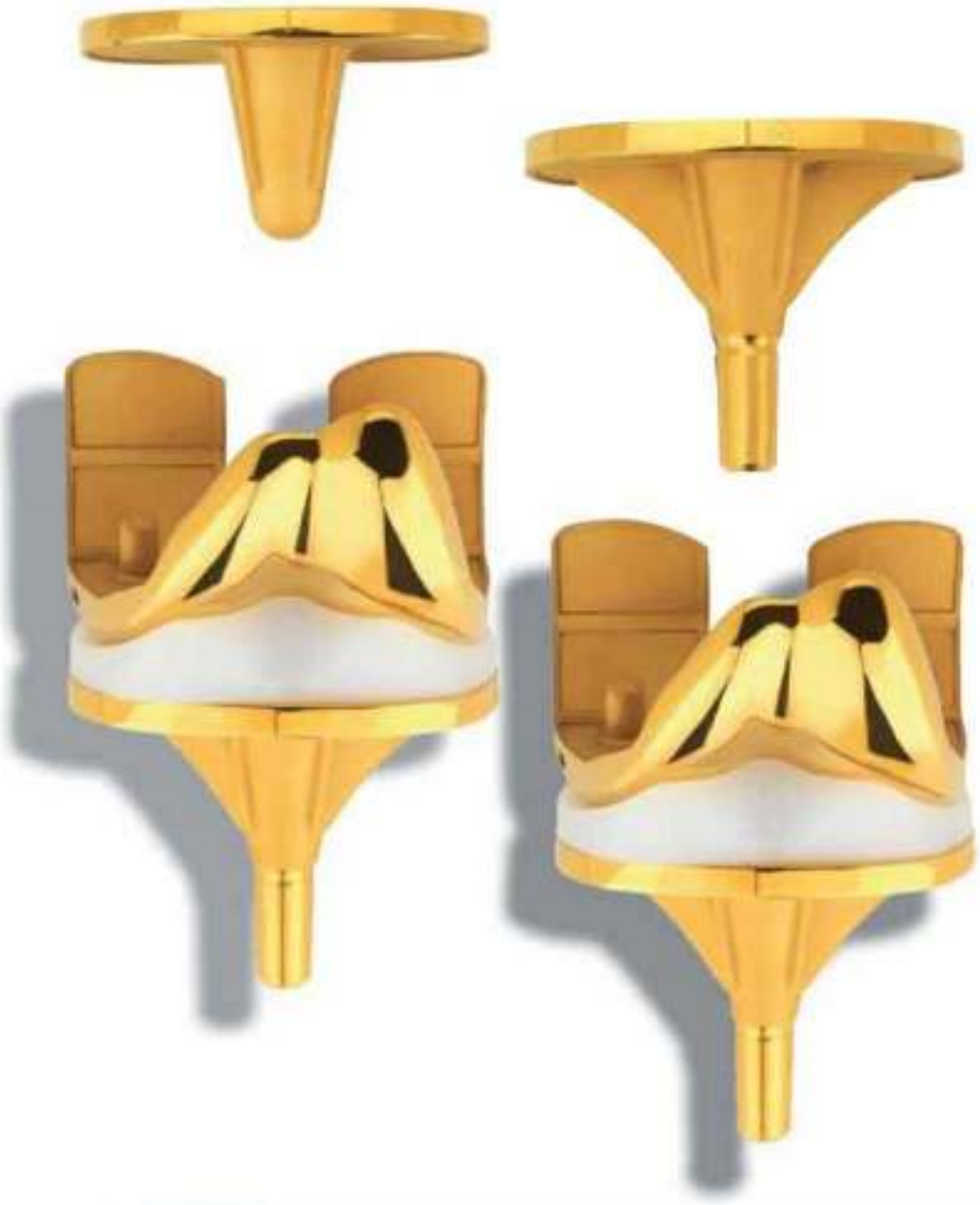
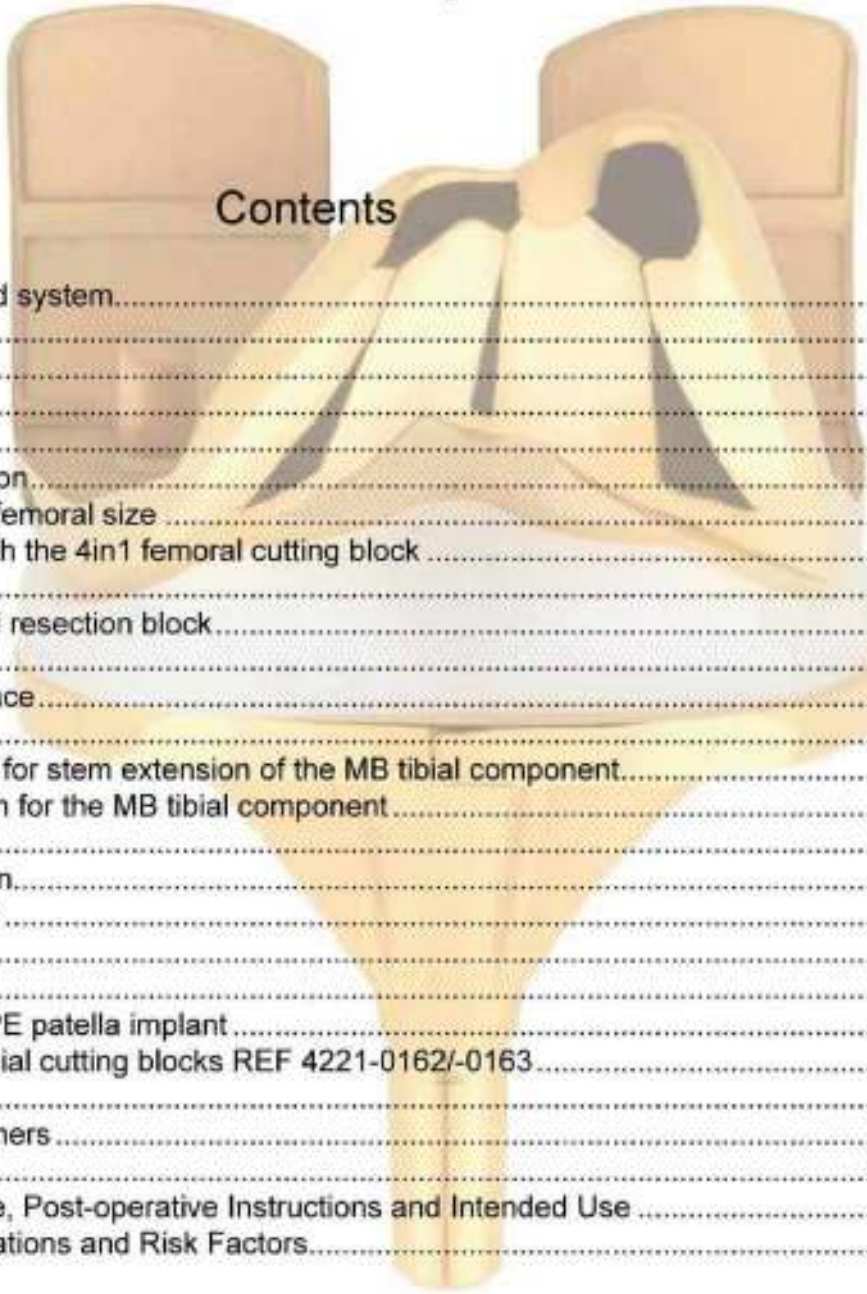
acs®
knee system
advanced coated system



implantcast

Mobile-Bearing Primary Surgical Technique 4in1 technique (distal femur cut first)

ACS® Primary Mobile Bearing 4in1 Technique



Contents

Nota Bene: The herein described surgical technique shows the treatment suggested by the author in uncomplicated surgical procedures. However, it is ultimately the operating surgeon's decision, which approach is the most reasonable and effective for the respective patient.

ACS® - advanced coated system

History

The clinical experience for decades of years makes the ACS® system to a worldwide proven knee joint replacement. Beginning with the introduction of the ceramic coated primary mobile bearing system continuous design optimizations were carried out in collaboration with several clinical partners. The developments of the fixed bearing and the unicondylar knee joint replacement, manufactured from an established orthopaedic implant material, followed. Finally the system is complemented by multiple options for revision cases.

Flexibility

The ACS® system offers an optimal solution individually for every patient, whether mobile or fixed bearing version, for primary interventions to the point of complex revision cases. The components are each available as cemented or cementless as well as coated or uncoated version. The same geometry of the articulating surface of the femoral component from uni to revision, as well as an identical inner contour of the femoral component from primary to revision allow for a high degree of intraoperative flexibility and for maximum preservation of bone stock. The instrumentation guarantees a simple, intuitive surgical technique.

