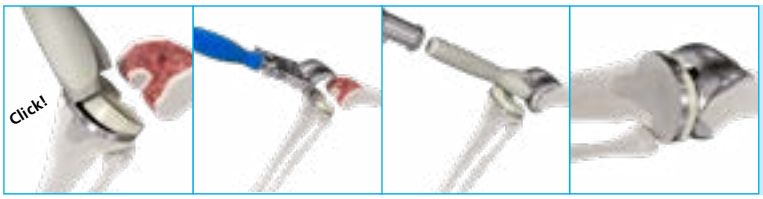

Insertion of the balanSys Inlay.
Insertion of the balanSys Femur.
Impacting of balanSys Femur.
Curing of the bone cement.

> Page 47

4. Preparation and implantation balanSys PS

Preparation of femoral box.
Insertion of Trial Femur.
Insertion of Tibial Template and Trial PE Inlay.
Trial reduction of the knee joint.

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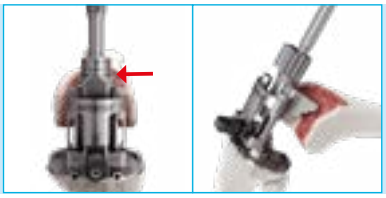

Preparation of the tibial medullary space.
Preparation of the fins.

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Insertion of balanSys Tibial Plateau.
Impacting of balanSys Tibial Plateau.

> Page 59

Insertion of the balanSys Femur.
Impacting of balanSys Femur.
Insertion of the balanSys Inlay.
Curing of the bone cement.

> Page 61

Before each surgery, instruments should be checked for damage or deformation. Use only undamaged instruments. Do not use trial components with marks or scratches.

6. Surgical technique

6.2 Tibial resection

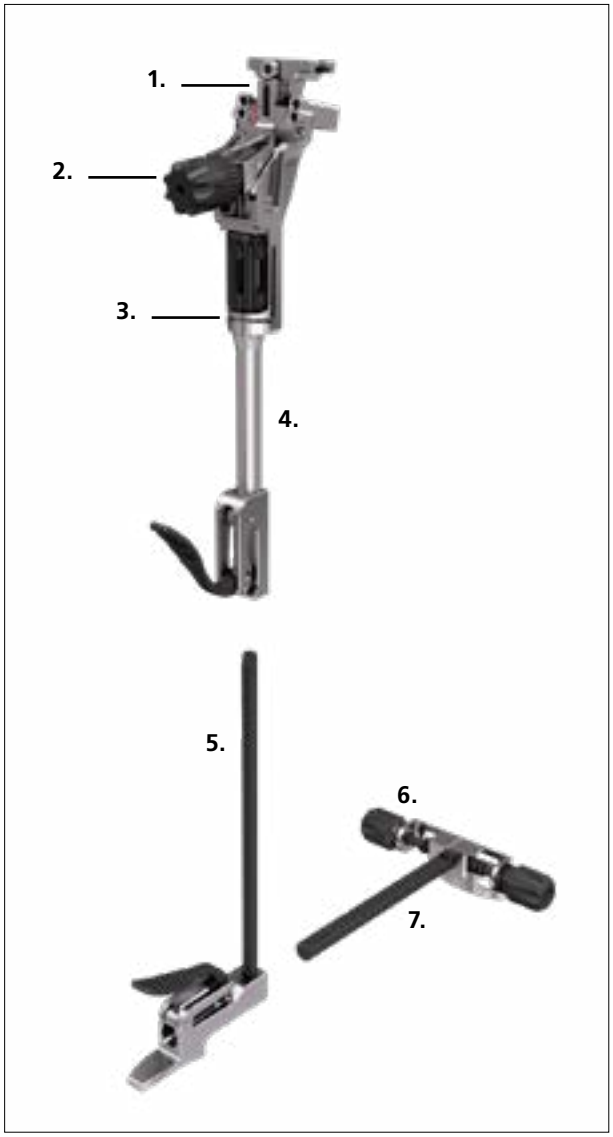


Fig. 1

6.2.1 Assembly of the Extramedullary Tibial Alignment Reference System (TRS)

Overview Extramedullary Tibial Alignment Reference System (TRS)

1. Scale resection level
2. Adjustment tibial slope
3. Adjustment resection level
4. TRS Proximal
5. TRS Distal
6. Adjustment tibia axis
7. TRS Ankle Holder

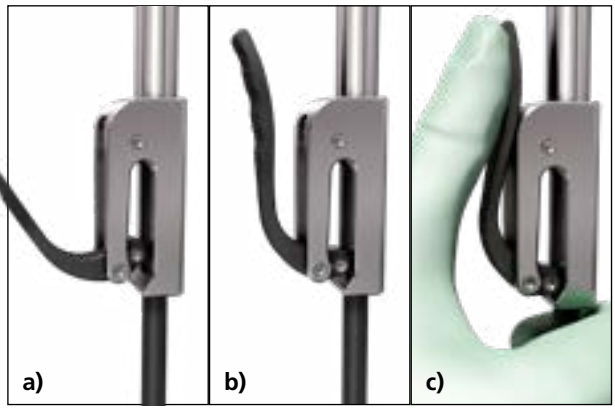


Fig. 2

The locking mechanism has three positions:
a) Open: To mount/dismount instruments
b) Fixed: Stable/Working position
c) Slide: For non-incremental positioning

Fig. 3 Attach the TRS Distal

Fig. 4 Attach the TRS Ankle Holder

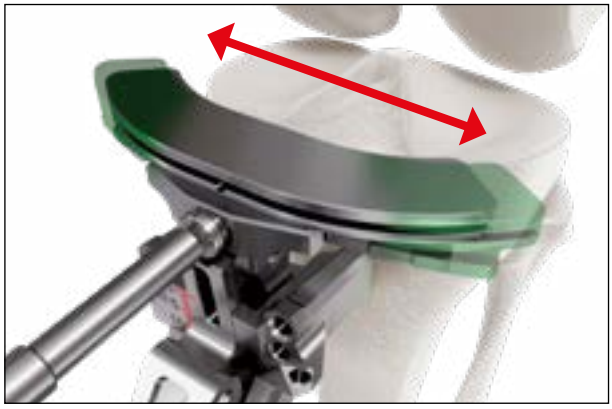


Fig. 5

Assemble the TRS Cutting Guide to the TRS Proximal with the balanSys Screwdriver. The TRS Cutting Guide can be shifted to the left and to the right, according to the side of surgery and the approach.

Fig. 6

Set the scale of the resection level to 0 mm by turning the axial wheel ❶.

Optional

The Eminentia Shackle can be mounted to fixate the TRS on the eminentia intercondylaris.
For assembly refer to appendix 7.2 – intramedullary alignment.

Remark

To have a good overview, first the ACL and – in case of deficiency or due to planning – the PCL should be completely removed. In addition, all osteophytes in the notch must be removed.

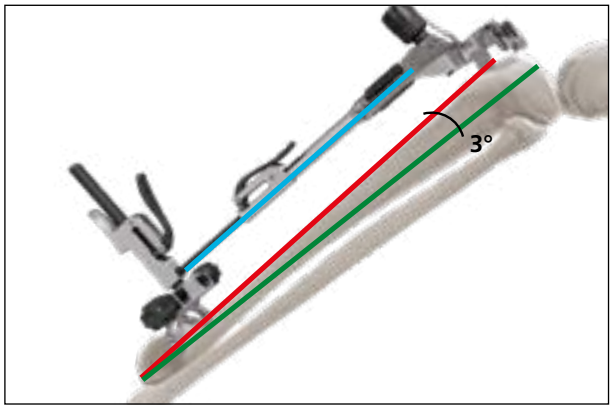


Fig. 7

6.2.2 Tibial resection

The axis of the TRS is placed parallel to the anterior tibial cortex. This can be approximated by running two fingers between the Tibia Reference System and the anterior face of the tibia.

Remark

The TRS incorporates the 3° angle between the medullary cavity (green line) and the anterior tibial cortex (red line). With the TRS being parallel to the anterior cortex (blue line), the degree of posterior slope of the resection will be as indicated on the dial.

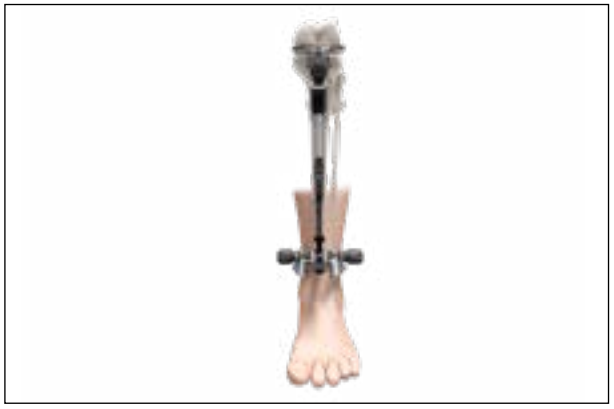


Fig. 8

Align the TRS distally with the second metatarsophalangeal bone, and fix it with the TRS Rubber Band. The center of the proximal TRS must be placed over the junction between the medial and central third of the tibial tubercle, and the distal TRS aligns in the medial third of the ankle to reproduce tibial rotation.

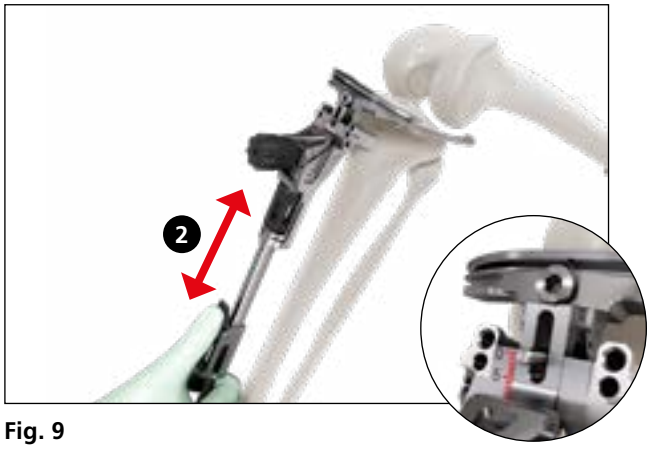


Fig. 9

The scale of the resection level must indicate a value of 0 mm.

Using the gliding mechanism ❷, set the lengths of the TRS so that the cutting slot is approximately at the height of the tibial plateau.

Stabilize the TRS with a central 3.2 mm pin.
Pre-drill with the 3.2 mm drill and insert a pin through the vertical slot of the TRS Proximal to increase stability.
The vertical position should be in the lower part of the slot.

Optional, the Intramedullary Shackle can be used for additional stability. Refer to appendix 7.2 – intramedullary alignment.

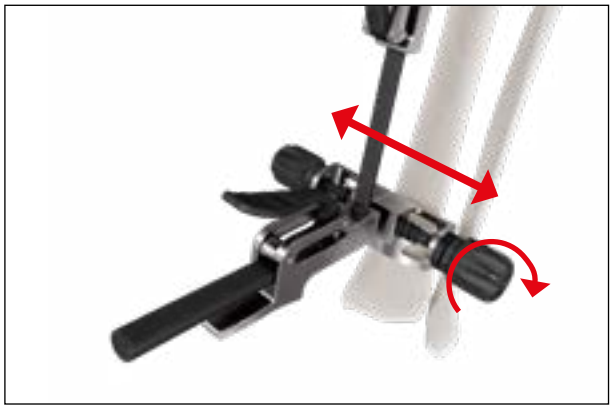


Fig. 10 Varus/Valgus adjustment

Use the varus/valgus Adjustment Mechanism to align the TRS parallel to the long axis of the tibia. The distal TRS must align in the medial third of the ankle (medial and lateral malleolus).
The long marking represents the neutral position.

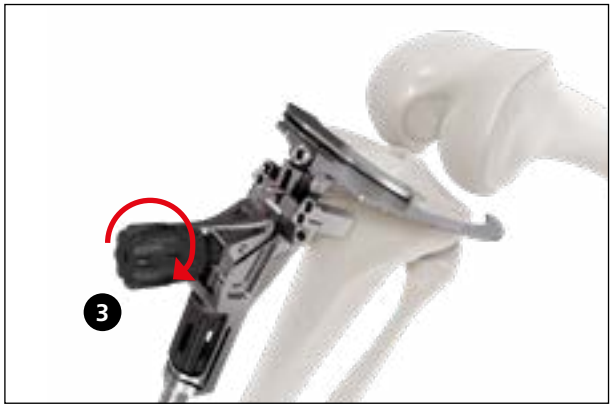


Fig. 11 Posterior slope

Use the slope adjustment dial ❸ to set the posterior slope according to the anatomy. The reference plate must be parallel to the best-preserved tibial joint surface.

Remark
The authors recommend a posterior slope up to 7° for a PCL retaining implant and up to 5° for a PCL substituting implant.

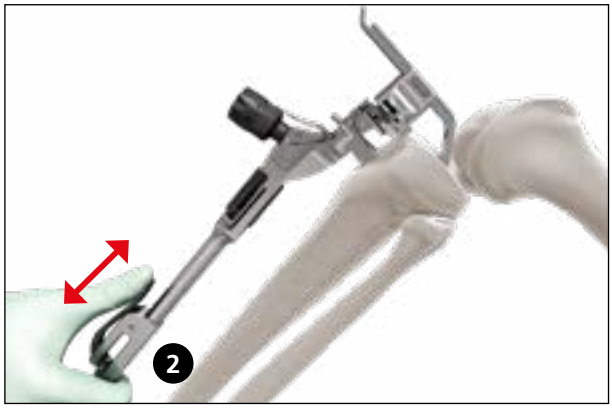


Fig. 12

Determine the original joint line at the level of the best-preserved tibial joint surface. To that end, use the reference plate as a reference, or attach the Tibial Stylus through the cutting slot of the TRS Cutting Guide. The tip of the Tibial Stylus must touch the best-preserved tibial joint surface.
Use the gliding mechanism ❷ to move the cutting guide distally or proximally.

Fixate the TRS proximally with at least two straight pins and one oblique pin. Predrill the holes with the 3.2 mm drill.

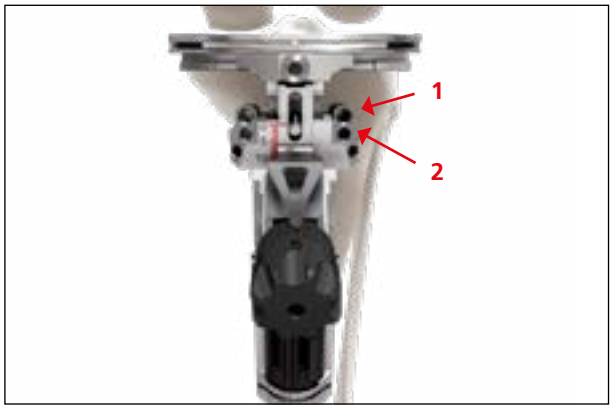


Fig. 13

There are two options to fixate the TRS.
1. Proximal holes (chamfered)
2. Distal holes

Generally, the proximal holes should be used for fixation, because the tibial bone widens proximally. The cutting guide can then be distalized by up to 10 mm.

For a planned resection of more than 10 mm, the distal holes should be used. After placement of the pins, the TRS with cutting guide can then be re-positioned to the proximal holes. This procedure will allow resection of 10 – 15 mm. Note that one must add 5 mm to the readable scale.

Fig. 14

Drill and pins may pass only through the anterior cortical bone and must not perforate the posterior cortical bone, in order to avoid injuries to dorsal vessels and nerves. It is recommended to drill just past the anterior dense bone and drive in the pin with a mallet until it touches the posterior cortex.

If the PCL is preserved, the stability must be taken into account. Especially in case of larger resections.

Fig. 15

Set the resection height by moving the TRS Cutting Guide 6 – 8 mm distad by turning the axial wheel ❶. The minimum resection height depends on the quality of cartilage in the area, where the joint line was determined (Fig. 14).

Check the adjusted osteotomy level with the reference plate, before resection.

Fig. 16

With a 1.27 mm saw blade, resect the tibia through the cutting slot.

Remark
Place bone retractors to protect the ligaments during tibial resection.

Remark
To reduce heat and the risk of osteonecrosis, it is recommended to cool the saw blades during sawing.

Fig. 17

Remove the instruments. At least one straight pin should be kept in place for the option of a later additional resection.

Fig. 18

Determine the tibial prosthesis size with the Tibial Template. Take the rotational alignment into account, to restore the flexion plane of the knee.
The rotation of the Tibial Template is typically centered on the junction between the medial and central third of the tibial tubercle.
Provide maximum coverage of the osteotomy surface without overhang of the Tibial Template.

Remark
If a Rotation Platform (RP) implant is being planned, the rotational alignment of the tibial implant must be considered. The Rotation Platform allows a rotational variability of not more than approximately 5° deviation.

Fig. 19

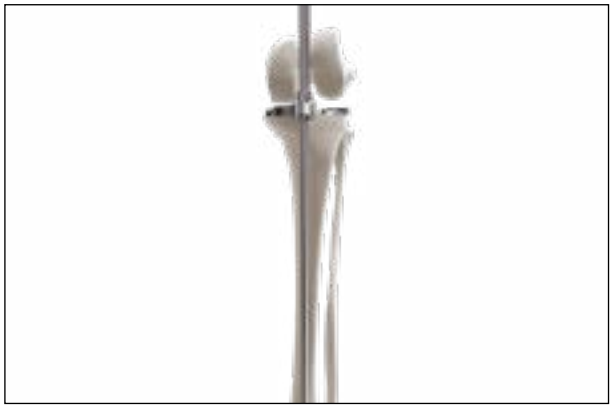


Fig. 20

Use the Alignment Rod to check the axis of the cutting plane.

6.3 Femur resection

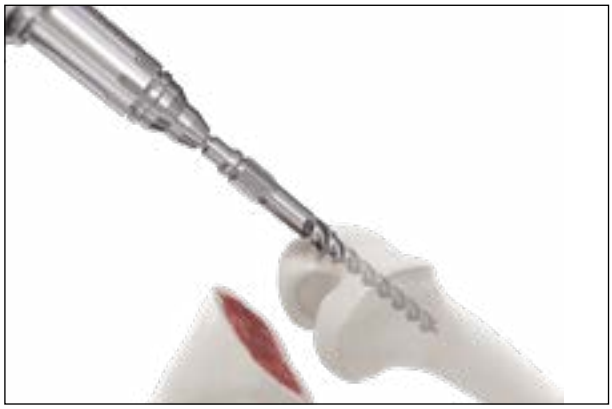


Fig. 21

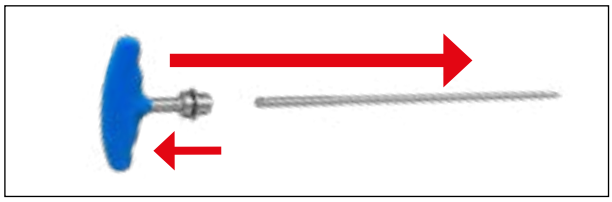


Fig. 22

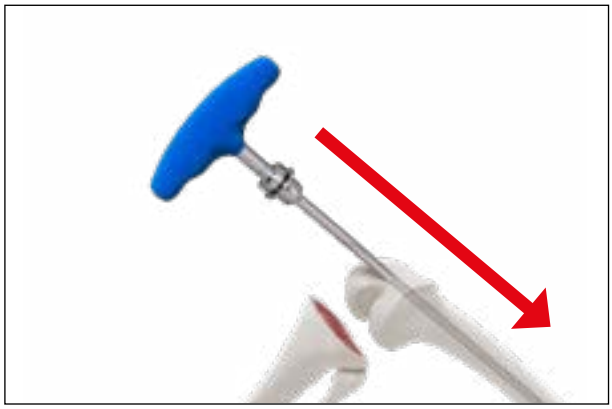


Fig. 23

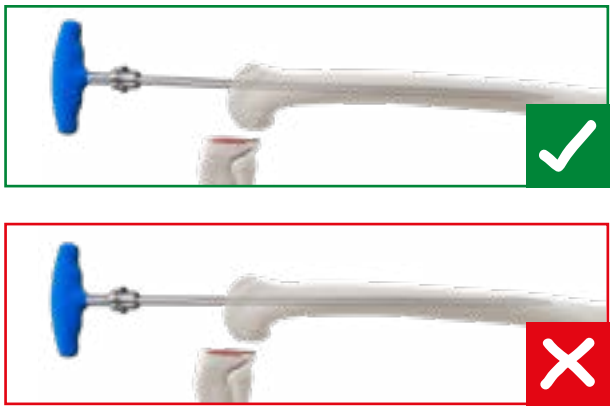


Fig. 24

Distal femoral resection
Remove all osteophytes.
Open the medullary canal with the balanSys drill bit 8.5 / 11 mm.
The entry point is determined by analyzing the long-leg radiograph. In general, it will be 3 – 5 mm medially to the apex of the intercondylar notch and 7 – 10 mm anterior to the origin of the Posterior Cruciate Ligament (PCL).

Insert the drill fully down to the end of the thread. The step feature of the drill increases the diameter of the hole by 1.5 mm to allow depressurization of the canal when the Intramedullary Rod is inserted.

Connect the Handle to the Intramedullary Rod.

Remark
Pull the locking ring for connecting and disconnecting the handle.

Insert the Intramedullary Rod slowly and fully into the femur in order to ensure the most accurate replication of the anatomical axis.
The Intramedullary Rod should not have any contact to the cortical bone at the entry point, to avoid misguiding. If it has, remove the Intramedullary Rod and widen the entry hole with the drill.

Remove the Handle.

Remark
If the entry hole is out of the anatomical axis, the Intramedullary Rod will be misguided. This may cause malangulation of the femoral component. In order to avoid that, the Intramedullary Rod must not touch the cortical bone when it is fully engaged. If it does, remove the Intramedullary Rod and widen the entry hole with the drill.

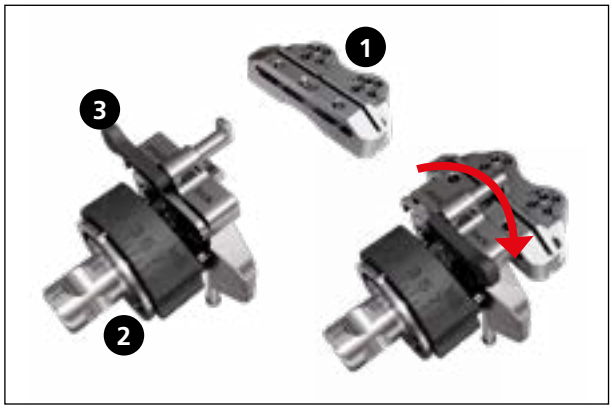


Fig. 25

Engage the Distal Cutting Guide with the Angle Guide.
To that end, mount the Distal Cutting Guide ❶ onto the open connector of the Angle Guide ❷ with the lever ❸ in open position. Then flip the lever over to «lock», securing the Distal Cutting Guide.

The secured Distal Cutting Guide still can slide to the left and to the right.

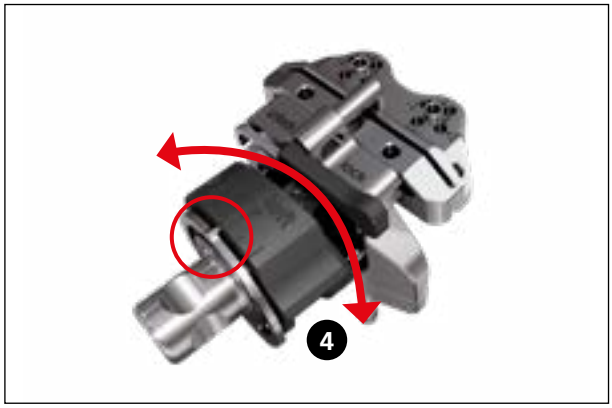


Fig. 26

According to the pre-operative planning, set the desired valgus angle (0 degrees to 9 degrees) on the Angle Guide.
Rotate the dial ❹ clockwise or counter-clockwise to the appropriate setting at the setting mark (top). Upon rotation, the dial has palpable stops and markings at each 1° location.
The marking «left» indicates the left knee, the marking «right» indicates the right knee.

