

# Aesculap® Columbus® Revision

Tibia First and Femur First  
Surgical Technique for CoCr and AS version



Aesculap Orthopaedics

# Aesculap® Columbus® Revision

The innovative Revision knee system



Based on the very successful design of the Columbus® knee endoprosthesis, the development of the Columbus® Revision System was just a logical consequence.

A further step towards a comprehensive knee portfolio – Precise. Safe. Modular.

Navigated implantation performed by CT-free OrthoPilot® navigation system.

Manual surgical technique.

AS-coated implants for reduced wear and as allergy solution available on request. For more information please see the implant ordering details.

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# Aesculap® Columbus® Revision

## Preoperative planning



To achieve a successful treatment with the Columbus® Revision knee system, the bone defects and maybe soft tissue dysfunction have to be analysed carefully. For revision of primary TKA the precise failure cause of the preceding arthroplasty has to be clearly known in order to avoid a repeat of these errors. Therefore the pre- and postoperative X-rays are needed.

Further pre conditions to ensure an optimal surgical result are:

- Function of extensor mechanism
- Removal of primary prosthesis
- Bone preservation
- Restoration of proper axis alignment
- Functional stability
- Situation of soft tissues
- Restoration of joint line

For preoperative planning, Columbus® Revision X-ray templates are available which support to define the following values:

- Angle between anatomical and mechanical femur axis
- Heights of resections
- Size of implants
- Entry point of intramedullary alignment
- Need and dimensions of wedges and extension stems

### Indication:

Severe knee joint conditions which cannot be treated through other therapies:

- Degenerative arthrosis
- Rheumatoid arthritis
- Posttraumatic arthrosis
- Symptomatic knee joint instability
- Knee stiffness
- Deformities of knee joint
- Revision surgeries

### Contra indication:

See instructions for use TA012000

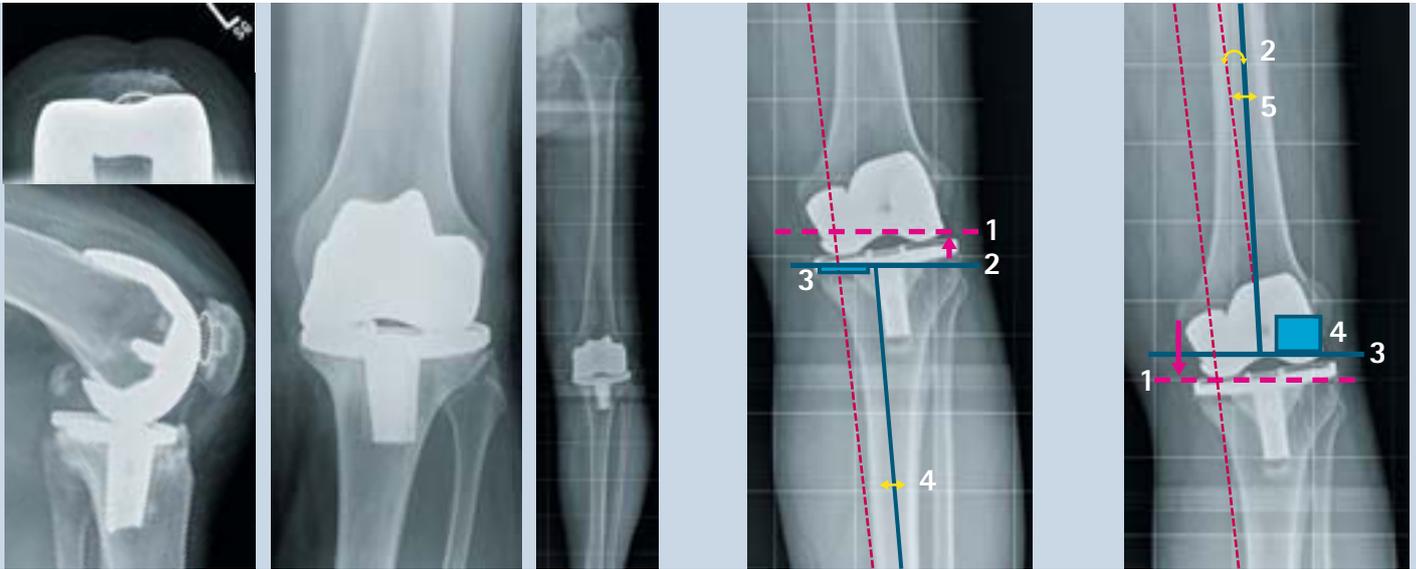
### Max. bone loss at distal femur:

- F1-F3: 19 mm
- F4-F7: 24 mm

### Max. bone loss of tibia:

- T0-T1: 39 mm
- T2-T3: 43 mm
- T4-T5: 47 mm

For more information about indication and contra-indications, please refer to the instructions for use TA012000.



► **Please note:**

Columbus® Revision MC (Medium Constraint) gliding surfaces distribute rotational forces via the peg into the femur and tibia components, that means there is a potential higher risk of loosening. The HC (High Constraint) gliding surfaces additionally pick up varus/valgus forces. Because of that Aesculap requires for the Columbus® Revision System to use the femur and tibia components only with extension stems. Deviant behaviour is decision of the surgeon.

In case of a Columbus® PS implant revision, the torx screw driver NE358R to loosen the PE fixation screw has to be ordered additionally.

For implantation of a Columbus® CR femur with CR/DD/UC PE gliding surface and Columbus® Revision tibia plateau, the requested primary trial femur respects the femur for the operated side and the drill with stop for the femur pegs have to be ordered additionally.

In order to be able to perform proper ligament balancing with the distractor, the soft tissue management set NQ414 has to be ordered.

Please ensure that the amount of received implants and instruments sent with an individual shipment via Aesculap Loan Service are complete and the ones your patient needs for surgery, based on your pre-operative planning.

**Tibial planning:**

- Definition of the new tibial jointline (14 mm proximal fibula head) (1)
- Definition of tibial resection line (hemi spacer cut or plane) (2)
- Evaluation of requested spacer (here medial) (3)
- Evaluation of stem diameter/-length (4)
- Evaluation of tibial rotation (intra operatively)

**Femoral planning:**

- Definition of the new femoral jointline (35 mm distal of the tuberculum adductorium) (1)
- Measurement of LDFA (2)
- Evaluation of femoral resection line (spacer cut or plane) (3)
- Evaluation of requested spacer (here lateral) (4)
- Evaluation of stem diameter/-length (5)
- Evaluation of femoral rotation (intra operatively)

# Aesculap® Columbus® Revision

## Brief instructions

1

Set ant. reference mark and remove implants / Ant. Referenzmarkierung anbringen und Implantate entfernen



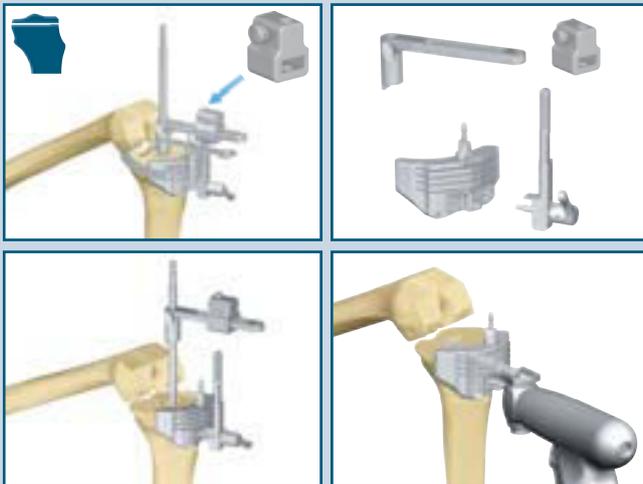
4

Gap balancing by distractor / Messung der Bandspannung mit Distraktor



2

Resection of proximal tibia / Proximale Tibiaresektion



5

Tibia box preparation by drill / Tibiabox aufbohren



Tibia box broach preparation. Define femur size / Tibiabox mit Kompressionsmeissel präparieren. Femurgröße bestimmen



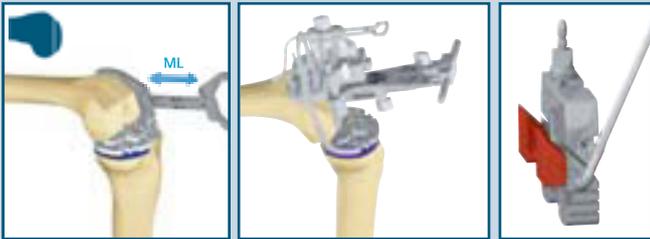
3

Gap balancing by spacer. Tibia and trial stem selection / Bandspannungsmessung mit Distanzblöcken. Auswahl von Tibiaplateau und Probeschaf



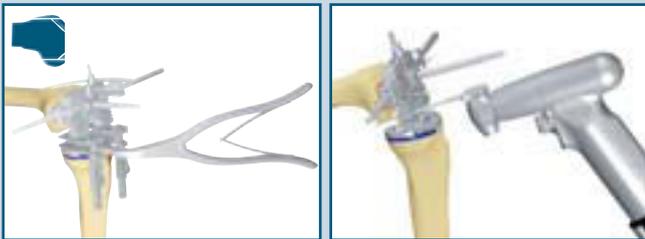
6

Resection of distal femur / Distale Femurresektion



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Resection of femoral APC geometry / APC Femurresektion



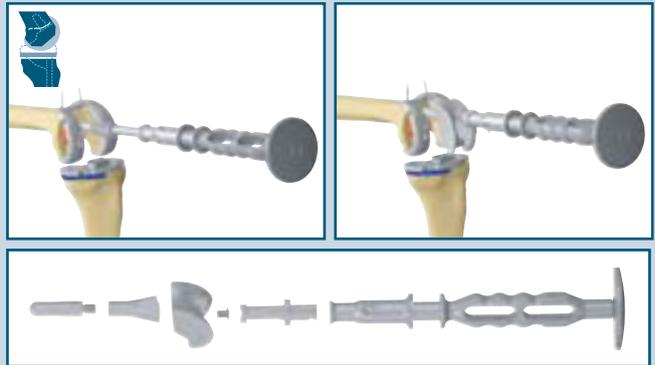
8

Resection of femoral box geometry / Femurbox Resektion



9

Femoral box preparation by rasp. Trial box impaction / Femurbox aufraspeln und Probebox einführen



10

Fix femoral box and stem / Femurbox und -schaft fixieren



11

Adapt trial values to definitive implants / Werte der Probeimplantate auf die def. Implantate übertragen

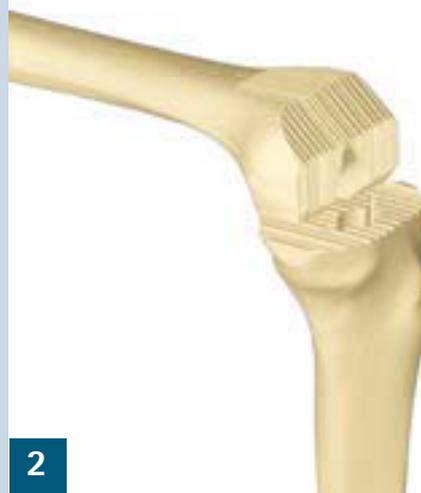


# Operative steps – Tibia First

OPTION: Applying reference marks



Assemble distal femur contact plate NQ799R and joint line positioner NQ798R. Set anterior mark where primary femoral implant ends proximal. Keep value of joint line positioner by tightening fixation screw.

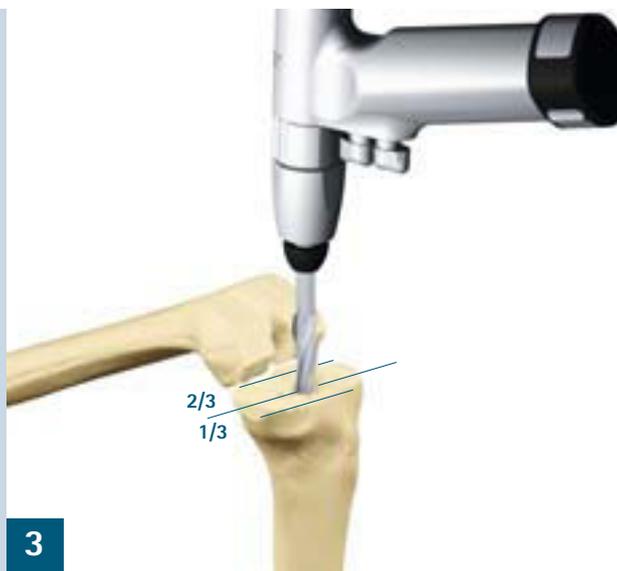


Remove all primary implants.

► **Please note:**

Ensure with cross check of implant availability matrix (see annex) that you will have the implants you need from preoperative planning.

## Preparation of the tibia



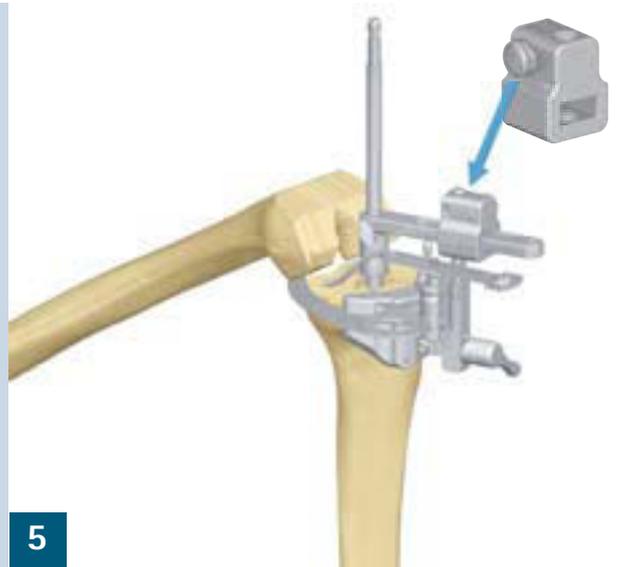
Define correct entry point for stepped drill NP410R and intramedullary rod NE376R or reamer e. g. with support of X-rays, by AP distance  $1/3$  to  $2/3$  or by trial tibia plateau. Insert rod or ream canal until reamer with connected handle NE198R has stable fit and until required depth mark for tibia extension stems on reamer is reached. Because of proximal resection bone the reamer has to be inserted deeper to ensure correct depth for extension stem. For cemented stems a minimum 1 mm cement mantle around is recommended.

# Operative steps – Tibia First

## Tibial resection variants



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Attach alignment system on reamer until posterior nose (N) is at same level like reamer mark. Tighten fixation screw. Connect tibia cutting guide with intramedullary connection rod.

### Option:

Check axis with control rods NE331R and NP471R.

### 1. Version:

Use stylus NE425R to determine cut depth. To see where saw blade ends, use check device NM350R.

### 2. Version:

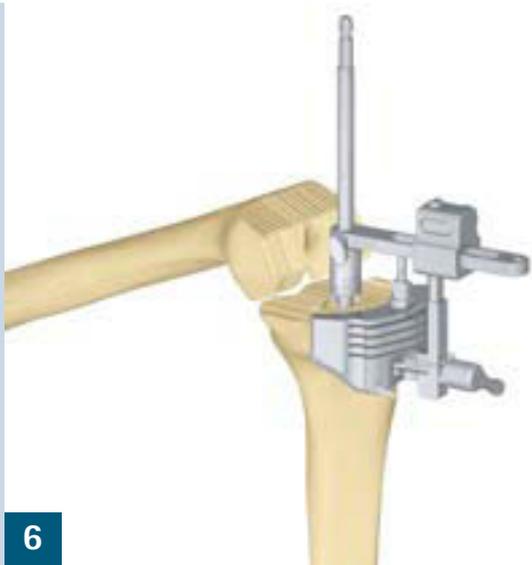
Ensure that posterior nose of alignment system (N) is at the same level as the reamer mark. Connect tibia cutting guide with intramedullary connection rod. Press button on opposite side (see small image) of intramedullary nut to select cut depth. See scale on the intramedullary connection rod device.

### 3. Version:

Attach complete alignment system inclusive cutting guide on reamer. Use check device in cutting slot and go down until contact with tibia plateau. Tighten the fixation screw. Select cut depth by intramedullary connection rod device.