Modularity

The ACS® system - a flexible, versatile system - has various femoral and tibial sizes available for an excellent fit of the components and an optimal bone coverage. Due to its modularity the system offers manifold options. The primary mobile bearing and fixed bearing tibia allow for the use of stem extensions. For revision cases a specific mobile bearing SC tibial component is available, whereas the identical fixed bearing tibia can be used in primary as well as revision cases. For the compensation of bone defects, femoral as well as as tibial spacer of different thicknesses are available. Femorally and tibially it is possible to use stems of several lengths and different diameters as well as offsets via appropriate adapters.

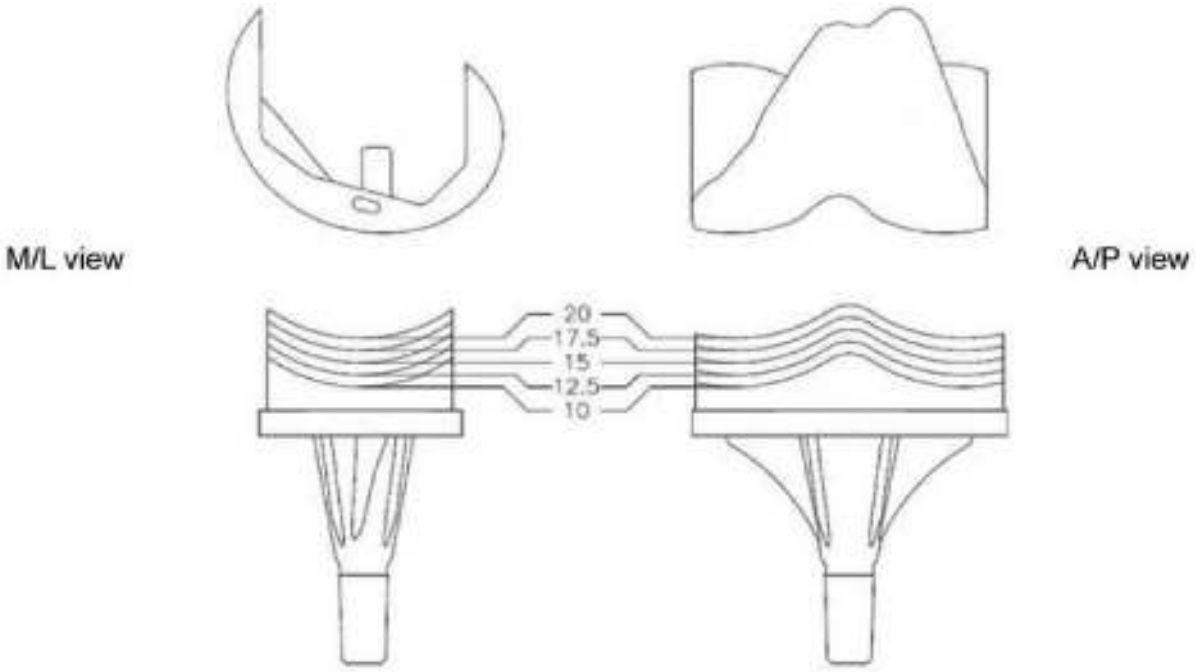
Pre-operative planning

Pre-operative planning and precise surgical techniques are mandatory for optimal results. The instructions and the procedure given in the surgical technique to the system must be adhered to. Familiarity with the recommended surgical technique and its careful application is essential to achieve the best possible outcome.
Before surgery a surgical planning with regard to the dimensions of the prosthetic model and the positioning of the implant components in the bone has to be carried out by the surgeon.

For this purpose, x-ray templates are available:

- Digital templates: Digital templates are included in the data base of the common planning systems. For missing templates, please contact the provider of the planning software and request for these templates.

- Radiographic templates: Alternatively radiographic templates are available in various scale factors, which can be obtained from your local representative.



Further prior to surgery the following should be ensured:
- all needed components are available during surgery. An adequate number of various implant components should be available for surgery. It should be determined whether the implantation should be done with or without the use of bone cement.
- All instruments for the implantation are present and are matching the corresponding implants. The insertion instruments must be adapted to the implant. The implants may only be used with the instruments of the implantcast GmbH. An exception are exclusively the standardized instruments used during surgery.

For further information, please see the instructions for use for ACS® Knee System (09300014GB) and p.40 and 41 of this surgical technique.

ACS® MB compatibility

Patella component

PE-Patella

Size: 26mm 29mm 32mm 35mm

compatible with all femoral sizes

Femoral component*

Size 1** / Size 2 | Size 2.5 / Size 3 / Size S3 | Size 4 / Size S4 | Size 5 / Size S5 | Size 5.5 / Size 6 / Size S6 / Size 7**

* the femoral components are also avaiable in the version PS and slim for selective sizes.
** available only for selected versions and on special demand

Tibial-PE-insert* symmetrical**

Size 2 | Size 3 | Size 4 | Size 5 | Size 6

*** all PE-inserts are available in heights 10, 12.5, 15, 17.5 and 20mm and in versions Standard, Deep Dish (DD) and posterior stabilized (PS).

Tibial component symmetrical

Design Basic

Design Standard

Size 2 | Size 3 / Size 3.5 | Size 4 | Size 5 | Size 6 / Size 7

→ compatible with

Surgical approach

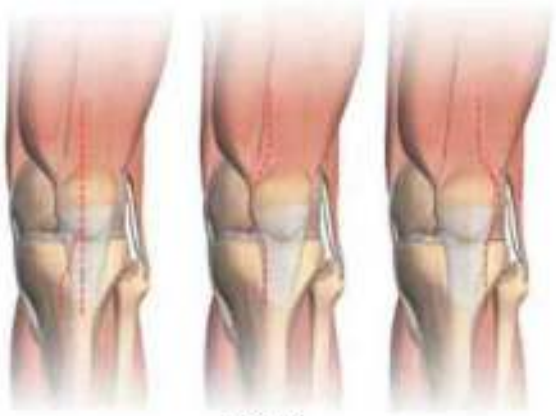


Fig. 1

Make a central skin incision across the patella. Then choose the preferred medial or lateral approach to open the knee joint (Fig. 1).

Note: Within this technique you have the choice of beginning with the femoral or the tibial preparation. The shown technique starts with the femoral preparation.

Femur preparation

Fig. 2

Open the femoral medullary canal with the initiator drill 9mm. The entry point should be set 7-10mm anterior to the posterior cruciate ligament (Fig. 2).

Fig. 3

To set the pre-operatively planned valgus angle, push the adjusting lever (Fig. 3) of the femoral alignment guide to release the locking mechanism. For locking release the adjusting lever at the desired position.

Insert the intramedullary rod through the femoral alignment guide into the opened medullary canal and attach the external rotation guide for the desired external rotation (Fig. 4). For correct alignment the rotation guide should touch the posterior condyles.

Fig. 4

The external rotation guide (Fig. 5) is available in three versions:

3° external rotation left side
3° external rotation right side
0° neutral

Fig. 5

Connect the distal cutting block and the alignment guide for the distal cutting block. The coupling is correct, when you hear a clicking noise and the implantcast logo (ic-cloverleaf) of the alignment guide is completely or partly visible through the central hole on the anterior side of the distal cutting block (Fig. 6).

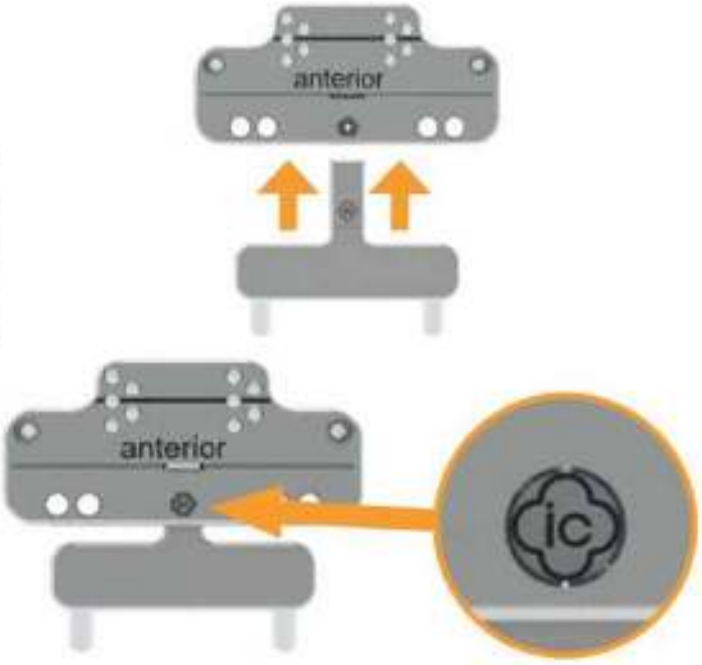


Fig. 6

Fig. 7

Slide the distal cutting block into the femoral alignment guide and lower it until the cutting block touches the anterior femoral bone (Fig. 7). To achieve a correct alignment make sure that the external rotation guide is in contact with the posterior condyles before fixating the distal cutting block to the femur.