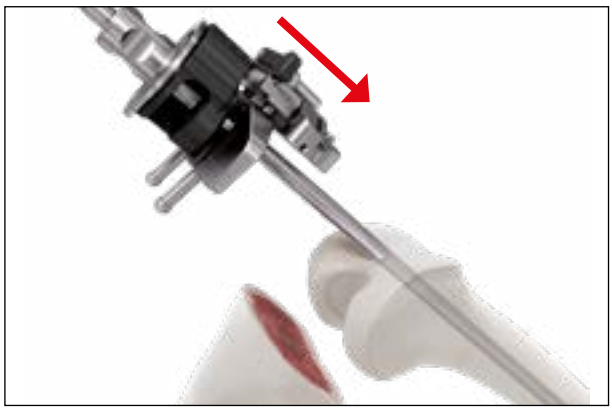


Fig. 27

Slide the Angle Guide with the Distal Cutting Guide over the Intramedullary Rod toward the femur until the Angle Guide touches at least one distal condyle.

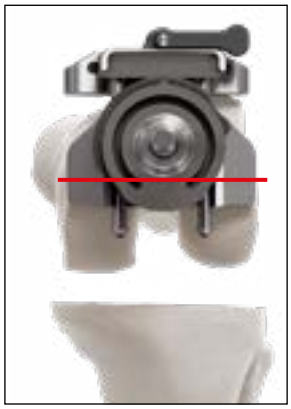


Fig. 28

Fig. 29

Since the distal cut is performed at an angle of 83° in relation to the intramedullary rod, the Angle Guide must be aligned parallel to the epicondylar axis.

Fig. 30

The Distal Cutting Guide touches normally only one anterior condyle. It can be shifted mediolaterad, based on the anatomical conditions.
Pre-drill through the two raised holes of the Distal Cutting Guide. Secure the Distal Cutting Guide to the femur with two headless pins through the raised holes.

Do not shift the Distal Cutting Guide more than 5 mm from the middle, in order to avoid hitting the Intramedullary Rod with the drill. Otherwise, carefully pre-drill the cortical bone only and fully engage the pin after removal of the Intramedullary Rod.

Fig. 31

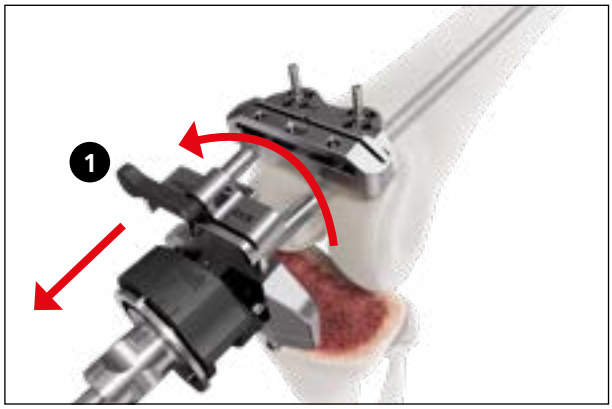


Fig. 32

Disconnect the Angle Guide from the Distal Cutting Guide (flip the lever ❶ to «unlock») and remove the Angle Guide and the Intramedullary Rod.

Fig. 33

Check the planned distal resection plane with the reference plate.

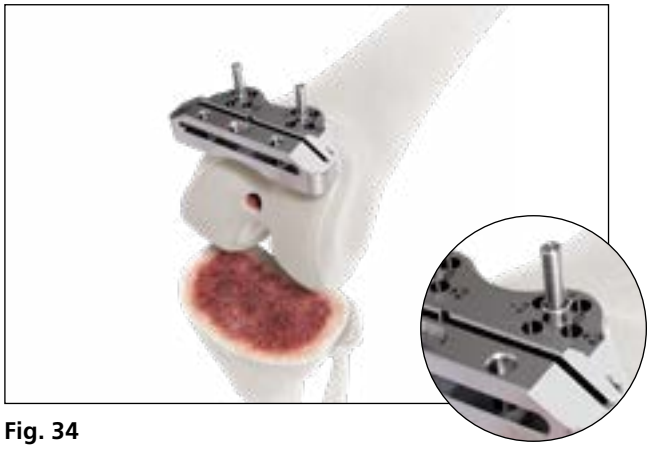


Fig. 34

Depending on the quality of the cartilage in the area where the Angle Guide is seated, additional adjustments may be made by repositioning of the Distal Cutting Guide.
Therefore, remove the Distal Cutting Guide from the Pins and place it onto the sets of holes marked «-2», «-4» and «+2», «+4».

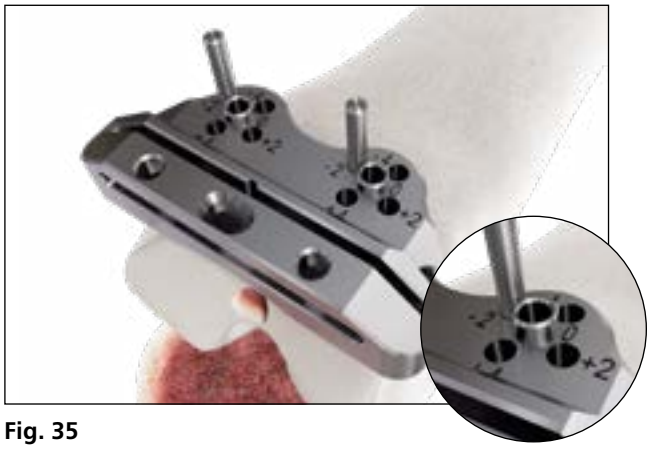


Fig. 35

The markings on the Distal Cutting Guide indicate the amount of bone resection each cut will yield, relative to the initial distal resection setting in millimeters.

If necessary for additional stability, now insert headless pins through the oblique pinholes.

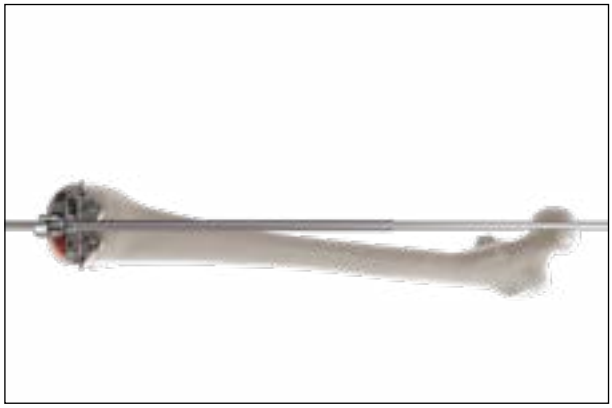


Fig. 36

Check the angle of the planned resection plane with the Alignment Rod.

Fig. 37

Fig. 38

With a 1.27 mm saw blade, execute the distal femoral osteotomy.

Remove the oblique pins and the Distal Cutting Guide.

Depending on the surgeon's preference, the Pins may be removed or left in place to allow for a recut if required.

Remark
Place bone retractors to protect the ligaments during resection of the distal femur.

Remove all tibial and femoral osteophytes and marginal bones.

Fig. 39

Fig. 40

Fig. 41

Extension gap assessment

Insert the Tensor and apply a force of **150 – 180 N** in full extension. The distal femoral osteotomy must be parallel to the tibial osteotomy.

Perform ligament releases if necessary and check again with Tensor.

Remark

The extension gap should be medial and lateral equal.

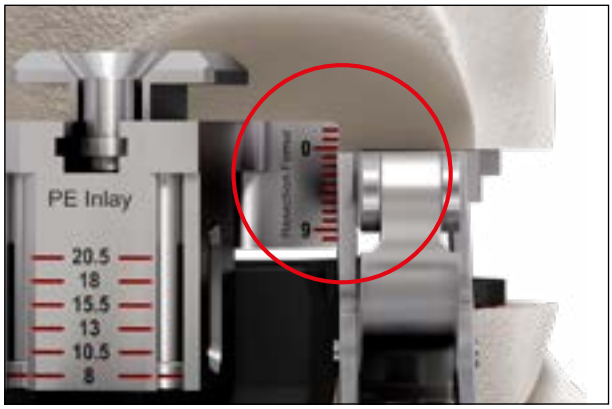


Fig. 42

The scale of the resection level should indicate 0 mm when the knee is well balanced in extension.

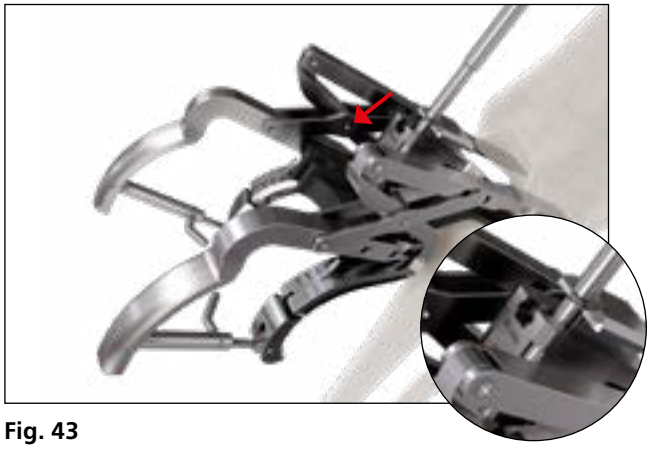


Fig. 43

If the resection level is indicated as < 0 mm, adjust the PE Inlay thickness using the set screw.

If the resection level is indicated as > 0 mm, then a corresponding amount of bone should be re-cut from the proximal tibia.

Remark
The inlay thicknesses 9 mm and 11.5 mm are available in vitamys only.

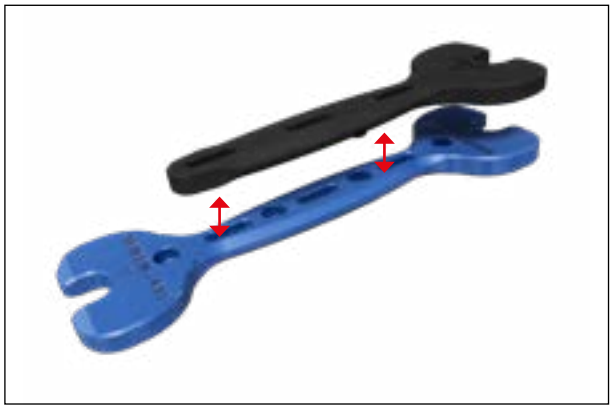


Fig. 44

Inspection of the extension gap
Connect the black Spacer Block Femur with the appropriate blue Spacer Block Tibia.

The Spacer Block Femur corresponds to the thickness of the femoral implant, distal and posterior (9 mm).

The Spacer Block Tibia corresponds to the thickness of the Tibial Plateau plus the indicated inlay thickness.

Fig. 45

The system includes Spacer Blocks Tibia for 8/9 mm, 10.5/11.5 mm, and 13/15.5 mm.
For inlay thicknesses 18 mm and 20.5 mm, the Spacer Shift Plate +5 must be connected to the balanSys Spacer Block Tibia 13/15.5.

Remark
The inlay thicknesses 9 mm and 11.5 mm are available in vitamys only.

Fig. 46

Verify the extension gap by inserting the Spacer Block Femur with the appropriate Spacer Block Tibia. The extension gap should be M-L balanced with the leg in full extension. If the extension gap is not balanced, adjust the angle of either the tibial or the femoral cut, or perform appropriate soft-tissue releases to achieve balance.

Remark
Remaining dorsal osteophytes can impede extension or pretend ligament stability.

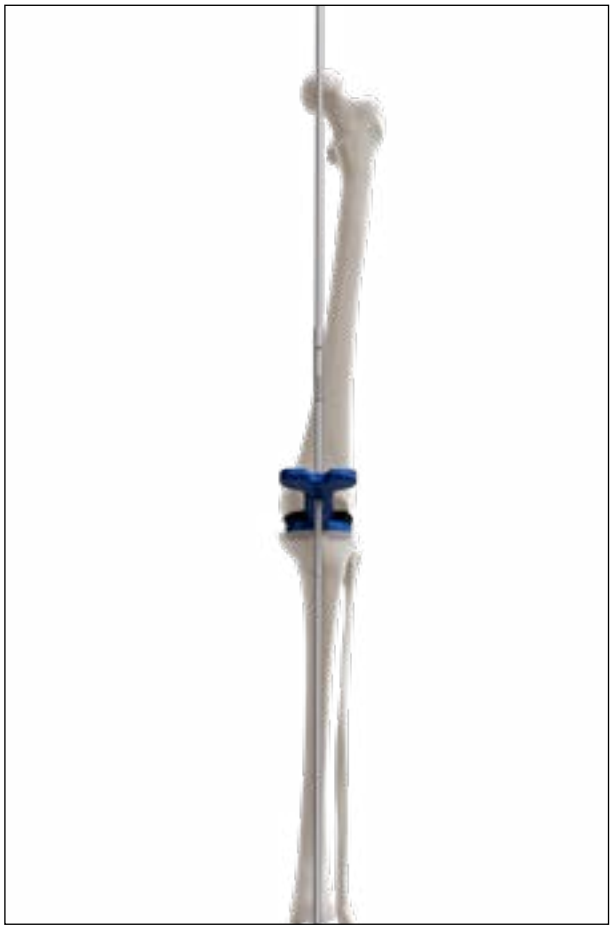


Fig. 47

Connect the Alignment Rod Short with the Alignment Rod Long.

Check the mechanical axis and the medial and lateral stability, as well as the extension ability. If conditions are too tight, a re-osteotomy can be performed at the distal femur or the proximal tibia.

Remove the Spacer Block and the Pins.

Fig. 48

Anterior and posterior femoral osteotomies with the chamfer cuts

Insert the Spacer with the preassembled Drill Guide into the Tensor.

Remark

Maintain the PE thickness on the scale identical as used for verifying the distal osteotomy with the Spacer Block and / or Tensor earlier.

Place the Drill Guide for the 4in1 Cutting Block on the distal femoral resection. Flex the knee to 90° and insert the calibrated Tensor into the joint.

Fig. 49

Modify the flexion until the Drill Guide butts against the surface of the distal femoral osteotomy.

Fig. 50

Use a force of **80 – 100 N** to symmetrically stretch the joint cavity.

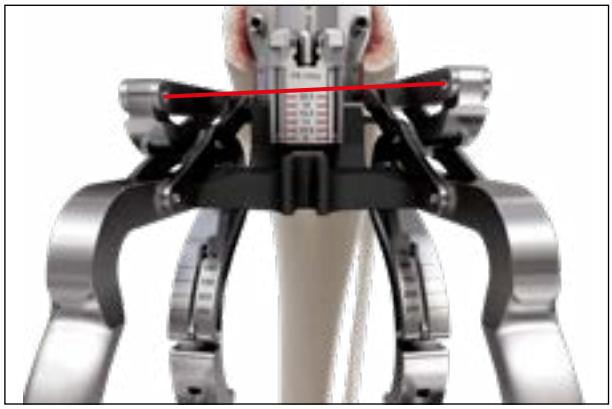


Fig. 51

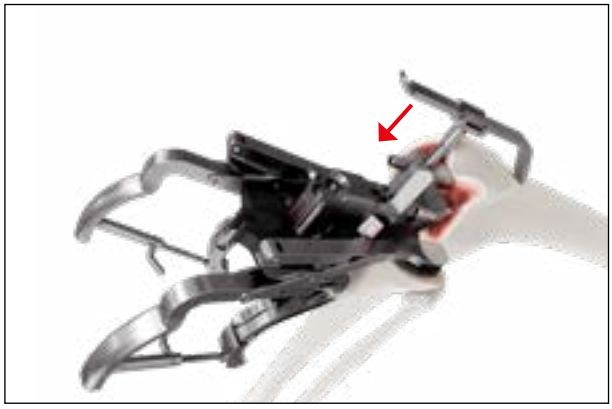


Fig. 52

The external rotation of the femoral component should be 2 – 5°.
Use the difference between the medial and lateral condyles to measure the external rotation. The difference in millimeters corresponds to the rotation in degrees (red line in Fig. 51). As a rule, the resection is < 9 mm laterally, and > 9 mm medially.

Remark

- *In case of larger deviations (e. g. in a dysplastic lateral femoral condyle), confirm the rotation with the trans-epicondylar axis*
- *If the external rotation is < 2°, release the lateral ligamentous structures, and remove the dorsal osteophytes and femorolateral adhesions*
- *If the external rotation is > 5°, release the medial ligament structures and remove the femoral medial osteophytes and adhesions from dorsal*

Insert the Femoral Stylus to determine the size of the femoral prosthesis.

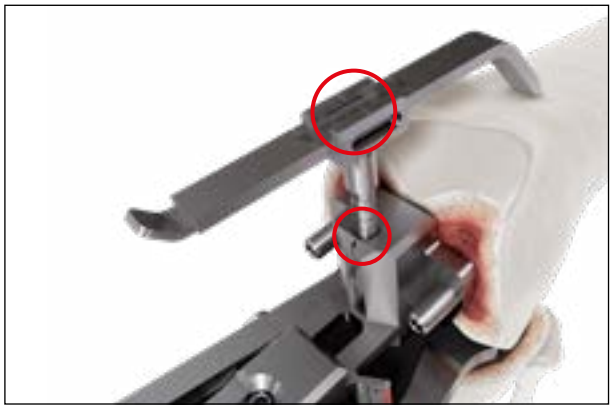


Fig. 53

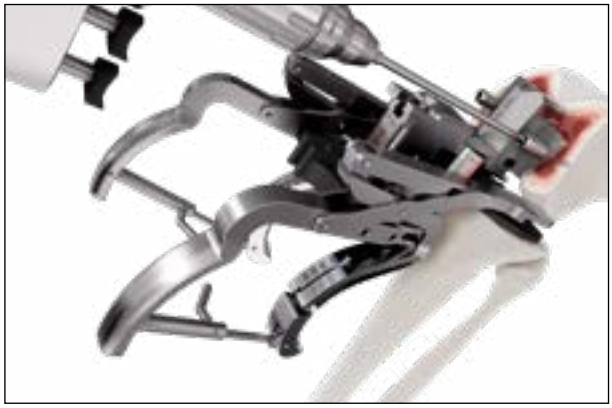


Fig. 54

The femur size is determined with the aid of the Femoral Stylus, which is placed on the elevation of the femoral metaphysis.

The size of the femur is determined using the distal scale and the anterior femoral stylus:
1. Read the marking of the distal scale
2. Adjust the size of the anterior Femoral Stylus to the size of the distal scale
3. The two values must match

Remark
The size of the femur must correspond to the predetermined size of the tibia (chapter 8.1). The sizing rings will give you an estimated femur size.

Verify the spreading force – it should still be **80 to 100 Newton** – and drill the two holes for the 4in1 Cutting Block.

Remove all the instruments.

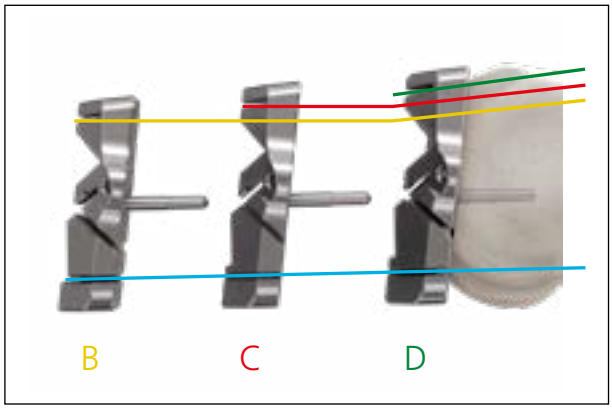


Fig. 55

Femoral 4in1 resection
The difference in AP dimension of the balanSys Femur components is approximately 3 mm per size (with the exception of the difference from size E to size F, which is 4 mm).

The distance between the posterior cut and the pin fixation is the same throughout the entire range of the 4in1 Cutting Guide, thus leaving the flexion gap constant through all sizes.

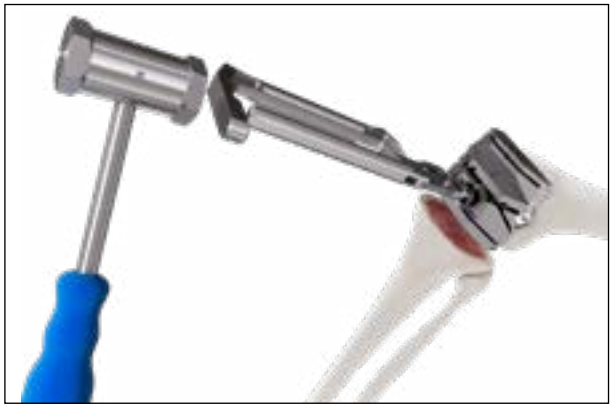


Fig. 56

Place the selected 4in1 Cutting Block in the two predrilled holes using the Pin Pliers, until it abuts flat on the distal osteotomy surface. If needed, you can use a mallet on the Pin Pliers.

The Instrument must be seated fully at the distal cut.

Fig. 57

The flexion space can be checked by using a Spacer Block Tibia placed below the 4in1 Cutting Block. Use the same thickness as for the extension gap balancing, but the Spacer Block Tibia only.

Check the anterior and posterior cuts with the reference plate.

Remark
Overhanging of the anterior shield may have a negative impact to the patella function. Notching of the anterior cortex of the femur can induce fractures. Both must be avoided.

Optional

Fig. 58

A-P adjustment (shifting) of the femoral component with the 4in1 cutting block

The 4in1 Cutting Block can be shifted 1.5 mm in anterior and 1.5 mm in posterior direction.

Pre-drill the corresponding drill holes medially and laterally through the 4in1 Cutting Block.

Use the anterior drill holes for 1.5 mm of shifting in anterior direction.

Use the posterior drill holes for 1.5 mm of shifting in posterior direction.

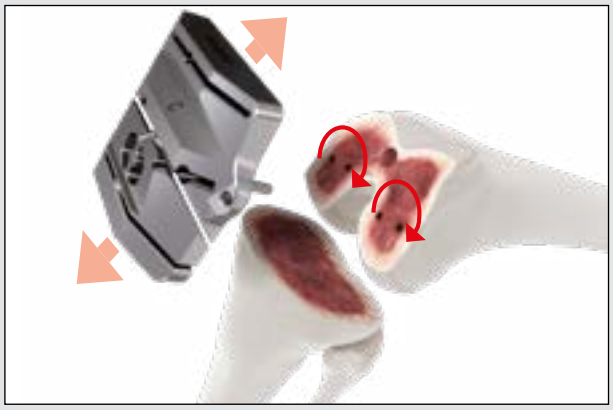


Fig. 59

Using the Pin Pliers, re-position the Cutting Block into the newly pre-drilled holes until it abuts flatly on the distal osteotomy surface. If needed, you can use a mallet on the Pin Pliers.

Check the flexion gap and the cuts again.

The Instrument must be seated fully at the distal cut.

Remark

The positioning of the femoral component is posterior-referenced, which allows good control of the flexion gap. Shifting in anterior direction will loosen the flexion gap. Shifting in posterior direction will tighten the flexion gap.

Fig. 60

Fig. 61

Fig. 62

Secure the Cutting Block with two pins medially and laterally. With a 1.27 mm saw blade, execute the osteotomies through the cutting slots in the following order:

1. Anterior osteotomy
2. Posterior osteotomy
3. Chamfer cuts

Remove the pins and the 4in1 Cutting Block with the Pliers.

Place Retractors to protect soft tissues at the medial and lateral collateral ligaments and the popliteal tendon.

Remark

The posterior osteotomies should be performed with the knee at 90° flexion, as this avoids touching the tibial surface with the saw blade and it moves the posterior soft tissues away from the posterior condyles.

Remark

The posterior cutting slots are open medially and laterally to accommodate complete saw cuts. To reduce the risk of inadvertent saw blade kick out, direct the saw slightly toward the midline before starting the sawing.

Fig. 63

Fig. 64

Removal of all marginal bones and osteophytes, particularly in the region of the posterior condyles.

Fig. 65

Verification of the flexion gap

Insertion of the Spacer Block (Femur & Tibia) into the flexion gap with the Spacer Block Tibia, previously defined in extension (see figure 46).
Evaluation of ligament stability, both medially and laterally.

Remark
It is recommended to re-check the extension gap as well. The removal of the posterior osteophytes may have an influence on stability.

6.4 Femoral preparation and trial reduction

Depending if a CR or PS femoral component is planned, the final preparation of the femur is different. In the following the surgical steps for the CR femoral component are shown. For preparation and implantation of the PS femoral component follow the surgical steps in Appendix 7.1 – PS – Preparation and implantation.

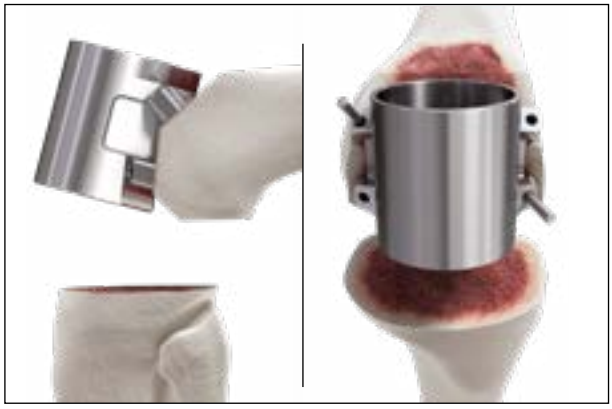


Fig. 66

Femoral preparation
The Trochlea Reamer Guide is placed onto the femur, with the entry for the reamer on the anterior side, and fixated with at least two Pins diagonally.