A: NQ648R Intramed. sliding rail, B: NQ649R Intramed. nut, C: NQ650R/NQ651R Asymm. cutting guide (Left/Right), D: NQ647R Intramedullary connection rod

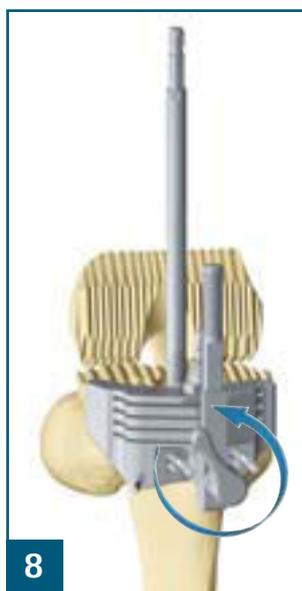


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Fix tibia cutting guide with two parallel headless and one convergent head pin in proper rotational position.  
Remove alignment system and reamer.

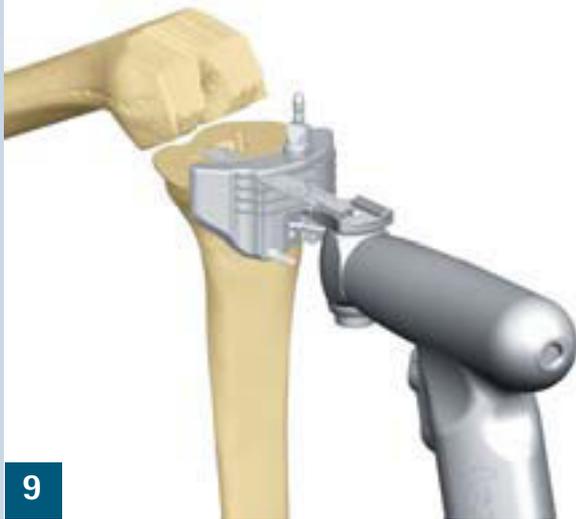


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Release rod after turning toggle counter-clockwise to 11 o'clock position 'Unlocked'.

# Operative steps – Tibia First

## Tibial resection



Perform tibia cut.

### Option:

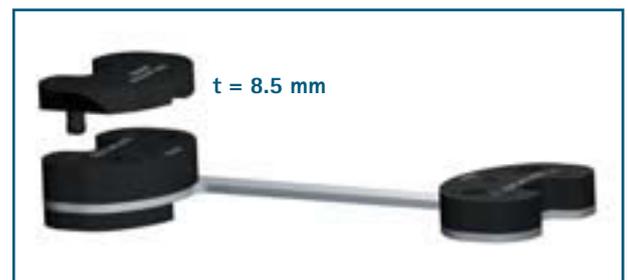
With this tibia cutting guide it is also possible to perform the 5, 10 or 15 mm hemi spacer cut by moving distal. Keep in mind where the hemi spacer ends sagittal.



### Option:

Measure the extension and flexion gaps with spacers – and if needed with hemi spacer clicked below to ensure stability.

If necessary perform release and test again.



If needed you have the opportunity to simulate joint stability after a performed Columbus® distal femoral resection of 9 mm by adding the femoral cut spacer. Use 18 mm spacer to start as this defines the minimum requested space (PE inclusive tibia plateau = 10 mm; femur implant distal = 9 mm, dorsal = 8 mm).

## Determining the size of the tibial components



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### 1. Option:

Insert reamer again until required depth mark. Select trial tibia plateau with best fit in ML and AP. Define position with chimney NQ677R guided by the reamer. Fix chimney by using anterior excentric screw – note value. Determine best rotational position.

### Option:

Check axis with rod inserted in the connected handle.

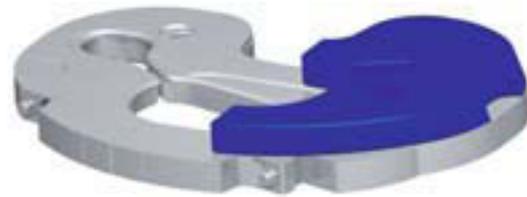
The tibial offset is:

■ T0/T0+ = ± 4 mm

■ T1-T5 = ± 6 mm

### ► Please note:

The reamer mark defines the length of stem and the height of tibia box together.



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### Option:

Select trial tibia hemi spacer of correct size below corresponding side of trial tibia plateau.



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Fix trial tibia plateau in correct ML and AP position with headed pin. Remove reamer.

See anterior marks where your hemi spacer ends in ML direction (A) for cuts. Central mark (B) defines the middle of trial tibia plateau.

# Operative steps – Tibia First

## Determining the size of the tibial components

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### 2. Option:

Select trial tibia plateau with best fit in ML and AP. Use ML positioner NQ676R with required trial stem interconnected. Define best rotational position.

### ► Please note:

Prepare ML tibia positioner before assembly. Ensure that the anterior fixation nose of the ML tibia positioner is turned to open position (engraved line mark has to be in anterior position) before impaction to avoid bending.

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### Option:

Connect trial hemi spacer in correct size below corresponding side of trial tibia plateau.

Place trial tibia plateau with screwed trial hemi spacer below on the tibia plateau. Insert intramedullary positioner with connected trial extension stem. Fix positioner by using anterior eccentric screw – note offset value. Determine best rotational position.

### Option:

Check axis with rod inserted in the connected handle.

The tibial offset is:

■ T0/T0+ =  $\pm 4$  mm

■ T1-T5 =  $\pm 6$  mm

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## Option: Gap measurements



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### Option:

Use distractor to measure the extension gap medial and lateral with trial tibia plateau and if needed hemi spacer below. If necessary perform release and measure again. Note the values.

The metal thickness of the trial tibia plateau is 5 mm.

### Option:

If you want, use distractor to measure the flexion gap medial and lateral with trial tibia plateau and if needed hemi spacer below. If necessary perform release and measure again. Note the values.



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Fix trial tibia plateau in correct rotational position with two headed pins.

# Operative steps – Tibia First

## Preparation of the tibial box



### ► Please note:

Using trial tibia plateau size T0/1/2 in cases with severe bone loss medial and lateral it could be possible in the following steps with drill with stop and box broach for tibia box preparation to create in extreme cases a perforation of tibia. To avoid this it could be useful to perform these steps with 5 mm trial hemi spacer med. and lat. below the trial tibia plateau. The definitive tibia plateau needs to have the same 5 mm hemi spacer below the medial and lateral side.

Remove intramedullary guide and trial stem. Place tibia box preparation guide NQ669R and drill guide NQ663R on the plateau (For tibia size 0: NQ668R and NQ662R).

Perform two holes with the  $\varnothing$  16 mm drill with stop NQ661R by turning the drill guide 180°. As result you'll see binocular hole geometry.

Connect ML rasp NQ667R with trial stem in corresponding size (For tibia size 0: NQ666R). Impact up to its stop in the trial tibia plateau twice by turning the rasp 180°.



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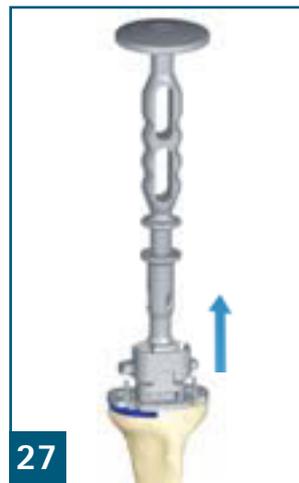


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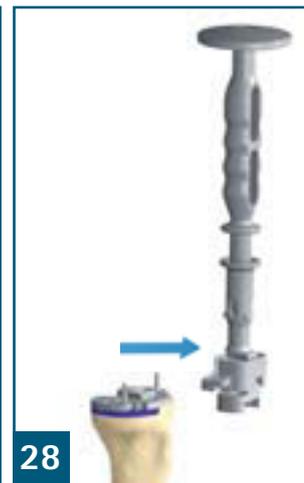
Connect broach corresponding to the trial tibia plateau and trialexension stem in corresponding size connected with ML tibia stem connector NQ833R slightly loose with unlosable fixation screw inside broach.

Connect handle with tibia box broach holder NQ665R (For tibia size 0: NQ664R) and broach-stem-assembly.

Impact broach-stem-assembly. Ensure that extension stem fixation screw on top of broach is slightly loose for stem self guidance in ML. Impact up to its stop in the trial tibia plateau. Remove holder with handle by lifting up the guide NQ669R/NQ668R and move holder-handle-assembly anterior to release. Tight fixation screw to fix ML offset.

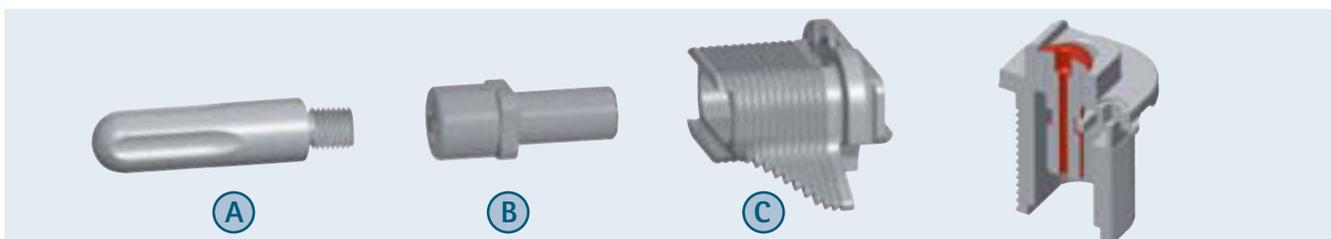


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Remove the two headed pins from trial tibia plateau.



A: Trial stem, B: NQ833R Tibia stem connector, C: Tibia broach

# Operative steps – Tibia First

## Preparation of the tibial box



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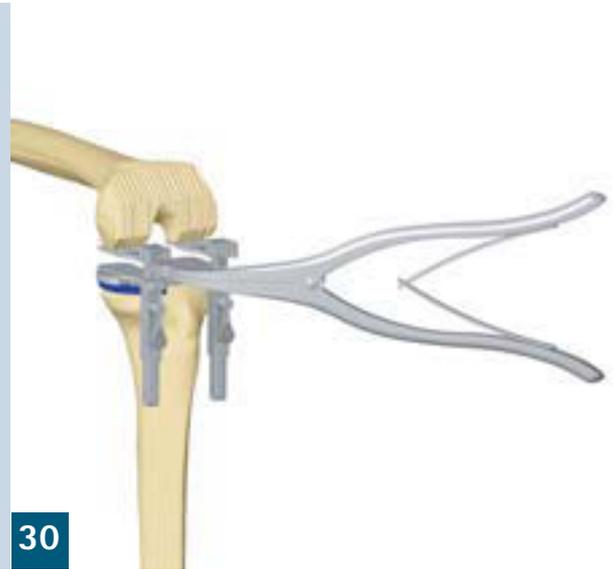
### Option:

If tension of ligaments was not already measured before.

### Option:

Measure the extension gap medial and lateral with trial tibia plateau and if required hemi spacer below. If necessary perform release and measure again. Note the values.

The metal thickness of the trial tibia plateau is 5 mm.



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### Option:

If you want, use distractor to measure the flexion gap medial and lateral with trial tibia plateau and if required hemi spacer below. If necessary perform release and measure again. Note the values.

# Operative steps – Femur First

## Preparation of the femur



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### Option:

If you prefer femur first technique, you could start as described below:

Determine femur size and requirement for distal and/or posterior spacers by using femur gauges.

Determine distal femoral entry point for stepped drill NP410R by using the X-rays. Drill in correct aligned angle to respect the femoral curvature and e. g. other bony details your patient has.

Femur stem offset possibilities:

- ML:  $\pm 2$  mm
- AP:  $\pm 4$  mm



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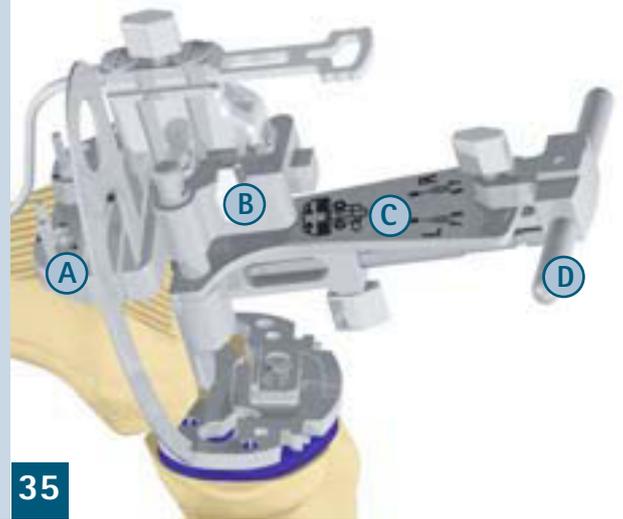
Ream until reamer connected with handle NE198R has stable fit and until required depth mark for femur extension stems on reamer is reached. Because of distal resection bone release, the reamer has to be inserted deeper to ensure correct depth for stem.

# Operative steps – Femur First

## Distal femur resection



Details:

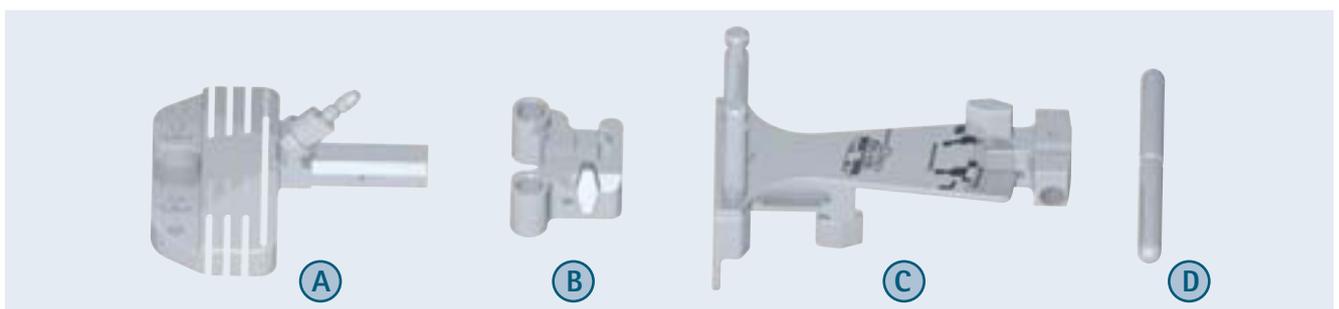


Place alignment system NQ702R on the reamer. Select correct angle. Connect distal femoral cutting guide NQ701R in prox./dist. guide on top. Attach joint line positioner NQ708R on cutting guide. Shift cutting guide until positioner tip is in same position with mark on anterior bone. If needed use mark as reference for proximalisation or distalisation of cutting guide to find correct level of joint line.

### Option:

Check cuts with cutting check device NM350R.

Fix cutting guide with two headless and one headed pin on anterior femur.



A: Distal femur cutting guide NQ701R, B: Guide support NQ703R, C: Alignment system NQ702R, D: Handle NQ474R



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Remove check device, joint line positioner, and alignment system (by opening screw A and B) from femur.

Reamer can remain in the intramedullary canal for adjustment of further cuts.



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Perform distal femoral cut. If needed cut additionally for distal femoral spacers in the correct slot.

► **Please note:**

Check if spacer height is in selected size for selected femur size available.

# Operative steps – Femur First

## Completing the femur resection



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If cut for distal femur spacer was performed: Screw trial femoral spacer(s) behind 4-in-1 cutting guide to ensure the correct distal position of the femoral cutting guide.



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Place cutting guide with slid in requested femur adjustment sleeve (5° NQ705R and 7° NQ707R for cementless and 6° NQ706R for cemented extension stems) inside on the reamer. Use check device in ant. parallel cutting slot as reference to avoid anterior notching.

Measure flexion gap. Dorsal geometry of femoral cutting guide is corresponding with definitive femoral implant measurements.

### Option:

Connect handles to the cutting guide to adjust rotational position.



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Femoral rotation can also be adjusted by using trial gliding surface in requested height with 4-in-1 cutting guide.