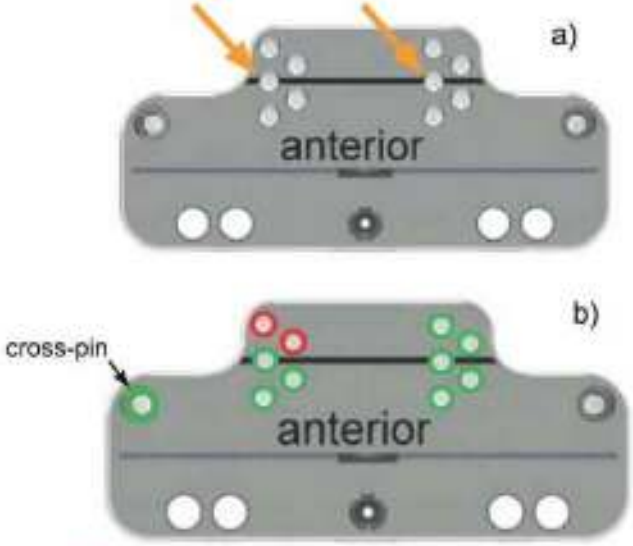


Fig. 8

It is recommended to use the two highlighted holes to fix the cutting block, then it is possible to shift the block in a more proximal/distal direction afterwards. That facilitates the reresection and accordingly the decrease of the planned resection level.

For more stability of the distal cutting block use a cross-pin. Please be aware that the cross-pin can not be inserted when a pin is used through one of the more proximal pin holes of the same side of the block (Fig. 8).

Fig. 9

After the distal cutting block has been fixed, the intramedullary rod can be removed with the T-handle. Then the femoral alignement guide and the external rotation guide can be disassembled (Fig. 9).

Distal femoral resection

The resection level can be checked by inserting the long resection check into the saw guide (Fig. 10).

Resect the distal femoral condyles through the saw guide by using the ACS® saw blade (Fig. 11). For more stability of the cutting block insert an additional cross pin.

Note: It is recommended to use the ACS® saw blade of medium size.

Fig. 10

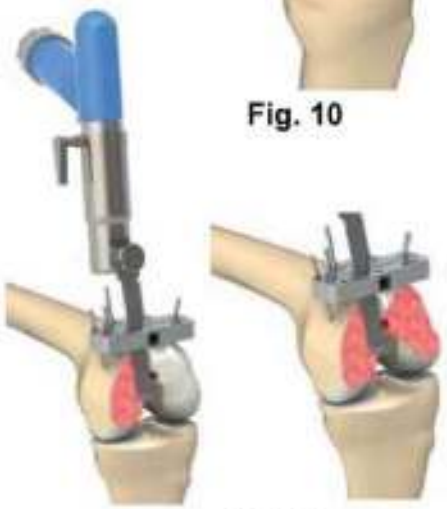


Fig. 11

Determination of the femoral size

The size of the femoral component is determined via anterior referencing by use of the femoral sizing guide (Fig. 12). At first loosen both set screws of the sizing guide and place the guide in neutral position 1. The markings should be aligned as indicated. Secure the position via the set screw 2.

Fig. 12

Place the sizing guide on the distal resected femur and make sure that the sizing guide touches the posterior condyles (Fig. 13). Lower the stylus anteriorly to the femoral bone and lock the set screw 3.

Fig. 13

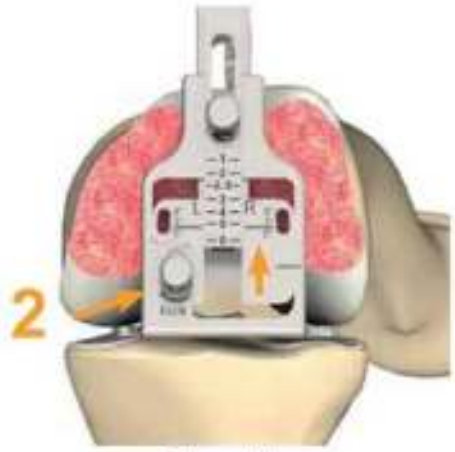


Fig. 14

The needed size of femoral component can be read from the scale.

If the size is not clearly readable (marking between two sizes), it is recommended to choose the next smaller femoral component size (Fig. 14). The sizer can be adjusted to the next smaller size by loosening set screw 2. Then adjust the sizer to the smaller size and lock screw 2 in the new position (Fig. 15).

Note: If the femoral component of the next larger size is selected, no sizer adjustment is necessary.

Fig. 15

Fig. 16

Insert two pins through the holes of the sizing guide to mark the position of the 4in1 cutting block of the respective size (Fig. 16). The insertion of the pins is done according to the afore used external rotation guide:

3° external rotation left knee:	3° L and 0° R
3° external roation right knee:	0° L and 3° R
neutral:	0° L and 0° R

Note: If an increased external rotation is desired, insert the pins through the holes with the 6°-marking respectively.

Subsequently, remove the pins and the sizing guide.

Femoral resection with the 4in1 femoral cutting block

Put the 4in1 cutting block of the determined femoral size in the afore prepared holes on the distally resected surface (Fig. 17).

Fig. 17

The 4in1 cutting block needs to sit flush with the distally resected femur. For increased stability during resection, insert additional cross-pins (Fig. 18). Futhermore, modular handles can be attached to the cutting block which make it possible to hold the block in place.

Fig. 18

Perform the anterior cut through the anterior slot (Fig. 19).

Fig. 19

Perform the resection of the posterior condyles through the posterior slots (Fig. 20).

Fig. 20

Fig. 21

Finally the anterior and posterior chamfer cuts are performed through the corresponding slots (Fig. 21).

Note: It is recommended to use the ACS® saw blade of medium size!

Tibia preparation

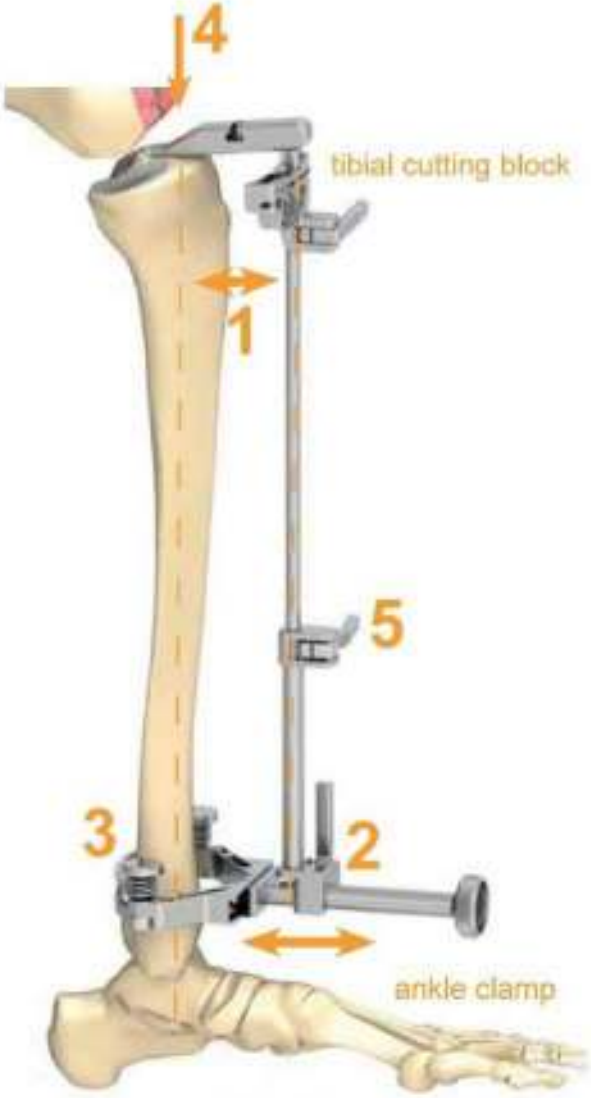


Fig. 22

Assemble the ankle clamp and the tibial cutting guide as indicated. Once the desired alignment is adjusted, fix the position of the tibial cutting block by closing the connection clamps respectively (Fig. 22).

Perform the adjustment as follows:
Align the tibial cutting guide 1 parallel to the intramedullary axis of the tibia. The posterior inclination of the tibial resection block should be parallel to the inclination of the tibia 2. Fix the ankle clamp 3 and insert the second bolt 4 of the cutting guide into the bone. Finally fix the rod 5.

Depending on the desired tibial slope the respective tibial resection block (5° or 7°) is attached (Fig. 23).

Note: There is no slope integrated into the design of the tibial component. Thus the peg of the tibial component will be titled anteriorly from the intramedullary axis when using the respective resection block.

Fig. 23

Adjust the medio-lateral position and fix the position by locking the knurled screw 6 (Fig. 24).