Remark
The authors recommend placing the Trochlea Reamer Guide slightly laterally for optimized patella tracking. The bone resection allows correction of the M-L position of the femoral component by up to 1.5 mm. Avoid overhang of the final component.

Fig. 67

Connect the Trochlea Reamer to a power drill.

The trochlea is chamfered by pushing the Trochlea Reamer to the stop. Do not start reaming before the central guide pin is engaged.

Remove all the instruments.

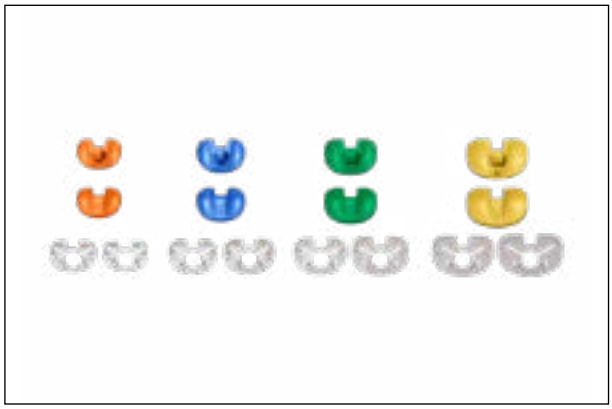


Fig. 68

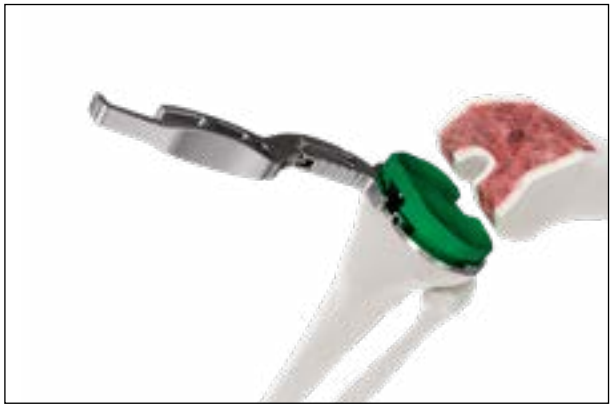


Fig. 69

Fig. 70

Trial reduction
There are 4 sizes of Trial Inlays available. Use the Trial Inlay that fits the appropriate Tibial Template.
The Tibial Templates and Trial Inlays are marked with the following symbols:

Combine only Tibial Template and Trial Inlays with the same symbols.

Place the selected Tibial Template and Trial Inlay with the Holder Tibial Template onto the resected tibia.

It must be ensured that the selected Tibial Template provides the desired tibial coverage and takes the selected femur size into account.

Remark
The femur sizes that are compatible with the selected Tibia sizes are marked on the Tibial Templates.

Remark
If desired, the Tibial Template can be fixated with two short Pins with Head before the Trial Inlay is inserted.

Insert the selected Trial Femur with the Femur Holder.

To mount the Trial Femur onto the Femur Holder, rotate the handle counter-clockwise. Open the clamps and attach the Trial Femur in the direction indicated on the instrument. Secure the Trial Femur by rotating the handle clockwise until it is tight.

Use the Femoral Impactor to drive the trial femur into the final position. Application of excessive force to the Femur Holder can cause damage to the instrument.

Fig. 71

Drive the Trial Femur in with the Femoral Impactor and a mallet until it is completely seated on the bone.

Avoid flexion position of the Femur Component.

Fig. 72

Repositioning of the extension apparatus.
With all provisional components in place, the knee is tested at 0° -30° -60° -90° at least for:

- range of motion
- stability
- PCL stability
- kinematics and mobility
- mechanical axis
- tibial overhang
- implant rotation
- patella tracking

Fig. 73

To remember the correct position of the tibial component, mark the position of the Tibial Template anterior with the electrosurgical knife on the tibia. The Tibial Template can be fixed with short headed pins.

Remark

If the patella is to be replaced, it is recommended to perform the patellar osteotomy and positioning the patellar trial component before the function of the knee is tested.

Fig. 74

Drill the two holes for the femoral anchor pins with the 6 mm Drill Bit.

Remark
Scratches on trial femurs can lead to damage of the trial inlays and must be replaced.

Fig. 75

Removal of the Trial Inlay and Trial Femur.

The Trial Inlay can be lifted with the handle end of the Holder Tibial Template. For the Trial Femur use the Femur Extractor.

Fig. 76

Final preparation tibia
The Tibial Template is fixed with two headed Pins.

Ensure that your markings on the tibial head match those on the Tibial Template.

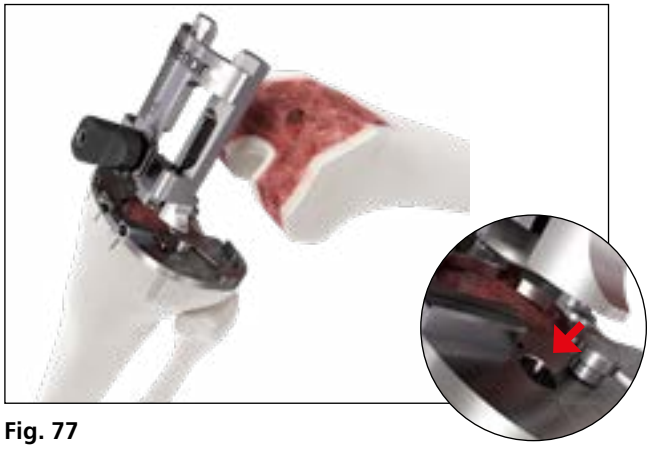


Fig. 77

Position of the Chisel Centering Guide.

Seat the holdings into the oval holes in the Tibial Template.

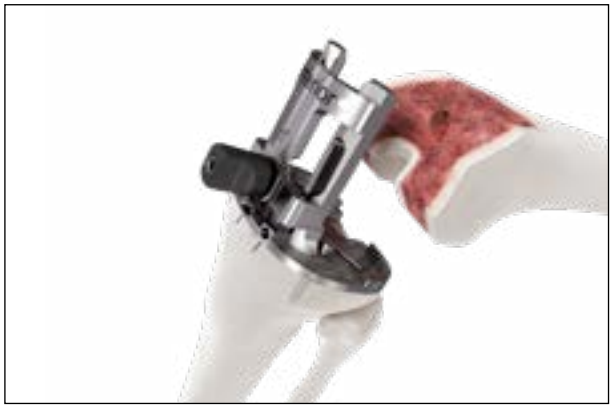


Fig. 78

For positioning of the Chisel Centering Guide, the looking mechanism at the anterior side must be in the vertical open position (⚷).

Fig. 79

To fix the Chisel Centering Guide on the Tibial Template turn the knob into the horizontal closed position (🔒).

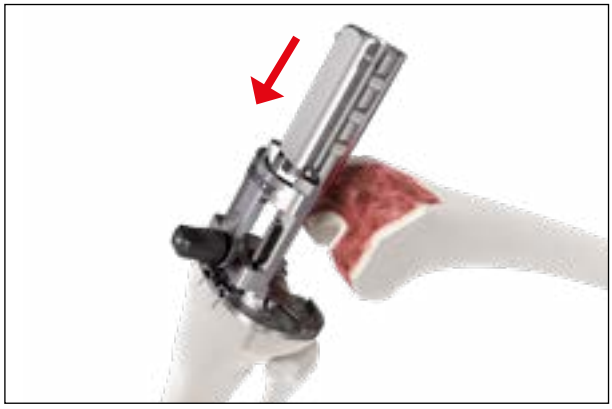


Fig. 80

Introduce the Attachment Milling Guide into the Tibial Centering Guide.

Fig. 81

Connect the Reamer to a power drill.

Insert the Reamer Drill into the Attachment Milling Guide before starting drilling. Drill out the tibial medullary space.

The depth must correspond to the appropriate length of the anchorage stem of the predetermined balanSys PS Tibial Plateau. The size markings on the Reamer must level the top edge of the Attachment Milling Guide.

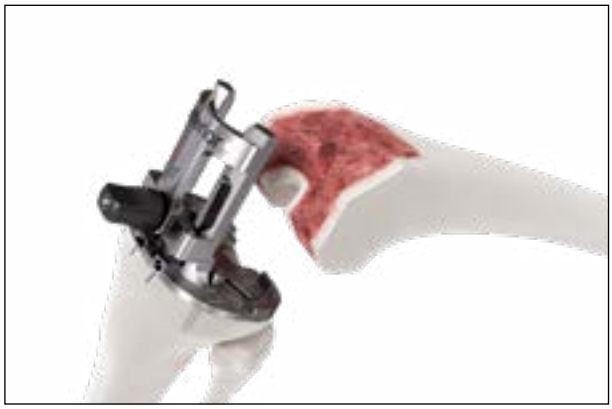


Fig. 82

Remove Reamer and Attachment Milling Guide.

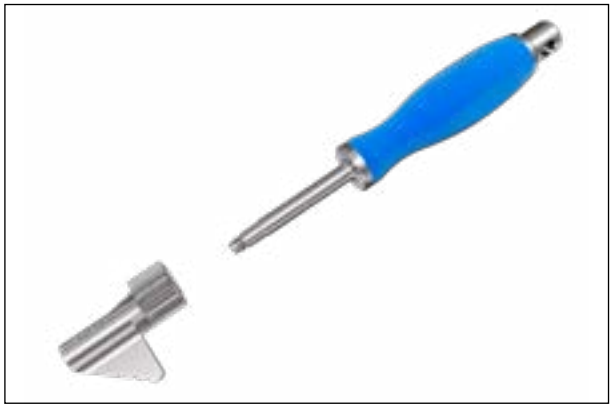


Fig. 83

Mount the Fin Chisel to the Handle for Tibia Chisel.

There are two sizes of the Fin Chisel. The smaller one can be used for tibia sizes 59 to 70 and the larger one for all tibia sizes.

Insert the Fin Chisel assembly into the Chisel Centering Guide.

Take care to protect the collateral ligaments and the poplitea.

Impact the Fin Chisel until the instrument depth stops rest on the Tibial Template. The depths of the fins are defined by the size of the Tibial Template.

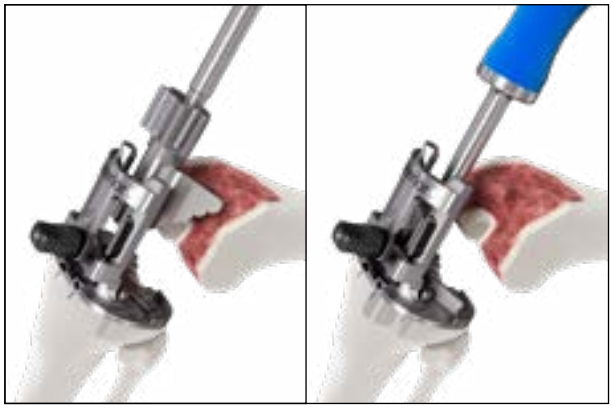


Fig. 84

To prevent fracture on the tibia, hammer down the Fin Chisel with care. If the bone is medially or laterally sclerotic, it may be helpful to prepare the fin slot initially with an oscillating saw or high-speed burr.

Remove all remaining instruments.

Optional

Fig. 85

Test rotating platform (RP)
For testing the Rotation Platform implant, connect the Pin Pliers to the RP Trial Tibial Plateau.

Insert the RP Trial Tibial Plateau into the prepared tibial plateau until it is fully seated.

Fig. 86

Insert the determined RP PE Trial Inlay.

It must be ensured that the selected RP PE Trial Inlay takes the selected femur size into account.

Insert the determined Trial Femur with the Femur Holder.

To mount the Trial Femur onto the Femur Holder, rotate the handle counter-clockwise. Open the clamps and attach the Trial Femur in the direction indicated on the instrument. Secure the Trial Femur by rotating the handle clockwise until it is tight.

Fig. 87

Remark
Scratches on trial femurs can lead to damage of the trial inlays. Damaged trial instruments must be replaced.

Use the Femoral Impactor to drive the trial femur into the final position. Application of excessive force to the Femur Holder can cause damage to the instrument.

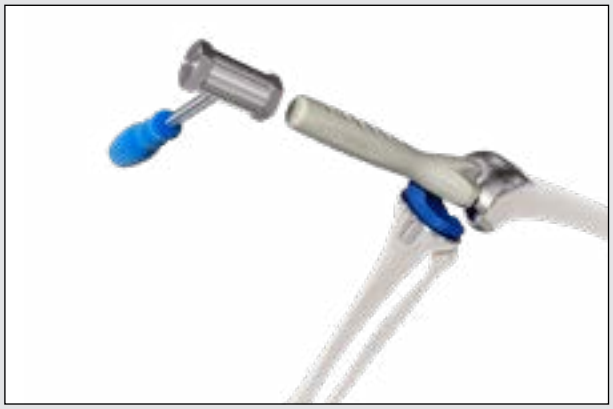


Fig. 88

Drive the Trial Femur in with the Femoral Impactor and a mallet until it is completely seated on the bone.

Avoid flexion position of the Femur Component.

Fig. 89

Repositioning of the extension apparatus.
With all provisional components in place, the knee is tested at 0° -30° -60° -90° at least for:

- range of motion
- stability
- PCL stability
- kinematics and mobility
- mechanical axis
- tibial overhang
- implant rotation
- patella tracking

If not performed in the step «Trial Reduction» (figure 74), drill the two holes for the femoral anchor pins with the 6 mm Drill Bit.

Removal of the Trial Femur and Trial Inlay.

6.5 Implantation definitive implants

Fig. 90

In sclerotic bone, short drill holes can be used to improve cement interdigitation.

Clean the osteotomy surfaces thoroughly (e. g. by means of pulse lavage).

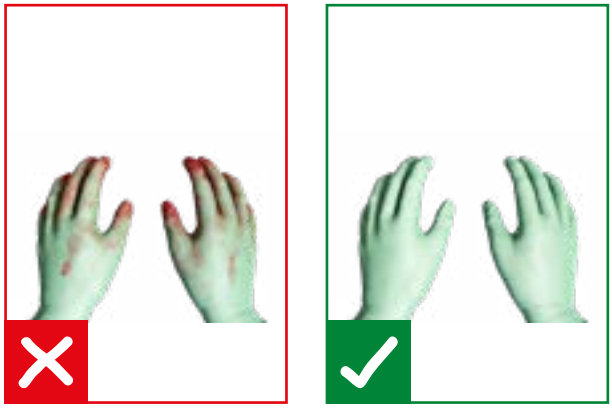


Fig. 91

Always put on fresh gloves before unpacking the final implants and starting the cement preparation. Use clean and dry gloves for cementing.

Fig. 92

Tibia
After the implants have been selected, one last check is recommended to ensure that the femoral, tibial, and PE inlay components match.

Attach the Positioner Tibia Plateau to the selected Tibial Plateau.

For fixed Tibial Plateau hook the instrument posteriorly under the rim; then it is fixed by turning the anterior knob clockwise, while the instrument sits flat on the Tibial Plateau surface.

Positioner Tibial Plateau RP
For RP Tibial Plateau turn the anterior knob counterclockwise up to the stop. Attach the Positioner Tibial Plateau RP to the selected Tibial Plateau. It is fixed by turning the anterior knob clockwise, while the instrument sits flat on the Tibial Plateau surface.

Fig. 93

Fig. 94

Mix the bone cement. Apply a thick layer of cement to the bone or the implant.

The cement should be in the early dough phase when applied. Follow the instructions for the specific bone cement.

For secure fixation of the Tibial Plateau in the bone, it is necessary that the tibial backside be fully cemented in the dough phase of the cement. The stem and fins may be cemented or not.

Failure to fully cement and pressurize the Tibial Plateau may lead to early loosening of the prosthesis. Furthermore, cementing in advanced stages of polymerization can lead to early loosening of the prosthesis.

Remark
Excessive cement extrusion should be avoided, especially in the posterior part of the tibia. Cement that is extruded posteriorly is difficult to remove.

Impact the Tibial Plateau with a mallet and the Tibial Impactor until the Tibial Plateau is fully seated on the resected bone. Then pressurize the Tibial Plateau with the Tibial Impactor until the cement cured.

Use a Curette to remove all extruded bone cement. Take care to inspect the posterior aspect for cement residues.

Remark
Avoid movement of the components while the cement is curing.

Fig. 95

The Femur Impactor
- Driving in the Femur Component
- Extra push for seating the anterior shield
- Insertion of the Inlay

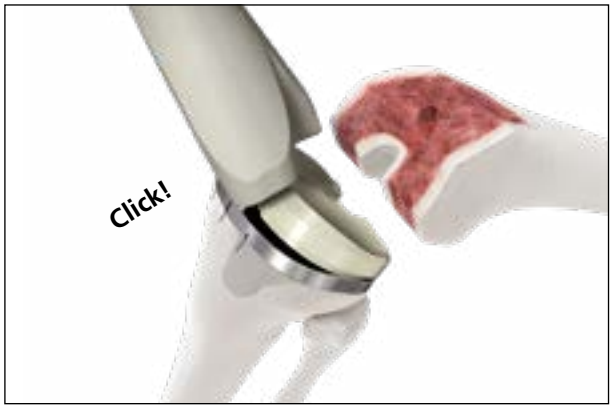


Fig. 96

Femur and Inlay CR and UC
Insert the final CR or UC Inlay of determined size and thickness.

The Inlay is first hooked under the posterior rim and then engaged at the anterior rim.

Fig. 97

Mount the Femur onto the Femur Holder. Rotate the handle counter-clockwise, open the clamps, and attach the Femur in the direction indicated on the instrument. Secure the Femur by rotating the handle clockwise until it is tight.

Insert the selected CR Femur Component (cemented or uncemented) with the Femur Holder. The knee must be in 90° flexion to avoid impingement with the Inlay. When using a cemented Femur, apply a thick layer of cement to the implant.

Remark

The friction on the ventral side is greater than dorsally, particularly when using an uncemented implant. Push the holder ventrad to avoid flexion position of the femoral component. Optionally, the Femoral Impactor can be placed at the notch to correct the femoral component.

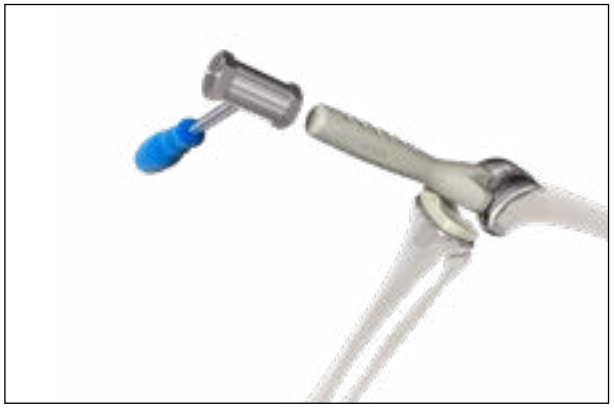


Fig. 98

Drive in the femoral component until it protrudes no more than 1 – 2 mm, then remove the Femur Holder. Use the Femoral Impactor and a mallet to drive in the Femur Component until it is completely seated on the bone. Place the instrument in a slightly posterior position to avoid flexion position of the femoral component.

Fig. 99

Use a curette to remove all extruded bone cement. Take care to inspect the notch and the posterior aspect for cement residues.

Use only the Femoral Impactor to drive the trial femur into the final position. Application of excessive force to the Femur Holder can damage the instrument.

Fig. 100

Optional
If desired, Trial Inlays can be used on the final Tibial Plateau to double-check function and stability of the knee with the planned inlay thickness.

The Trial inlays match two tibia sizes each. Use the Adapter Trial Inlay for the respectively larger tibia sizes to achieve a stable situation.

Fig. 101

The leg should be in extension during hardening of the bone cement.

Avoid hyperextension during the curing of the bone cement. Hyperextension leads to high pressure anteriorly, which may result in tilting of the tibial implant.

6.6 Rotating Platform – Femur and Inlay

Fig. 102

For insertion of the Rotating Platform inlay (RP), insert the balanSys Bolt for the RP Tibial Plateau into the hole in the Tibial Plateau.

Remark
Ensure that there are no foreign bodies in the receiving hole of the Tibial Plateau.

Remark
The bolt is packed with the Tibial Plateau.

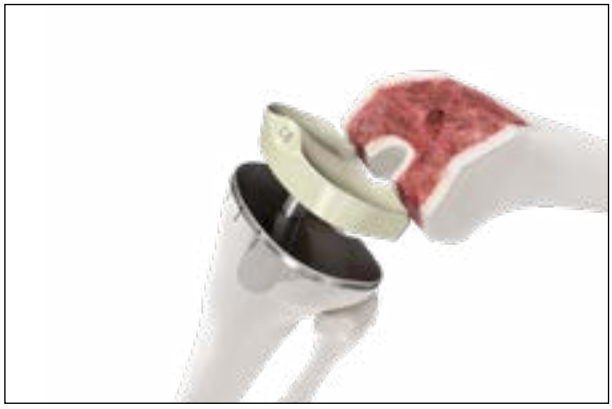


Fig. 103

Insertion of the balanSys RP PE Inlay above the balanSys Bolt for the RP Tibial Plateau.

Mount the Femur onto the Femur Holder. Rotate the handle counter-clockwise, open the clamps, and attach the Femur in the direction indicated on the instrument. Secure the Femur by rotating the handle clockwise until it is tight.

Insert the selected CR Femur Component (cemented or uncemented) with the Femur Holder. The knee must be in 90° flexion to avoid impingement with the inlay. When using a cemented Femur, apply a thick layer of cement to the implant.

Fig. 104

Remark
The friction on the ventral side is greater than dorsally, particularly when using an uncemented implant. Push the holder ventrad to avoid flexion position of the femoral component. Optionally, the Femoral Impactor can be placed at the notch to correct the femoral component.

Fig. 105

Drive in the femoral component until it protrudes no more than 1 – 2 mm, then remove the Femur Holder. Use the Femoral Impactor and a mallet to drive in the Femur Component until it is completely seated on the bone. Place the instrument in a slightly posterior position to avoid flexion position of the femoral component.

Fig. 106

Use a curette to remove all extruded bone cement. Take care to inspect the notch and the posterior aspect for cement residues.

Use only the Femoral Impactor to drive the trial femur into the final position. Application of excessive force to the Femur Holder can damage the instrument.

Fig. 107

The leg should be in extension during the curing of the bone cement.

Avoid hyperextension during the curing of the bone cement. Hyperextension leads to high pressure anteriorly, which may result in tilting of the tibial implant.

7. Appendix

7.1 PS – Preparation and implantation

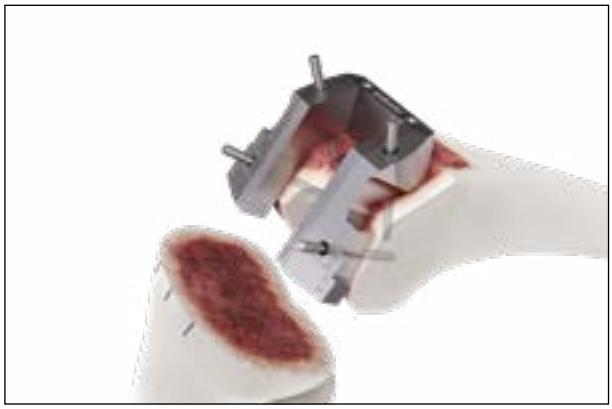


Fig. 108

Femoral preparation
A Femur Box Cutting Guide of appropriate size is placed onto the femur. It must rest flush onto the resected surfaces of the posterior and distal femur.

The Cutting Guide must be secured to the femur with four Pins diagonally. The posterior Pins must be introduced first.

The sizing guides medially and laterally show the widest M-L dimension of the marked femur size.

Remark
The authors recommend placing the Femur Box Cutting Guide slightly laterally for optimized patella tracking. Avoid overhang of the final component.

Fig. 109

A reciprocating saw should be used and guided along the walls of the open box to cut the medial and lateral sides and the base of the intercondylar notch.

Use pins in the two anterior pinholes as stops for the saw.