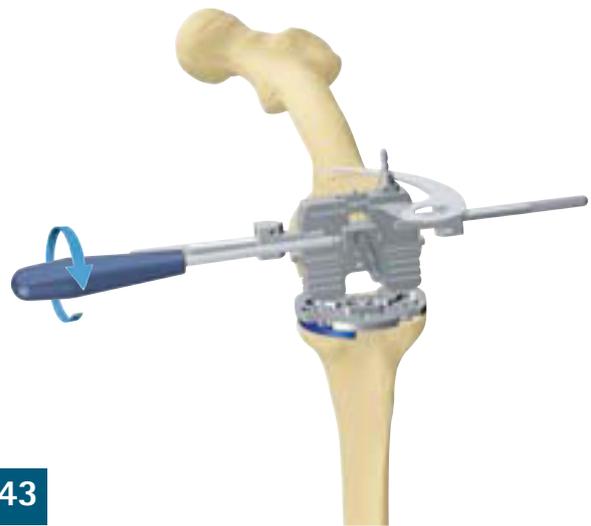


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Fix cutting guide in defined **anterior/posterior** position by tightening the distal screw. The now visible offset value is just a rough information. The definitive offset value can be read later on the assembly of trial femur and trial stem.

**Option:**

Use handle just on the opposite side of everted patella. Use check device in anterior parallel cutting slot as reference to avoid anterior notching.



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Fix cutting guide in defined **rotational** position by tightening the horizontal screw.

**Option:**

Use check device in anterior parallel cutting slot as reference to avoid anterior notching.



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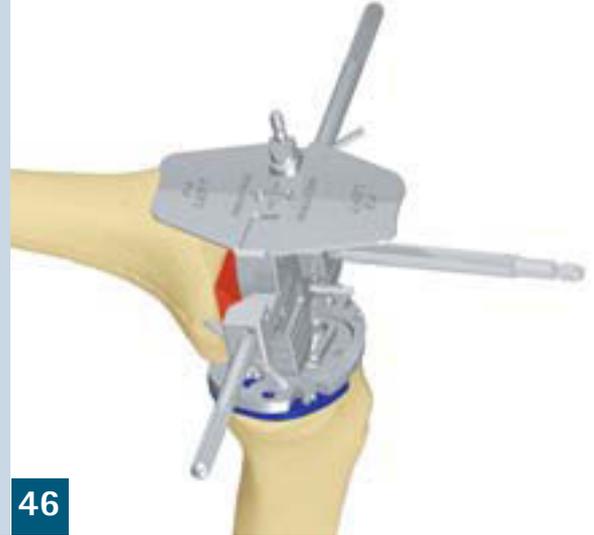
Fix cutting guide in defined rotational position by using two long headless pin through the holes of the handles. Fix with one additional headless pin through distal hole in cutting guide marked with L (left leg)/R (right leg). Select your operated leg side.

# Operative steps – Femur First

## Completing the femur resection



Ensure that cutting guide is in contact with distal femoral bone and – if needed trial distal spacer(s) are proper tightened by fixation screw.



### Option:

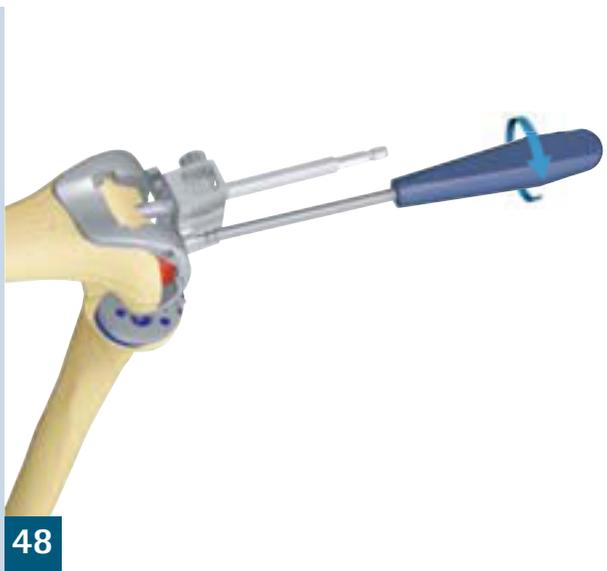
You can cross check femur size and ML position by attaching the femur geometry check plate. By switching from central hole to the medial or lateral one, you can simulate the medialized or lateralized cementless stem position.



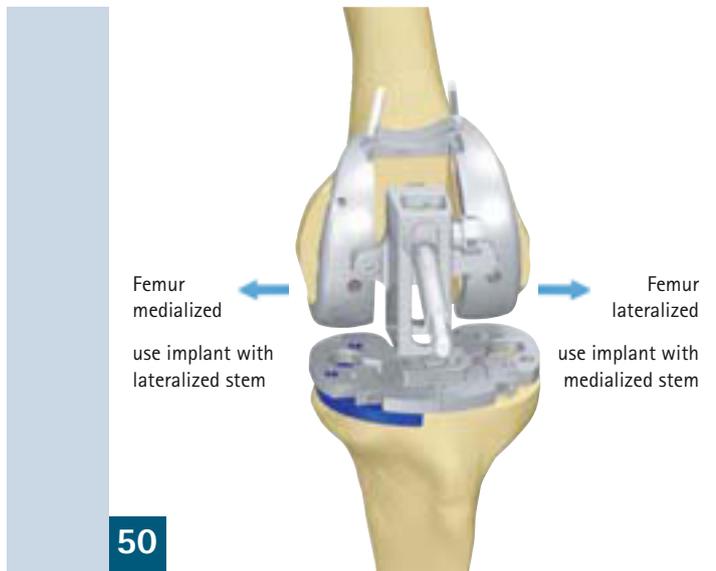
Perform all femoral cuts in sequence below:

1. Anterior cut
2. Posterior cut (incl, spacer cut(s) if needed)
3. Posterior chamfer cut
4. Anterior chamfer cut

## Preparation of the femoral box



Attach trial femoral prosthesis in correct size connected with screwed on ML adjustment adapter with correct angle ( $5^{\circ}/7^{\circ}$  for cementless extension stems;  $6^{\circ}$  for cemented) – if needed in neutral or with medial/lateral offset – guided by the reamer on the bone until full bone contact of inner femoral geometry.



Fix trial femur with two head pin in this defined position. Remove adjustment device and reamer.



### Example:

If the trial femur switched to medial, the ML-offset-adapter with correct angle ( $5^{\circ}/7^{\circ}$ ) need to be attached on the trial femur in offset version medial.

This **femur-assembly** has to be placed on the reamer until complete bone contact of the inner femur geometry.

# Operative steps – Femur First

## Preparation of the femoral box



Perform medial and lateral inner box cuts with oscillating saw with small saw blade.

If necessary use chisel to remove all bone particles.



To ensure optimal implant fit of the femoral extension stem perform medial and lateral rasp procedure to remove all bone particles, by using rasp NQ832R with interconnected trial stem in requested dimension.

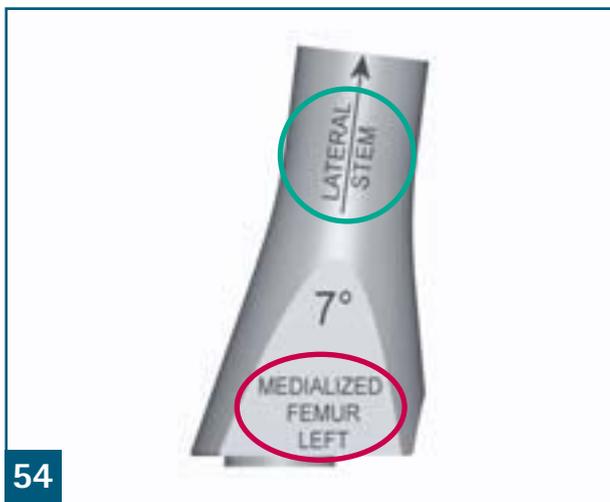
### Option:

Attach on trial femur the guide for proximal chisel box cut NQ796R. Slide sizing device NQ795R in correct slot on the chisel. Impact chisel NQ794R until stop.

## Assembly of the femoral trial box



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### Assembly of femoral trial box:

Connect required femoral extension stem with proper angle adapter sleeve (length code of adapter and trial extension stem have to be the same). Place this assembly on the proximal flat box surface. Tight fixation screw from distal just slightly in the femoral trial box. Connect handle with box impactor (spring ball has to be lateral) with the trial box.

### Example:

If the femur medialized like in the example before: the result is that the stem is now in lateral position. So the adapter (e. g. NS016R) with correct angle (5°/7°) has to be selected in requested offset version medialized like shown in the pink ring. This stem-assembly is now placed on the proximal flat femur box surface.



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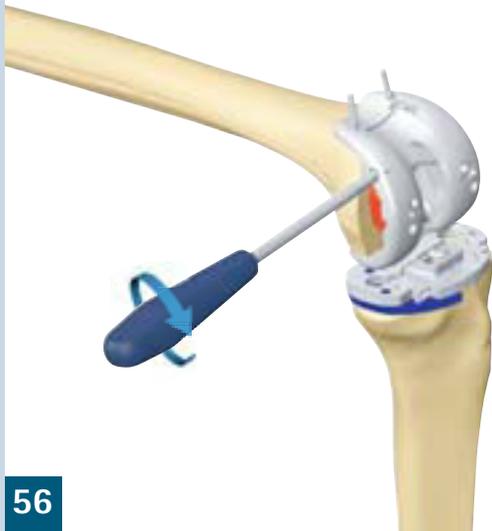
### ► Please note:

The definitive stem implant has to correspond to the stem-assembly. The version: medialized, neutral or lateralized is on the adapter displayed. In the example left side it shows in the green ring: The definitive Implant has to be a lateralized stem.

Impact femoral-box-assembly until stop.

# Operative steps – Femur First

## Assembly of the femoral trial box

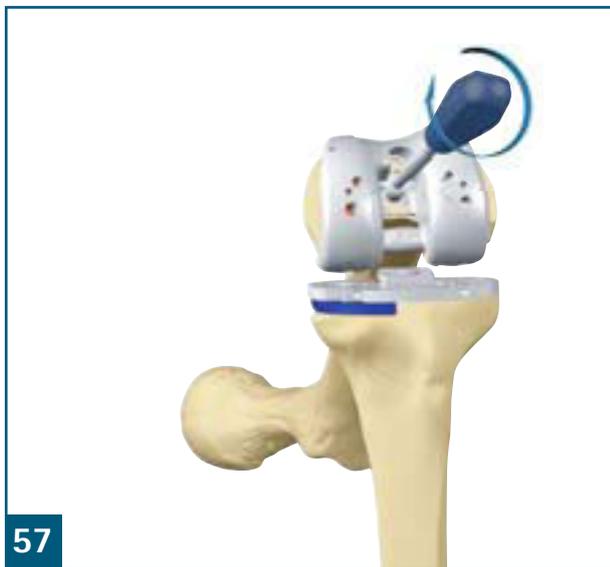


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Tight femur box fixation screw.



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Tight trial femur extension stem AP-offset fixation screw in this self centered position.

**Option:**

Place trial polyethylene with correct size, trial post (NP105 MC, NP106 HC) and height on the trial tibia plateau with trial hemi spacer attached below. Check joint stability in flexion and extension. If too lax select higher polyethylene.



If a cemented extension stem procedure was selected, a 2 mm larger diameter must be reamed up to allow for the cement layer. Alternatively, thinner extension stem can be used (-2 mm). Reamers with Ø 14, 15, 17 and 20 mm are available.

# Operative steps – Femur First

## Preparation of the patella



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The thickness of the patella is measured using the patella foreceps NS840R. This thickness should not be exceeded after implantation of the patella implant (see table of measurements). There is also a caliper AA847R available. The aim should be to achieve same level or a reduction in patella thickness following implantation.



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The drilling clamp NS841R is brought around the patella and fixed. The peg holes are drilled with the diameter 6 mm drill NE480R with stop.

The size of the patella is established with the four color coded trial patellae implants.



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The foreceps is set to chosen resection height. The resection is performed through the cutting slot.



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The implantation is performed with the same foreceps using the fix inside curved adapter NS842 to press patella and cemented patella implant together.

Bone cement has also to be in the three drilled peg holes.

## Assembling the final implants

Please note: To apply the requested torque, all implants which are tightened with defined torque (Tibia-/Femur stem, PE fixation screw), tight three times with torque wrench!



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Consider medial/lateral position of the trial tibia extension stem for assembling the definitive implants in same alignment.

The ML stem position of the explanted trial tibia is the reference for assembling of the definitive implant.



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Select definitive implants.

**Option:**

Screw tibia hemi spacer below the tibia plateau.

Use torque wrench NE184RM and tibia plateau holder NQ835R to screw extension stem with 20 Nm below the tibia in requested offset position.



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**Option:**

Screw distal and posterior spacer in femoral implant.

**Steps:**

1. Distal spacer
2. Posterior spacer

Use cranked wrench key NQ643R for posterior spacer with ball shape side.

The AP stem position of the explanted trial femur is the reference for assembling of the definitive implant.



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Use torque wrench and stem holder NQ834R to screw extension stem with 27 Nm with correct nut in the femur.

# Operative steps – Femur First

## Assembling the final implants



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Sequence of implantation steps:

- Tibia plateau
- Femur
- Gliding surface
- Patella

Insert tibia plateau holder NQ399RM into the tibia plateau and spread until stable fit. Tighten fixation screw and connect handle.



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Click femur insert NQ561 inside femur holder NQ560R and attach handle. Slide both retaining fingers of the holder inside the recesses of the femur and tighten fixation screw.

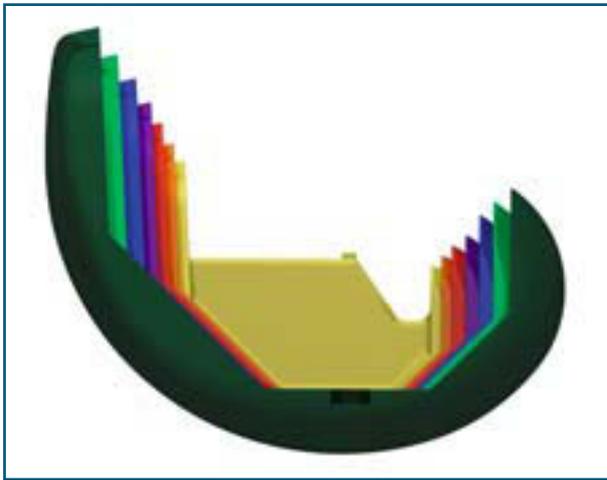


71



72

Click defined poly into the tibia plateau by inserting in first the two posterior noses diagonal. Then the two anterior ones top down. After hardening of bone cement, tight poly fixation screw, which is in same package with – adapter NP450R.



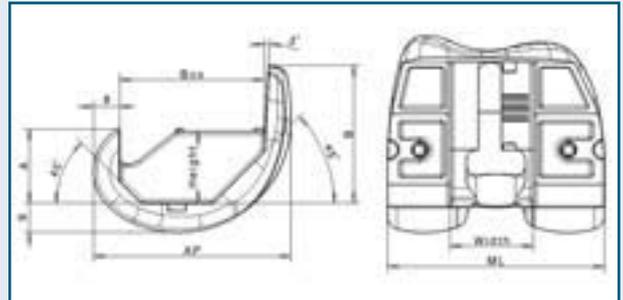
73

Explosion view of the Columbus® Revision knee system trial instruments.