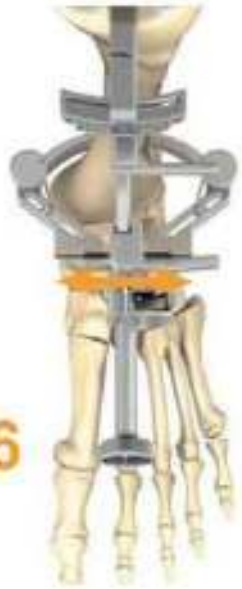


Fig. 24

Alignment of the tibial resection block

Adjust the tibial resection height by means of the tibial stylus (Fig. 25).
There are the following two options to adjust the tibial resection height: 2mm underneath the lowest point of the tibial plateau or 10mm underneath the highest. For both options the resection is performed through the slot of the resection block (slotted).

Fig. 25

Option A: lowest contact point as reference

Fig. 26

With this technique, the tibial resection block is oriented towards the deepest tibial point on the worn side. The stylus side marked with 2mm (Fig. 26) has to be used.

Attach the stylus to the tibial resection block and lower the resection block until the tip of the stylus touches the deepest point of the more destructed tibial side (Fig. 27), mostly the medial side. In this position the resection block is fixed to the cutting guide.

By doing this the resection will be performed 2mm below the referenced defect point.

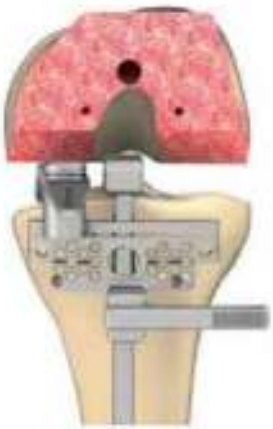


Fig. 27

Option B: highest contact point as reference

Fig. 28

With this technique, the tibial resection block is oriented towards the highest tibial point on the lesser worn side. The stylus side marked with 10mm has to be used (Fig. 28).

Insert the base of the stylus into the slot of the tibial resection block and lower the resection block until the tip of the stylus touches the highest point of the less destructed tibial side (Fig. 29), mostly the lateral side. In this position the resection block is fixed to the cutting guide.

By doing this, the resection will be performed 10mm below the referenced tibial point.

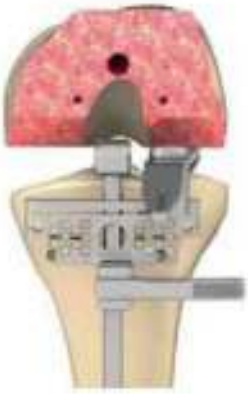


Fig. 29

Once the alignment has been done, fix the resection block to the tibial bone by inserting two pins (Fig. 30).

Fig. 30

It is recommended to use the two countersunk holes in the marked plane of the resection block (Fig. 31), like this it is possible to shift the cutting block to a more proximal/distal position. That facilitates the reresection and accordingly the decrease of the planned resection.

Fig. 31

Optionally, the alignment host can be attached to the resection block to check the tibial alignment with the extramedullary rod (Fig. 32).

Fig. 32

After releasing the clamps, the tibial cutting guide is removed by use of the slap hammer (Fig. 33).

Fig. 33

Tibial resection

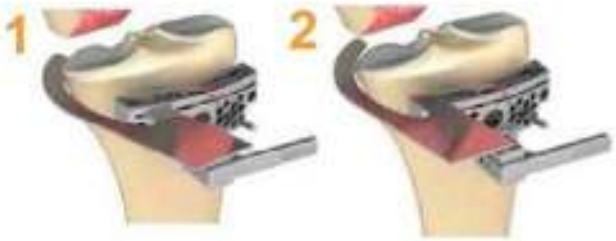


Fig. 34

The resection plane can be checked with the long resection check (Fig. 34). The resection check is applied according to the selected resection technique (slotted or non-slotted) either through the slot 1 or on the tibial resection block 2.

Fig. 35

If an increased stability is necessary fix the resection block with an additional cross-pin (Fig. 35

Fig. 36

Note: Please be aware that the cross-pin can not be inserted when a pin is used through one of the more proximal pin holes of the same side of the block (Fig. 36).

Fig. 37

Perform the tibial resection according to the selected resection technique: guided through the slot (Fig. 37) or non-slotted.
After the resection the block is removed.

Check of the joint space

Assemble the adapter and the joint space gauger (Fig. 38) to check the joint space in case of a resected tibia and a resected femur by using a 10mm PE insert 1. For simulation of an increased PE thickness a spacer shim of the respective PE thickness can be assembled to the joint space gauger 2.

Fig. 38

Fig. 39

Insert the spacer block into the flexion (Fig. 39) and extension gap (Fig. 40) to check the ligament situation and make corrections if necessary.

Fig. 40

Final tibial preparation

Fig. 44

Attach a tibial trial plate of the selected size to the handle and check size and rotation (Fig. 44). To check the rotational alignment the external alignment rod can be inserted through the handle. In case of a satisfying position respective size fix the plate with the short bone pins with stop through the outer holes of the plate.

Fig. 45

Remove the handle and attach the tibial drill bushing of the respective tibial size (Sz. 2/3, 4/5 and 6/7) with the pins in the corresponding holes of the trial plate (Fig. 45). In case of need the modular handle can be screwed to the tibial drill bushing.

Fig. 41

Fig. 42

Ream with the tibial reamer through the bushing till the stop (Fig. 41).
For an optional compression of the cancelleous bone a tibial punch is additionally available, which is impacted till the stop through the drill bushing (Fig. 42).

Fig. 43

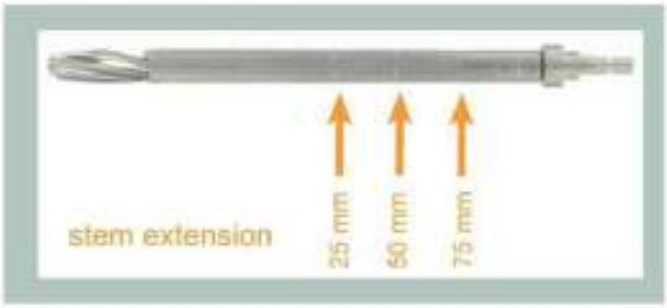
For the MB tibial component basic (Fig. 43) the tibial preparation is finalized at that stage. If you use that component proceed with the trial reposition (p.19).

Optional: preparation for stem extension of the MB tibial component

If a stem extension should be used with the MB tibial component (Fig. 46), insert the tibial drill guide 14mm into the drill bushing.

Fig. 46

Drill with the drill for stem extensions through the tibial drill guide (Fig. 47) to the marking of the corresponding length:



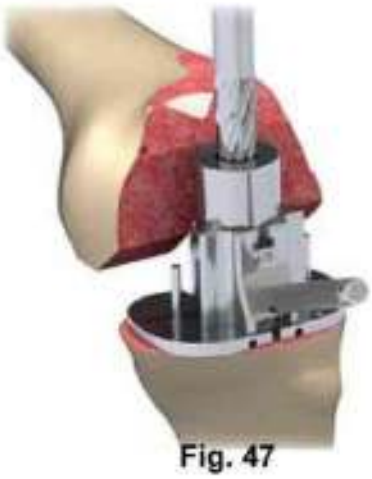


Fig. 47

Final tibial preparation for the MB tibial component

Remove the tibial drill bushing. Connect the handle with the tibial trial cone with fins by pulling the front part of the handle backwards and fix the trial cone of the corresponding tibial size (size 2-4 and 5-7).

Impact the trial cone through the tibial trial plate till the stop (Fig. 48).

Fig. 48

Loosen the handle afterwards and leave the trial cone in for a subsequent trial reposition (Fig. 49).

Fig. 49

Trial reposition

Fig. 50

Attach a trial PE-insert of the correct size to the tibial trial plate (Fig. 50). The size of the PE-insert complies with the femoral size. There are trial PE-inserts with 10 and 12.5mm height available.

Note: For simulation of PE inserts with increased thickness there are corresponding adapters for 15, 17.5 and 20mm thickness available. They have to be assembled to the 10mm trial insert accordingly.

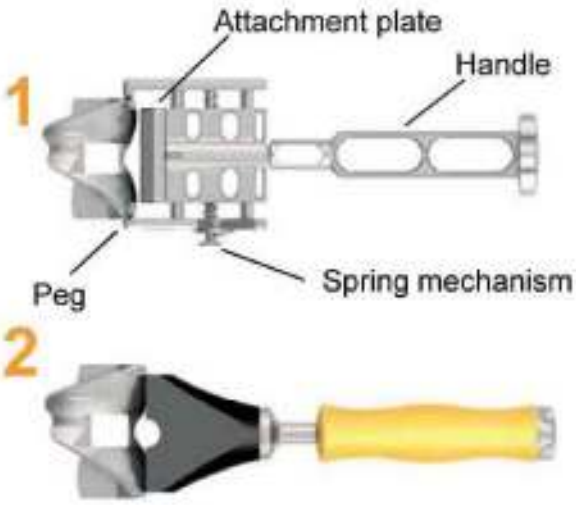


Fig. 51

Attach the femoral trial component of the determined size to the femur. To attach the femoral trial component to the femur start with the guided impactor 1 (Fig. 51). The fixation of the components in the femoral impactor guide results from two pegs, which grab laterally in the component by compression. By turning the handle the attachment plate is screwed to the component and the femoral component is hammered to the bone. For removal of the femoral impactor guide firstly release the attachment plate by turning the handle and then push the spring mechanism, which opens the impactor guide.
Following this, perform the final impaction with the short femoral impactor (non-guided) 2.