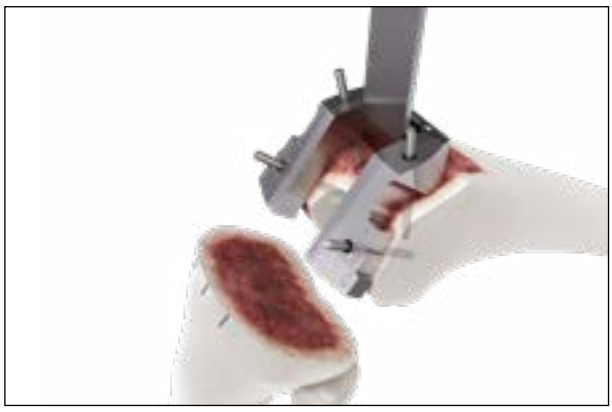


Fig. 110

Using a saw, also the base of the intercondylar notch should be cut out. Then the block is mobilized with the balanSys chisel A–F or XS–S, respectively.

Fig. 111

After the cutting, the Femur Box Cutting Guide and the Pins are removed in the following order:

1. Pins
2. Cutting guide
3. Resected bone block

Fig. 112

Trial reduction
Insert the selected Trial Femur with the Femur Holder.

To mount the Trial Femur onto the Femur Holder, rotate the handle counter-clockwise. Open the clamps and attach the Trial Femur in the direction indicated on the instrument. Secure the Trial Femur by rotating the handle clockwise until it is tight.

Use the Femoral Impactor to drive the trial femur into the final position. Application of excessive force to the Femur Holder can cause damage to the instrument.

Fig. 113

Drive in the Trial Femur with the Femoral Impactor and a mallet until it is completely seated on the bone.

Avoid flexion position of the Femur Component.

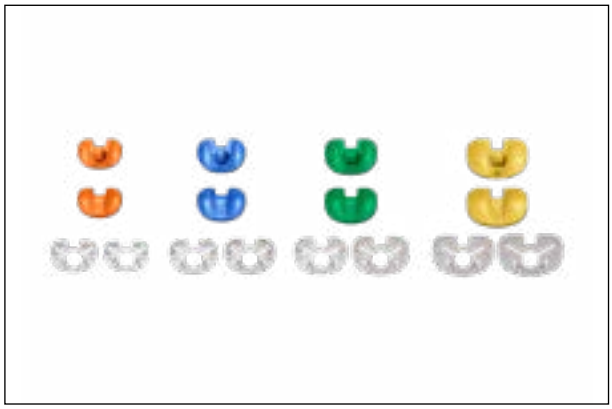


Fig. 114

There are 4 sizes of Trial Inlays available. Use the Trial Inlay that fits the appropriate Tibial Template.
The Tibial Templates and Trial Inlays are marked with the following symbols:

Combine only Tibial Template and Trial Inlays with the same symbols.

Fig. 115

Once the femur is impacted, the tibia must be subluxated anteriorly with a Bone Retractor to position the Tibial Template and the PS Trial Inlay.

Insert the selected Tibial Template and the PS Trial Inlay with the Holder Tibial Template onto the resected tibia.

It must be ensured that the selected template provides the desired tibial coverage and takes the selected femur size into account.

Remark
The femur sizes that are compatible with the chosen Tibia are marked on the Tibial Templates.

Remark
If desired, the Tibial Template can be fixated with two short Pins with Head before the Trial Inlay is inserted.

Fig. 116

Repositioning of the extension apparatus.

With all provisional components in place, the knee is tested at 0° -30° -60° -90° at least for:

- range of motion
- stability
- kinematics and mobility
- mechanical axis
- tibial overhang
- implant rotation
- patella tracking

Fig. 117

To remember the correct position of the tibial component mark the position of the Tibial Template anterior with the electrosurgical knife on the tibia. The Tibial Template can be fixed with short headed pins.

Remark

If the patella is to be replaced, it is recommended to perform the patellar osteotomy and positioning the patellar trial component before the function of the knee is tested.

Fig. 118

Removal of the Trial Inlay and Trial Femur.

The Trial Inlay can be lifted with the handle end of the Holder Tibial Template. For the Trial Femur use the Femur Extractor 71.34.0788.

Remark

Scratches on trial femurs can lead to damage of the trial inlays and must be replaced.

Fig. 119

Final preparation tibia
The Tibial Template is fixed with two headed Pins.

Ensure that your markings on the tibial head match those on the Tibial Template.

Fig. 120

Position of the Chisel Centering Guide.

Seat the holdings into the oval holes in the Tibial Template.

Fig. 121

For positioning of the Chisel Centering Guide, the looking mechanism at the anterior side must be in the vertical open position (⛎).

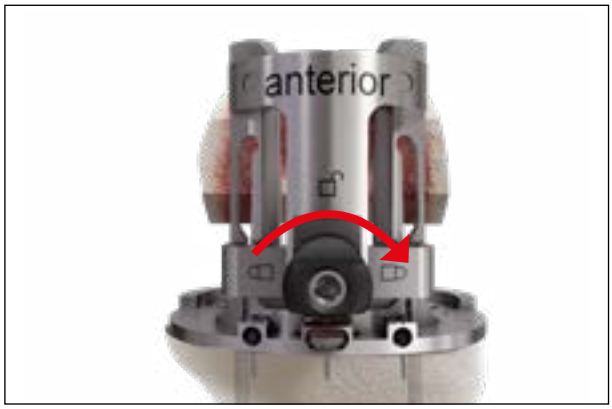


Fig. 122

To fix the Chisel Centering Guide on the Tibial Template turn the knob into the horizontal closed position (🔒).

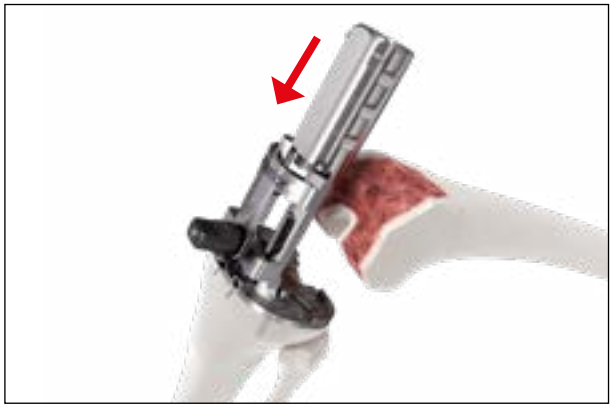


Fig. 123

Introduce the Attachment Milling Guide into the Tibial Centering Guide.

Fig. 124

Connect the Reamer to a power drill.

Insert the Reamer Drill into the Attachment Milling Guide before starting drilling. Drill out the tibial medullary space.

The depth must correspond to the appropriate length of the anchorage stem of the predetermined balanSys PS Tibial Plateau. The size markings on the Reamer must level the top edge of the Attachment Milling Guide.

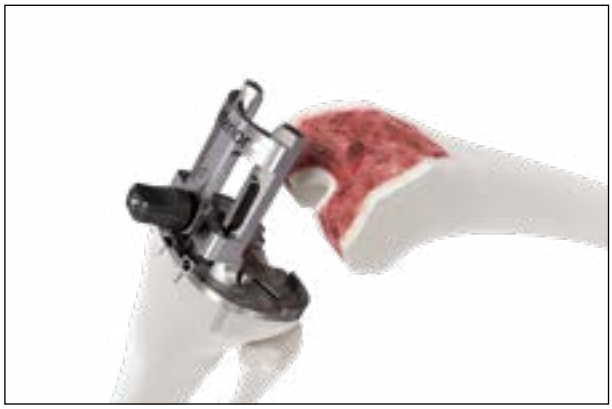


Fig. 125

Remove Reamer and Attachment Milling Guide.

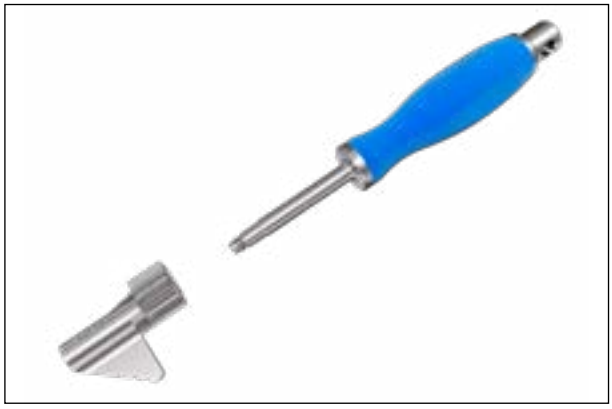


Fig. 126

Mount the Fin Chisel to the Handle for Tibia Chisel.

There are two sizes of the Fin Chisel. The smaller one can be used for tibia sizes 59 to 70 and the larger one for all tibia sizes.

Insert the Fin Chisel assembly into the Chisel Centering Guide.

Take care to protect the collateral ligaments and the poplitea.

Impact the Fin Chisel until the instrument depth stops rest on the Tibial Template. The depths of the fins are defined by the size of the Tibial Template.

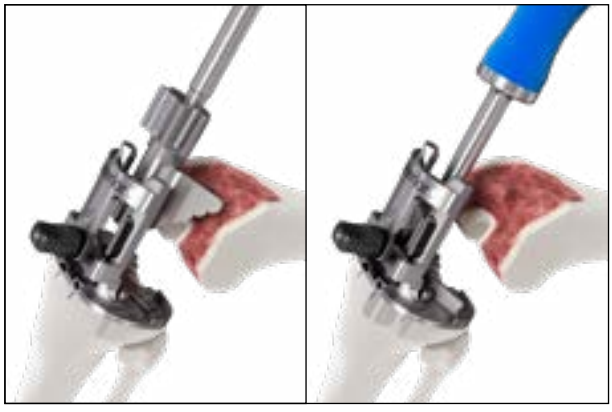


Fig. 127

To prevent fracture on the tibia, hammer down the Fin Chisel with care. If the bone is medially or laterally sclerotic, it may be helpful to prepare the fin slot initially with an oscillating saw or high-speed burr.

Remove all remaining instruments.

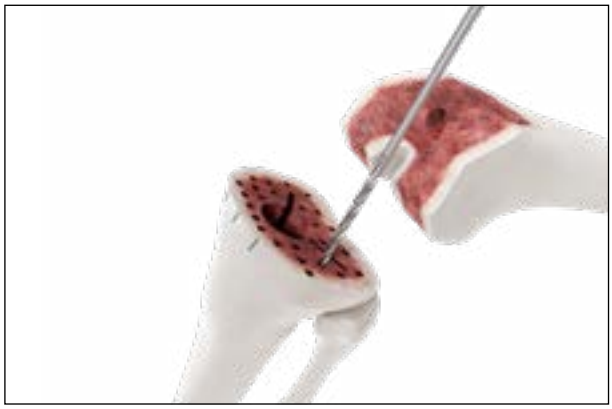


Fig. 128

In sclerotic bone, short drill holes can be used to improve cement interdigitation.

Clean the osteotomy surfaces thoroughly (e. g. by means of pulse lavage).

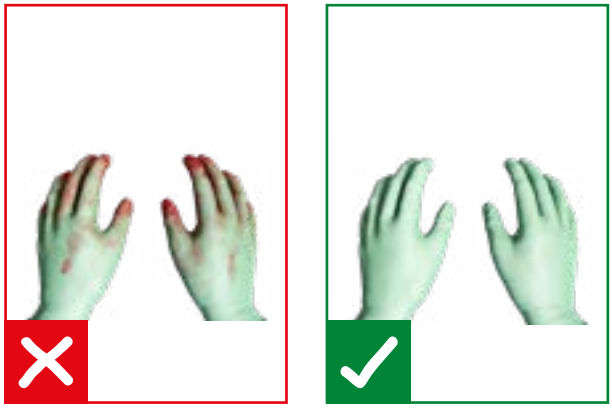


Fig. 129

Always put on fresh gloves before unpacking the final implants and starting the cement preparation. Use clean and dry gloves for cementing.

Fig. 130

Tibia

After the implants have been selected, one last check is recommended to ensure that the femoral, tibial, and PE inlay components match.

Attach the Positioner Tibia Plateau to the selected Tibial Plateau.

For fixed Tibial Plateau hook the instrument posteriorly under the rim; then it is fixed by turning the anterior knob clockwise, while the instrument sits flat on the Tibial Plateau surface.

Fig. 131

Mix the bone cement. Apply a thick layer of cement to the bone or the implant.

The cement should be in the early dough phase when applied. Follow the instructions for the specific bone cement.

For secure fixation of the Tibial Plateau in the bone, it is necessary that the tibial backside be fully cemented in the dough phase of the cement. The stem and fins may be cemented or not.

Failure to fully cement and pressurize the Tibial Plateau may lead to early loosening of the prosthesis. Furthermore, cementing in advanced stages of polymerization can lead to early loosening of the prosthesis.

Remark
Excessive cement extrusion should be avoided, especially in the posterior part of the tibia. Cement that is extruded posteriorly is difficult to remove.

Fig. 132

Impact the Tibial Plateau with a mallet and the Tibial Impactor until the Tibial Plateau is fully seated on the resected bone. Then pressurize the Tibial Plateau with the Tibial Impactor until the cement cured.

Use a Curette to remove all extruded bone cement. Take care to inspect the posterior aspect for cement residues.

Remark
Avoid movement of the components while the cement is curing.

Fig. 133

The Femur Impactor
- Driving in the Femur Component
- Extra push for seating the anterior shield
- Insertion of the Inlay

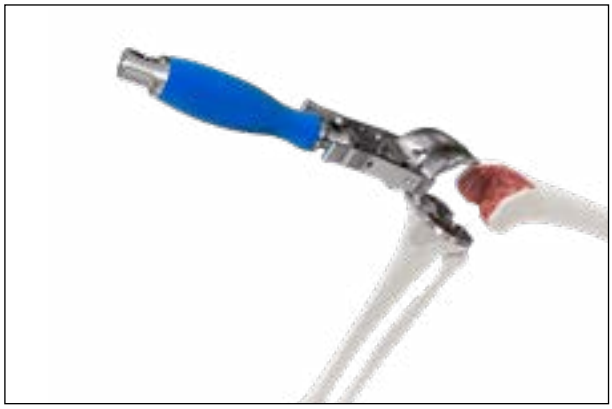


Fig. 134

Femoral implant and inlay
Mount the Femur onto the Femur Holder. Rotate the handle counter-clockwise, open the clamps, and attach the Femur in the direction indicated on the instrument. Secure the Femur by rotating the handle clockwise until it is tight.

Insert the selected PS Femur Component (cemented or uncemented) using the Femur Holder. The knee must be in 90° flexion to avoid impingement with the tibia. If using a cemented Femur, apply a thick layer of cement to the implant.

Remark
The friction on the ventral side is greater than dorsally. Push the holder ventrad to avoid flexion position of the femoral component. Optionally, the Femoral Impactor can be placed at the notch to correct the femoral component.

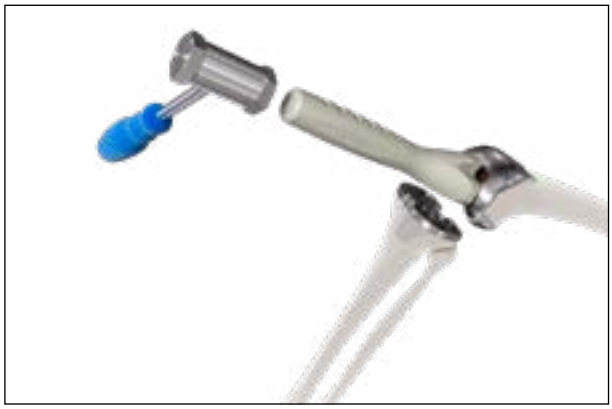


Fig. 135

Drive in the femoral component until it protrudes no more than 1 – 2 mm, then remove the Femur Holder. Use the Femoral Impactor and a mallet to drive in the Femur Component until it is completely seated on the bone. Place the instrument in a slightly posterior position to avoid flexion position of the femoral component.

Use a curette to remove all extruded bone cement. Take care to inspect the notch and the posterior aspect for cement residues.

Fig. 136

Use only the Femoral Impactor to drive the trial femur into the final position. Application of excessive force to the Femur Holder can damage the instrument.

Fig. 137

Insert the final PS Inlay of the determined size and thickness.

The Inlay is first hooked in under the posterior rim and then engaged at the anterior rim.

Fig. 138

Optional
If desired, Trial Inlays can be used on the final Tibial Plateau to double-check function and stability of the knee with the planned inlay thickness.

The Trial inlays match for two tibia sizes each. Use the Adapter Trial Inlay for the respective larger tibia sizes to achieve stable situation.

Fig. 139

The leg should be in extension during the curing of the bone cement.

Avoid hyperextension during the curing of the bone cement. Hyperextension leads to high pressure anteriorly, which may result in tilting of the tibial implant.

7. Appendix

7.2 Intramedullary Tibia Alignment

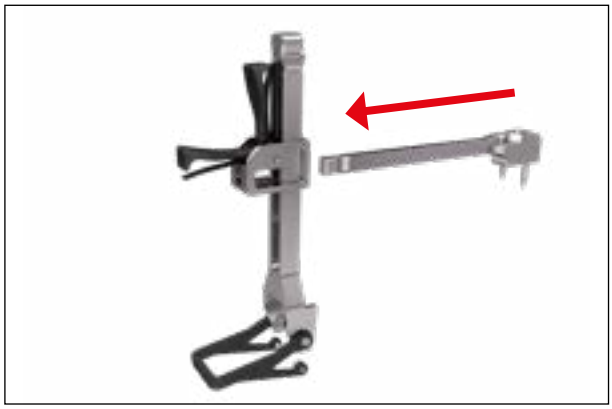


Fig. 140

Connect the Eminentia Shackle (optional Eminentia Shackle rotating) with the Intramedullary Shackle. Position instruments at «start position».

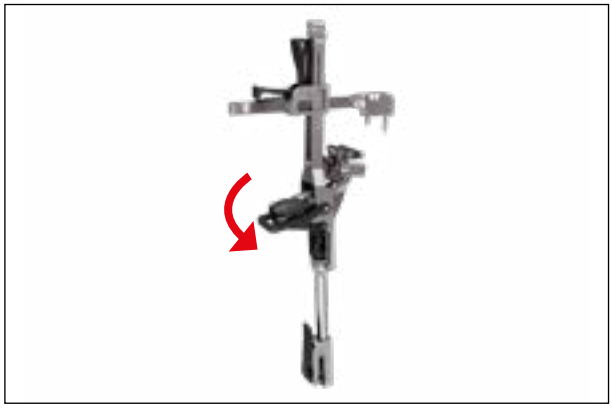


Fig. 141

Assemble the TRS Cutting Guide to the TRS Proximal with the balanSys Screwdriver. The TRS Cutting Guide can be shifted to the left and to the right, according to the side of surgery and the approach.

Place the Intramedullary Shackle onto the TRS Proximal. Push the looking mechanism to fix the two parts together.

Fig. 142

Open the medullary canal with the balanSys drill bit 8.5 / 11 mm.

The entry point is determined by analyzing the long-leg radiography. In general, it is medial to the eminentia intercondylaris.

Insert the drill fully down to the end of the thread. The step feature of the drill increases the diameter of the hole by 1.5 mm to allow depressurization of the canal when the Intramedullary Rod is inserted.

Remark

If the entry hole is out of the anatomical axis, the Intramedullary Rod will be misguided. This may cause malangulation of the tibial component.

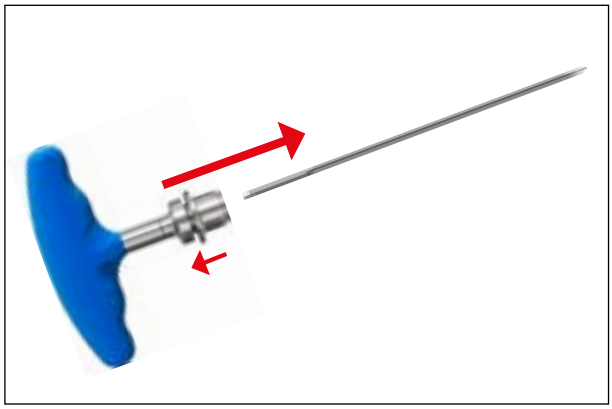


Fig. 143

Connect the Handle to the Intramedullary Rod.

Remark
Pull the locking ring for connecting and disconnecting the handle.

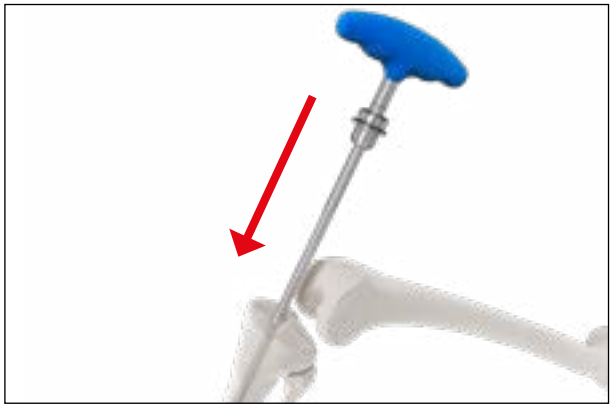


Fig. 144

Insert the Intramedullary Rod slowly and fully into the tibia to ensure the most accurate replication of the anatomical axis.

Remove the Handle.

The Intramedullary Rod should not have any contact to the cortical bone at the entry point to avoid misguiding. If it has, remove the Intramedullary Rod and widen the entry hole with the drill.

Fig. 145

Slide the pre-mounted equipment onto the Intramedullary Rod.

Distal alignment of the TRS to the second metatarsophalangeal bone, proximally to the transition of the medial to the middle third of the tibial tuberosity.

Impaction of the Intramedullary Shackle.

Remark
The zero-position of the TRS Cutting Guide is 90° to the Intramedullary Rod.

Fig. 146a

The scale of the resection level must show «0».

With the gliding mechanism, set the lengths of the TRS so that the cutting slot is approximately at the level of the Tibial Plateau.

For proximal-distal adjustment press the lower lever and for anterior-posterior adjustment the upper lever.

Optional

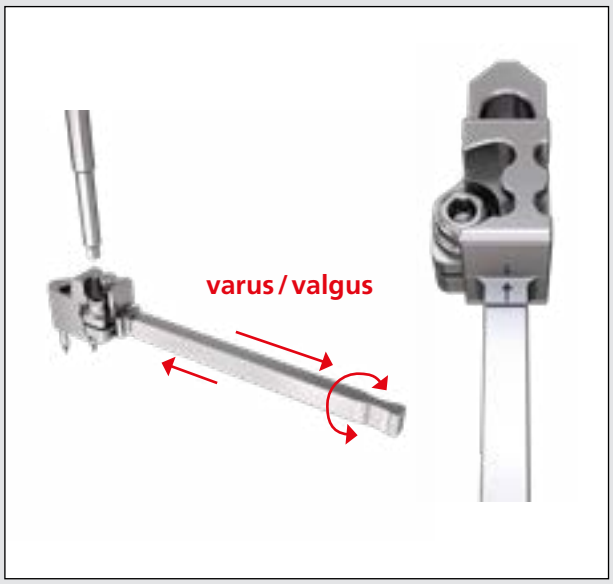


Fig. 146b

balanSys TRS Eminentia Shackle rotating
The TRS Eminentia Shackle rotating can be used for varus/valgus adjustment with intramedullary alignment.

The angle of the TRS Eminentia Shackle rotating can be adjusted according to the anatomy and fixed with the balanSys Screwdriver.

If no angle is to be set (0°), the TRS Eminentia Shackle rotating must be arrested and the markings on the top side in line.

Fig. 147

Posterior slope

Use the slope adjustment dial to set the posterior slope according to the anatomy (reference plate parallel to the best-preserved tibial joint surface).

Remark
The authors recommend a posterior slope of 7° for a PCL-retaining implant and up to 5° for a PCL substituting implant.

Fig. 148

Determine the original joint line at the level of the best-preserved tibial joint surface. To that end, attach the Tibial Stylus through the cutting slot of the TRS Cutting Guide and use the gliding mechanism to move the cutting guide distad or proximad. The Tibial Stylus must touch the best-preserved tibial joint surface.

Affix the TRS proximally with at least two straight and one oblique pin. Predrill the holes with the 3.2 mm drill.

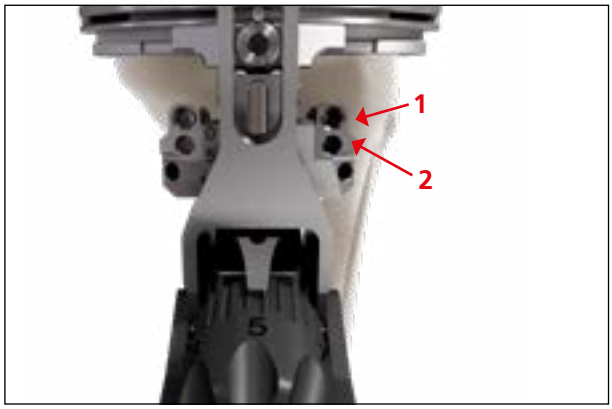


Fig. 149

There are two options to fixate the TRS.
1. Proximal holes (chamfered)
2. Distal holes

Generally, the proximal holes should be used for fixation, because the tibial bone widens proximally. The cutting guide can then be distalized by up to 10 mm.