# Implants

## Columbus® Revision implant dimensions and design

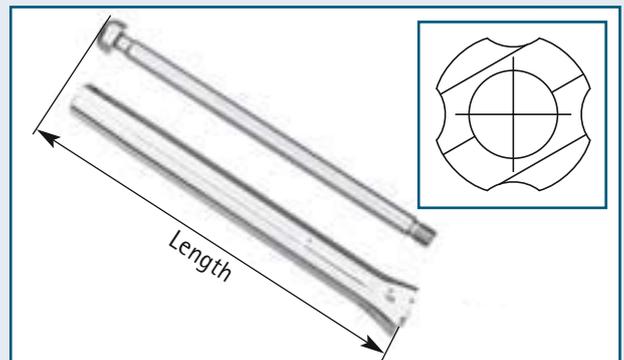
- 7 sizes left/right
- Bone cuts similar Columbus® primary
- Femur box width always 25.5 mm
- Hyperextension 4°
- Flexion angle 130°



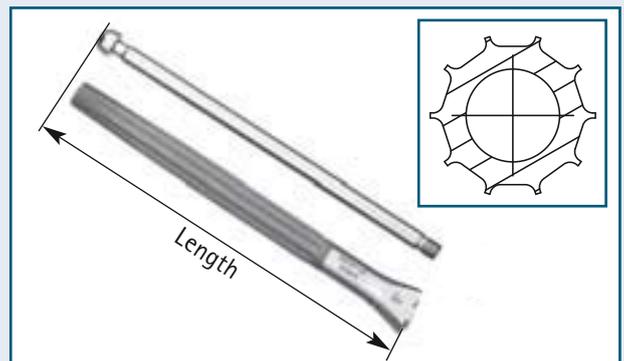
Measurements in [mm]

Size	ML	AP	Box	Box difference -	Box difference +	A	B	Height	Width
F1	56	50	34	0	3	18.5	34	19	25.5
F2	59	53	37	3	3	20	36.5	20.5	25.5
F3	62.5	56.5	40	3	3.5	21.5	39.5	22	25.5
F4	66.5	60.5	43.5	3.5	4	23	42.5	22	25.5
F5	71	65	47.5	4	4.5	26	46	22	25.5
F6	76	70	52	4.5	5	28	49.5	22	25.5
F7	82	75.5	57	5	0	30	53.5	22	25.5

- Cemented: 6°
- Length: 77, 157 mm
- ML offset: Neutral
- Diameter: 12, 15, 18 mm
- Cylindrical and polished
- 4 longitudinal grooves to avoid risk of embolism



- Cementless: 5°/7°
- Length: 117, 177 mm
- ML offset: Neutral, Medialized, Lateralized
- Diameter: 12 – 20 mm (steps of 1 mm)
- Slightly tapered
- 10 longitudinal grooves (Wagner profile)



Nut for extension stems in neutral and offset version.

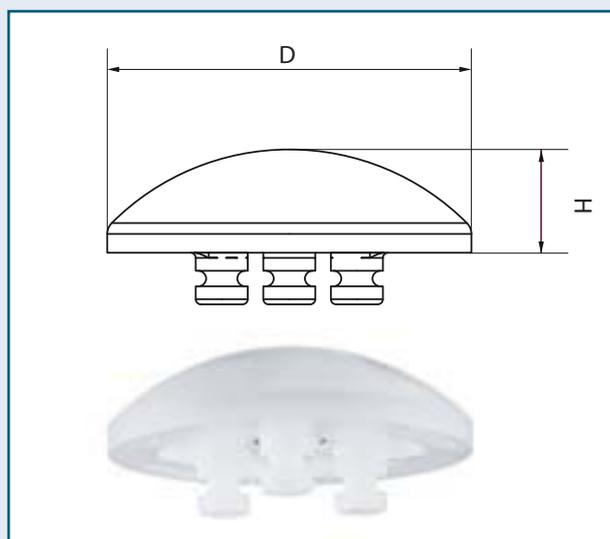


- Distal spacer for F1 – F3: 5, 10 mm
- Distal spacer for F4 – F7: 5, 10 and 15 mm
- Dorsal spacer for F1 – F3: 5, 10 mm
- Dorsal spacer for F4 – F7: 5, 10 and 15 mm
- Each spacer is fixed by one screw
- Cement pockets: 1 mm deep



#### Patellae Dimensions

Patella P0	27 mm x 7 mm
Patella P1	30 mm x 8 mm
Patella P2	33 mm x 9 mm
Patella P3	36 mm x 10 mm

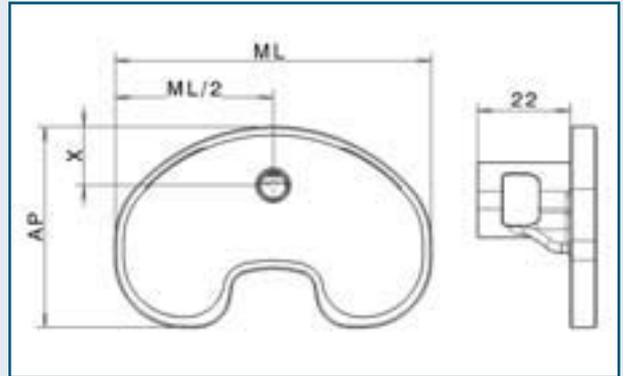


# Implants

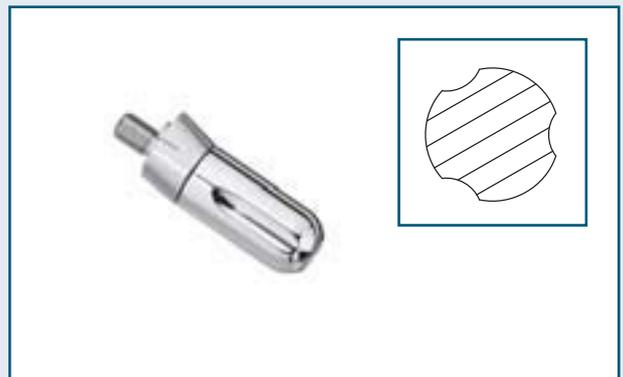
## Columbus® Revision implant dimensions and design

- 11 sizes
- Seating for tibial extension stems
- Offset: T0/T0+ =  $\pm 4$  mm, T1-T5 =  $\pm 6$  mm
- Flexion angle 130°
- Symmetric plateau design
- Cemented

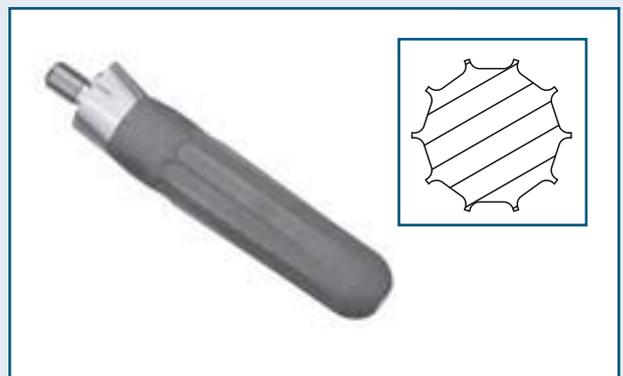
Size	T0	T0+	T1	T1+	T2	T2+	T3	T3+	T4	T4+	T5
ML	62	62	65	65	70	70	75	75	80	80	85
AP	41	44	43	46	45	49	52	48	51	55	56
X	10.5	11	11.5	12.5	12.5	14	15.5	15.5	15.5	17	17



- Cemented
- Length: 52, 92 mm
- Diameter: 12, 15, 18 mm
- Cylindrical and polished
- With asymmetric 'collar' for increased stability
- 3 longitudinal grooves to avoid risk of embolism

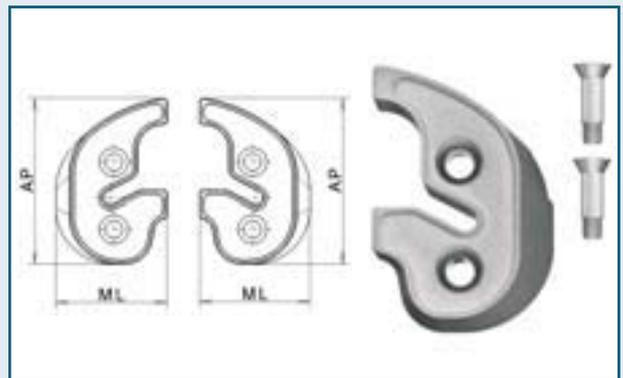


- Cementless
- Length: 92, 132 mm
- Diameter: 11 – 20 mm (steps of 1 mm)
- Slightly tapered
- With asymmetric 'collar' for increased stability
- 10 longitudinal grooves (Wagner profile)



- Spacer in 5, 10 and 15 mm
- Screwed in from underneath
- Anatomical medial or lateral design
- Cement pockets 1 mm deep

Size	T0	T1	T2	T3	T4	T5
AP	40.3	42.3	44.4	47.4	50.5	55.5
ML	24.8	26.3	28.8	31.1	33.8	36.3



Columbus® Revision tibia spacer		Tibia 0/0+	Tibia 1/1+	Tibia 2/2+	Tibia 3/3+	Tibia 4/4+	Tibia 5
	Original ML dim.	62	65	70	75	80	85
With 2 tibia spacer	5 mm ML	58	61	66	71	76	81
With 2 tibia spacer	10 mm ML	54	57	62	67	72	77
With 2 tibia spacer	15 mm ML	50	53	58	63	68	73
	Original AP dim.	41/44	43/46	45/49	48/52	51/55	56
With 2 tibia spacer	5 mm AP	40.3	42.3	44.4	47.4	50.5	55.5
With 2 tibia spacer	10 mm AP	40.3	42.3	44.4	47.4	50.5	55.5
With 2 tibia spacer	15 mm AP	37.3	39.3	41.4	44.4	47.5	52.5

# Implants

## Columbus® Revision implant dimensions and design

### PE Gliding surfaces Medium Constraint (MC) design

- T0/0+ - T1/T1+ in 10, 12, 14, 16, 18, 20, 24 mm
- T2/2+ - T3/T3+ in 10, 12, 14, 16, 18, 20, 24, 28 mm
- T4/T4+ - T5 in 10, 12, 14, 16, 18, 20, 24, 28, 32 mm
- Fixation by four noses to click in tibia plateau
- Additional fixation screw (AS-coated)



### PE Gliding surfaces High Constraint (HC) design

- T0/0+ - T1/T1+ in 10, 12, 14, 16, 18, 20, 24 mm
- T2/2+ - T3/T3+ in 10, 12, 14, 16, 18, 20, 24, 28 mm
- T4/T4+ - T5 in 10, 12, 14, 16, 18, 20, 24, 28, 32 mm
- Fixation by four noses to click in tibia plateau
- Additional fixation screw (AS-coated)



### Combination options

#### Possible Combination Femur/Tibia

Types:	F1	F2	F3	F4	F5	F6	F7
T0/T0+	OK	OK	OK	+	+	+	+
T1/T1+	OK	OK	OK	OK	+	+	+
T2/T2+	-	OK	OK	OK	OK	+	+
T3/T3+	-	-	OK	OK	OK	OK	+
T4/T4+	-	-	+	OK	OK	OK	OK
T5	-	-	+	+	OK	OK	OK

- not compatible

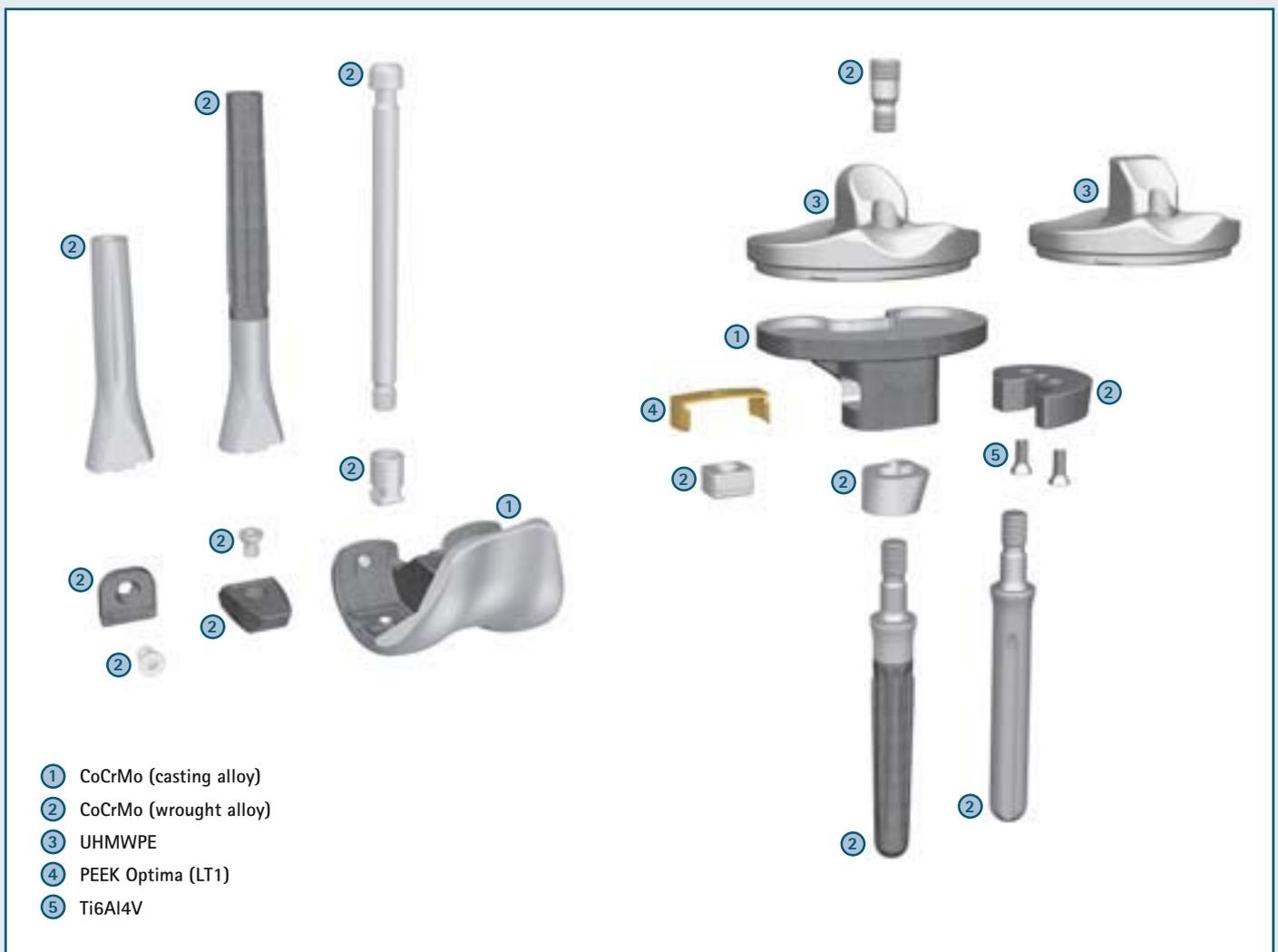
+ possible, but not recommended by Aesculap

#### Torque information:

- 27 Nm for femur extension stems
- 20 Nm for tibia extension stems
- 10 Nm for PE fixation screw



## Material overview



CoCrMo (casting alloy)	Cobalt-chromium-molybdenum casting alloy according to ISO 5832-4
CoCrMo (wrought alloy)	Wrought cobalt-chromium-molybdenum alloy according to ISO 5832-12
UHMWPE	Ultra-high molecular weight polyethylene according to ISO 5834-2
PEEK Optima (LT1)	Medical Grade Polyetheretherketone (provided by Invibio)
Ti6Al4V	Wrought titanium 6-aluminium 4-vanadium alloy according to ISO 5832-3

# Implants

## Compact matrix of implants – Femur components

### Femur, cemented 27 Nm for femur stems



Femur	F1	F2	F3	F4	F5	F6	F7
Left	NR001K	NR002K	NR003K	NR004K	NR005K	NR006K	NR007K
Right	NR011K	NR012K	NR013K	NR014K	NR015K	NR016K	NR017K

### Possible Combination Femur/Tibia

Types:	F1	F2	F3	F4	F5	F6	F7
T0/T0+	OK	OK	OK	+	+	+	+
T1/T1+	OK	OK	OK	OK	+	+	+
T2/T2+	-	OK	OK	OK	OK	+	+
T3/T3+	-	-	OK	OK	OK	OK	+
T4/T4+	-	-	+	OK	OK	OK	OK
T5	-	-	+	+	OK	OK	OK

### Femur stems, cemented, 6°



	Ø 12 mm		Ø 15 mm		Ø 18 mm	
Femur	77 mm	157 mm	77 mm	157 mm	77 mm	157 mm
F1-F7	NR291K	NR294K	NR292K	NR295K	NR293K	NR296K

- not compatible

+ possible, but not recommended by Aesculap

### Femur stems, cementless, 5°/7°



		Ø 12 mm		Ø 13 mm		Ø 14 mm		Ø 15 mm		Ø 16 mm	
Femur		117 mm	177 mm								
F1-F7	5° Neut	NR402K	NR432K	NR403K	NR433K	NR404K	NR434K	NR405K	NR435K	NR406K	NR436K
F1-F7	5° Med	NR412K	NR442K	NR413K	NR443K	NR414K	NR444K	NR415K	NR445K	NR416K	NR446K
F1-F7	5° Lat	NR422K	NR452K	NR423K	NR453K	NR424K	NR454K	NR425K	NR455K	NR426K	NR456K
F1-F7	7° Neut	NR502K	NR532K	NR503K	NR533K	NR504K	NR534K	NR505K	NR535K	NR506K	NR536K
F1-F7	7° Med	NR512K	NR542K	NR513K	NR543K	NR514K	NR544K	NR515K	NR545K	NR516K	NR546K
F1-F7	7° Lat	NR522K	NR552K	NR523K	NR553K	NR524K	NR554K	NR525K	NR555K	NR526K	NR556K

		Ø 17 mm		Ø 18 mm		Ø 19 mm		Ø 20 mm	
Femur		117 mm	177 mm						
F1-F7	5° Neut	NR407K	NR437K	NR408K	NR438K	NR409K	NR439K	NR410K	NR440K
F1-F7	5° Med	NR417K	NR447K	NR418K	NR448K	NR419K	NR449K	NR420K	NR450K
F1-F7	5° Lat	NR427K	NR457K	NR428K	NR458K	NR429K	NR459K	NR430K	NR460K
F1-F7	7° Neut	NR507K	NR537K	NR508K	NR538K	NR509K	NR539K	NR510K	NR540K
F1-F7	7° Med	NR517K	NR547K	NR518K	NR548K	NR519K	NR549K	NR520K	NR550K
F1-F7	7° Lat	NR527K	NR557K	NR528K	NR558K	NR529K	NR559K	NR530K	NR560K

Please note: If e. g. a offset stem adapter type 7° 'medial stem' was selected, the definitive implant must be selected in version 7° 'medialized'.