Fig. 52

Fig. 52 shows the impaction of the femoral trial component with the guided impactor.

Check the ligament tension and check the joint stability in flexion (Fig. 53) and extension (Fig. 54). In case of insufficient stability the trial reposition should be redone with a trial insert of increased thickness.

If you can't achieve sufficient anterio-posterior stability by using a trial insert of increased thickness, the use of a posterior stabilised implant should be considered (see page 23).

Note: A final reduction with trial inserts can further be performed after implantation of the final implant components.

Fig. 53

Fig. 54

Final femoral preparation

Ensure the appropriate medio-lateral position of the femoral trial component. Prepare the holes for the two pegs of the femoral implant by drilling through the holes of the trial component with the femoral drill with stop (Fig. 55). Complete the anterior femoral bone preparation by use of a saw blade or the osteotom (Fig. 56).

Note: If a component with smaller medio-lateral dimensions is desired (with same antero-posterior dimensions), use the respective slim femoral trial component.

The femoral preparation is done after this step.

Fig. 55

Fig. 56

Femoral preparation PS

Fig. 57

Remove the trial PE insert and the femoral trial component. Attach the PS box chisel guide of the correct size to the femoral bone (Fig. 57). Make sure that the guide rests properly on the distal and the anterior resected surfaces. Fixate the guide to the bone with 2 to 3 fixation pins.

Fig. 58

Use the PS box reamer first anteriorly and then posteriorly (Fig. 58). Ream all the way to the stop. Push the rotating reamer to the anterior and the posterior edge in order to complete the reaming.

Fig. 59

Use the PS box chisel to finalize the bone preparation for the stabilising box. Insert the chisel to the anterior and the posterior edge till the stop (Fig. 59).

Fig. 60

Finally use the PS osteotom to prepare the anterior notch (Fig. 60).

Trial reposition PS

Remove the PS chisel guide and insert the PS femoral trial component of the correct size by using the femoral impactor guide (Fig. 61).

Fig. 61

Insert the PS trial insert of the previously determined tibial size and thickness (Fig. 62).

Check the ligament tension and the stability of the joint in flexion and extension. If necessary, increase the thickness of the trial insert until sufficient stability is achieved.

Fig. 62

Remove the trial insert and the PS femoral trial component by using of the slap hammer (Fig. 63). Screw the adapter for the slap hammer into the trial component for that purpose.

Fig. 63

Implantation

Fig. 64

Fig. 65

Fig. 66

Fig. 67

Fig. 68

Depending on the choice of the implant components (cementless or cemented) an adequate amount of bone cement needs to be kept ready.

The tibial component should be implanted first (Fig. 64). Impact the tibial component with caution into the tibial bone. Use the tibial impactor for that purpose (Fig. 65).

Insert the PE-insert of the correct size into the tibial component (the size of the PE-insert complies with the size of the femoral component) (Fig. 66).

Note: If the trial PE-insert should be used again, the tibial trial keel can be inserted into the tibial component and the trial PE-insert can be inserted afterwards.

To attach the femoral trial component to the bone start with the guided impactor (Fig. 67). The fixation of the components in the femoral impactor guide results from two pegs, which grab laterally in the component by compression. By turning the handle the attachment plate is screwed to the component. Like that the femoral component can be inserted to the bone. For removal of the femoral impactor guide firstly release the attachment plate by turning the handle and then push the spring mechanism, which opens the impactor guide.
Following this, perform the final impaction with the short femoral (non-guided) impactor (Fig. 68).

Note: Do not move the prosthesis while the bone cement is hardening.

Patella preparation for PE patella implant

Note: The description of the patella preparation is restricted to the preparation of the PE patella implants. The surgical technique for the rotating patella implants is available upon request.

Fig. 69

Use the patella resection guide to prepare the patella dome (Fig. 69). For preparation of the PE patella implants the resection height should be set to 9mm (Fig. 70), the thickness of all PE patella components. The height can be adjusted by twisting the turning handle and read off from the scale.

Fig. 70

Resect the patella dome by using an ACS® Saw blade through the Saw capture of the guide.

Fig. 71

Remove the patella resection guide and determine the size of the patella implant by application of the patella drill guide. If neccessary vary the sizes (all sizes of the PE patella implants are compatible with all sizes of the femoral components). Then drill with the patella drill till the stop to prepare the three anchorage holes (Fig. 71).

Fig. 72

Remove the patella drill guide and insert the trial patella for a trial reposition (Fig. 72).

Fig. 73

Insert the patella implant of the determined size with cement onto the prepared patella and fixate it with the ic-patella clamp (Fig. 73). Leave the clamp fixated till hardening of the cement.

Appendix: Alternative tibial cutting blocks REF 4221-0162/-0163

Fig. 74

Fig. 75

Applying one of the tibial cutting blocks with click mechanism (REF 4221-0162 or -0163) there will be some differences compared to the usually used cutting blocks (REF 4220-0405 und -0407). The following aspects should be kept in mind:

The connection between cutting block and tibial alignment is realized by the corresponding adapter (REF 4221-0177/-0277 oder -0178/-0278). To connect this adapter to the cutting block use the click mechanism and then slide the assembly of cutting block and adapter over the tibial alignment rod. The adapter is furnished with a small lever 1, which is used to fixate the adapter at the tibial alignment (Fig. 74).

Use bone pins to fixate the cutting block to the bone. It is recommended to use the holes on the marked line, then it is easy to shift the tibial cutting block in proximal or distal direction (Fig. 75). The cross-pin can be placed without restrictions, all combinations of pin holes are allowed.

The subsequent handeling of the cutting block with click mechanism is equivalent to the procedure described on p.13 et seqq.

Implants

Femoral components

ACS® femoral components cemented

implavit®, CoCrMo acc. ISO 5832-4 with TiN-coating

Size	Left	Right
1*	4200-3001	4200-3011
2	4200-3002	4200-3012
2.5*	4200-3008	4200-3018
3	4200-3003	4200-3013
4	4200-3004	4200-3014
5	4200-3005	4200-3015
6	4200-3006	4200-3016
7*	4200-3007	4200-3017

ACS® femoral components cementless pc

implavit®, CoCrMo acc. ISO 5832-4 with TiN-coating and porous coating

Size	Left	Right
2	4200-3102	4200-3112
2.5*	4200-3108	4200-3118
3	4200-3103	4200-3113
4	4200-3104	4200-3114
5	4200-3105	4200-3115
6	4200-3106	4200-3116
7*	4200-3107	4200-3117

ACS® femoral components cementless cpTi/TCP

implavit®, CoCrMo acc. ISO 5832-4 with TiN-coating and cpTi- and TCP-coating

Size	Left	Right
2	4200-3202	4200-3212
2.5*	4200-3208	4200-3218
3	4200-3203	4200-3213
4	4200-3204	4200-3214
5	4200-3205	4200-3215
6	4200-3206	4200-3216

ACS® LD femoral components cemented

implavit®, CoCrMo acc. ISO 5832-4

Size	Left	Right
1*	4200-3801	4200-3811
2	4200-3802	4200-3812
2.5*	4200-3808	4200-3818
3	4200-3803	4200-3813
4	4200-3804	4200-3814
5	4200-3805	4200-3815
6	4200-3806	4200-3816

* available on special demand

ACS® LD femoral components cementless pc

implavit®, CoCrMo acc. ISO 5832-4 with poous coating

Size	Left	Right
2	4200-3902	4200-3912
2.5*	4200-3908	4200-3918
3	4200-3903	4200-3913
4	4200-3904	4200-3914
5	4200-3905	4200-3915
6	4200-3906	4200-3916

Femoral components slim

ACS® femoral components slim cemented

implavit®, CoCrMo acc. ISO 5832-4 with TiN-coating

Size	Left	Right
S3	4221-0203	4221-0213
S4	4221-0204	4221-0214
S5	4221-0205	4221-0215
S6*	4221-0206	4221-0216

ACS® femoral components slim cementless pc

implavit®, CoCrMo acc. ISO 5832-4 with TiN-coating and porous coating

Size	Left	Right
S3	4221-0303	4221-0313
S4	4221-0304	4221-0314
S5	4221-0305	4221-0315
S6*	4221-0306	4221-0316

ACS® femoral components slim cementless cpTi/TCP

implavit®, CoCrMo acc. ISO 5832-4 with TiN-coating and cpTi- and TCP-coating

Size	Left	Right
S3	4200-5103	4200-5113
S4	4200-5104	4200-5114
S5	4200-5105	4200-5115