For a planned resection of more than 10 mm, the distal holes should be used. After placement of the pins, the TRS with cutting guide can then be re-positioned to the proximal holes. This procedure will allow resection of 10 – 15 mm. Note that one must add 5 mm to the readable scale.

Fig. 150

Drill and pins may pass only through the anterior cortical bone and must not perforate the posterior cortical bone, in order to avoid injuries to dorsal vessels and nerves. It is recommended to drill just past the anterior dense bone and drive in the pin with a mallet until it touches the posterior cortex.

The stability of the PCL must be taken into account, especially in case of larger resections.

Fig. 151

After fixation of the TRS Distal unlock intramedullary shackle from TRS and remove the Intramedullary Rod and the Intramedullary Shackle.

Be careful not to interfere with the fixation pins.

Set the resection height by moving the TRS Cutting Guide 6 – 8 mm distally by turning the axial wheel. The minimum resection height depends on the quality of cartilage in the area, where the joint line was determined.

Check the adjusted osteotomy level with the reference plate, before resection.

Fig. 152

Using a 1.27 mm saw blade, resect the tibia through the cutting slot.

Remove the instruments. At least one straight pin should be kept in place for the option of a later additional resection.

Remark
Place bone retractors to protect the ligaments during tibial resection.

Remark
To reduce heat and the risk of osteonecrosis, it is recommended to cool the saw blades during sawing.

Fig. 153

Fig. 154

Determine the tibial prosthesis size with the Tibial Template. Take the rotational alignment into account, to restore the flexion plane of the knee.

The rotation of the Tibial Template is typically centered on the junction between the medial and central third of the tibial tubercle.

Provide maximum coverage of the osteotomy surface without overhang of the Tibial Template.

Fig. 155

Remark

Furthermore, if a Rotation Platform (RP) implant is being planned, the rotational alignment of the tibial implant must be considered. The Rotation Platform allows a rotational variability of not more than approximately 5° deviation.

Fig. 156

Use the Alignment Rod to check the axis of the cutting plane.

7. Appendix

7.3 Optional 2° recut

Fig. 157

If the performed tibial or femoral resection needs to be corrected, an optional 2° recut can be done.

Fig. 158 Tibia

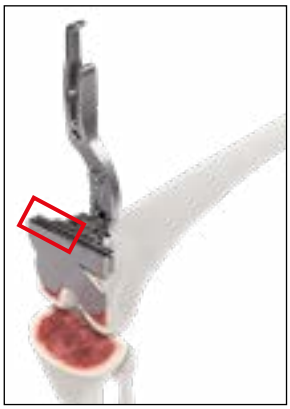


Fig. 159 Femur

Insert the Paddle into the Corrective Cutting Guide. Then attach the Holder Tibial Template to the Corrective Cutting Guide and position the Paddle onto the resected tibia or femur, respectively.

To correct from a valgus situation, the paddle slot (marked in the picture) must be on the lateral side (side of larger bone resection).

To correct from a varus situation, the paddle slot (marked in the picture) must be on the medial side (side of larger bone resection).

Fig. 160 Tibia

Fig. 161 Femur

Use the Alignment Rod to check the axis of the planned corrective cutting plane.

Fig. 162 Tibia

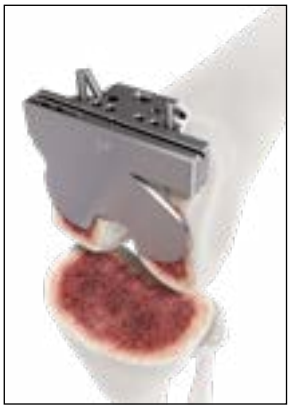


Fig. 163 Femur

Remove the Holder Tibial Template and fixate the Corrective Cutting Guide in the determined position with at least two straight and one oblique pin. Predrill the holes with the 3.2 mm drill.

Fig. 164 Tibia

Fig. 165 Femur

Before performing the resection through the cutting slot, move the Paddle as far as possible to the side of the larger bone resection to avoid impingement with the saw blade.

With a 1.27 mm saw blade, resect the tibia or femur through the cutting slot, respectively.

Remove the instruments and all pins.

7. Appendix

7.4 Preparation 3-Peg Patella

Fig. 166

Evert the Patella.

Perform circumferential denervation of the synovial edge of the patella using electrocautery.
Remove peripheral osteophytes to restore the patella to its normal shape and size.
Be careful not to damage the tendon insertions.

Fig. 167

Determine the patella size using the caliper or the Patella Sizing Guide.

Fig. 168

Measure the thickness of the patella with the caliper.

After resection, a minimum of 12 mm bone must remain to allow sufficient bone stock. See the table below for the thickness = resection height for the balanSys 3-Peg FLAT patella.

Dia	3-Peg FLAT	3-Peg
26	8 mm	–
28	8 mm	10.2 mm
31	8 mm	11.4 mm
34	9 mm	12.3 mm
37	9 mm	13.0 mm

Fig. 169

Grip the patella centrically with the Patella Forceps. Adjust the resection height with the height topper to the selected patellar size setting.

It is important to avoid tilting of the patella implant. Double-check the planned resection with the reference plate.

Remark

*Ensure that you are using the Patella Resection Pliers Flat for the 3-Peg Patella FLAT (marked with sizes **26**–37) and the Patella Resection Pliers Standard for the 3-Peg Patella (marked with sizes **28**–37), respectively.*

Fig. 170

Perform the patellar osteotomy through the saw guide on the lateral side of the Patella Forceps.

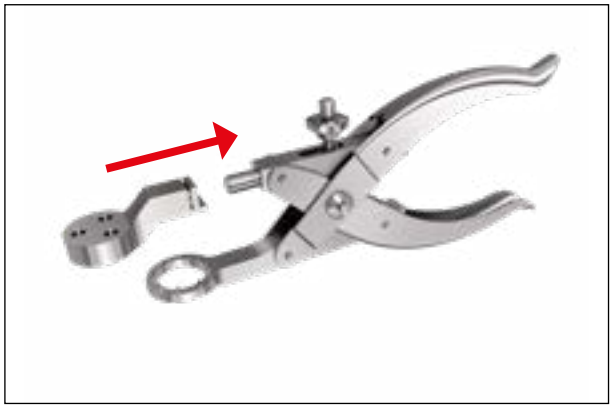


Fig. 171

Attach the balanSys Patella Drill Guide to the Patella Universal Pliers.

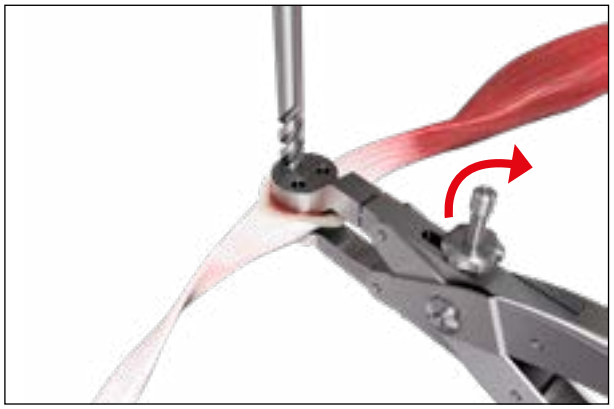


Fig. 172

Place the Drill Guide in order to determine the final positioning of the patella implant with regard to the predetermined gliding path of the femoral shield.

Fixate the Drill Guide to the Patella toughly by turning the knurled nut clockwise.
Drill the three patella peg holes with the 5.5 mm Drill Bit.

Remove the Drill Guide.

Remark
Slightly medializing of the patella implant can support patella tracking.

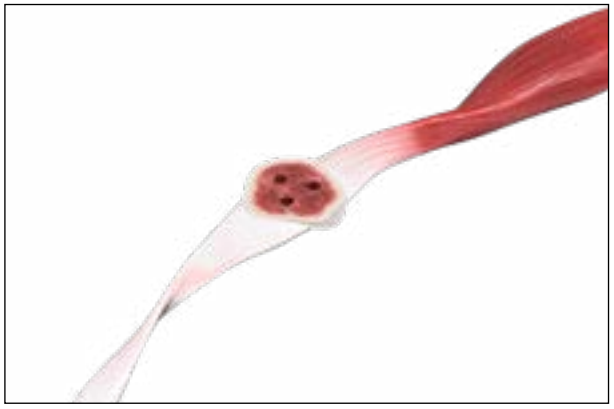


Fig. 173

Retro-patellar surface prepared for implantation.

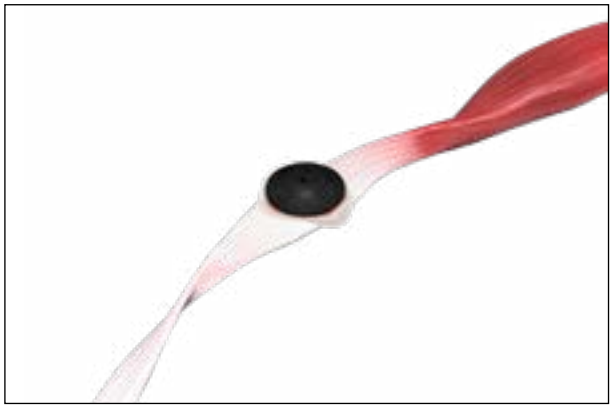


Fig. 174

Insert the Trial Patella of predetermined size (FLAT or standard).

Chamfer the medial and lateral edges of the rear surface of the patella.

Check the resulting patella thickness with the caliper and the gliding movement in the femoro-patellar joint with respect to centering and impingement.

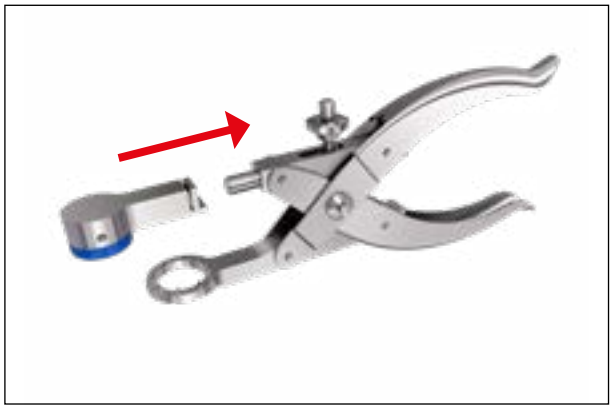


Fig. 175

Attach the balanSys Patella Cementing Aid to the Patella Universal Pliers.

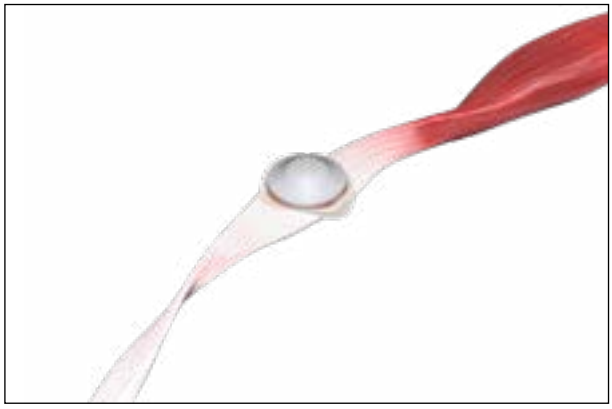


Fig. 176

Thoroughly clean the osteotomy surface.

Apply a layer of cement to the bone or the patella component.

Insert the balanSys 3-Peg Patella cemented.

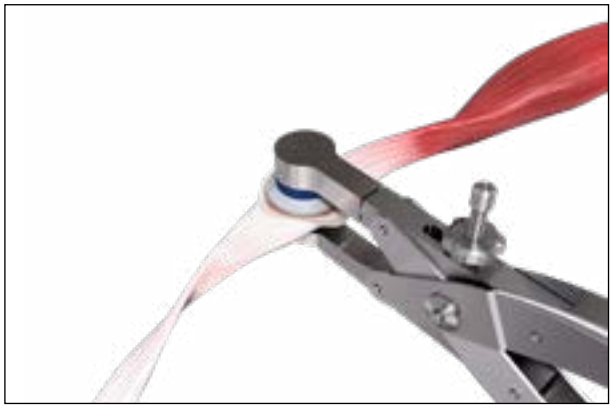


Fig. 177

Place the Patella Cementing Aid and fixate the Cementing Aid toughly by turning the knurled nut clockwise.

Use a curette to remove all extruded bone cement.

After hardening of the cement remove the Patella Cementing Aid.

After reposing the joint capsule, make a final functional test and check the centered running of the patella.

7. Appendix

7.5 Pins and screws

Item no.	Description
71.02.3054	balanSys pin 3.2/80

Item no.	Description
71.34.1047	balanSys Pin with Head 3.2/30

Item no.	Description
315.310	AO Drill bit 3.2

Item no.	Description
71.34.0647	Drill Pin 3.2/89/2.25

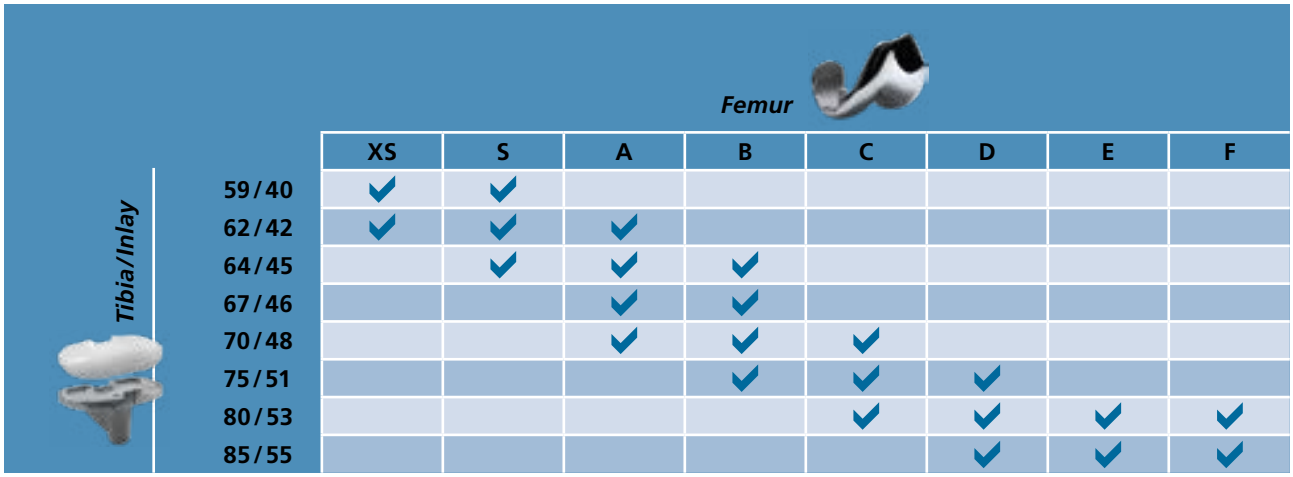
Item no.	Description
71.34.0787	Quick Coupling Square 2.25 (Adapter for Drill Pin)

Item no.	Description
71.34.0798	balanSys Pin Pliers

8. Implants

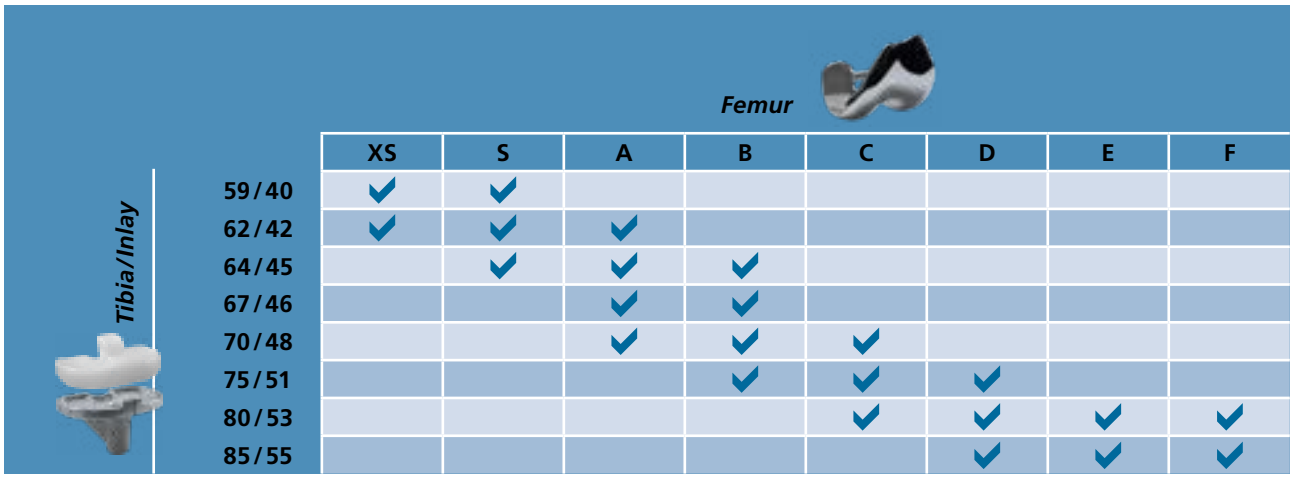
8.1 Combination charts

balanSys Fixed Bearing CR and UC



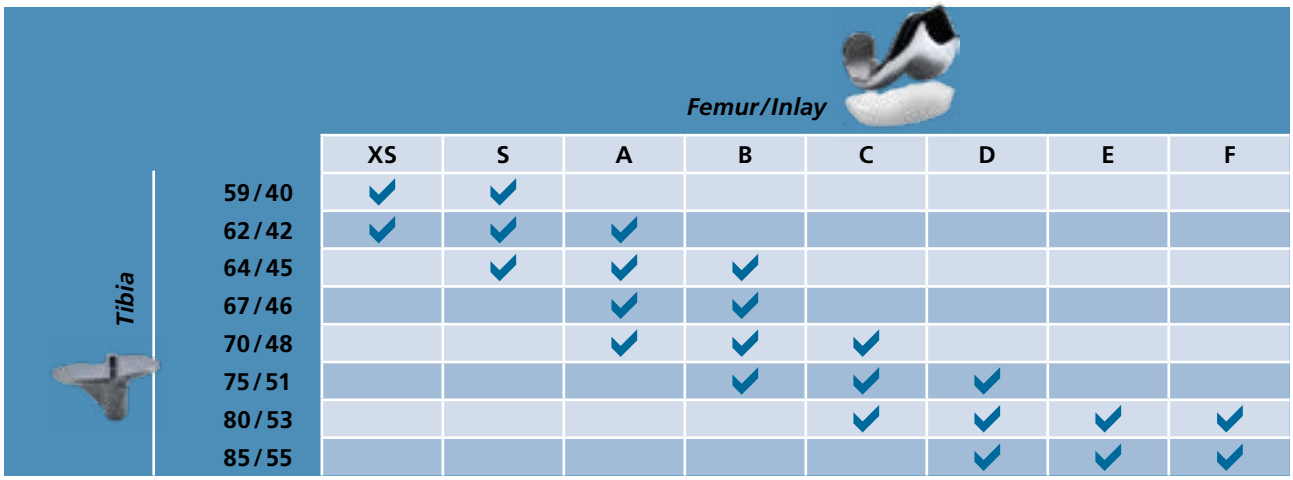
	XS	S	A	B	C	D	E	F
59/40	✓	✓						
62/42	✓	✓	✓					
64/45		✓	✓	✓				
67/46			✓	✓				
70/48			✓	✓	✓			
75/51				✓	✓	✓		
80/53					✓	✓	✓	✓
85/55						✓	✓	✓

balanSys PS



	XS	S	A	B	C	D	E	F
59/40	✓	✓						
62/42	✓	✓	✓					
64/45		✓	✓	✓				
67/46			✓	✓				
70/48			✓	✓	✓			
75/51				✓	✓	✓		
80/53					✓	✓	✓	✓
85/55						✓	✓	✓

balanSys Mobile Bearing RP



	XS	S	A	B	C	D	E	F
59/40	✓	✓						
62/42	✓	✓	✓					
64/45		✓	✓	✓				
67/46			✓	✓				
70/48			✓	✓	✓			
75/51				✓	✓	✓		
80/53					✓	✓	✓	✓
85/55						✓	✓	✓

8. Implants

8.2 Item numbers of the balanSys implants

balanSys Femur Components for CR / UC / RP

balanSys Femur, cemented

Item no.	Mediolat.	Size
72.15.3401	56 mm	XS left
72.15.3701	58 mm	S left
72.15.4001	60 mm	A left
72.15.4301	64 mm	B left
72.15.4601	68 mm	C left
72.15.4901	72 mm	D left
72.15.5201	76 mm	E left
72.15.5501	80 mm	F left
72.15.3402	56 mm	XS right
72.15.3702	58 mm	S right
72.15.4002	60 mm	A right
72.15.4302	64 mm	B right
72.15.4602	68 mm	C right
72.15.4902	72 mm	D right
72.15.5202	76 mm	E right
72.15.5502	80 mm	F right

Material: CoCrMo

balanSys Femur, uncemented

Item no.	Mediolat.	Size
73.15.3401TPS	56 mm	XS left
73.15.3701TPS	58 mm	S left
73.15.4001TPS	60 mm	A left
73.15.4301TPS	64 mm	B left
73.15.4601TPS	68 mm	C left
73.15.4901TPS	72 mm	D left
73.15.5201TPS	76 mm	E left
73.15.5501TPS	80 mm	F left
73.15.3402TPS	56 mm	XS right
73.15.3702TPS	58 mm	S right
73.15.4002TPS	60 mm	A right
73.15.4302TPS	64 mm	B right
73.15.4602TPS	68 mm	C right
73.15.4902TPS	72 mm	D right
73.15.5202TPS	76 mm	E right
73.15.5502TPS	80 mm	F right

Material: CoCrMo, TiCP coated

balanSys Fixed Bearing Components

balanSys CR PE Inlay

Item no.	Mediolat.	Size
74.30.5908	59 mm	8.0 mm
74.30.5910	59 mm	10.5 mm
74.30.5913	59 mm	13.0 mm
74.30.5915	59 mm	15.5 mm
74.30.6208	62 mm	8.0 mm
74.30.6210	62 mm	10.5 mm
74.30.6213	62 mm	13.0 mm
74.30.6215	62 mm	15.5 mm
74.30.6408	64 mm	8,0 mm
74.30.6410	64 mm	10.5 mm
74.30.6413	64 mm	13.0 mm
74.30.6415	64 mm	15.5 mm
74.30.6708	67 mm	8.0 mm
74.30.6710	67 mm	10.5 mm
74.30.6713	67 mm	13.0 mm
74.30.6715	67 mm	15.5 mm

Item no.	Mediolat.	Size
74.30.7008	70 mm	8.0 mm
74.30.7010	70 mm	10.5 mm
74.30.7013	70 mm	13.0 mm
74.30.7015	70 mm	15.5 mm
74.30.7508	75 mm	8.0 mm
74.30.7510	75 mm	10.5 mm
74.30.7513	75 mm	13.0 mm
74.30.7515	75 mm	15.5 mm
72.34.0170	80 mm	8.0 mm
72.34.0171	80 mm	10.5 mm
72.34.0172	80 mm	13.0 mm
72.34.0173	80 mm	15.5 mm
72.34.0174	85 mm	8.0 mm
72.34.0175	85 mm	10.5 mm
72.34.0176	85 mm	13.0 mm
72.34.0177	85 mm	15.5 mm

Material: UHMWPE

vitamys®

balanSys CR vitamys Inlay

Item no.	Mediolat.	Size
72.34.1000	59 mm	8.0 mm
72.34.1001	59 mm	9.0 mm
72.34.1002	59 mm	10.5 mm
72.34.1003	59 mm	11.5 mm
72.34.1004	59 mm	13.0 mm
72.34.1005	59 mm	15.5 mm
72.34.1010	62 mm	8.0 mm
72.34.1011	62 mm	9.0 mm
72.34.1012	62 mm	10.5 mm
72.34.1013	62 mm	11.5 mm
72.34.1014	62 mm	13.0 mm
72.34.1015	62 mm	15.5 mm
72.34.1020	64 mm	8.0 mm
72.34.1021	64 mm	9.0 mm
72.34.1022	64 mm	10.5 mm
72.34.1023	64 mm	11.5 mm
72.34.1024	64 mm	13.0 mm
72.34.1025	64 mm	15.5 mm
72.34.1030	67 mm	8.0 mm
72.34.1031	67 mm	9.0 mm
72.34.1032	67 mm	10.5 mm
72.34.1033	67 mm	11.5 mm
72.34.1034	67 mm	13.0 mm
72.34.1035	67 mm	15.5 mm