### Femur spacer distal with screw



Femur	5 mm	10 mm	15 mm	5 mm	10 mm	15 mm
F1	NR461K	NR471K	-	NR561K	NR571K	-
F2	NR462K	NR472K	-	NR562K	NR572K	-
F3	NR463K	NR473K	-	NR563K	NR573K	-
F4	NR464K	NR474K	NR484K	NR564K	NR574K	NR584K
F5	NR465K	NR475K	NR485K	NR565K	NR575K	NR585K
F6	NR466K	NR476K	NR486K	NR566K	NR576K	NR586K
F7	NR467K	NR477K	NR487K	NR567K	NR577K	NR587K

### Femur spacer posterior with screw



### Femur nut for ext. stems



Femur types	Neutral	Offset
F1-F7	NR400K	NR401K

### Patella 3-Peg



	P0	P1	P2	P3
Ø	27 mm	30 mm	33 mm	36 mm
F1-F7	NN481	NN482	NN483	NN484

## Compact matrix of implants – Tibia components

### Tibia, cemented 20 Nm for tibia stems



Tibia	T0	T0+	T1	T1+	T2	T2+
	NR070K	NR068K	NR071K	NR072K	NR073K	NR074K
Tibia	T3	T3+	T4	T4+	T5	
	NR075K	NR076K	NR077K	NR078K	NR079K	

### Tibia offset stems, cemented



	Ø 12 mm		Ø 15 mm		Ø 18 mm	
Femur	52 mm	92 mm	52 mm	92 mm	52 mm	92 mm
T0-T5	NR191K	NR194K	NR192K	NR195K	NR193K	NR196K

### Tibia offset stems, cementless



	Ø 11 mm		Ø 12 mm		Ø 13 mm		Ø 14 mm		Ø 15 mm	
Tibia	92 mm	132 mm								
T0-T5	NR171K	NR181K	NR172K	NR182K	NR173K	NR183K	NR174K	NR184K	NR175K	NR185K
	Ø 16 mm		Ø 17 mm		Ø 18 mm		Ø 19 mm		Ø 20 mm	
Tibia	92 mm	132 mm								
T0-T5	NR176K	NR186K	NR177K	NR187K	NR178K	NR188K	NR179K	NR189K	NR180K	NR190K

### PE Gliding Surface Medium Constraint with screw/10 Nm for PE



Femur	10 mm	12 mm	14 mm	16 mm	18 mm	20 mm	24 mm	28 mm	32 mm
T0/T0+	NR100M	NR101M	NR102M	NR103M	NR104M	NR105M	NR106M	-	-
T1/T1+	NR110M	NR111M	NR112M	NR113M	NR114M	NR115M	NR116M	-	-
T2/T2+	NR120M	NR121M	NR122M	NR123M	NR124M	NR125M	NR126M	NR127M	-
T3/T3+	NR130M	NR131M	NR132M	NR133M	NR134M	NR135M	NR136M	NR137M	-
T4/T4+	NR140M	NR141M	NR142M	NR143M	NR144M	NR145M	NR146M	NR147M	NR148M
T5	NR150M	NR151M	NR152M	NR153M	NR154M	NR155M	NR156M	NR157M	NR158M

### PE Gliding Surface High Constraint with screw/10 Nm for PE



Femur	10 mm	12 mm	14 mm	16 mm	18 mm	20 mm	24 mm	28 mm	32 mm
T0/T0+	NR600M	NR601M	NR602M	NR603M	NR604M	NR605M	NR606M	-	-
T1/T1+	NR610M	NR611M	NR612M	NR613M	NR614M	NR615M	NR616M	-	-
T2/T2+	NR620M	NR621M	NR622M	NR623M	NR624M	NR625M	NR626M	NR627M	-
T3/T3+	NR630M	NR631M	NR632M	NR633M	NR634M	NR635M	NR636M	NR637M	-
T4/T4+	NR640M	NR641M	NR642M	NR643M	NR644M	NR645M	NR646M	NR647M	NR648M
T5	NR650M	NR651M	NR652M	NR653M	NR654M	NR655M	NR656M	NR657M	NR658M

### Tibial hemi-spacer RM/LL with screws



Tibia	5 mm	10 mm	15 mm
T0/T0+	NR040K	NR041K	NR042K
T1/T1+	NR044K	NR045K	NR046K
T2/T2+	NR048K	NR049K	NR050K
T3/T3+	NR052K	NR053K	NR054K
T4/T4+	NR056K	NR057K	NR058K
T5	NR060K	NR061K	NR062K

### Tibial hemi-spacer RL/LM with screws



Tibia	5 mm	10 mm	15 mm
T0/T0+	NR240K	NR241K	NR242K
T1/T1+	NR244K	NR245K	NR246K
T2/T2+	NR248K	NR249K	NR250K
T3/T3+	NR252K	NR253K	NR254K
T4/T4+	NR256K	NR257K	NR258K
T5	NR260K	NR261K	NR262K

### Possible Combination Femur/Tibia

Types:	F1	F2	F3	F4	F5	F6	F7
T0/T0+	OK	OK	OK	+	+	+	+
T1/T1+	OK	OK	OK	OK	+	+	+
T2/T2+	-	OK	OK	OK	OK	+	+
T3/T3+	-	-	OK	OK	OK	OK	+
T4/T4+	-	-	+	OK	OK	OK	OK
T5	-	-	+	+	OK	OK	OK

- not compatible

+ possible, but not recommended by Aesculap

# Implants

## Implant ordering details



### Femur

Standard AS

NR001K	NR001Z	Femur F1, left
NR002K	NR002Z	Femur F2, left
NR003K	NR003Z	Femur F3, left
NR004K	NR004Z	Femur F4, left
NR005K	NR005Z	Femur F5, left
NR006K	NR006Z	Femur F6, left
NR007K	NR007Z	Femur F7, left
NR011K	NR011Z	Femur F1, right
NR012K	NR012Z	Femur F2, right
NR013K	NR013Z	Femur F3, right
NR014K	NR014Z	Femur F4, right
NR015K	NR015Z	Femur F5, right
NR016K	NR016Z	Femur F6, right
NR017K	NR017Z	Femur F7, right



### Femur spacer distal, with screw

Standard AS

NR461K	NR461Z	Femur spacer, distal, F1 5 mm
NR471K	NR471Z	Femur spacer, distal, F1 10 mm
NR462K	NR462Z	Femur spacer, distal, F2 5 mm
NR472K	NR472Z	Femur spacer, distal, F2 10 mm
NR463K	NR463Z	Femur spacer, distal, F3 5 mm
NR473K	NR473Z	Femur spacer, distal, F3 10 mm
NR464K	NR464Z	Femur spacer, distal, F4 5 mm
NR474K	NR474Z	Femur spacer, distal, F4 10 mm
NR484K	NR484Z	Femur spacer, distal, F4 15 mm
NR465K	NR465Z	Femur spacer, distal, F5 5 mm
NR475K	NR475Z	Femur spacer, distal, F5 10 mm
NR485K	NR485Z	Femur spacer, distal, F5 15 mm



NR466K	NR466Z	Femur spacer, distal, F6 5 mm
NR476K	NR476Z	Femur spacer, distal, F6 10 mm
NR486K	NR486Z	Femur spacer, distal, F6 15 mm
NR467K	NR467Z	Femur spacer, distal, F7 5 mm
NR477K	NR477Z	Femur spacer, distal, F7 10 mm
NR487K	NR487Z	Femur spacer, distal, F7 15 mm

### Femur spacer posterior, with screw

Standard AS

NR561K	NR561Z	Femur spacer, posterior, F1 5 mm
NR571K	NR571Z	Femur spacer, posterior, F1 10 mm
NR562K	NR562Z	Femur spacer, posterior, F2 5 mm
NR572K	NR572Z	Femur spacer, posterior, F2 10 mm
NR563K	NR563Z	Femur spacer, posterior, F3 5 mm
NR573K	NR573Z	Femur spacer, posterior, F3 10 mm
NR564K	NR564Z	Femur spacer, posterior, F4 5 mm
NR574K	NR574Z	Femur spacer, posterior, F4 10 mm
NR584K	NR584Z	Femur spacer, posterior, F4 15 mm
NR565K	NR565Z	Femur spacer, posterior, F5 5 mm
NR575K	NR575Z	Femur spacer, posterior, F5 10 mm
NR585K	NR585Z	Femur spacer, posterior, F5 15 mm



NR566K	NR566Z	Femur spacer, posterior, F6 5 mm
NR576K	NR576Z	Femur spacer, posterior, F6 10 mm
NR586K	NR586Z	Femur spacer, posterior, F6 15 mm
NR567K	NR567Z	Femur spacer, posterior, F7 5 mm
NR577K	NR577Z	Femur spacer, posterior, F7 10 mm
NR587K	NR587Z	Femur spacer, posterior, F7 15 mm

## Femur offset stems, cemented, 6°

Standard AS

NR291K NR291Z Femur stem, 6°, 12 x 77 mm, cemented

NR294K NR294Z Femur stem, 6°, 12 x 157 mm, cemented

NR292K NR292Z Femur stem, 6°, 15 x 77 mm, cemented

NR295K NR295Z Femur stem, 6°, 15 x 157 mm, cemented

NR293K NR293Z Femur stem, 6°, 18 x 77 mm, cemented

NR296K NR296Z Femur stem, 6°, 18 x 157 mm, cemented



## Femur stem nut, neutral and offset

Standard AS

NR400K NR400Z Femur extension stem nut, neutral

NR401K NR401Z Femur extension stem nut, offset



## Patellae

NN481 Patella, P0, Ø 27 x 7 mm

NN482 Patella, P1, Ø 30 x 8 mm

NN483 Patella, P2, Ø 33 x 9 mm

NN484 Patella, P3, Ø 36 x 10 mm



## Femur extension stems, cementless, 5° neutral

Standard AS

NR402K NR402Z Femur stem, 5°, 12 x 117 mm, cementless

NR432K NR432Z Femur stem, 5°, 12 x 177 mm, cementless

NR403K NR403Z Femur stem, 5°, 13 x 117 mm, cementless

NR433K NR433Z Femur stem, 5°, 13 x 177 mm, cementless

NR404K NR404Z Femur stem, 5°, 14 x 117 mm, cementless

NR434K NR434Z Femur stem, 5°, 14 x 177 mm, cementless

NR405K NR405Z Femur stem, 5°, 15 x 117 mm, cementless

NR435K NR435Z Femur stem, 5°, 15 x 177 mm, cementless

NR406K NR406Z Femur stem, 5°, 16 x 117 mm, cementless

NR436K NR436Z Femur stem, 5°, 16 x 177 mm, cementless

NR407K NR407Z Femur stem, 5°, 17 x 117 mm, cementless

NR437K NR437Z Femur stem, 5°, 17 x 177 mm, cementless

NR408K NR408Z Femur stem, 5°, 18 x 117 mm, cementless

NR438K NR438Z Femur stem, 5°, 18 x 177 mm, cementless

NR409K NR409Z Femur stem, 5°, 19 x 117 mm, cementless

NR439K NR439Z Femur stem, 5°, 19 x 177 mm, cementless

NR410K NR410Z Femur stem, 5°, 20 x 117 mm, cementless

NR440K NR440Z Femur stem, 5°, 20 x 177 mm, cementless



# Implants

## Implant ordering details

### Femur extension stems, cementless, 5° medialized

Standard AS

NR412K	NR412Z	Femur stem, 5°, 12 x 117 mm, cementless
NR442K	NR442Z	Femur stem, 5°, 12 x 177 mm, cementless
NR413K	NR413Z	Femur stem, 5°, 13 x 117 mm, cementless
NR443K	NR443Z	Femur stem, 5°, 13 x 177 mm, cementless
NR414K	NR414Z	Femur stem, 5°, 14 x 117 mm, cementless
NR444K	NR444Z	Femur stem, 5°, 14 x 177 mm, cementless
NR415K	NR415Z	Femur stem, 5°, 15 x 117 mm, cementless
NR445K	NR445Z	Femur stem, 5°, 15 x 177 mm, cementless
NR416K	NR416Z	Femur stem, 5°, 16 x 117 mm, cementless
NR446K	NR446Z	Femur stem, 5°, 16 x 177 mm, cementless
NR417K	NR417Z	Femur stem, 5°, 17 x 117 mm, cementless
NR447K	NR447Z	Femur stem, 5°, 17 x 177 mm, cementless
NR418K	NR418Z	Femur stem, 5°, 18 x 117 mm, cementless
NR448K	NR448Z	Femur stem, 5°, 18 x 177 mm, cementless
NR419K	NR419Z	Femur stem, 5°, 19 x 117 mm, cementless
NR449K	NR449Z	Femur stem, 5°, 19 x 177 mm, cementless
NR420K	NR420Z	Femur stem, 5°, 20 x 117 mm, cementless
NR450K	NR450Z	Femur stem, 5°, 20 x 177 mm, cementless



### Femur extension stems, cementless, 5° lateralized

Standard AS

NR422K	NR422Z	Femur stem, 5°, 12 x 117 mm, cementless
NR452K	NR452Z	Femur stem, 5°, 12 x 177 mm, cementless
NR423K	NR423Z	Femur stem, 5°, 13 x 117 mm, cementless
NR453K	NR453Z	Femur stem, 5°, 13 x 177 mm, cementless
NR424K	NR424Z	Femur stem, 5°, 14 x 117 mm, cementless
NR454K	NR454Z	Femur stem, 5°, 14 x 177 mm, cementless
NR425K	NR425Z	Femur stem, 5°, 15 x 117 mm, cementless
NR455K	NR455Z	Femur stem, 5°, 15 x 177 mm, cementless
NR426K	NR426Z	Femur stem, 5°, 16 x 117 mm, cementless
NR456K	NR456Z	Femur stem, 5°, 16 x 177 mm, cementless
NR427K	NR427Z	Femur stem, 5°, 17 x 117 mm, cementless
NR457K	NR457Z	Femur stem, 5°, 17 x 177 mm, cementless
NR428K	NR428Z	Femur stem, 5°, 18 x 117 mm, cementless
NR458K	NR458Z	Femur stem, 5°, 18 x 177 mm, cementless
NR429K	NR429Z	Femur stem, 5°, 19 x 117 mm, cementless
NR459K	NR459Z	Femur stem, 5°, 19 x 177 mm, cementless
NR430K	NR430Z	Femur stem, 5°, 20 x 117 mm, cementless
NR460K	NR460Z	Femur stem, 5°, 20 x 177 mm, cementless