*available on special demand

ACS® LD femoral components slim cemented

implavit®, CoCrMo acc. ISO 5832-4

Size	Left	Right
S3	4221-0503	4221-0513
S4	4221-0504	4221-0514
S5	4221-0505	4221-0515
S6*	4221-0506	4221-0516

ACS® LD femoral components slim cementless pc

implavit®, CoCrMo acc. ISO 5832-4 with porous coating

Size	Left	Right
S3	4221-0403	4221-0413
S4	4221-0404	4221-0414
S5	4221-0405	4221-0415

PS femoral components

ACS® PS femoral components cemented

implavit®, CoCrMo acc. ISO 5832-4 with TiN-coating

Size	Left	Right
1*	4200-6201	4200-6211
2	4200-6202	4200-6212
2.5*	4200-6208	4200-6218
3	4200-6203	4200-6213
4	4200-6204	4200-6214
5	4200-6205	4200-6215
6	4200-6206	4200-6216

ACS® PS femoral components cementless pc

implavit®, CoCrMo acc. ISO 5832-4 with TiN-coating and porous coating

Size	Left	Right
2	4200-6602	4200-6612
2.5*	4200-6608	4200-6618
3	4200-6603	4200-6613
4	4200-6604	4200-6614
5	4200-6605	4200-6615
6	4200-6606	4200-6616

*available on special demand

ACS® LD PS femoral components cemented

implavit®, CoCrMo acc. ISO 5832-4

Size	Left	Right
2	4200-6102	4200-6112
2.5*	4200-6108	4200-6118
3	4200-6103	4200-6113
4	4200-6104	4200-6114
5	4200-6105	4200-6115
6	4200-6106	4200-6116

PS femoral components slim

ACS® PS femoral components slim cemented

implavit®, CoCrMo acc. ISO 5832-4 with TiN-coating

Size	Left	Right
S3	4200-9103	4200-9113
S4	4200-9104	4200-9114
S5	4200-9105	4200-9115
S6*	4200-9106	4200-9116

*available on special demand

ACS® MB PE-inserts

UHMW-PE acc. ISO 5834-2

Size	10.0mm	12.5mm	15.0mm	17.5mm	20.0mm
1*	4202-6110	4202-6112	4202-6115	4202-6117	
2	4202-6210	4202-6212	4202-6215	4202-6217	4202-6220
3	4202-6310	4202-6312	4202-6315	4202-6317	4202-6320
4	4202-6410	4202-6412	4202-6415	4202-6417	4202-6420
5	4202-6510	4202-6512	4202-6515	4202-6517	4202-6520
6	4202-6610	4202-6612	4202-6615	4202-6617	4202-6620

ACS® MB PE-inserts DD

UHMW-PE acc. ISO 5834-2

Size	10.0mm	12.5mm	15.0mm	17.5mm	20.0mm
2	4202-3210	4202-3212	4202-3215	4202-3217	4202-3220
3	4202-3310	4202-3312	4202-3315	4202-3317	4202-3320
4	4202-3410	4202-3412	4202-3415	4202-3417	4202-3420
5	4202-3510	4202-3512	4202-3515	4202-3517	4202-3520
6	4202-3610	4202-3612	4202-3615	4202-3617	4202-3620

ACS® MB PS PE-inserts hyperflex

UHMW-PE acc. ISO 5834-2

Size	10.0mm	12.5mm	15.0mm	17.5mm	20.0mm
2	4202-8210	4202-8212	4202-8215	4202-8217	4202-8220
3	4202-8310	4202-8312	4202-8315	4202-8317	4202-8320
4	4202-8410	4202-8412	4202-8415	4202-8417	4202-8420
5	4202-8510	4202-8512	4202-8515	4202-8517	4202-8520
6	4202-8610	4202-8612	4202-8615	4202-8617	4202-8620

*available on special demand

ACS® MB tibial components cemented

implavit®, CoCrMo acc. ISO 5832-4 with TiN-coating

Size	REF
2	4201-0212
3	4201-0213
3.5*	4201-0219
4	4201-0214
5	4201-0215
6	4201-0216
7	4201-0217

ACS® MB tibial components cementless pc

implavit®, CoCrMo acc. ISO 5832-4 with TiN-coating and porous coating

Size	REF
2	4201-3102
3	4201-3103
4	4201-3104
5	4201-3105
6	4201-3106
7	4201-3107

ACS® MB tibial components cementless cpTi/TCP

implavit®, CoCrMo acc. ISO 5832-4 with TiN-coating and cpTi- and TCP-coating

Size	REF
2	4201-0202
3	4201-0203
4	4201-0204
5	4201-0205
6	4201-0206
7	4201-0207

ACS® LD MB tibial components cemented

implavit®, CoCrMo acc. ISO 5832-4

Size	REF
2	4201-0822
3	4201-0823
3.5*	4201-0829
4	4201-0824
5	4201-0825
6	4201-0826
7	4201-0827

*available on special demand

ACS® LD MB tibial components cementless pc

implavit®, CoCrMo acc. ISO 5832-4 with porous coating

Size	REF
2	4201-0902
3	4201-0903
4	4201-0904
5	4201-0905
6	4201-0906
7	4201-0907

ACS® MB tibial components basic cemented

implavit®, CoCrMo acc. ISO 5832-4 with TiN-coating

Size	REF
2	4201-0002
3	4201-0003
3.5*	4201-0035
4	4201-0004
5	4201-0005
6	4201-0006
7	4201-0007

ACS® MB tibial components basic cementless pc

implavit®, CoCrMo acc. ISO 5832-4 with TiN-coating and porous coating

Size	REF
2	4201-0102
3	4201-0103
4	4201-0104
5	4201-0105
6	4201-0106
7	4201-0107

ACS® extension stems

implatan®, $TiAl_6V_4$ acc. ISO 5832-3 with TiN-coating

Sizee	REF
14/25mm	4201-4025
14/50mm	4201-4050
14/75mm	4201-4075

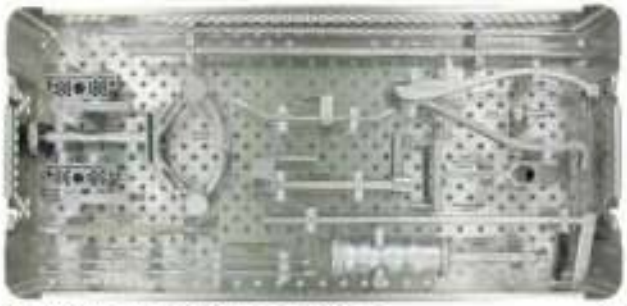
ACS® PE patellae cemented

UHMW-PE acc. ISO 5834-2

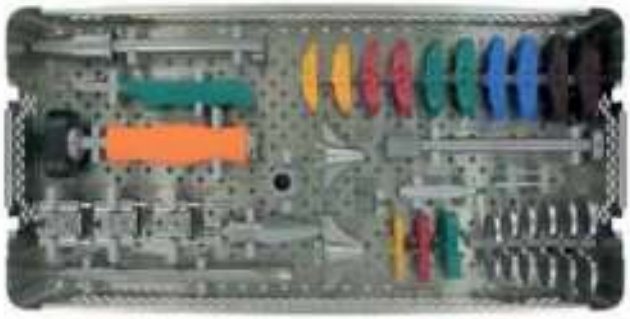
Size	REF
26mm	4203-0326
29mm	4203-0329
32mm	4203-0332
35mm	4203-0335

*available on special demand

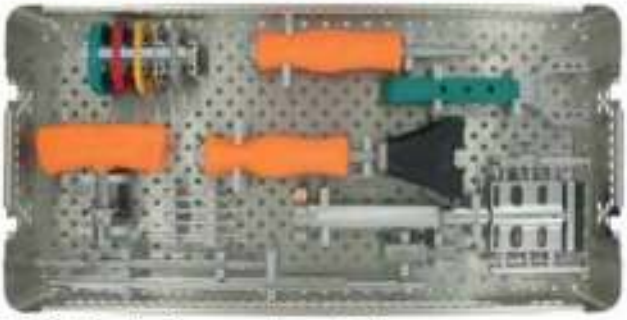
ACS® Instrument containers



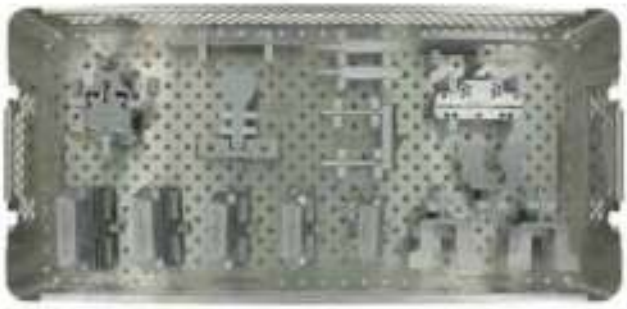
ACS® Basic tibial container IM
4223-0401/-0501 4223-0411/-0511