Item no.	Mediolat.	Size
72.34.1040	70 mm	8.0 mm
72.34.1041	70 mm	9.0 mm
72.34.1042	70 mm	10.5 mm
72.34.1043	70 mm	11.5 mm
72.34.1044	70 mm	13.0 mm
72.34.1045	70 mm	15.5 mm
72.34.1050	75 mm	8.0 mm
72.34.1051	75 mm	9.0 mm
72.34.1052	75 mm	10.5 mm
72.34.1053	75 mm	11.5 mm
72.34.1054	75 mm	13.0 mm
72.34.1055	75 mm	15.5 mm
72.34.1060	80 mm	8.0 mm
72.34.1061	80 mm	9.0 mm
72.34.1062	80 mm	10.5 mm
72.34.1063	80 mm	11.5 mm
72.34.1064	80 mm	13.0 mm
72.34.1065	80 mm	15.5 mm
72.34.1070	85 mm	8.0 mm
72.34.1071	85 mm	9.0 mm
72.34.1072	85 mm	10.5 mm
72.34.1073	85 mm	11.5 mm
72.34.1074	85 mm	13.0 mm
72.34.1075	85 mm	15.5 mm

Material: VEPE

balanSys UC PE Inlay

Item no.	Mediolat.	Size
77.30.5908	59 mm	8.0 mm
77.30.5910	59 mm	10.5 mm
77.30.5913	59 mm	13.0 mm
77.30.5915	59 mm	15.5 mm
77.30.5918	59 mm	18.0 mm
77.30.6208	62 mm	8.0 mm
77.30.6210	62 mm	10.5 mm
77.30.6213	62 mm	13.0 mm
77.30.6215	62 mm	15.5 mm
77.30.6218	62 mm	18.0 mm
77.30.6408	64 mm	8.0 mm
77.30.6410	64 mm	10.5 mm
77.30.6413	64 mm	13.0 mm
77.30.6415	64 mm	15.5 mm
77.30.6418	64 mm	18.0 mm
77.30.6708	67 mm	8.0 mm
77.30.6710	67 mm	10.5 mm
77.30.6713	67 mm	13.0 mm
77.30.6715	67 mm	15.5 mm
77.30.6718	67 mm	18.0 mm

Item no.	Mediolat.	Size
77.30.7008	70 mm	8.0 mm
77.30.7010	70 mm	10.5 mm
77.30.7013	70 mm	13.0 mm
77.30.7015	70 mm	15.5 mm
77.30.7018	70 mm	18.0 mm
77.30.7508	75 mm	8.0 mm
77.30.7510	75 mm	10.5 mm
77.30.7513	75 mm	13.0 mm
77.30.7515	75 mm	15.5 mm
77.30.7518	75 mm	18.0 mm
72.34.0182	80 mm	8.0 mm
72.34.0183	80 mm	10.5 mm
72.34.0184	80 mm	13.0 mm
72.34.0185	80 mm	15.5 mm
72.34.0186	80 mm	18.0 mm
72.34.0188	85 mm	8.0 mm
72.34.0189	85 mm	10.5 mm
72.34.0190	85 mm	13.0 mm
72.34.0191	85 mm	15.5 mm
72.34.0192	85 mm	18.0 mm

Material: UHMWPE

balanSys UC vitamys Inlay

Item no.	Mediolat.	Size	Item no.	Mediolat.	Size
72.34.1100	59 mm	8.0 mm	72.34.1140	70 mm	8.0 mm
72.34.1101	59 mm	9.0 mm	72.34.1141	70 mm	9.0 mm
72.34.1102	59 mm	10.5 mm	72.34.1142	70 mm	10.5 mm
72.34.1103	59 mm	11.5 mm	72.34.1143	70 mm	11.5 mm
72.34.1104	59 mm	13.0 mm	72.34.1144	70 mm	13.0 mm
72.34.1105	59 mm	15.5 mm	72.34.1145	70 mm	15.5 mm
72.34.1106	59 mm	18.0 mm	72.34.1146	70 mm	18.0 mm
72.34.1110	62 mm	8.0 mm	72.34.1150	75 mm	8.0 mm
72.34.1111	62 mm	9.0 mm	72.34.1151	75 mm	9.0 mm
72.34.1112	62 mm	10.5 mm	72.34.1152	75 mm	10.5 mm
72.34.1113	62 mm	11.5 mm	72.34.1153	75 mm	11.5 mm
72.34.1114	62 mm	13.0 mm	72.34.1154	75 mm	13.0 mm
72.34.1115	62 mm	15.5 mm	72.34.1155	75 mm	15.5 mm
72.34.1116	62 mm	18.0 mm	72.34.1156	75 mm	18.0 mm
72.34.1120	64 mm	8.0 mm	72.34.1160	80 mm	8.0 mm
72.34.1121	64 mm	9.0 mm	72.34.1161	80 mm	9.0 mm
72.34.1122	64 mm	10.5 mm	72.34.1162	80 mm	10.5 mm
72.34.1123	64 mm	11.5 mm	72.34.1163	80 mm	11.5 mm
72.34.1124	64 mm	13.0 mm	72.34.1164	80 mm	13.0 mm
72.34.1125	64 mm	15.5 mm	72.34.1165	80 mm	15.5 mm
72.34.1126	64 mm	18.0 mm	72.34.1166	80 mm	18.0 mm
72.34.1130	67 mm	8.0 mm	72.34.1170	85 mm	8.0 mm
72.34.1131	67 mm	9.0 mm	72.34.1171	85 mm	9.0 mm
72.34.1132	67 mm	10.5 mm	72.34.1172	85 mm	10.5 mm
72.34.1133	67 mm	11.5 mm	72.34.1173	85 mm	11.5 mm
72.34.1134	67 mm	13.0 mm	72.34.1174	85 mm	13.0 mm
72.34.1135	67 mm	15.5 mm	72.34.1175	85 mm	15.5 mm
72.34.1136	67 mm	18.0 mm	72.34.1176	85 mm	18.0 mm

Material: VEPE

balanSys PS Tibial Plateau, cemented

Item no.	Mediolateral
79.15.0400	59 mm
79.15.0401	62 mm
79.15.0056	64 mm
79.15.0402	67 mm
79.15.0057	70 mm
79.15.0058	75 mm
79.15.0059	80 mm
79.15.0060	85 mm

Material: CoCrMo

balanSys Mobile Bearing RP Components

balanSys RP PE Inlay

Item no.	Femur	Size	Item no.	Femur	Size
72.34.0200	XS	8.0 mm	78.30.7008	C	8.0 mm
72.34.0201	XS	10.5 mm	78.30.7010	C	10.5 mm
72.34.0202	XS	13.0 mm	78.30.7013	C	13.0 mm
72.34.0203	XS	15.5 mm	78.30.7015	C	15.5 mm
72.34.0206	S	8.0 mm	78.30.7408	D	8.0 mm
72.34.0207	S	10.5 mm	78.30.7410	D	10.5 mm
72.34.0208	S	13.0 mm	78.30.7413	D	13.0 mm
72.34.0209	S	15.5 mm	78.30.7415	D	15.5 mm
78.30.6208	A	8.0 mm	78.30.7808	E	8.0 mm
78.30.6210	A	10.5 mm	78.30.7810	E	10.5 mm
78.30.6213	A	13.0 mm	78.30.7813	E	13.0 mm
78.30.6215	A	15.5 mm	78.30.7815	E	15.5 mm
78.30.6608	B	8.0 mm	72.34.0242	F	8.0 mm
78.30.6610	B	10.5 mm	72.34.0243	F	10.5 mm
78.30.6613	B	13.0 mm	72.34.0244	F	13.0 mm
78.30.6615	B	15.5 mm	72.34.0245	F	15.5 mm

Material: UHMWPE, FeCrNiMoMn (Contrast balls, optional)

balanSys RP vitamys Inlay

Item no.	Femur	Size
72.34.1200	XS	8.0 mm
72.34.1201	XS	9.0 mm
72.34.1202	XS	10.5 mm
72.34.1203	XS	11.5 mm
72.34.1204	XS	13.0 mm
72.34.1205	XS	15.5 mm
72.34.1210	S	8.0 mm
72.34.1211	S	9.0 mm
72.34.1212	S	10.5 mm
72.34.1213	S	11.5 mm
72.34.1214	S	13.0 mm
72.34.1215	S	15.5 mm
72.34.1220	A	8.0 mm
72.34.1221	A	9.0 mm
72.34.1222	A	10.5 mm
72.34.1223	A	11.5 mm
72.34.1224	A	13.0 mm
72.34.1225	A	15.5 mm
72.34.1230	B	8.0 mm
72.34.1231	B	9.0 mm
72.34.1232	B	10.5 mm
72.34.1233	B	11.5 mm
72.34.1234	B	13.0 mm
72.34.1235	B	15.5 mm

Item no.	Femur	Size
72.34.1240	C	8.0 mm
72.34.1241	C	9.0 mm
72.34.1242	C	10.5 mm
72.34.1243	C	11.5 mm
72.34.1244	C	13.0 mm
72.34.1245	C	15.5 mm
72.34.1250	D	8.0 mm
72.34.1251	D	9.0 mm
72.34.1252	D	10.5 mm
72.34.1253	D	11.5 mm
72.34.1254	D	13.0 mm
72.34.1255	D	15.5 mm
72.34.1260	E	8.0 mm
72.34.1261	E	9.0 mm
72.34.1262	E	10.5 mm
72.34.1263	E	11.5 mm
72.34.1264	E	13.0 mm
72.34.1265	E	15.5 mm
72.34.1270	F	8.0 mm
72.34.1271	F	9.0 mm
72.34.1272	F	10.5 mm
72.34.1273	F	11.5 mm
72.34.1274	F	13.0 mm
72.34.1275	F	15.5 mm

Material: VEPE

balanSys RP Tibial Plateau, cemented

Item no.	Mediolateral
72.34.0059	59 mm
72.34.0060	62 mm
72.34.0061	64 mm
72.34.0062	67 mm
72.34.0063	70 mm
72.34.0064	75 mm
72.34.0065	80 mm
72.34.0066	85 mm

Material: CoCrMo

balanSys PS Components

balanSys PS Femur, cemented

Item no.	Mediolat.	Size
79.15.0999	56 mm	XS right
79.15.1000	58 mm	S right
79.15.0001	60 mm	A right
79.15.0002	64 mm	B right
79.15.0003	68 mm	C right
79.15.0004	72 mm	D right
79.15.0005	76 mm	E right
79.15.1006	80 mm	F right
79.15.1009	56 mm	XS left
79.15.1010	58 mm	S left
79.15.0011	60 mm	A left
79.15.0012	64 mm	B left
79.15.0013	68 mm	C left
79.15.0014	72 mm	D left
79.15.0015	76 mm	E left
79.15.1016	80 mm	F left

Material: CoCrMo

balanSys PS PE Inlay

Item no.	Mediolat.	Size
79.30.9986	59 mm	8.0 mm
79.30.9987	59 mm	10.5 mm
79.30.9988	59 mm	13.0 mm
79.30.9989	59 mm	15.5 mm
79.30.9990	59 mm	18.0 mm
79.30.9991	59 mm	20.5 mm
79.30.9993	62 mm	8.0 mm
79.30.9994	62 mm	10.5 mm
79.30.9995	62 mm	13.0 mm
79.30.9996	62 mm	15.5 mm
79.30.9997	62 mm	18.0 mm
79.30.9998	62 mm	20.5 mm
79.30.0200	64 mm	8.0 mm
79.30.0201	64 mm	10.5 mm
79.30.0202	64 mm	13.0 mm
79.30.0203	64 mm	15.5 mm
79.30.0204	64 mm	18.0 mm
79.30.0205	64 mm	20.5 mm
79.30.0210	67 mm	8.0 mm
79.30.0211	67 mm	10.5 mm
79.30.0212	67 mm	13.0 mm
79.30.0213	67 mm	15.5 mm
79.30.0214	67 mm	18.0 mm
79.30.0215	67 mm	20.5 mm

Item no.	Mediolat.	Size
79.30.0010	70 mm	8.0 mm
79.30.0011	70 mm	10.5 mm
79.30.0012	70 mm	13.0 mm
79.30.0013	70 mm	15.5 mm
79.30.0014	70 mm	18.0 mm
79.30.0015	70 mm	20.5 mm
79.30.0020	75 mm	8.0 mm
79.30.0021	75 mm	10.5 mm
79.30.0022	75 mm	13.0 mm
79.30.0023	75 mm	15.5 mm
79.30.0024	75 mm	18.0 mm
79.30.0025	75 mm	20.5 mm
72.34.0255	80 mm	8.0 mm
72.34.0256	80 mm	10.5 mm
72.34.0257	80 mm	13.0 mm
72.34.0258	80 mm	15.5 mm
72.34.0259	80 mm	18.0 mm
72.34.0260	80 mm	20.5 mm
72.34.0262	85 mm	8.0 mm
72.34.0263	85 mm	10.5 mm
72.34.0264	85 mm	13.0 mm
72.34.0265	85 mm	15.5 mm
72.34.0266	85 mm	18.0 mm
72.34.0267	85 mm	20.5 mm

Material: UHMWPE

vitamys®

balanSys PS vitamys Inlay

Item no.	Mediolat.	Size
72.34.1300	59 mm	8.0 mm
72.34.1301	59 mm	9.0 mm
72.34.1302	59 mm	10.5 mm
72.34.1303	59 mm	11.5 mm
72.34.1304	59 mm	13.0 mm
72.34.1305	59 mm	15.5 mm
72.34.1306	59 mm	18.0 mm
72.34.1307*	59 mm	20.5 mm
72.34.1310	62 mm	8.0 mm
72.34.1311	62 mm	9.0 mm
72.34.1312	62 mm	10.5 mm
72.34.1313	62 mm	11.5 mm
72.34.1314	62 mm	13.0 mm
72.34.1315	62 mm	15.5 mm
72.34.1316	62 mm	18.0 mm
72.34.1317*	62 mm	20.5 mm
72.34.1320	64 mm	8.0 mm
72.34.1321	64 mm	9.0 mm
72.34.1322	64 mm	10.5 mm
72.34.1323	64 mm	11.5 mm
72.34.1324	64 mm	13.0 mm
72.34.1325	64 mm	15.5 mm
72.34.1326	64 mm	18.0 mm
72.34.1327*	64 mm	20.5 mm
72.34.1330	67 mm	8.0 mm
72.34.1331	67 mm	9.0 mm
72.34.1332	67 mm	10.5 mm
72.34.1333	67 mm	11.5 mm
72.34.1334	67 mm	13.0 mm
72.34.1335	67 mm	15.5 mm
72.34.1336	67 mm	18.0 mm
72.34.1337*	67 mm	20.5 mm

Item no.	Mediolat.	Size
72.34.1340	70 mm	8.0 mm
72.34.1341	70 mm	9.0 mm
72.34.1342	70 mm	10.5 mm
72.34.1343	70 mm	11.5 mm
72.34.1344	70 mm	13.0 mm
72.34.1345	70 mm	15.5 mm
72.34.1346	70 mm	18.0 mm
72.34.1347*	70 mm	20.5 mm
72.34.1350	75 mm	8.0 mm
72.34.1351	75 mm	9.0 mm
72.34.1352	75 mm	10.5 mm
72.34.1353	75 mm	11.5 mm
72.34.1354	75 mm	13.0 mm
72.34.1355	75 mm	15.5 mm
72.34.1356	75 mm	18.0 mm
72.34.1357*	75 mm	20.5 mm
72.34.1360	80 mm	8.0 mm
72.34.1361	80 mm	9.0 mm
72.34.1362	80 mm	10.5 mm
72.34.1363	80 mm	11.5 mm
72.34.1364	80 mm	13.0 mm
72.34.1365	80 mm	15.5 mm
72.34.1366	80 mm	18.0 mm
72.34.1367*	80 mm	20.5 mm
72.34.1370	85 mm	8.0 mm
72.34.1371	85 mm	9.0 mm
72.34.1372	85 mm	10.5 mm
72.34.1373	85 mm	11.5 mm
72.34.1374	85 mm	13.0 mm
72.34.1375	85 mm	15.5 mm
72.34.1376	85 mm	18.0 mm
72.34.1377*	85 mm	20.5 mm

Material: VEPE

*on request

balanSys TiNbN Components

balanSys Femur TiNbN, cemented

Item no.	Mediolat.	Size	Item no.	Mediolat.	Size
72.23.3401	56 mm	XS left	72.23.3402	56 mm	XS right
72.23.3701	58 mm	S left	72.23.3702	58 mm	S right
72.23.4001	60 mm	A left	72.23.4002	60 mm	A right
72.23.4301	64 mm	B left	72.23.4302	64 mm	B right
72.23.4601	68 mm	C left	72.23.4602	68 mm	C right
72.23.4901	72 mm	D left	72.23.4902	72 mm	D right
72.23.5201	76 mm	E left	72.23.5202	76 mm	E right
72.23.5501	80 mm	F left	72.23.5502	80 mm	F right

Material: CoCrMo, TiNbN coating

balanSys PS Tibial Plateau TiNbN Fix, cemented

Item no.	Mediolateral	Item no.	Mediolateral
79.23.0400	59 mm	79.23.0057	70 mm
79.23.0401	62 mm	79.23.0058	75 mm
79.23.0056	64 mm	79.23.0059	80 mm
79.23.0402	67 mm	79.23.0060	85 mm

Material: CoCrMo, TiNbN coating

balanSys PS Femur TiNbN, cemented

Item no.	Mediolat.	Size	Item no.	Mediolat.	Size
79.23.1009	56 mm	XS left	79.23.0999	56 mm	XS right
79.23.1010	58 mm	S left	79.23.1000	58 mm	S right
79.23.0011	60 mm	A left	79.23.0001	60 mm	A right
79.23.0012	64 mm	B left	79.23.0002	64 mm	B right
79.23.0013	68 mm	C left	79.23.0003	68 mm	C right
79.23.0014	72 mm	D left	79.23.0004	72 mm	D right
79.23.0015	76 mm	E left	79.23.0005	76 mm	E right
79.23.1016	80 mm	F left	79.23.1006	80 mm	F right

Material: CoCrMo, TiNbN coating

balanSys 3-Peg Patella FLAT Components

Item no.	Diameter Ø
72.34.0049	26 mm
72.34.0050	28 mm
72.34.0051	31 mm
72.34.0052	34 mm
72.34.0053	37 mm

Material: UHMWPE, FeCrNiMoMn (Contrast balls)

balanSys 3-Peg Patella Components

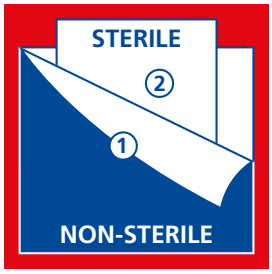
Item no.	Diameter Ø
72.30.0128	28 mm
72.30.0131	31 mm
72.30.0134	34 mm
72.30.0137	37 mm

Material: UHMWPE, FeCrNiMoMn (Contrast balls)

Not all products are available in all countries.

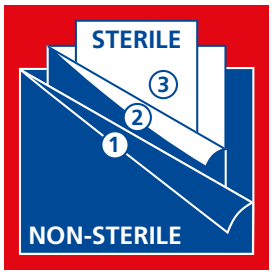
8. Implants

8.3 Double pouch and triple pouch sterile packaging



Instruction for double pouch / double blister packaging:
This packaging consists of a double sterile barrier system.

1) The outer sterile barrier (1st layer) must be opened by non-sterile operating room (OR) personnel.
2) The inner sterile barrier must be presented to sterile OR personnel using an aseptic technique.
3) The inner sterile barrier (2nd layer) must be taken out by sterile OR personnel.
4) The inner sterile barrier (2nd layer) must be opened by sterile OR personnel, and the implant can be taken out.



Instruction for the triple pouch packaging:
This packaging consists of a double sterile barrier system packaged into non-sterile protective pouch.

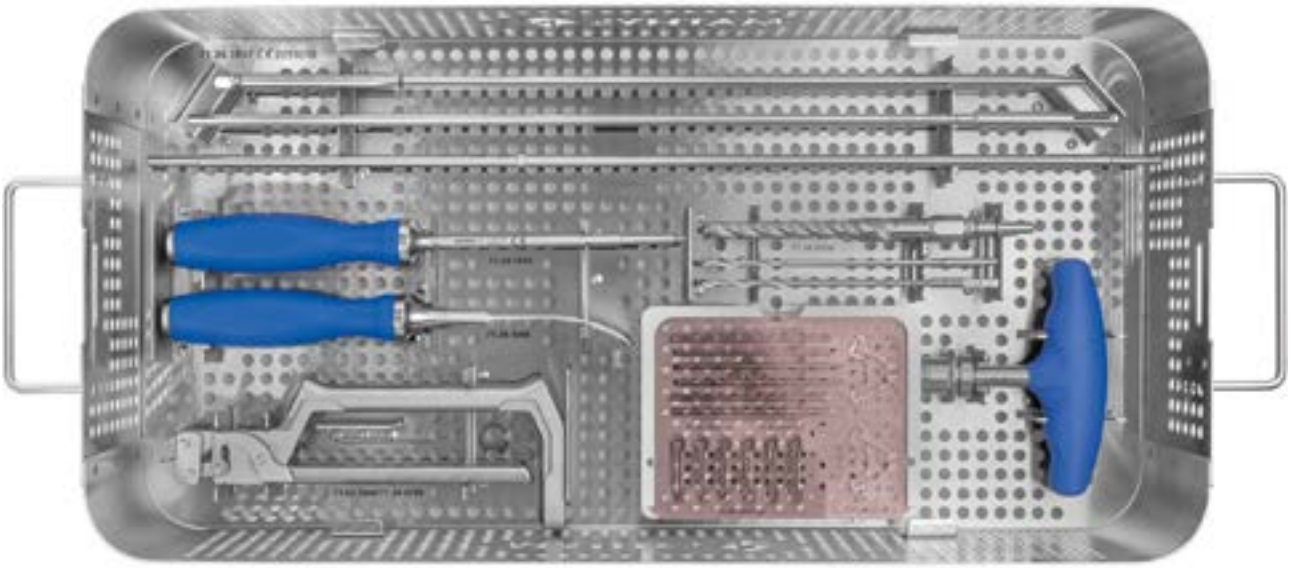
1) The non-sterile protective pouch (1st layer) must be opened by non-sterile operating room (OR) personnel.
2) The outer sterile barrier (2nd layer) must be taken out of the protective pouch by non-sterile OR personnel.
3) The outer sterile barrier (2nd layer) must be opened by non-sterile OR personnel and the inner sterile barrier must be presented to sterile OR personnel using an aseptic technique.
4) The inner sterile barrier (3rd layer) must be taken out by sterile OR personnel.
5) The inner sterile barrier (3rd layer) must be opened by sterile OR personnel, and the implant can be taken out.