## Femur extension stems, cementless, 7° neutral

Standard AS

NR502K	NR502Z	Femur stem, 7°, 12 x 117 mm, cementless
NR532K	NR532Z	Femur stem, 7°, 12 x 177 mm, cementless
NR503K	NR503Z	Femur stem, 7°, 13 x 117 mm, cementless
NR533K	NR533Z	Femur stem, 7°, 13 x 177 mm, cementless
NR504K	NR504Z	Femur stem, 7°, 14 x 117 mm, cementless
NR534K	NR534Z	Femur stem, 7°, 14 x 177 mm, cementless
NR505K	NR505Z	Femur stem, 7°, 15 x 117 mm, cementless
NR535K	NR535Z	Femur stem, 7°, 15 x 177 mm, cementless
NR506K	NR506Z	Femur stem, 7°, 16 x 117 mm, cementless
NR536K	NR536Z	Femur stem, 7°, 16 x 177 mm, cementless
NR507K	NR507Z	Femur stem, 7°, 17 x 117 mm, cementless
NR537K	NR537Z	Femur stem, 7°, 17 x 177 mm, cementless
NR508K	NR508Z	Femur stem, 7°, 18 x 117 mm, cementless
NR538K	NR538Z	Femur stem, 7°, 18 x 177 mm, cementless
NR509K	NR509Z	Femur stem, 7°, 19 x 117 mm, cementless
NR539K	NR539Z	Femur stem, 7°, 19 x 177 mm, cementless
NR510K	NR510Z	Femur stem, 7°, 20 x 117 mm, cementless
NR540K	NR540Z	Femur stem, 7°, 20 x 177 mm, cementless



## Femur extension stems, cementless, 7° medialized

Standard AS

NR512K	NR512Z	Femur stem, 7°, 12 x 117 mm, cementless
NR542K	NR542Z	Femur stem, 7°, 12 x 177 mm, cementless
NR513K	NR513Z	Femur stem, 7°, 13 x 117 mm, cementless
NR543K	NR543Z	Femur stem, 7°, 13 x 177 mm, cementless
NR514K	NR514Z	Femur stem, 7°, 14 x 117 mm, cementless
NR544K	NR544Z	Femur stem, 7°, 14 x 177 mm, cementless
NR515K	NR515Z	Femur stem, 7°, 15 x 117 mm, cementless
NR545K	NR545Z	Femur stem, 7°, 15 x 177 mm, cementless
NR516K	NR516Z	Femur stem, 7°, 16 x 117 mm, cementless
NR546K	NR546Z	Femur stem, 7°, 16 x 177 mm, cementless
NR517K	NR517Z	Femur stem, 7°, 17 x 117 mm, cementless
NR547K	NR547Z	Femur stem, 7°, 17 x 177 mm, cementless
NR518K	NR518Z	Femur stem, 7°, 18 x 117 mm, cementless
NR548K	NR548Z	Femur stem, 7°, 18 x 177 mm, cementless
NR519K	NR519Z	Femur stem, 7°, 19 x 117 mm, cementless
NR549K	NR549Z	Femur stem, 7°, 19 x 177 mm, cementless
NR520K	NR520Z	Femur stem, 7°, 20 x 117 mm, cementless
NR550K	NR550Z	Femur stem, 7°, 20 x 177 mm, cementless



# Implants

## Implant ordering details

### Femur extension stems, cementless, 7° lateralized

Standard AS

NR522K	NR522Z	Femur stem, 7°, 12 x 117 mm, cementless
NR552K	NR552Z	Femur stem, 7°, 12 x 177 mm, cementless
NR523K	NR523Z	Femur stem, 7°, 13 x 117 mm, cementless
NR553K	NR553Z	Femur stem, 7°, 13 x 177 mm, cementless
NR524K	NR524Z	Femur stem, 7°, 14 x 117 mm, cementless
NR554K	NR554Z	Femur stem, 7°, 14 x 177 mm, cementless
NR525K	NR525Z	Femur stem, 7°, 15 x 117 mm, cementless
NR555K	NR555Z	Femur stem, 7°, 15 x 177 mm, cementless
NR526K	NR526Z	Femur stem, 7°, 16 x 117 mm, cementless
NR556K	NR556Z	Femur stem, 7°, 16 x 177 mm, cementless
NR527K	NR527Z	Femur stem, 7°, 17 x 117 mm, cementless
NR557K	NR557Z	Femur stem, 7°, 17 x 177 mm, cementless
NR528K	NR528Z	Femur stem, 7°, 18 x 117 mm, cementless



NR558K	NR558Z	Femur stem, 7°, 18 x 177 mm, cementless
NR529K	NR529Z	Femur stem, 7°, 19 x 117 mm, cementless
NR559K	NR559Z	Femur stem, 7°, 19 x 177 mm, cementless
NR530K	NR530Z	Femur stem, 7°, 20 x 117 mm, cementless
NR560K	NR560Z	Femur stem, 7°, 20 x 177 mm, cementless

### Tibia plateau, cemented

Standard AS

NR070K	NR070Z	Tibia T0
NR068K	NR068Z	Tibia T0+
NR071K	NR071Z	Tibia T1
NR072K	NR072Z	Tibia T1+
NR073K	NR073Z	Tibia T2
NR074K	NR074Z	Tibia T2+
NR075K	NR075Z	Tibia T3
NR076K	NR076Z	Tibia T3+
NR077K	NR077Z	Tibia T4
NR078K	NR078Z	Tibia T4+
NR079K	NR079Z	Tibia T5



### Tibia spacer, cemented with screws

Standard AS

NR240K	NR240Z	Tibia spacer, RL/LM, T0/T0+, 5 mm
NR241K	NR241Z	Tibia spacer, RL/LM, T0/T0+, 10 mm
NR242K	NR242Z	Tibia spacer, RL/LM, T0/T0+, 15 mm
NR244K	NR244Z	Tibia spacer, RL/LM, T1/T1+, 5 mm
NR245K	NR245Z	Tibia spacer, RL/LM, T1/T1+, 10 mm
NR246K	NR246Z	Tibia spacer, RL/LM, T1/T1+, 15 mm
NR248K	NR248Z	Tibia spacer, RL/LM, T2/T2+, 5 mm
NR249K	NR249Z	Tibia spacer, RL/LM, T2/T2+, 10 mm
NR250K	NR250Z	Tibia spacer, RL/LM, T2/T2+, 15 mm
NR252K	NR252Z	Tibia spacer, RL/LM, T3/T3+, 5 mm
NR253K	NR253Z	Tibia spacer, RL/LM, T3/T3+, 10 mm
NR254K	NR254Z	Tibia spacer, RL/LM, T3/T3+, 15 mm
NR256K	NR256Z	Tibia spacer, RL/LM, T4/T4+, 5 mm



NR257K	NR257Z	Tibia spacer, RL/LM, T4/T4+, 10 mm
NR258K	NR258Z	Tibia spacer, RL/LM, T4/T4+, 15 mm
NR260K	NR260Z	Tibia spacer, RL/LM, T5, 5 mm
NR261K	NR261Z	Tibia spacer, RL/LM, T5, 10 mm
NR262K	NR262Z	Tibia spacer, RL/LM, T5, 15 mm

## Tibia spacer, cemented with screws

Standard AS

NR040K	NR040Z	Tibia spacer, RM/LL, T0/T0+, 5 mm
NR041K	NR041Z	Tibia spacer, RM/LL, T0/T0+, 10 mm
NR042K	NR042Z	Tibia spacer, RM/LL, T0/T0+, 15 mm
NR044K	NR044Z	Tibia spacer, RM/LL, T1/T1+, 5 mm
NR045K	NR045Z	Tibia spacer, RM/LL, T1/T1+, 10 mm
NR046K	NR046Z	Tibia spacer, RM/LL, T1/T1+, 15 mm
NR048K	NR048Z	Tibia spacer, RM/LL, T2/T2+, 5 mm
NR049K	NR049Z	Tibia spacer, RM/LL, T2/T2+, 10 mm
NR050K	NR050Z	Tibia spacer, RM/LL, T2/T2+, 15 mm
NR052K	NR052Z	Tibia spacer, RM/LL, T3/T3+, 5 mm
NR053K	NR053Z	Tibia spacer, RM/LL, T3/T3+, 10 mm
NR054K	NR054Z	Tibia spacer, RM/LL, T3/T3+, 15 mm
NR056K	NR056Z	Tibia spacer, RM/LL, T4/T4+, 5 mm



NR057K	NR057Z	Tibia spacer, RM/LL, T4/T4+, 10 mm
NR058K	NR058Z	Tibia spacer, RM/LL, T4/T4+, 15 mm
NR060K	NR060Z	Tibia spacer, RM/LL, T5, 5 mm
NR061K	NR061Z	Tibia spacer, RM/LL, T5, 10 mm
NR062K	NR062Z	Tibia spacer, RM/LL, T5, 15 mm

## PE Gliding surface Medium Constraint (MC) with screw

NR100M	Gliding surface, T0/T0+, 10 mm
NR101M	Gliding surface, T0/T0+, 12 mm
NR102M	Gliding surface, T0/T0+, 14 mm
NR103M	Gliding surface, T0/T0+, 16 mm
NR104M	Gliding surface, T0/T0+, 18 mm
NR105M	Gliding surface, T0/T0+, 20 mm
NR106M	Gliding surface, T0/T0+, 24 mm
NR110M	Gliding surface, T1/T1+, 10 mm
NR111M	Gliding surface, T1/T1+, 12 mm
NR112M	Gliding surface, T1/T1+, 14 mm
NR113M	Gliding surface, T1/T1+, 16 mm
NR114M	Gliding surface, T1/T1+, 18 mm
NR115M	Gliding surface, T1/T1+, 20 mm
NR116M	Gliding surface, T1/T1+, 24 mm
NR120M	Gliding surface, T2/T2+, 10 mm
NR121M	Gliding surface, T2/T2+, 12 mm
NR122M	Gliding surface, T2/T2+, 14 mm
NR123M	Gliding surface, T2/T2+, 16 mm
NR124M	Gliding surface, T2/T2+, 18 mm
NR125M	Gliding surface, T2/T2+, 20 mm
NR126M	Gliding surface, T2/T2+, 24 mm
NR127M	Gliding surface, T2/T2+, 28 mm
NR130M	Gliding surface, T3/T3+, 10 mm
NR131M	Gliding surface, T3/T3+, 12 mm
NR132M	Gliding surface, T3/T3+, 14 mm
NR133M	Gliding surface, T3/T3+, 16 mm
NR134M	Gliding surface, T3/T3+, 18 mm
NR135M	Gliding surface, T3/T3+, 20 mm



NR136M	Gliding surface, T3/T3+, 24 mm
NR137M	Gliding surface, T3/T3+, 28 mm
NR140M	Gliding surface, T4/T4+, 10 mm
NR141M	Gliding surface, T4/T4+, 12 mm
NR142M	Gliding surface, T4/T4+, 14 mm
NR143M	Gliding surface, T4/T4+, 16 mm
NR144M	Gliding surface, T4/T4+, 18 mm
NR145M	Gliding surface, T4/T4+, 20 mm
NR146M	Gliding surface, T4/T4+, 24 mm
NR147M	Gliding surface, T4/T4+, 28 mm
NR148M	Gliding surface, T4/T4+, 32 mm
NR150M	Gliding surface, T5, 10 mm
NR151M	Gliding surface, T5, 12 mm
NR152M	Gliding surface, T5, 14 mm
NR153M	Gliding surface, T5, 16 mm
NR154M	Gliding surface, T5, 18 mm
NR155M	Gliding surface, T5, 20 mm
NR156M	Gliding surface, T5, 24 mm
NR157M	Gliding surface, T5, 28 mm
NR158M	Gliding surface, T5, 32 mm

# Implants

## Implant ordering details

### PE Gliding surface High Constraint (HC) with screw

NR600M	Gliding surface, T0/T0+, 10 mm
NR601M	Gliding surface, T0/T0+, 12 mm
NR602M	Gliding surface, T0/T0+, 14 mm
NR603M	Gliding surface, T0/T0+, 16 mm
NR604M	Gliding surface, T0/T0+, 18 mm
NR605M	Gliding surface, T0/T0+, 20 mm
NR606M	Gliding surface, T0/T0+, 24 mm
NR610M	Gliding surface, T1/T1+, 10 mm
NR611M	Gliding surface, T1/T1+, 12 mm
NR612M	Gliding surface, T1/T1+, 14 mm
NR613M	Gliding surface, T1/T1+, 16 mm
NR614M	Gliding surface, T1/T1+, 18 mm
NR615M	Gliding surface, T1/T1+, 20 mm
NR616M	Gliding surface, T1/T1+, 24 mm
NR620M	Gliding surface, T2/T2+, 10 mm
NR621M	Gliding surface, T2/T2+, 12 mm
NR622M	Gliding surface, T2/T2+, 14 mm
NR623M	Gliding surface, T2/T2+, 16 mm
NR624M	Gliding surface, T2/T2+, 18 mm
NR625M	Gliding surface, T2/T2+, 20 mm
NR626M	Gliding surface, T2/T2+, 24 mm
NR627M	Gliding surface, T2/T2+, 28 mm
NR630M	Gliding surface, T3/T3+, 10 mm
NR631M	Gliding surface, T3/T3+, 12 mm
NR632M	Gliding surface, T3/T3+, 14 mm
NR633M	Gliding surface, T3/T3+, 16 mm
NR634M	Gliding surface, T3/T3+, 18 mm
NR635M	Gliding surface, T3/T3+, 20 mm
NR636M	Gliding surface, T3/T3+, 24 mm
NR637M	Gliding surface, T3/T3+, 28 mm
NR640M	Gliding surface, T4/T4+, 10 mm
NR641M	Gliding surface, T4/T4+, 12 mm
NR642M	Gliding surface, T4/T4+, 14 mm
NR643M	Gliding surface, T4/T4+, 16 mm
NR644M	Gliding surface, T4/T4+, 18 mm
NR645M	Gliding surface, T4/T4+, 20 mm
NR646M	Gliding surface, T4/T4+, 24 mm
NR647M	Gliding surface, T4/T4+, 28 mm
NR648M	Gliding surface, T4/T4+, 32 mm
NR650M	Gliding surface, T5, 10 mm
NR651M	Gliding surface, T5, 12 mm
NR652M	Gliding surface, T5, 14 mm
NR653M	Gliding surface, T5, 16 mm



NR654M	Gliding surface, T5, 18 mm
NR655M	Gliding surface, T5, 20 mm
NR656M	Gliding surface, T5, 24 mm
NR657M	Gliding surface, T5, 28 mm
NR658M	Gliding surface, T5, 32 mm

## Tibia offset stems, cemented

Standard AS

NR191K NR191Z Tibia stem, 12 x 52 mm, cemented

NR194K NR194Z Tibia stem, 12 x 92 mm, cemented

NR192K NR192Z Tibia stem, 15 x 52 mm, cemented

NR195K NR195Z Tibia stem, 15 x 92 mm, cemented

NR193K NR193Z Tibia stem, 18 x 52 mm, cemented

NR196K NR196Z Tibia stem, 18 x 92 mm, cemented



## Tibia offset stems, cementless

Standard AS

NR171K NR171Z Tibia stem, 11 x 92 mm, cementless

NR181K NR181Z Tibia stem, 11 x 132 mm, cementless

NR172K NR172Z Tibia stem, 12 x 92 mm, cementless

NR182K NR182Z Tibia stem, 12 x 132 mm, cementless

NR173K NR173Z Tibia stem, 13 x 92 mm, cementless

NR183K NR183Z Tibia stem, 13 x 132 mm, cementless

NR174K NR174Z Tibia stem, 14 x 92 mm, cementless

NR184K NR184Z Tibia stem, 14 x 132 mm, cementless

NR175K NR175Z Tibia stem, 15 x 92 mm, cementless

NR185K NR185Z Tibia stem, 15 x 132 mm, cementless

NR176K NR176Z Tibia stem, 16 x 92 mm, cementless

NR186K NR186Z Tibia stem, 16 x 132 mm, cementless

NR177K NR177Z Tibia stem, 17 x 92 mm, cementless

NR187K NR187Z Tibia stem, 17 x 132 mm, cementless

NR178K NR178Z Tibia stem, 18 x 92 mm, cementless

NR188K NR188Z Tibia stem, 18 x 132 mm, cementless

NR179K NR179Z Tibia stem, 19 x 92 mm, cementless

NR189K NR189Z Tibia stem, 19 x 132 mm, cementless

NR180K NR180Z Tibia stem, 20 x 92 mm, cementless

NR190K NR190Z Tibia stem, 20 x 132 mm, cementless



# Instruments

## Overview of instruments, X-ray templates and saw blades

### Columbus® Revision instruments

NQ600	Columbus® Revision F Instrumentation CLP.
NQ601	Columbus® Revision F Set General Instruments
NQ602	Columbus® Revision F Set Manual Femur Instr.
NQ603	Columbus® Revision F Set Manual Tibia Instr.
NQ604	Columbus® Revision F Set Femoral Preparation
NQ605	Columbus® Revision F Set Trial Tibial Comp.
NQ606	Columbus® Revision F Set Trial Femoral Comp. L
NQ607	Columbus® Revision F Set Trial Femoral Comp. R
NQ608	Columbus® Revision F Set Trial Tibia Spacer
NQ609	Columbus® Revision F Set Stem Prep. Cemented
NQ610	Columbus® Revision F Set Stem Prep. Cementless
NQ611	Columbus® Revision F Set Patella Preparation
NQ612	Columbus® Revision F Set Tibial Instruments Size 0