ACS® MB tibial container incl. Sz. 3.5
4223-0402 4223-0502



ACS® Basic femoral container
4223-0403



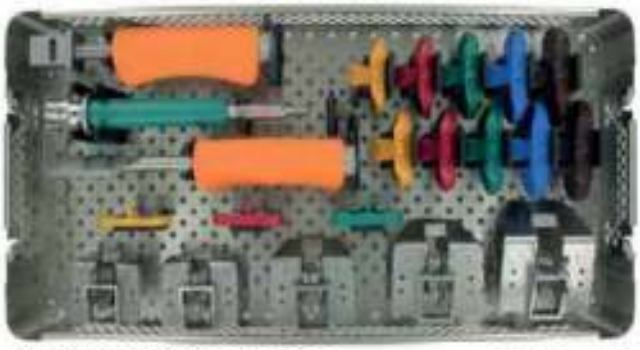
ACS® 4in1 femoral container incl. Sz. 2.5
4223-0414 4223-0514

ACS® Femoral trial container incl. Sz. 2.5
4223-0406 4223-0506

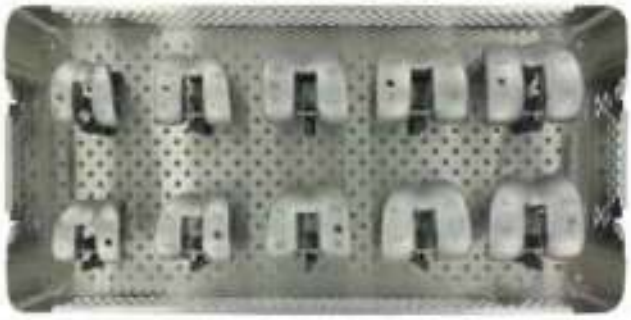
ACS® Femoral slim trial container
4223-0416

Note: The Femoral Trial Container is available in side specific versions:

Left (incl. Sz. 2.5)	4223-0516
Right (incl. Sz. 2.5)	4223-0526



ACS® MB PS container incl. Sz. 2.5
4223-0408 4223-0508



ACS® PS femoral trial container incl. Sz. 2.5
4223-0409 4223-0509

Note: The PS Femoral Trial Container is available in side specific versions:

Left (incl. Sz. 2.5)	4223-0519
Right (incl. Sz. 2.5)	4223-0529

ACS® PS Femoral slim trial container
4223-0419

ACS® PE patella resection container
4223-0410

Note: All instruments are delivered non-sterile.

Instruments

ACS® Basic Tibial Container (4223-0401/-0501) (4223-0411/-0511 incl. IM alignment guide)

Ankle clamp easy-fix
4220-0426

Tibial cutting guide
4220-0401

Tibial stylus 2/10mm for slotted resection
4220-0418

Tibial resection block slotted
5° 4220-0405
7° 4220-0407

Alternatively
Tibial resection block slotted
5° 4221-1164
7° 4221-1165

Tibial cutting block adapter
5° 4221-0277
7° 4221-0278

Drill 126x3.2mm
4221-0019 (2x)

External alignment host
4223-0004

Pin inserter 3.2mm
4223-0006

Fixation pin 3.2x97mm
4223-0008 (2x)

Slap hammer short
4223-0031

Adapter M8 for slap hammer
4223-0032

Externer alignment rod 6x400mm
4223-0035

I/M tibial alignment guide
7755-0024

ic pin extractor
7512-0800

ACS® MB Tibial container (4223-0402) (4223-0502 incl. Sz. 3.5)

ACS® tibial alignment handle
4210-2215

ACS® tibial trial adapter

Size	*REF*
15mm	4212-1015
17.5mm	4212-1017
20mm	4212-1020

ACS® MB trial PE insert

Size	*10mm*	*12.5mm*
2	4212-1210	4212-1212
3	4212-1310	4212-1312
4	4212-1410	4212-1412
5	4212-1510	4212-1512
6	4212-1610	4212-1612

ACS® tibial drill bushing

Size	*REF*
2/3	4220-0352
4/5	4220-0354
6/7	4220-0356

ACS® MB tibial trial plate

Size	*REF*
2	4220-0372
3	4220-0373
3.5	4220-0379
4	4220-0374
5	4220-0375
6	4220-0376
7	4220-0377

Drill for stem extension 12/14mm
4220-1001

Tibial reamer
4221-0043

Tibial punch
4221-0044

Handle for tibial trial cone with fins
4221-0047

ACS® tibial trial cone with fins

Size	*REF*
2-4	4221-0058
5-7	4221-0059

Tibial drill guide 14mm
4221-0074

ACS® tibial trial keel
4221-0081

Modular handle
4223-0015

ACS® tibial impactor short
4223-0045

Fixation pin 3.2mmx55mm with stop
4223-0255 (2x)

ACS® Basis Femoral Container (4223-0403)

Femoral impactor guide
4223-0020

ic adapter
4223-0022

Femoral impactor short
4223-0044

ACS® joint space gauger
4210-4300

Femoral/tibial extractor
4223-0036

Intramedullary rod 9x330mm
4220-0026

Initiator drill 9mm
4220-0014

Fixation pin 3.2mmx77mm
4223-0029

ic T-handle Zimmer-Jakobs
4223-0023

Adapter for joint space gauger
4210-4301

ACS® spacer shim

Size	*REF*
12.5mm	4210-4312
15mm	4210-4315
17.5mm	4210-4317
20mm	4210-4320

ic pin adapter
4220-0421

Drilling pin 3.2mmx77mm
4224-0132

Drilling pin 3.2mmx97mm
4224-0133

ACS® 4in1 Femoral Container (4223-0414) (4223-0514 incl. Sz. 2.5)

Resection check long
4220-0318

Distal cutting block
4220-0813

Femoral alignment guide 0 - 9°
4220-0818

Distal cutting block adapter
4220-0819

External rotation guide

4220-0820	neutral
4220-0824	3° right
4220-0825	3° left

4in1 femoral cutting block GIS

Size	*REF*
2	4220-0832
2.5	4220-0838
3	4220-0833
4	4220-0834
5	4220-0835
6	4220-0836

Femoral sizing guide anterior reference
4220-0845

Handle "fast fix"
4223-0017

ACS® M/L sizing caliper
4223-0019

ACS® Femoral Trial Container (4223-0406) (4223-0506 incl. Sz 2.5)

ACS® femoral trial component

Size	*Left*	*Right*
2	4210-3102	4210-3112
2.5	4210-3108	4210-3118
3	4210-3103	4210-3113
4	4210-3104	4210-3114
5	4210-3105	4210-3115
6	4210-3106	4210-3116

Femoral/patella drill with stop
4223-0024

Osteotom Size 2-6
4223-0060

ACS® Femoral Slim Trial Container (4223-0416)

ACS® Femoral trial components

Size	*Left*	*Right*
S3	4201-2203	4201-2213
S4	4201-2204	4201-2214
S5	4201-2205	4201-2215

ACS® MB PS Container (4223-0408) (4223-0508 incl. Sz. 2.5)

ACS® PS box chisel
210-2210
Alternatively
ACS® PS box chisel +1mm
210-2230

ACS® PS box reamer
4210-2211
Alternatively
ACS® PS box reamer +1mm
4210-2231

ACS® PS U-chisel
4210-2212

ACS® PS box chisel guide

Size	*REF*
2	4210-2202
2.5	4210-2208
3	4210-2203
4	4210-2204
5	4210-2205
6	4210-2206

ACS® tibial trial adapter

Height	*REF*
15mm	4212-1015
17.5mm	4212-1017
20mm	4212-1020

ACS® MB trial PE insert PS hyperflex

Size	*10mm*	*12.5mm*
2	4214-3210	4214-3212
3	4214-3310	4214-3312
4	4214-3410	4214-3412
5	4214-3510	4214-3512
6	4214-3610	4214-3612

ACS® tibial trial keel
4221-0081

ACS® PS Femoral Trial Container (4223-0409) (4223-0509 incl. Sz. 2.5)

ACS® PS femoral trial components

Size	*Left*	*Right*
2	4210-2502	4210-2512
2.5	4210-2508	4210-2518
3	4210-2503	4210-2513
4	4210-2504	4210-2514
5	4210-2505	4210-2515
6	4210-2506	4210-2516

ACS® PS Femoral Slim Trial Container (4223-0419)

ACS® PS femoral trial components

Size	*Left*	*Right*
S3	4201-9203	4201-9213
S4	4201-9204	4201-9214
S5	4201-9205	4201-9215

ACS® PE Patella Resection Container (4223-0410)

ACS® PE Patella trial

Size	*REF*
26mm	4213-0326
29mm	4213-0329
32mm	4213-0332
35mm	4213-0335

Patella resection guide 1.5mm
4222-0002
Alternatively
Patella resection guide
4222-0001

ACS® patella drill guide

Size	*REF*
26/29mm	4222-0004
32/35mm	4222-0005

Femoral/patella drill with stop
4223-0024

ic patella clamp
7352-0001

Pre-operative Instructions
A pre-operative planning is mandatory for optimal results. Before surgery a surgical planning with regard to the dimensions of the prosthetic model and the positioning of the implant components in the bone has to be carried out by the surgeon.