9. Instruments

Not all products are available in all countries.

leggera Basic Set 71.34.9193A

No Picture / 71.34.1056 **leggera Set Lid**



71.34.1057 **leggera Basic Set Tray**

Item no.	Description	Qty.
10.935-RAL5010	Silicone Handle	1

Item no.	Description	Qty.
71.02.3054	balanSys pin 3.2/80	6

Item no.	Description	Qty.
71.34.1047	balanSys Pin with Head 3.2/30	4

Item no.	Description	Qty.
71.34.0798	balanSys Pin Pliers	1

Item no.	Description	Qty.
315.310	AO Drill bit 3.2	2

Item no.	Description	Qty.
71.34.0100	balanSys drill bit 8.5/11 mm	1

Item no.	Description	Qty.
71.34.1048	balanSys Osteophyte Chisel, curved	1

Item no.	Description	Qty.
71.34.1049	balanSys Screwdriver	1

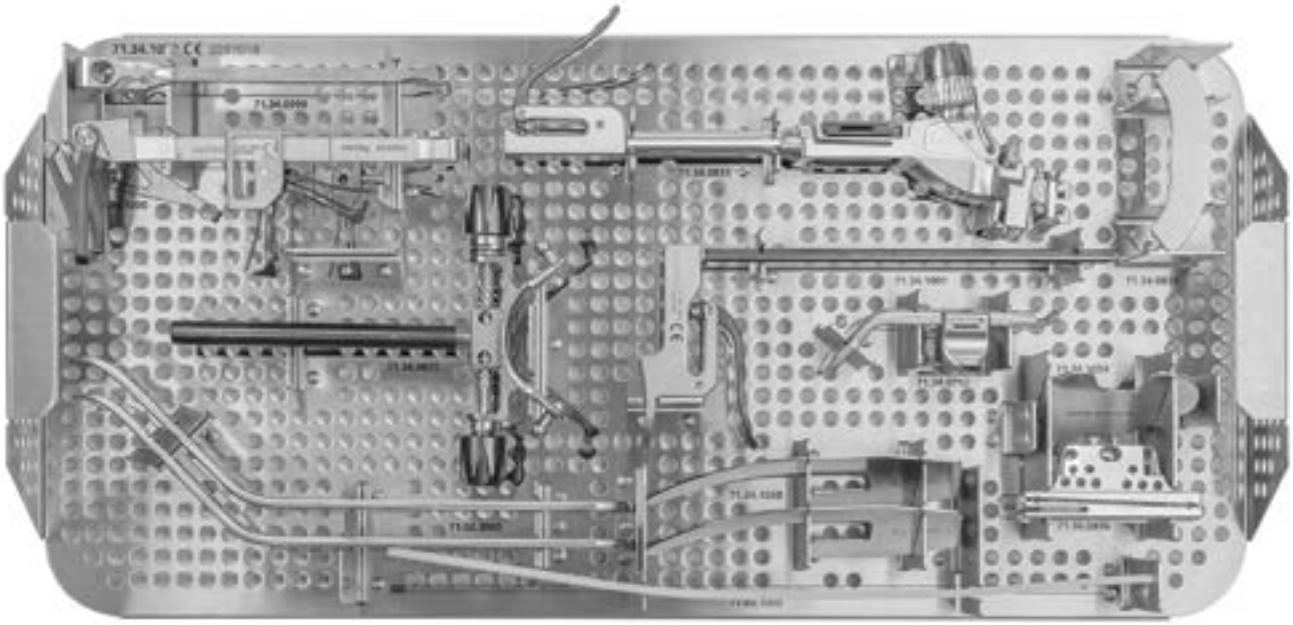
Item no.	Description	Qty.
71.34.0793	balanSys Intramedullary Rod	1

Item no.	Description	Qty.
71.34.1008	balanSys Alignment Rod Short	1

Item no.	Description	Qty.
71.34.1009	balanSys Alignment Rod Long	1

Item no.	Description	Qty.
71.34.1055	balanSys Adapter Trial Inlay	1

leggera Basic Set 71.34.9193A



71.34.1058 **leggera Basic Set Insert**

Item no.	Description	Qty.
71.02.1005	balanSys Trs. rubber band 3x25x300	1

Item no.	Description	Qty.
71.34.1050	balanSys reference plate	2

Item no.	Description	Qty.
71.34.0792	balanSys Tibial Stylus	1

Item no.	Description	Qty.
71.02.3005	balanSys bone retractor	2

Item no.	Description	Qty.
71.34.0833	balanSys TRS Proximal	1

Item no.	Description	Qty.
71.34.1001	balanSys TRS Distal	1

Item no.	Description	Qty.
71.34.0835	balanSys TRS Ankle Holder	1

Item no.	Description	Qty.
71.34.0834	balanSys TRS Cutting Guide	1

Item no.	Description	Qty.
71.34.0999	balanSys TRS Eminentia Shakle	1

Item no.	Description	Qty.
71.34.1000	balanSys TRS Intramedullary Shakle	1

Optional instruments

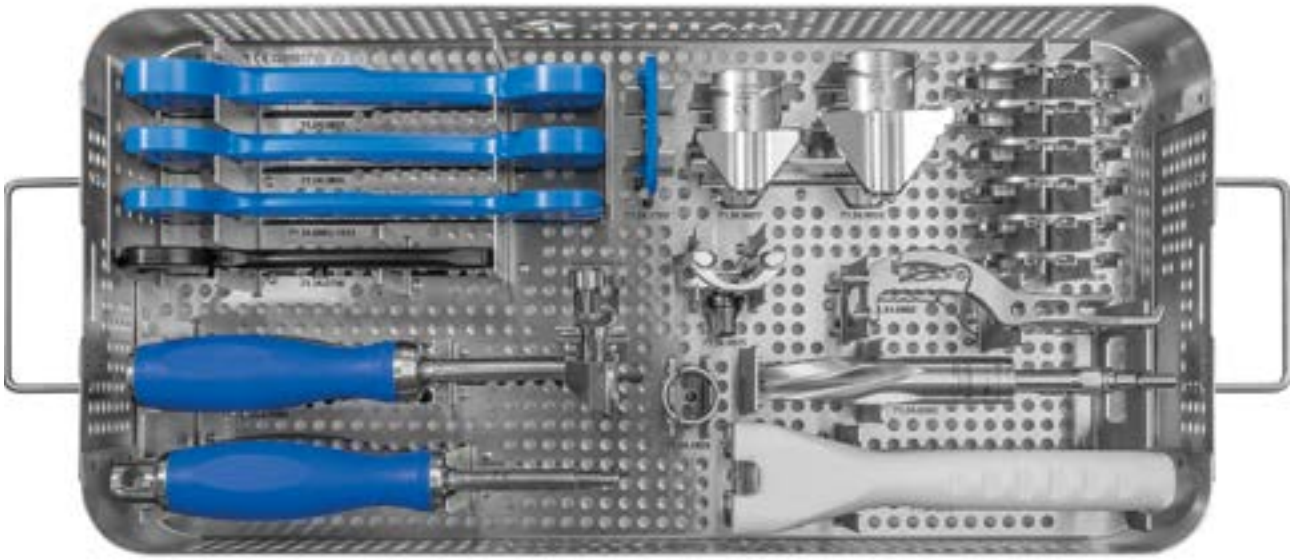
Item no.	Description	Qty.
71.34.1054	balanSys Paddle Corrective Cutting Guide	1

Item no.	Description	Qty.
71.34.0836	balanSys Corrective Cutting Guide	1

Item no.	Description	Qty.
71.34.1077	balanSys TRS Eminentia Shakle rotating	1

leggera Tibia Set 71.34.9194A

No Picture / 71.34.1056 **leggera Set Lid**



71.34.1059 **leggera Tibia Set Tray**

Item no.	Description	Qty.
71.34.0800	balanSys Tibial Impactor	1

Item no.	Description	Qty.
71.34.0802	balanSys Holder Tibial Template	1

Item no.	Description	Qty.
71.34.0200	balanSys Reamer	1

Item no.	Description	Qty.
71.34.0819	balanSys Tibial Template 64	1
71.34.0820	balanSys Tibial Template 67	1
71.34.0821	balanSys Tibial Template 70	1
71.34.0822	balanSys Tibial Template 75	1
71.34.0823	balanSys Tibial Template 80	1
71.34.0824	balanSys Tibial Template 85	1

Item no.	Description	Qty.
71.34.0825	balanSys Chisel Centering Guide	1

Item no.	Description	Qty.
71.34.0826	balanSys Attachment Milling Guide	1

Item no.	Description	Qty.
71.34.0827	balanSys Fin Chisel 59–70	1
71.34.0828	balanSys Fin Chisel 59–85	1

Item no.	Description	Qty.
71.34.0829	balanSys Chisel Handle	1

Item no.	Description	Qty.
71.34.1052	balanSys Positioner for Tibial Plateau	1

Item no.	Description	Qty.
71.34.0805*	balanSys Spacer Block Tibia 8/9	1
71.34.0806*	balanSys Spacer Block Tibia 10.5/11.5	1
71.34.0807	balanSys Spacer Block Tibia 13/15.5	1

* balanSys PE Inlays 9 mm and 11.5 mm are available in vitamys only.

Item no.	Description	Qty.
71.34.0795	balanSys Spacer Shift Plate +5	1

Item no.	Description	Qty.
71.34.0796	balanSys Spacer Block Femur	1

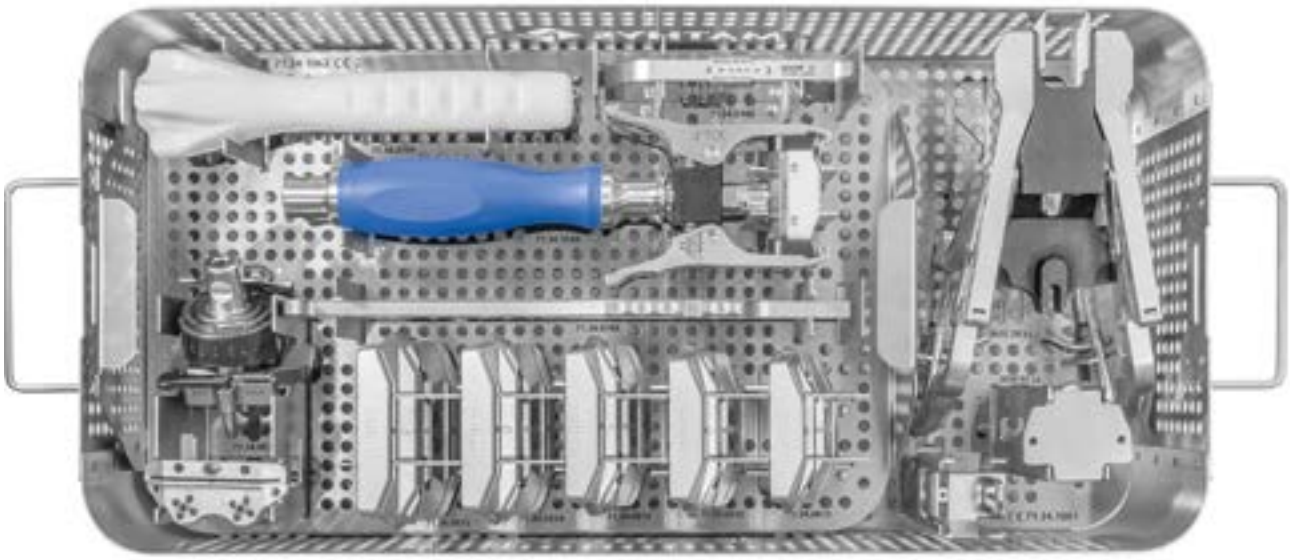
Optional instruments

Item no.	Description	Qty.
71.34.1053	balanSys Spacer Block Tibia 8/10.5	1

Item no.	Description	Qty.
71.34.0886	balanSys Positioner Tibial Plateau RP	1

leggera Femur Set Combination 71.34.9200A

No Picture / 71.34.1056 **leggera Set Lid**



71.34.1061 **leggera Femur Set Combination Tray**
71.34.1062 **leggera Femur Set Combination Insert**

Item no.	Description	Qty.
71.34.0830	balanSys Angle Guide	1

Item no.	Description	Qty.
71.34.0804	balanSys Distal Cutting Guide	1

Item no.	Description	Qty.
71.34.0788	balanSys Femur Extractor	1

Item no.	Description	Qty.
71.34.1014	balanSys Femur Holder	1

Item no.	Description	Qty.
71.34.0811	balanSys 4in1 Cutting Guide A	1
71.34.0812	balanSys 4in1 Cutting Guide B	1
71.34.0813	balanSys 4in1 Cutting Guide C	1
71.34.0814	balanSys 4in1 Cutting Guide D	1
71.34.0815	balanSys 4in1 Cutting Guide E	1

Item no.	Description	Qty.
71.34.0799	balanSys Femoral Impactor	1

Item no.	Description	Qty.
71.34.0143	balanSys Femoral feeler 8G	1

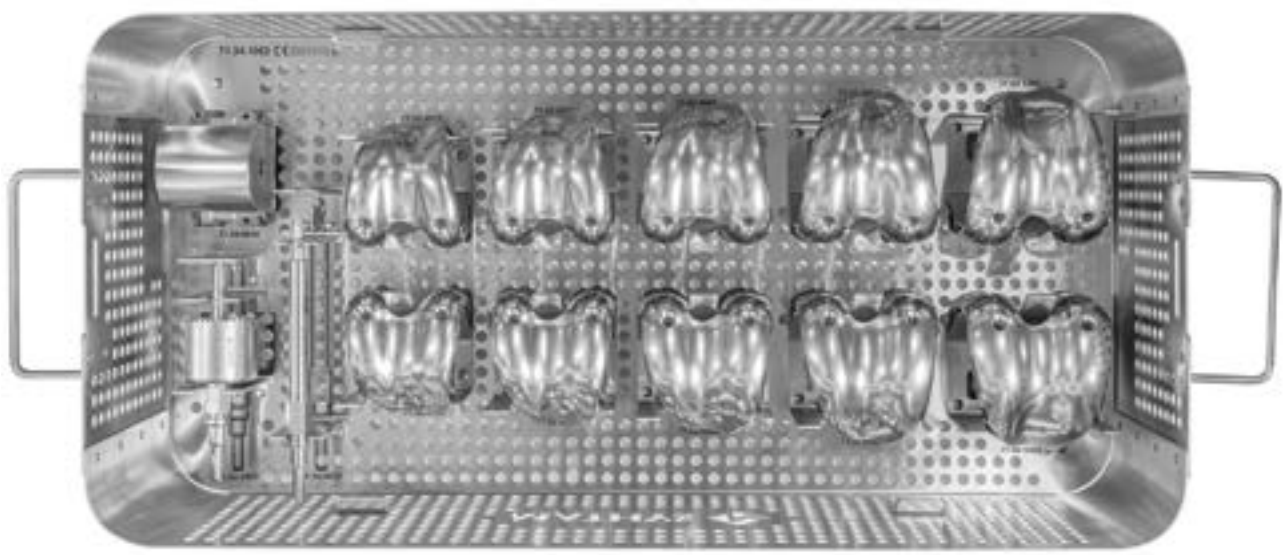
Item no.	Description	Qty.
71.34.0168	balanSys Spacer 8G	1

Item no.	Description	Qty.
71.34.0606	balanSys Drill Guide 4in1 CuttBlock 8G	1

Item no.	Description	Qty.
71.02.3018	balanSys ligament tensor	1

leggera Trial Set CR / UC 71.34.9196A

No Picture / 71.34.1056 **leggera Set Lid**



71.34.1063 **leggera Trial Set CR / UC Tray**

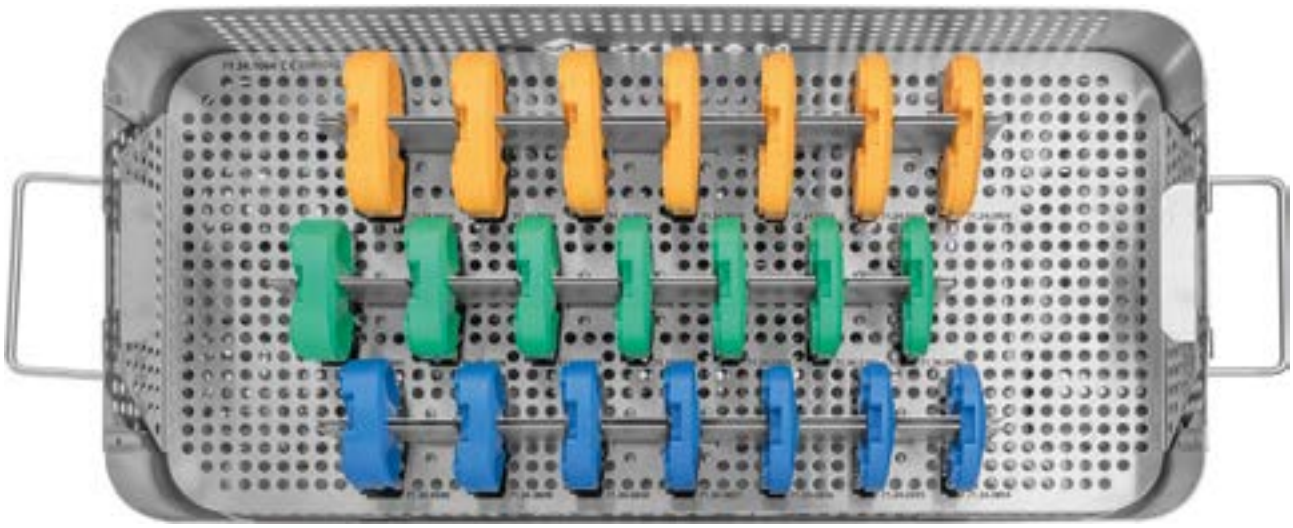
Item no.	Description	Qty.
71.34.0023	balanSys Drill Bit with stop 6	1

Item no.	Description	Qty.
71.34.0840	balanSys Trochlea Bushing	1

Item no.	Description	Qty.
71.02.4001	balanSys trial femur A left	1
71.02.4002	balanSys trial femur A right	1
71.02.4301	balanSys trial femur B left	1
71.02.4302	balanSys trial femur B right	1
71.02.4601	balanSys trial femur C left	1
71.02.4602	balanSys trial femur C right	1
71.02.4901	balanSys trial femur D left	1
71.02.4902	balanSys trial femur D right	1
71.02.5201	balanSys trial femur E left	1
71.02.5202	balanSys trial femur E right	1

Item no.	Description	Qty.
71.02.3023	balanSys trochlea reamer	1

leggera Trial Set CR / UC 71.34.9196A



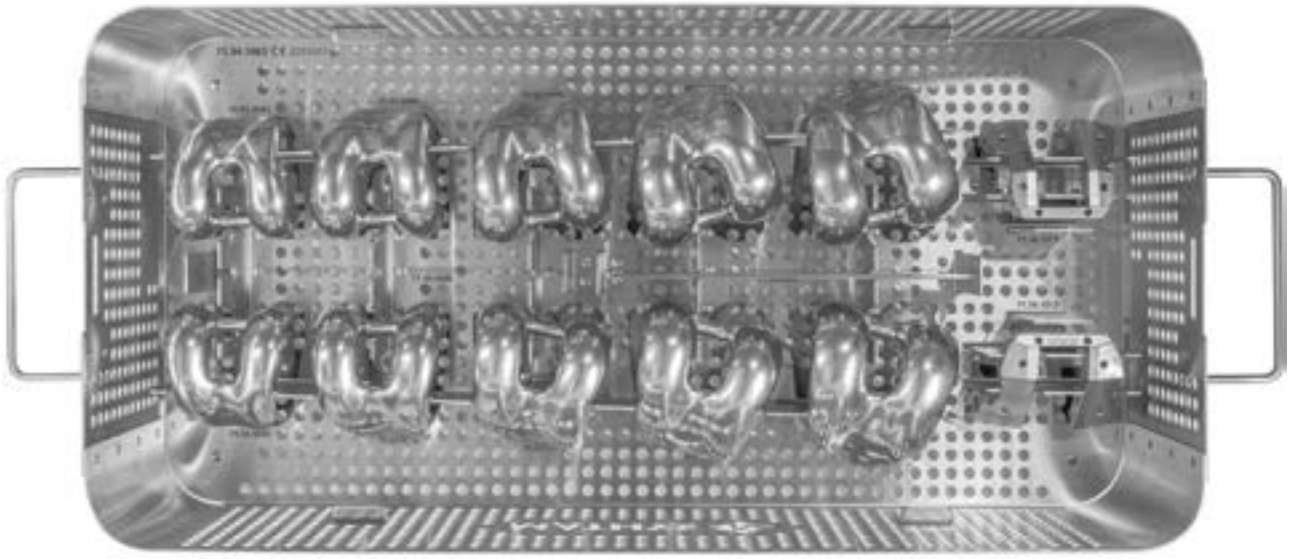
71.34.1064 **leggera Trial Set CR / UC Insert**

Item no.	Description	Qty.
71.34.0894	balanSys CR/UC Trial Inlay 64–67/8	1
71.34.0895*	balanSys CR/UC Trial Inlay 64–67/9	1
71.34.0896	balanSys CR/UC Trial Inlay 64–67/10.5	1
71.34.0897*	balanSys CR/UC Trial Inlay 64–67/11.5	1
71.34.0898	balanSys CR/UC Trial Inlay 64–67/13	1
71.34.0899	balanSys CR/UC Trial Inlay 64–67/15.5	1
71.34.0900	balanSys CR/UC Trial Inlay 64–67/18	1
71.34.0901	balanSys CR/UC Trial Inlay 70–75/8	1
71.34.0902*	balanSys CR/UC Trial Inlay 70–75/9	1
71.34.0903	balanSys CR/UC Trial Inlay 70–75/10.5	1
71.34.0904*	balanSys CR/UC Trial Inlay 70–75/11.5	1
71.34.0905	balanSys CR/UC Trial Inlay 70–75/13	1
71.34.0906	balanSys CR/UC Trial Inlay 70–75/15.5	1
71.34.0907	balanSys CR/UC Trial Inlay 70–75/18	1
71.34.0908	balanSys CR/UC Trial Inlay 80–85/8	1
71.34.0909*	balanSys CR/UC Trial Inlay 80–85/9	1
71.34.0910	balanSys CR/UC Trial Inlay 80–85/10.5	1
71.34.0911*	balanSys CR/UC Trial Inlay 80–85/11.5	1
71.34.0912	balanSys CR/UC Trial Inlay 80–85/13	1
71.34.0913	balanSys CR/UC Trial Inlay 80–85/15.5	1
71.34.0914	balanSys CR/UC Trial Inlay 80–85/18	1

* balanSys PE Inlays 9 mm and 11.5 mm are available in vitamys only.

leggera Trial Set PS 71.34.9197A

No Picture / 71.34.1056 **leggera Set Lid**



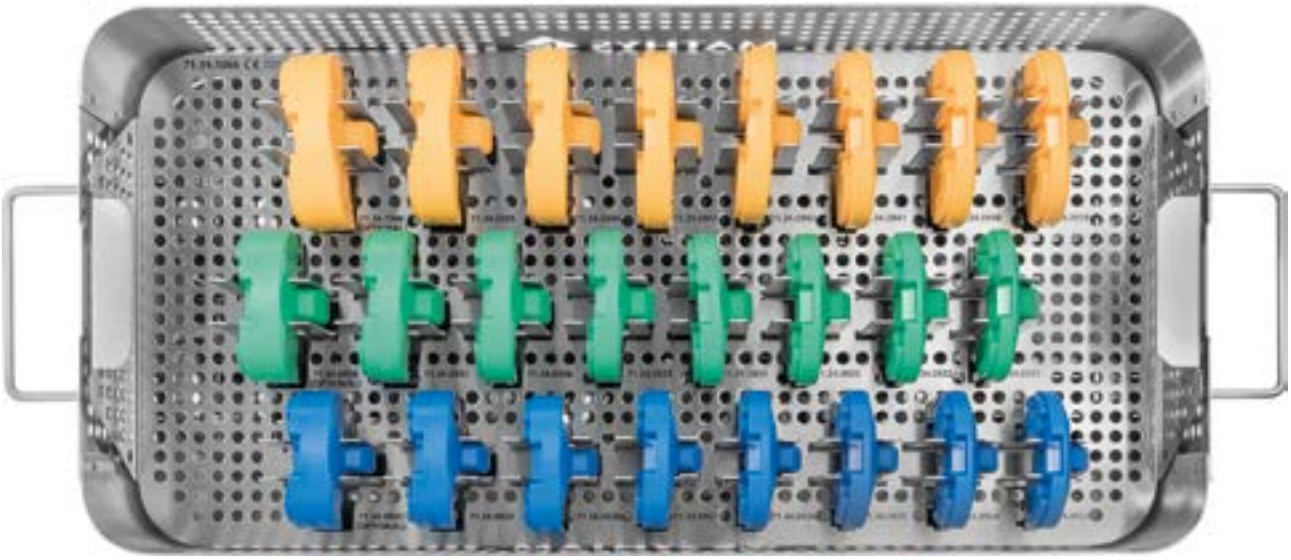
71.34.1063 **leggera Trial Set CR / UC Tray**

Item no.	Description	Qty.
79.02.0040	balanSys PS trial femur A right	1
79.02.0041	balanSys PS trial femur A left	1
79.02.0042	balanSys PS trial femur B right	1
79.02.0043	balanSys PS trial femur B left	1
79.02.0044	balanSys PS trial femur C right	1
79.02.0045	balanSys PS trial femur C left	1
79.02.0046	balanSys PS trial femur D right	1
79.02.0047	balanSys PS trial femur D left	1
79.02.0048	balanSys PS trial femur E right	1
79.02.0049	balanSys PS trial femur E left	1

Item no.	Description	Qty.
71.34.1011	balanSys Femur Box Cutting Guide A/B/C	1
71.34.1012	balanSys Femur Box Cutting Guide D/E	1