### OrthoPilot® TKR – Navigation instruments sets

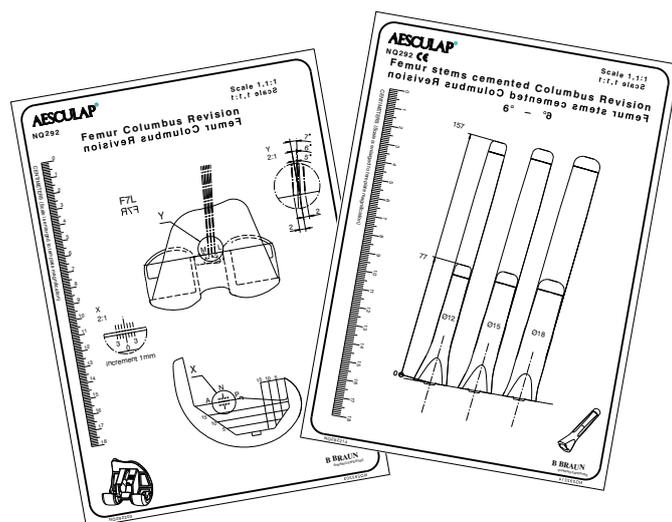
NQ596	Active
NQ594	Passive

### X-ray templates

NQ292	Set of X-ray templates, scale 1.10:1
NQ293	Set of X-ray templates, scale 1.15:1
NQ289	Axis planning

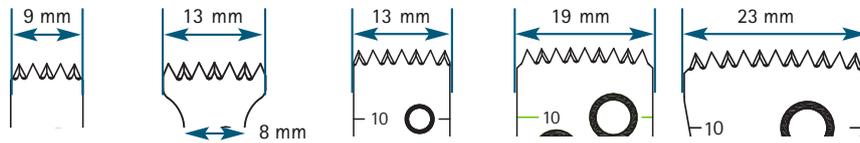
### Columbus® Revision marketing tools

090602	Brochure
037702	Surgical technique
035511	OR Poster (main surgical steps)
M07811	DVD Navigated Columbus® Revision



# Saw blades overview

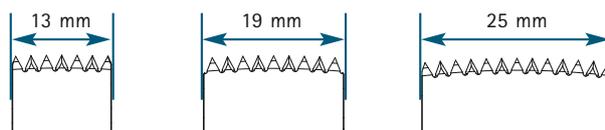
■ Thickness:  
1.27 mm



Connection Width/ Length	Aesculap Acculan® 3 Ti					Aesculap

9 mm/ 75 mm	GE231SU	-	-	-	-	-
13 mm/ 90 mm	-	GE233SU	GE236SU	-	-	GE266SU
19 mm/ 90 mm	-	-	-	GE241SU	-	GE271SU
23 mm/ 90 mm	-	-	-	-	GE246SU	-
23 mm/100 mm	-	-	-	-	GE249SU	-
25 mm/ 90 mm	-	-	-	-	-	GE276SU

■ Thickness:  
1.27 mm



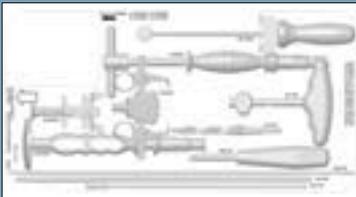
Connection Width/ Length	Stryker System 4+5 System 2000	Conmed/ Linvatec/Hall PowerPro Versipower plus	Synthes

9 mm/ 75 mm	-	-	-
13 mm/ 90 mm	GE320SU	GE327SU	GE323SU
19 mm/ 90 mm	-	-	-
23 mm/ 90 mm	-	-	-
23 mm/100 mm	-	-	-
25 mm/ 90 mm	GE322SU	GE329SU	GE326SU

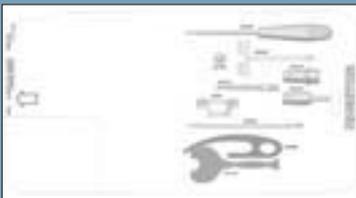
# Instruments

Compact overview of instruments

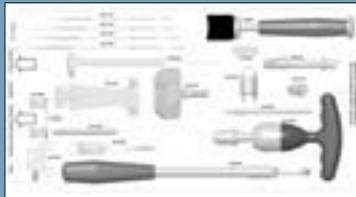
NQ601 General Instruments



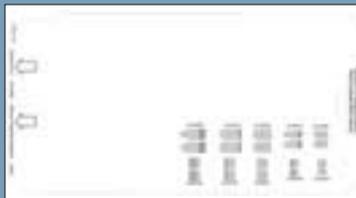
NQ601 General Instruments



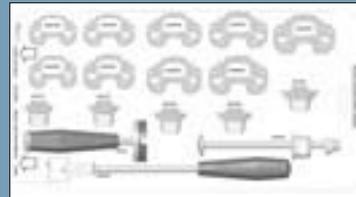
NQ602 Manual Femur Instruments



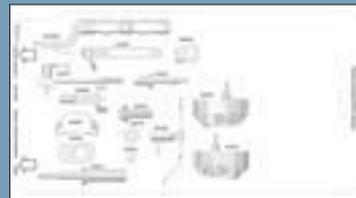
NQ602 Manual Femur Instruments



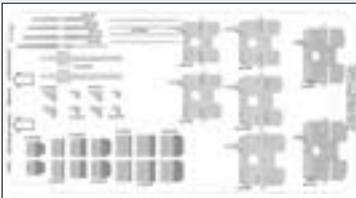
NQ603 Manual Tibia Instruments



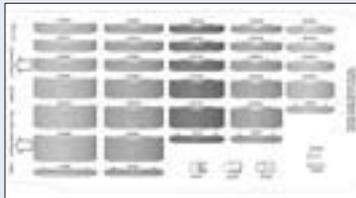
NQ603 Manual Tibia Instruments



NQ604 Femoral Preparation



NQ605 Trial Tibial Components



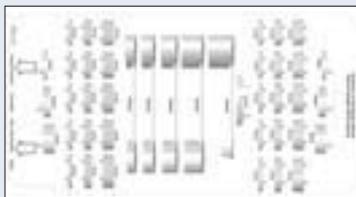
NQ606 Trial Femoral Components Left



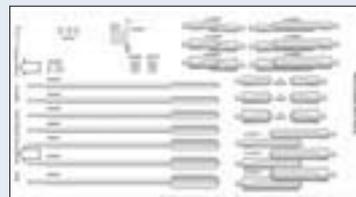
NQ607 Trial Femoral Components Right



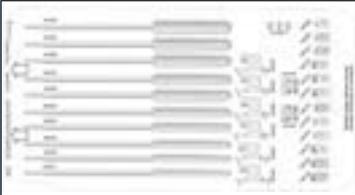
NQ608 Trial Tibia Spacer



NQ609 Stem Preparation Cemented



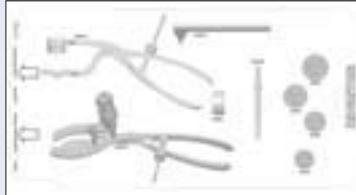
NQ610 Stem Preparation  
Cementless Set 1/2



NQ610 Stem Preparation  
Cementless Set 2/2



NQ611 Patella Preparation

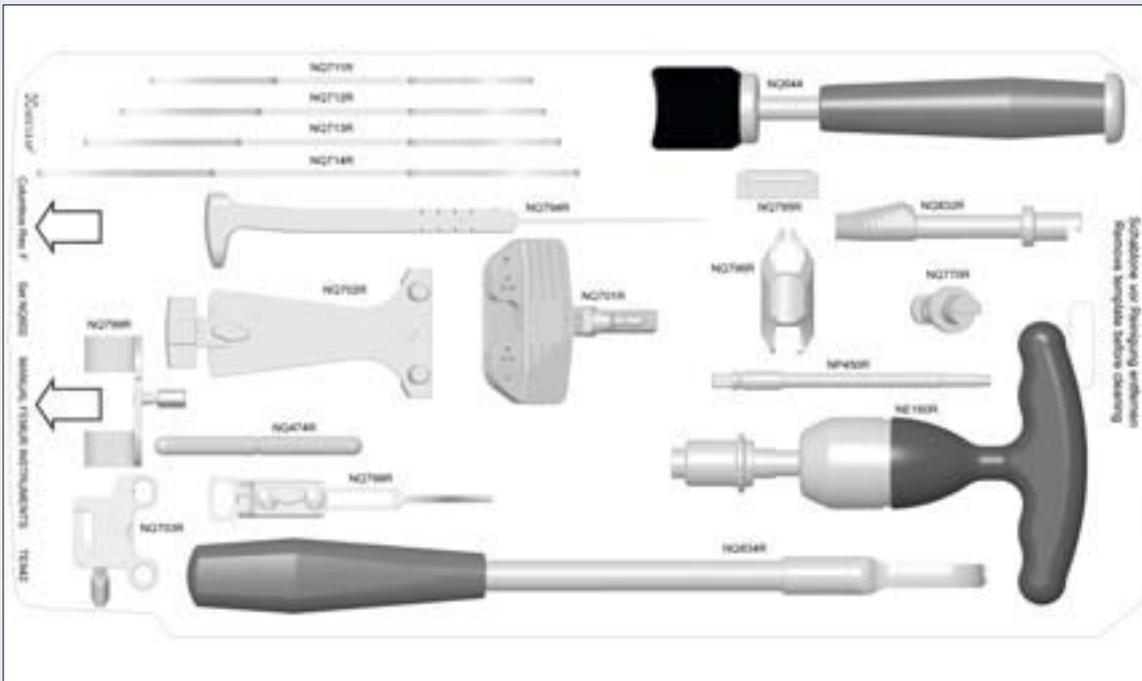


NQ612 Tibial Instruments  
Size 0





NQ602 Columbus® Revision F Manual Femur Instruments



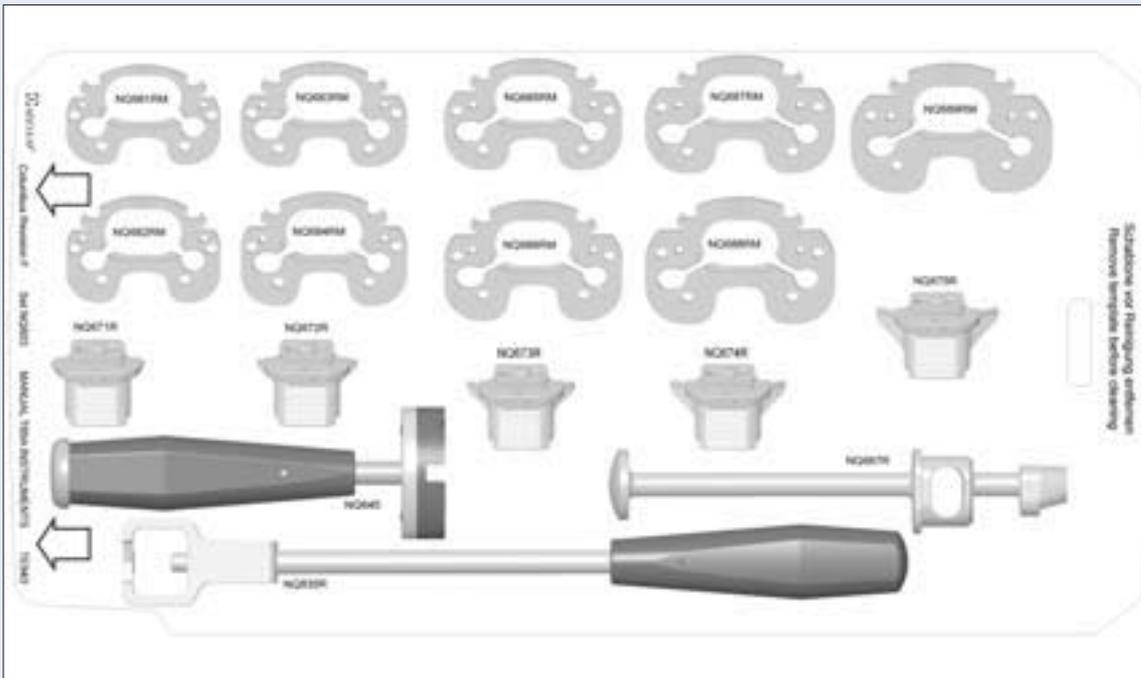
NQ602 Columbus® Revision F Femoral Preparation



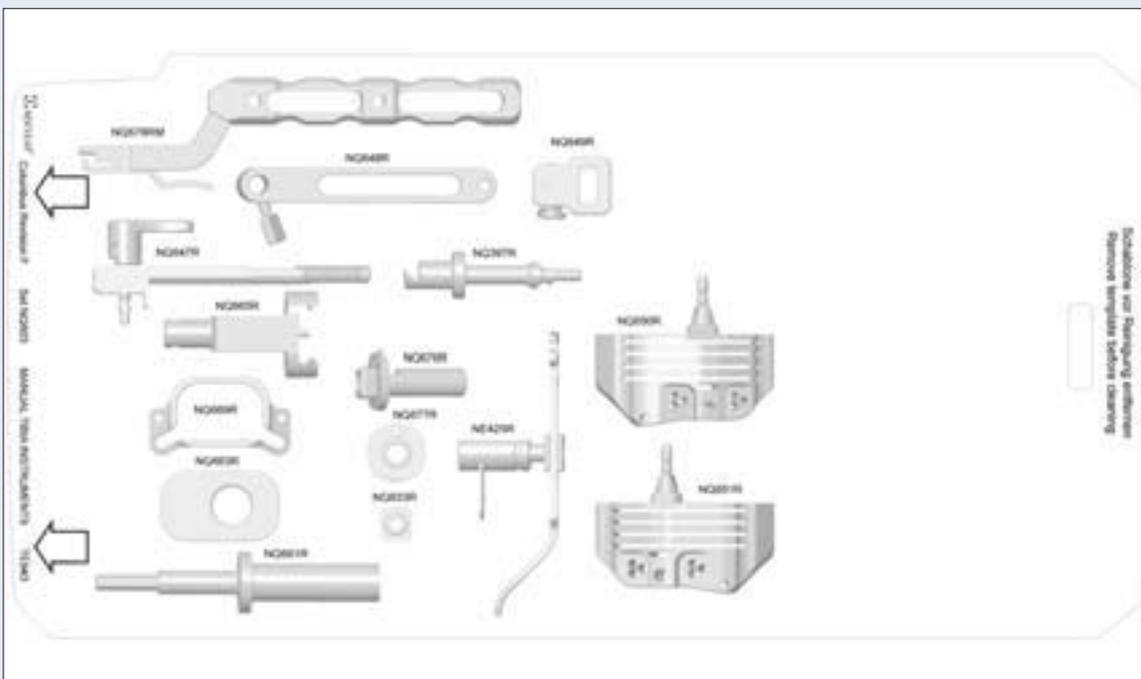
# Instruments

## Overview of instruments

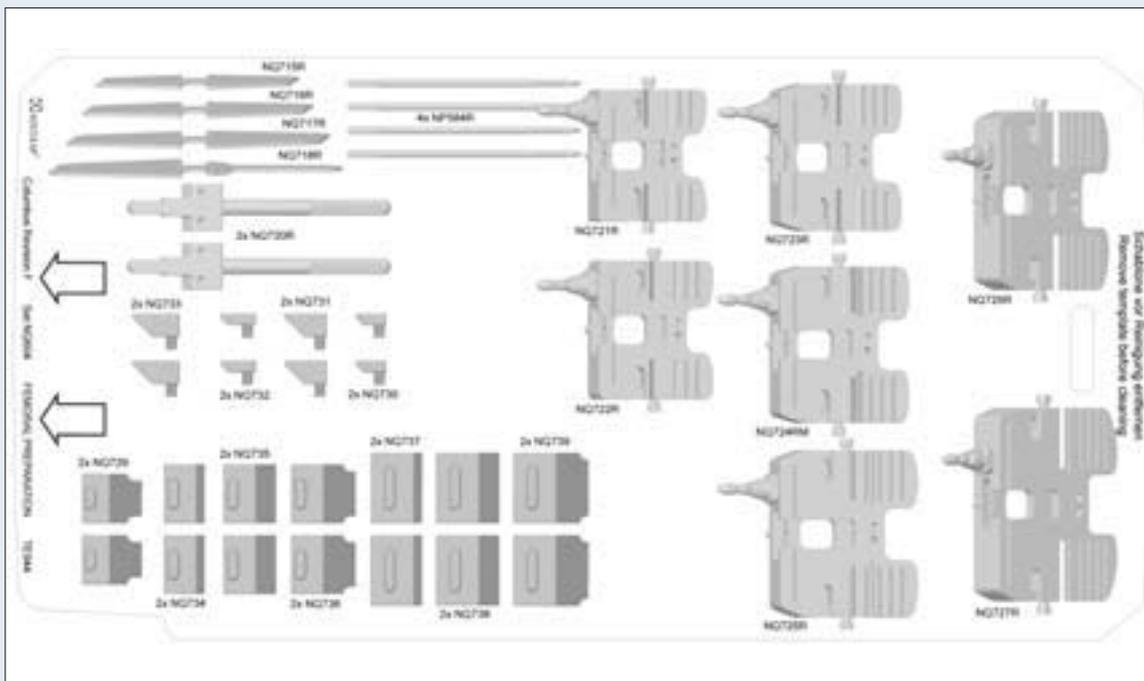
NQ603 Columbus® Revision F Manual Tibia Instruments