Operative Instructions
Before using, the implant should be checked to ensure that the product reference number, lot number and size correspond with the data on the labelling (REF, LOT and size).
Use appropriate aseptic technique when removing the implant from the packaging. The user is taking full responsibility for this. Implants should be implanted immediately after removal from the original packaging.
The surfaces of the implants are extremely sensitive. Implants should not be allowed to come into contact with objects that could damage the surfaces.
Before implantation, the implant should be visually inspected by the user for possible damage. Damaged implants must not be used.
The implant should not be modified in any way – modifications to the implant may lead to impairment of its function or early failure. The manufacturer assumes no liability for modified products. In case of changes or manipulation the regulatory responsibility is transferred to the person changing or manipulating the components. The manufacturer no longer guarantees the product.
When acrylic bone cement is used the instruction for use from the cement manufacturer should be followed.
Bone cement should not be allowed to come or remain in contact with the articulating surfaces of the implant during or after the surgery. Bone cement residues that could dislodge over time and get between the articulation surfaces must be removed. Bone cement fragments and residues may lead to increased wear and damage of the implant components.
In cementless applications, a firm fixation of the implant at the time of surgery is essential for the success of the implantation. The cementless components are seated in the bone by pressfit which requires to perform precise surgery and the use of the instruments provided for this purpose.
A reliable fit of taper connections is only possible with completely intact surfaces of the tapers. The taper of the stem must be cleaned and dried before being connected to the taper of the head. Both tapers must be of matching size.
Prior to wound closure, the surgical area including the articulation surfaces of the implant must be thoroughly cleaned to remove any foreign bodies such as bone splinters, bone cement residues and any remaining frag-ments of a previously revised component or instrument.
It is also recommended to take an intraoperative X-ray image and examine it for remaining particles and remove them before wound closure.

Post-operative Instructions
Post-operative patient care, patient instructions and warnings are of the utmost importance.
The use of an external support of the operated extremity for a limited period is recommended.
Active and passive movements of the operated extremity should be monitored.
The post-operative regime should be aimed at the prevention of overloading of the operated extremity and stimulation of the healing process.
Regular monitoring of the position and condition of the prosthetic components and the surrounding bone is recommended.

Intendend Use
The ACS® Knee System is a total knee replacement system that consists of numerous components intended to resurface the articulating surface of the femur, tibia and patella.
The ACS® Knee System (standard) is intended to resurface the knee joint.
The ACS® PS Knee System is intended for the functional replacement of the posterior cruciate ligament in cases of concurrent loss/damage of both cruciate ligaments.
The ACS® SC Knee System is intended for the functional replacement of the posterior cruciate ligament in cases of concurrent loss/damage of both cruciate ligaments and instable collateral ligaments.
The ACS® [LD] MB Tibial Component, ACS® [LD] MB Tibial Component Basic and ACS® [LD] MB SC Tibial Component are tibial mobile-bearing components intended for cemented or cementless fixation to resurface the tibial condyles.
The ACS® [LD] FB Tibial Component and ACS® [LD] FB+ Tibia are tibial fixed-bearing components intended for cemented or cementless fixation to resurface the tibial condyles.
The ACS® [LD] Femoral Component, ACS® [LD] SC Femoral Component and ACS® [LD] PS Femoral Component are femoral components intended for cemented or cementless fixation to resurface the femoral condyles and trochlear groove.
The ACS® LS Femoral Component is a femoral component intended for cemented fixation to resurface the femoral condyles and trochlear groove.
The ACS® MB PE-Insert, ACS® MB PE-Insert DD, ACS® MB NC PE-Insert, ACS® MB PS PE-Insert Hyperflex and ACS® MB SC PE-Insert Hyperflex are tibial mobile-bearing inserts intended to articulate with a femoral component.
The ACS® FB/FB+ PE-Insert, ACS® FB/FB+ PS PE-Insert Hyperflex, ACS® FB/FB+ PE-Insert Hyperflex, ACS® FB/FB+ PE-Insert Ultra and ACS® FB/FB+ SC PE-Insert are tibial fixed-bearing inserts intended to articulate with a femoral component.
The ACS® PE-Patella and ACS® Patella Anatomic are all-poly patella implants intended for cemented fixation to resurface the natural patella.
The ACS® Rotating Patella Component is a metal-backed patella implant intended for cemented or cementless fixation to resurface the natural patella.
The ACS® MB/FB Tibial Spacer and ACS® MB SC Tibial Spacer are tibial spacers intended for cemented fixation to fill and replace bone defects within the proximal tibia.
The ACS® SC Femoral Spacer is a femoral spacer intended for cemented fixation to fill and replace bone defects within the distal femur.
The ACS® MB Offset Adapter [for MK Stems] and ACS® Double Taper [for MK Stems] are intended to adjust the offset between a tibial or femoral component and a stem.
The ACS® Stem and ACS® [LD] Extension Stem [Male Taper] are stems intended for cemented or cementless fixation to serve as a diaphyseal anchorage in the femur and tibia respectively.
The ACS® Stem HA is a stem intended for cementless fixation to serve as a diaphyseal anchorage in the femur and tibia respectively.

Indications
The decision for replacement of the joint should be based on careful evaluation. The indication for this type of surgery should only be made when all other conservative or surgical alternatives are less promising.
Danger of post-operative complications can be limited by careful evaluation of the individual anatomical and load conditions, the condition of the soft tissues and the condition of the bone bed for the implants.
The provision of ACS® Knee System is generally indicated only in patients whose skeleton is fully grown.
Before intervention, preoperative examinations should be performed. The examinations depend on the patient's medical history.
Under consideration of these conditions the ACS® Knee System applies to the following indications:
- non-inflammatory degenerative joint disease including osteoarthritis and avascular necrosis,
- post-traumatic osteoarthritis,
- rheumatoid arthritis.

The use of a retropatellar replacement is particularly recommended for the following indications:
- large and thick patella,
- deformed non-conforming patella,
- severe pre-operative pain.

For the EPORE® metaphyseal components the following indication applies:
- bone defects in the metaphyseal area of the distal femur or proximal tibia.

The surgeon decides which version of prosthesis for the individual patient is used. This decision depends on several factors, such as the age and the patient's weight, bone quality, shape of the bone and deformation of the joint.

ATTENTION:
The ACS® Femoral Components may only be used in patients with sufficient stability of the knee joint provided by the collateral ligaments. An exception is the ACS® SC Femoral Components, which are indicated for instabilities of the collateral ligaments.
The primary ACS® Femoral Components may only be used in patients, in which the posterior cruciate ligament is intact. An exception are the combinations with the ACS® MB PE-Inserts as well as the ACS® FB/FB+ PE-Inserts Ultra, which can also be used in the loss or defect of the cruciate ligaments.
The ACS® PS Femoral Components are indicated in patients with loss or defect of both cruciate ligaments.

Contraindications
The longevity of an orthopaedic implant can be reduced by biological aspects, material characteristics and biomechanical factors. Therefore, a careful examination of the indications is recommended in overweight patients, in patients with very high joint loads due to high physical activity as well as in patients younger than 60 years.
The ACS® Knee System is contraindicated in cases of:
- Allergy to one of the implant materials. The TiN-coating reduces the release of metal ions, so that there is a relative contraindication for TiN-coated ACS® components in case of known allergy. (The label on the secondary packaging of the respective component indicates the materials used. It is strongly recommended to perform an allergy test.)
- Ongoing infections.
- Physiological or anatomic conditions, which preclude or are not expected to maintain an adequate bony support of the implant or do not allow the implantation of a sufficiently large prosthesis:
  - bone tumors in the implant fixation area,
  - untreated vascular diseases which limit blood supply to the affected limb,
  - metabolic disorders that may impair bone formation.

In case of insufficient quantity and quality of bone stock, an alternative prosthetic treatment allowing for sufficient bony fixation should be considered.
- Lack of patient compliance.
- Mental or neurological conditions that affect the ability or willingness of patients to comply with medical instructions, especially during the healing phase.

Risk Factors
The following risk factors may affect the success of the ACS® Knee System:
- excessive loading of the operated joint by strong physical work and/or inappropriate sports,
- severe deformities which lead to an impairment of bone fixation or the exact positioning or the function of the implant,
- therapies that may affect bone quality,
- muscle insufficiency,
- neuromuscular disease of the affected limb,
- conditions that restrict the patient's ability or willingness to comply with medical instructions, especially during the healing process,
- obesity,
- nicotine and/or drug abuse,
- alcoholism,
- previous surgeries on the affected limb,
- diabetes,
- psoriasis.

The implantation of a cementless tibial component in a treatment with ACS® PS Knee System is not recommended in cases of moderate to severe varus malalignment.