Item no.	Description	Qty.
71.34.0691	balanSys Chisel 25 mm A–F	1

leggera Trial Set PS 71.34.9197A



71.34.1066 **leggera Trial Set PS Insert**

Item no.	Description	Qty.
71.34.0923	balanSys PS Trial Inlay 64–67/8	1
71.34.0924*	balanSys PS Trial Inlay 64–67/9.0	1
71.34.0925	balanSys PS Trial Inlay 64–67/10.5	1
71.34.0926*	balanSys PS Trial Inlay 64–67/11.5	1
71.34.0927	balanSys PS Trial Inlay 64–67/13	1
71.34.0928	balanSys PS Trial Inlay 64–67/15.5	1
71.34.0929	balanSys PS Trial Inlay 64–67/18	1
71.34.0930	balanSys PS Trial Inlay 64–67/20.5	1
71.34.0931	balanSys PS Trial Inlay 70–75/8	1
71.34.0932*	balanSys PS Trial Inlay 70–75/9	1
71.34.0933	balanSys PS Trial Inlay 70–75/10.5	1
71.34.0934*	balanSys PS Trial Inlay 70–75/11.5	1
71.34.0935	balanSys PS Trial Inlay 70–75/13	1
71.34.0936	balanSys PS Trial Inlay 70–75/15.5	1
71.34.0937	balanSys PS Trial Inlay 70–75/18	1
71.34.0938	balanSys PS Trial Inlay 70–75/20.5	1
71.34.0939	balanSys PS Trial Inlay 80–85/8	1
71.34.0940*	balanSys PS Trial Inlay 80–85/9	1
71.34.0941	balanSys PS Trial Inlay 80–85/10.5	1
71.34.0942*	balanSys PS Trial Inlay 80–85/11.5	1
71.34.0943	balanSys PS Trial Inlay 80–85/13	1
71.34.0944	balanSys PS Trial Inlay 80–85/15.5	1
71.34.0945	balanSys PS Trial Inlay 80–85/18	1
71.34.0946	balanSys PS Trial Inlay 80–85/20.5	1

* balanSys PE Inlays 9 mm and 11.5 mm are available in vitamys only.

leggera Trial Set CR / UC Add. Sizes 71.34.9198A

No Picture / 71.34.1056 **leggera Set Lid**
No Picture / 71.34.1067 **leggera Trial Set CR / UC Add. Sizes Tray**

Item no.	Description	Qty.
71.34.0809	balanSys 4in1 Cutting Guide XS	1
71.34.0810	balanSys 4in1 Cutting Guide S	1
71.34.0816	balanSys 4in1 Cutting Guide F	1

Item no.	Description	Qty.
71.34.0818	balanSys Tibial Template 59	1
71.34.0801	balanSys Tibial Template 62	1

Item no.	Description	Qty.
71.34.0355	balanSys trial femur XS left	1
71.34.0356	balanSys trial femur XS right	1
71.34.0504	balanSys trial femur S left	1
71.34.0505	balanSys trial femur S right	1
71.34.0371	balanSys trial femur F left	1
71.34.0372	balanSys trial femur F right	1

Item no.	Description	Qty.
71.34.0887	balanSys CR/UC Trial Inlay 59–62/8	1
71.34.0888*	balanSys CR/UC Trial Inlay 59–62/9	1
71.34.0889	balanSys CR/UC Trial Inlay 59–62/10.5	1
71.34.0890*	balanSys CR/UC Trial Inlay 59–62/11.5	1
71.34.0891	balanSys CR/UC Trial Inlay 59–62/13	1
71.34.0892	balanSys CR/UC Trial Inlay 59–62/15.5	1
71.34.0893	balanSys CR/UC Trial Inlay 59–62/18	1

* balanSys PE Inlays 9 mm and 11.5 mm are available in vitamys only.

leggera Trial Set PS Add. Sizes 71.34.9199A

No Picture / 71.34.1056 **leggera Set Lid**
No Picture / 71.34.1068 **leggera Trial Set PS Add. Sizes Tray**

Item no.	Description	Qty.
71.34.1010	balanSys Femur Box Cutting Guide XS/S	1
71.34.1013	balanSys Femur Box Cutting Guide F	1

Item no.	Description	Qty.
71.34.0690	balanSys Chisel 22 mm XS/S	1

Item no.	Description	Qty.
71.34.0382	balanSys PS trial femur XS left	1
71.34.0383	balanSys PS trial femur XS right	1
71.34.0247	balanSys PS trial femur S left	1
71.34.0248	balanSys PS trial femur S right	1
71.34.0399	balanSys PS trial femur F left	1
71.34.0400	balanSys PS trial femur F right	1

Item no.	Description	Qty.
71.34.0915	balanSys PS Trial Inlay 59–62/8	1
71.34.0916*	balanSys PS Trial Inlay 59–62/9	1
71.34.0917	balanSys PS Trial Inlay 59–62/10.5	1
71.34.0918*	balanSys PS Trial Inlay 59–62/11.5	1
71.34.0919	balanSys PS Trial Inlay 59–62/13	1
71.34.0920	balanSys PS Trial Inlay 59–62/15.5	1
71.34.0921	balanSys PS Trial Inlay 59–62/18	1
71.34.0922	balanSys PS Trial Inlay 59–62/20.5	1

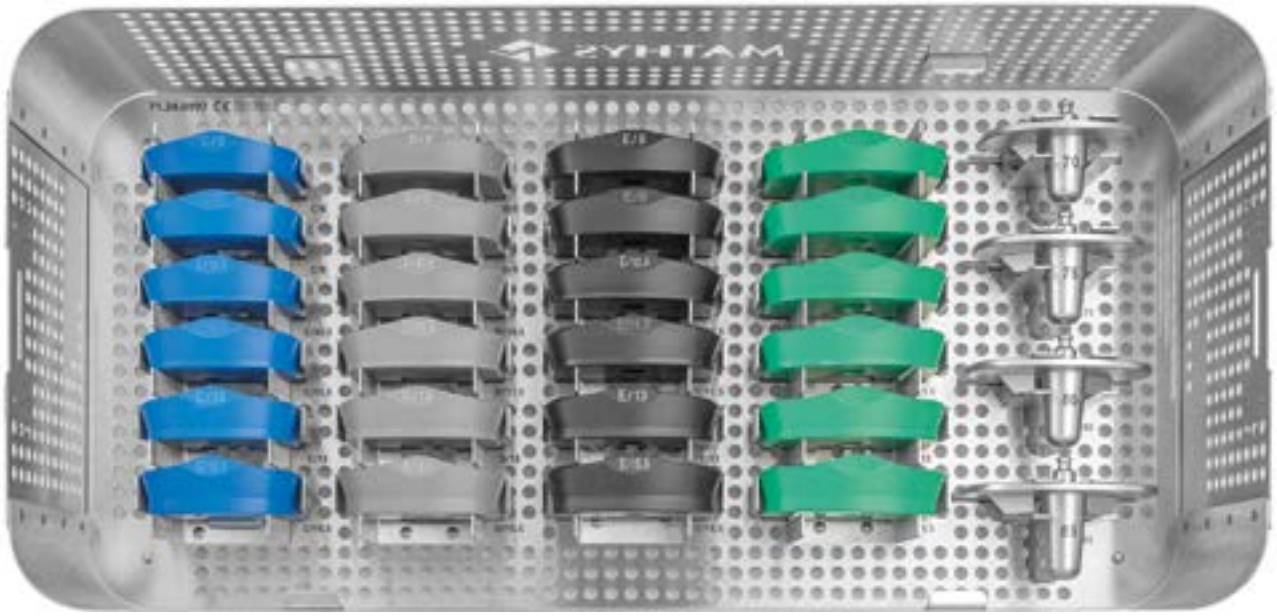
* balanSys PE Inlays 9 mm and 11.5 mm are available in vitamys only.

Item no.	Description	Qty.
71.34.0809	balanSys 4in1 Cutting Guide XS	1
71.34.0810	balanSys 4in1 Cutting Guide S	1
71.34.0816	balanSys 4in1 Cutting Guide F	1

Item no.	Description	Qty.
71.34.0818	balanSys Tibial Template 59	1
71.34.0801	balanSys Tibial Template 62	1

balanSys Trial Set RP 71.34.9060A (optional)

No Picture / 71.34.1056 **leggera Set Lid**



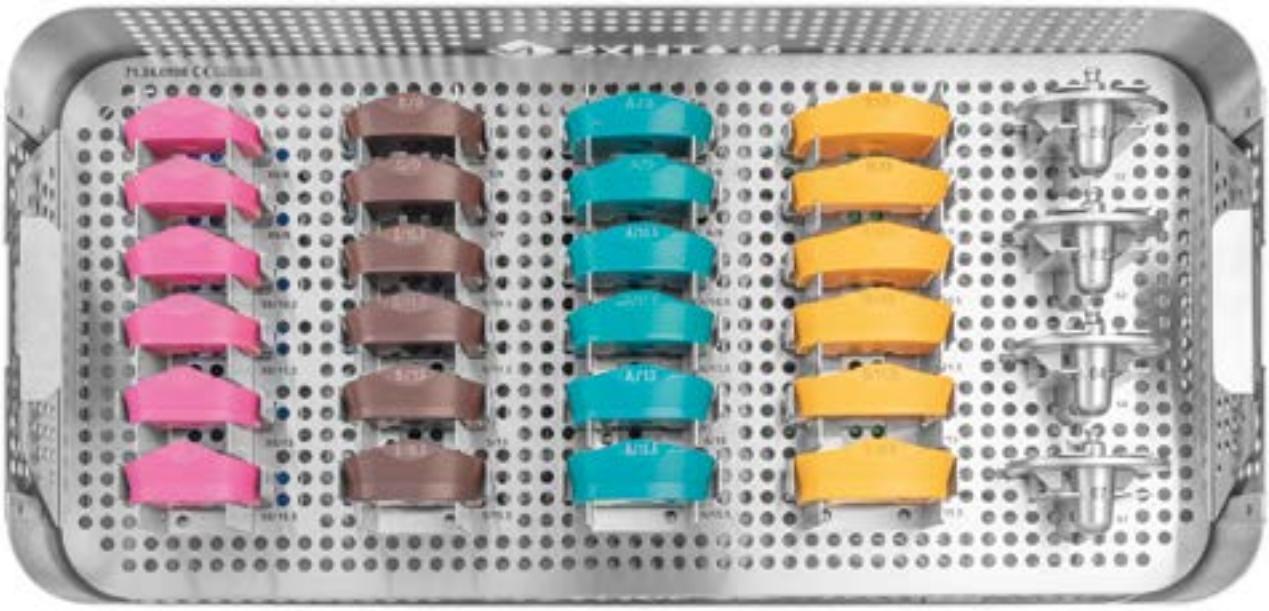
71.34.0997 **balanSys Trial Set 6-RP Tray**

Item no.	Description	Qty.
71.34.0297	balanSys RP Trial Tibial Plateau 70	1
71.34.0298	balanSys RP Trial Tibial Plateau 75	1
71.34.0299	balanSys RP Trial Tibial Plateau 80	1
71.34.0300	balanSys RP Trial Tibial Plateau 85	1

Item no.	Description	Qty.
71.34.0574	balanSys RP PE Trial Inlay C/8	1
71.34.0989*	balanSys RP PE Trial Inlay C/9	1
71.34.0575	balanSys RP PE Trial Inlay C/10.5	1
71.34.0990*	balanSys RP PE Trial Inlay C/11.5	1
71.34.0576	balanSys RP PE Trial Inlay C/13	1
71.34.0577	balanSys RP PE Trial Inlay C/15.5	1
71.34.0580	balanSys RP PE Trial Inlay D/8	1
71.34.0991*	balanSys RP PE Trial Inlay D/9	1
71.34.0581	balanSys RP PE Trial Inlay D/10.5	1
71.34.0992*	balanSys RP PE Trial Inlay D/11.5	1
71.34.0582	balanSys RP PE Trial Inlay D/13	1
71.34.0583	balanSys RP PE Trial Inlay D/15.5	1
71.34.0586	balanSys RP PE Trial Inlay E/8	1
71.34.0993*	balanSys RP PE Trial Inlay E/9	1
71.34.0587	balanSys RP PE Trial Inlay E/10.5	1
71.34.0994*	balanSys RP PE Trial Inlay E/11.5	1
71.34.0588	balanSys RP PE Trial Inlay E/13	1
71.34.0589	balanSys RP PE Trial Inlay E/15.5	1
71.34.0429	balanSys RP PE Trial Inlay F/8	1
71.34.0995*	balanSys RP PE Trial Inlay F/9	1
71.34.0430	balanSys RP PE Trial Inlay F/10.5	1
71.34.0996*	balanSys RP PE Trial Inlay F/11.5	1
71.34.0431	balanSys RP PE Trial Inlay F/13	1
71.34.0432	balanSys RP PE Trial Inlay F/15.5	1

* balanSys PE Inlays 9 mm and 11.5 mm are available in vitamys only.

balanSys Trial Set RP 71.34.9060A (optional)



71.34.0998 **balanSys Trial Set 6-RP Insert**

Item no.	Description	Qty.
71.34.0418	balanSys RP Trial Tibial Plateau 59	1
71.34.0294	balanSys RP Trial Tibial Plateau 62	1
71.34.0295	balanSys RP Trial Tibial Plateau 64	1
71.34.0296	balanSys RP Trial Tibial Plateau 67	1

Item no.	Description	Qty.
71.34.0413	balanSys RP PE Trial Inlay XS/8	1
71.34.0981*	balanSys RP PE Trial Inlay XS/9	1
71.34.0414	balanSys RP PE Trial Inlay XS/10.5	1
71.34.0982*	balanSys RP PE Trial Inlay XS/11.5	1
71.34.0415	balanSys RP PE Trial Inlay XS/13	1
71.34.0416	balanSys RP PE Trial Inlay XS/15.5	1
71.34.0301	balanSys RP PE Trial Inlay S/8	1
71.34.0983*	balanSys RP PE Trial Inlay S/9	1
71.34.0302	balanSys RP PE Trial Inlay S/10.5	1
71.34.0984*	balanSys RP PE Trial Inlay S/11.5	1
71.34.0303	balanSys RP PE Trial Inlay S/13	1
71.34.0304	balanSys RP PE Trial Inlay S/15.5	1
71.34.0562	balanSys RP PE Trial Inlay A/8	1
71.34.0985*	balanSys RP PE Trial Inlay A/9	1
71.34.0563	balanSys RP PE Trial Inlay A/10.5	1
71.34.0986*	balanSys RP PE Trial Inlay A/11.5	1
71.34.0564	balanSys RP PE Trial Inlay A/13	1
71.34.0565	balanSys RP PE Trial Inlay A/15.5	1
71.34.0568	balanSys RP PE Trial Inlay B/8	1
71.34.0987*	balanSys RP PE Trial Inlay B/9	1
71.34.0569	balanSys RP PE Trial Inlay B/10.5	1
71.34.0988*	balanSys RP PE Trial Inlay B/11.5	1
71.34.0570	balanSys RP PE Trial Inlay B/13	1
71.34.0571	balanSys RP PE Trial Inlay B/15.5	1

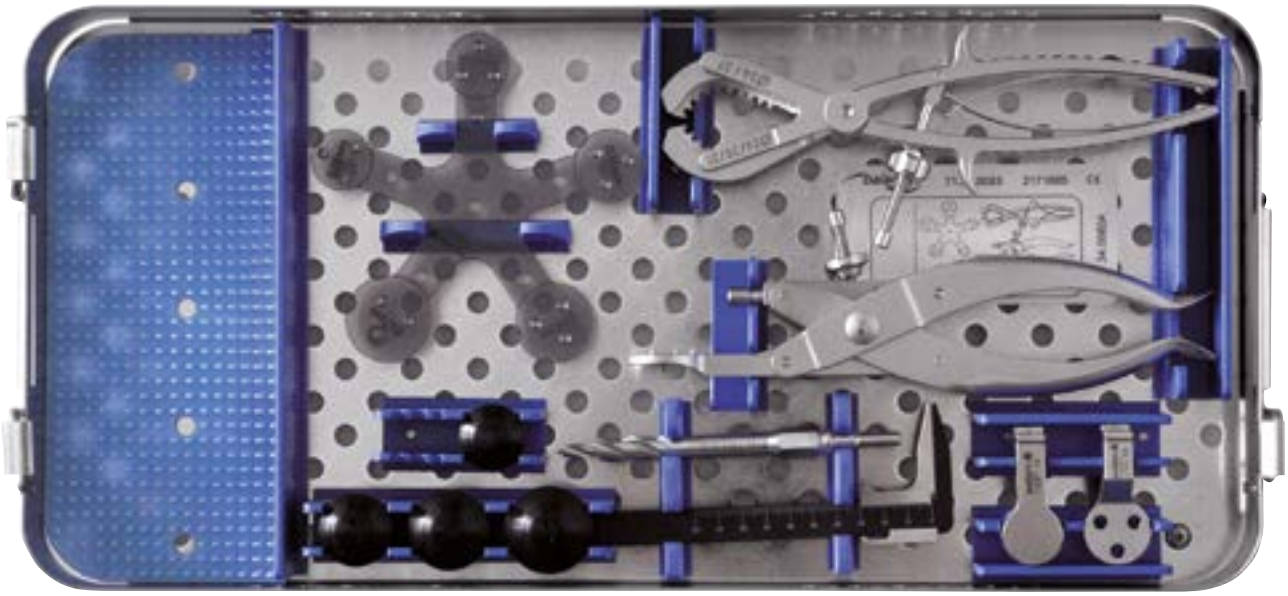
* balanSys PE Inlays 9 mm and 11.5 mm are available in vitamys only.

balanSys 3-Peg Patella FLAT 71.34.0080A

No Picture / 71.34.0082
balanSys Lid 3-Peg Patella FLAT

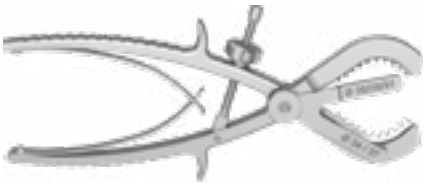
balanSys 3-Peg Patella Standard 71.34.0081A

No Picture / 71.34.0084
balanSys Lid 3-Peg Patella STANDARD

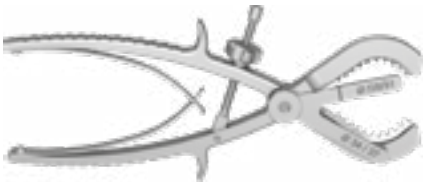


71.34.0083 **balanSys Tray f / patella 3 pegs FLAT**

71.34.0085 **balanSys Tray f / patella 3 pegs STANDARD**



Item no.	Description
71.34.0071	balanSys Patella resection pliers flat



Item no.	Description
71.34.0070	balanSys Patella resection pliers raised

Item no.	Description
71.34.0708	balanSys Trial patella 3 pegs flat 26
71.34.0075	balanSys Trial patella 3 pegs flat 28
71.34.0076	balanSys Trial patella 3 pegs flat 31
71.34.0077	balanSys Trial patella 3 pegs flat 34
71.34.0078	balanSys Trial patella 3 pegs flat 37

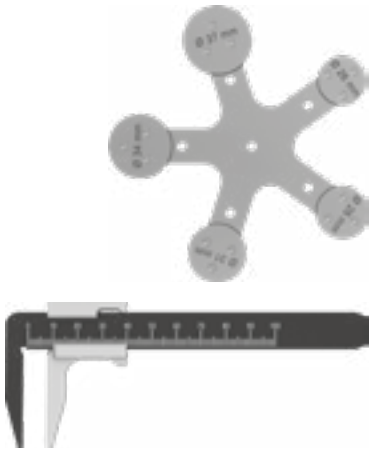
Item no.	Description
71.02.3063	balanSys trial patella 3-peg 28
71.02.3064	balanSys trial patella 3-peg 31
71.02.3065	balanSys trial patella 3-peg 34
71.02.3066	balanSys trial patella 3-peg 37

Item no.	Description	Qty.
71.02.2201	balanSys Patella universal pliers	1

Item no.	Description	Qty.
71.34.0074	balanSys Patella drill guide to pliers	1

Item no.	Description	Qty.
71.34.0073	balanSys Patella cementing aid to pliers	1

Item no.	Description	Qty.
71.02.3061	Drill bit 5.5	1



Optional instruments
NOT part of the standard configuration and must be ordered separately:

Item no.	Description	Qty.
71.34.0079	balanSys patella sizing guide	1

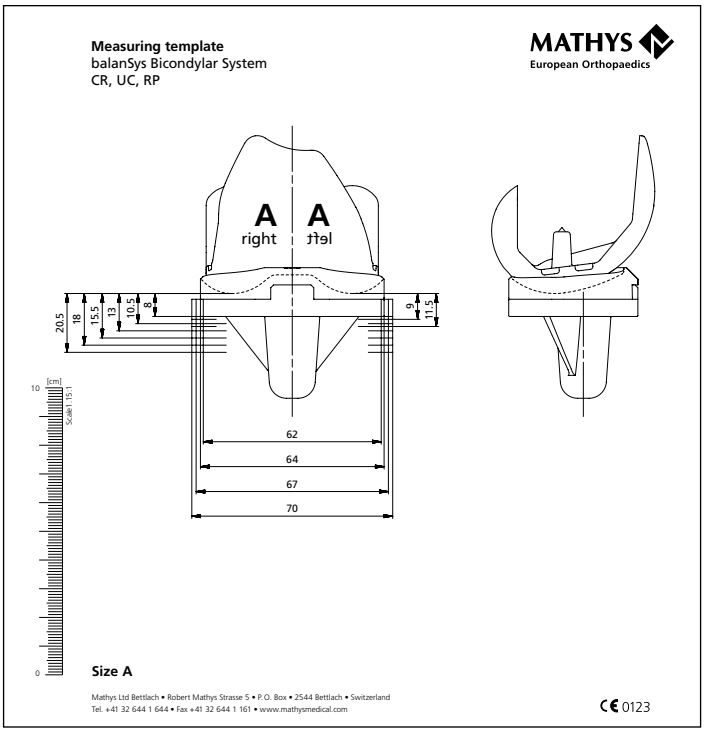
Item no.	Description	Qty.
71.02.3002	balanSys Patella calliper	1

9. Instruments

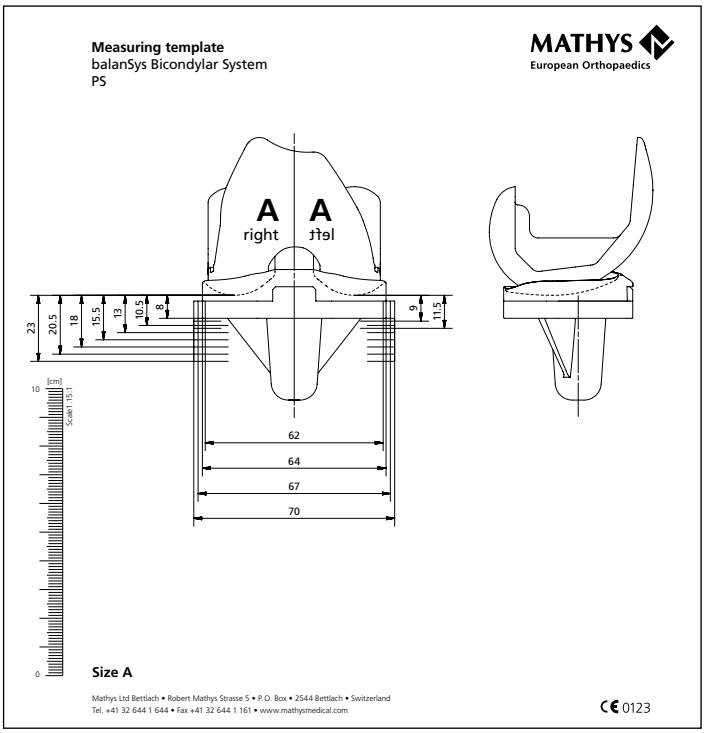
9.1 Measuring templates

balanSys BICON Knee System 330.030.034

Suitable for CR, UC and RP



balanSys PS Knee System 330.030.035



10. Symbols and abbreviations


Manufacturer


Correct


Incorrect


Caution


Open


Close

Click! Engage snap mechanism

CR	Cruciate Retaining
UC	Ultra Congruent
PS	Posterior Stabilized
RP	Rotating Platform
ACL	Anterior Cruciate Ligament
PCL	Posterior Cruciate Ligament
MCL	Medial Collateral Ligament
LCL	Lateral Collateral Ligament
TRS	Tibia Reference System
IFU	Instruction For Use

Notes

Notes

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