NQ603 Columbus® Revision F Manual Tibia Instruments



NQ604 Columbus® Revision F Femoral Preparation



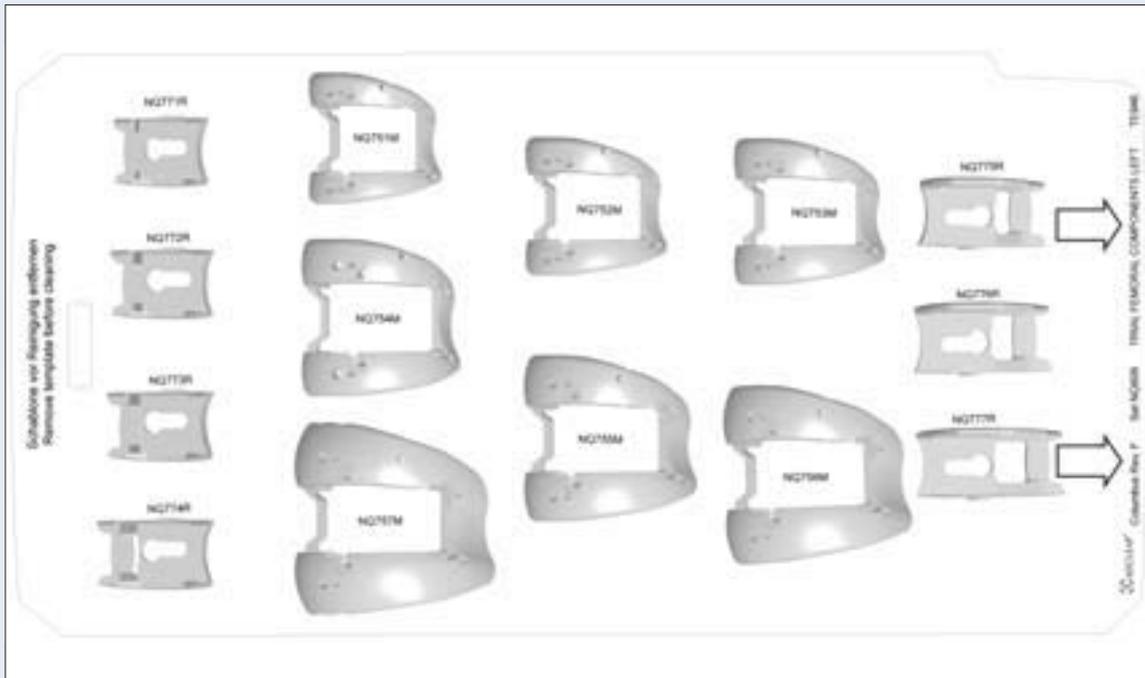
NQ605 Columbus® Revision F Trial Tibial Components



# Instruments

## Overview of instruments

NQ606 Columbus® Revision F Trial Femoral Components Left



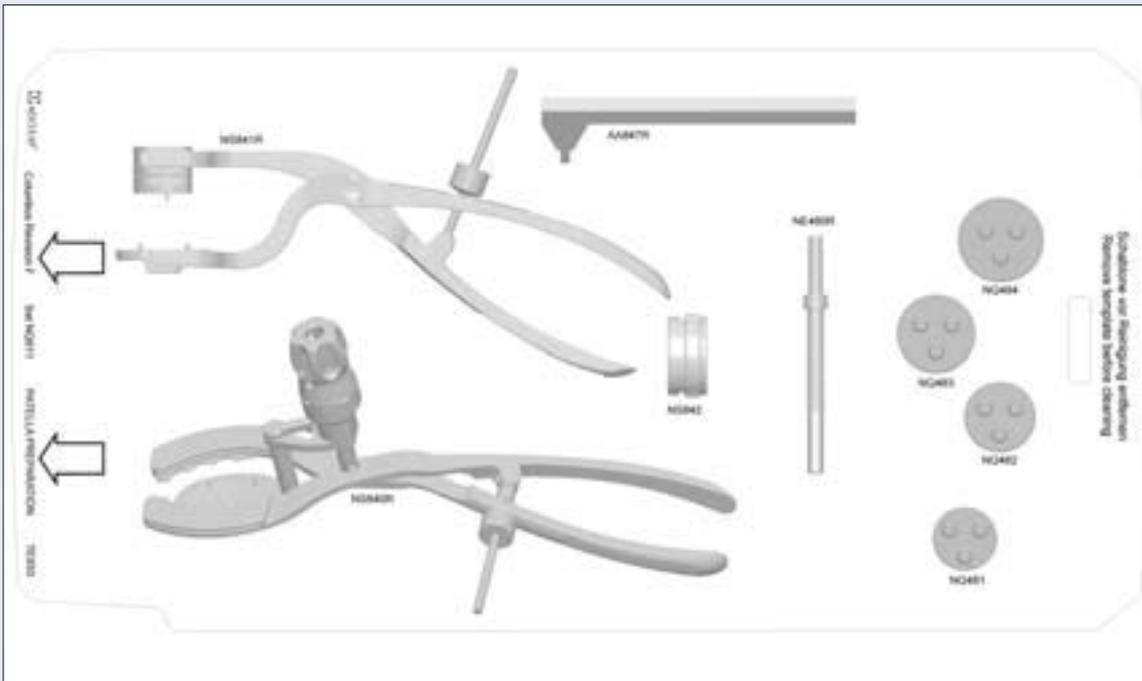
NQ607 Columbus® Revision F Trial Femoral Components Right



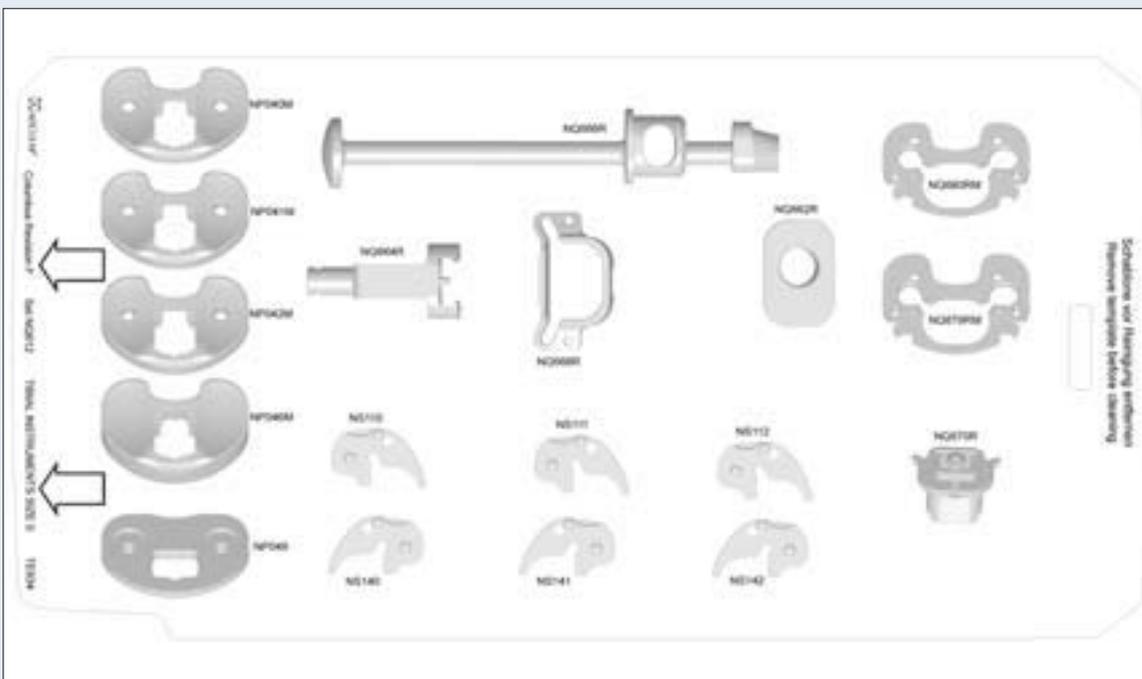




NQ611 Patella Preparation



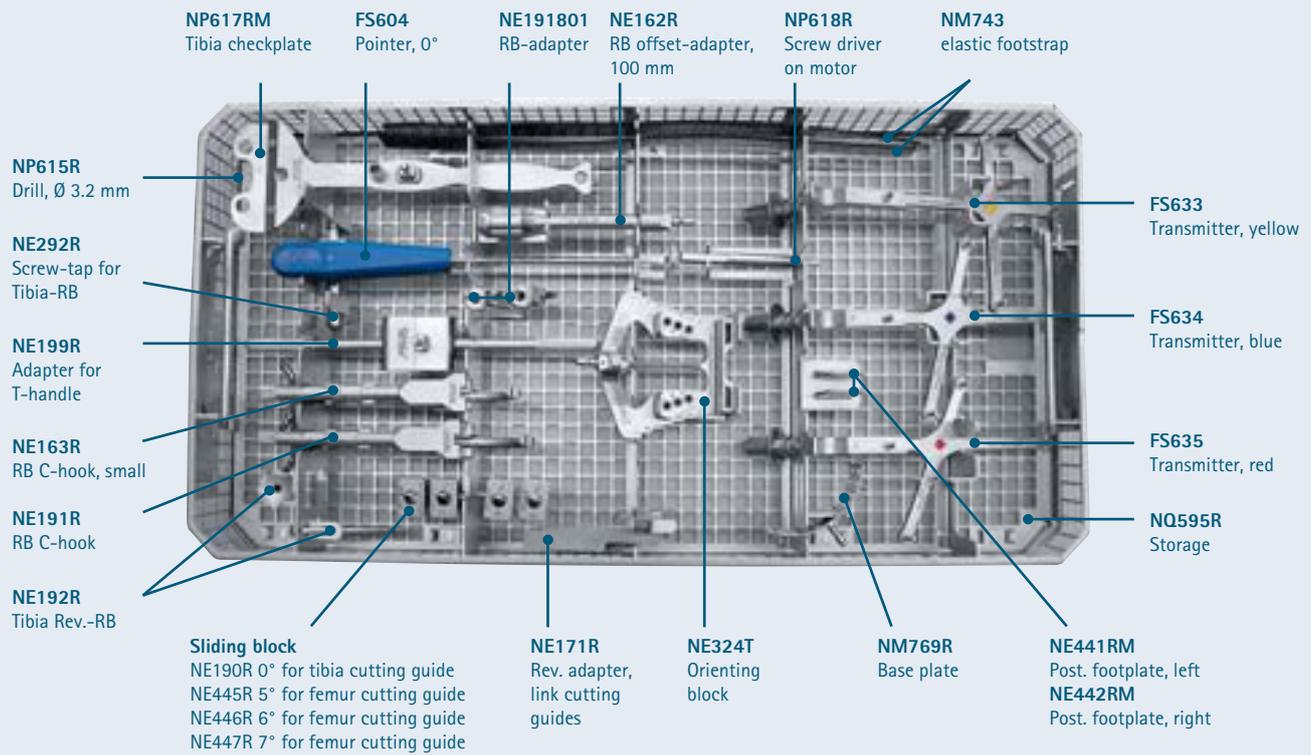
NQ612 Columbus® Revision F Tibial Instruments Size 0



# Instruments

## Overview of instruments

### NQ594 Passiv OrthoPilot® TKR – Navigation instruments sets





## Femur, cemented 27 Nm for femur stems



Types:	F1	F2	F3	F4	F5	F6	F7
Left	NR001K	NR002K	NR003K	NR004K	NR005K	NR006K	NR007K
Right	NR011K	NR012K	NR013K	NR014K	NR015K	NR016K	NR017K

## Femur stems, cemented, 6°



Types:	Ø 12 mm	Ø 15 mm	Ø 18 mm
F1-F7	77 mm 157 mm	77 mm 157 mm	77 mm 157 mm
	NR291K NR294K	NR292K NR295K	NR293K NR296K

## Femur stems, cementless, 5°/7°



Types:	Ø 12 mm	Ø 13 mm	Ø 14 mm	Ø 15 mm	Ø 16 mm	Ø 17 mm	Ø 18 mm	Ø 19 mm	Ø 20 mm
F1-F7	117 mm 177 mm								
	NR402K NR432K	NR403K NR433K	NR404K NR434K	NR405K NR435K	NR406K NR436K	NR407K NR437K	NR408K NR438K	NR409K NR439K	NR410K NR440K
	NR412K NR442K	NR413K NR443K	NR414K NR444K	NR415K NR445K	NR416K NR446K	NR417K NR447K	NR418K NR448K	NR419K NR449K	NR420K NR450K
	NR422K NR452K	NR423K NR453K	NR424K NR454K	NR425K NR455K	NR426K NR456K	NR427K NR457K	NR428K NR458K	NR429K NR459K	NR430K NR460K
	NR502K NR532K	NR503K NR533K	NR504K NR534K	NR505K NR535K	NR506K NR536K	NR507K NR537K	NR508K NR538K	NR509K NR539K	NR510K NR540K
	NR512K NR542K	NR513K NR543K	NR514K NR544K	NR515K NR545K	NR516K NR546K	NR517K NR547K	NR518K NR548K	NR519K NR549K	NR520K NR550K
	NR522K NR552K	NR523K NR553K	NR524K NR554K	NR525K NR555K	NR526K NR556K	NR527K NR557K	NR528K NR558K	NR529K NR559K	NR530K NR560K

Please note: If e. g. a offset stem adapter type 7° 'medial stem' was selected, the definitive implant must be selected in version 7° 'medialized'.

## Possible Combination Femur/Tibia

Types:	F1	F2	F3	F4	F5	F6	F7
T0/T0+	OK	OK	OK	+	+	+	+
T1/T1+	OK	OK	OK	OK	+	+	+
T2/T2+	-	OK	OK	OK	OK	+	+
T3/T3+	-	-	OK	OK	OK	OK	+
T4/T4+	-	-	+	OK	OK	OK	OK
T5	-	-	+	+	OK	OK	OK

- not compatible

+ possible, but not recommended by Aesculap

## Femur spacer distal with screw



Types:	5 mm	10 mm	15 mm	5 mm	10 mm	15 mm
F1	NR461K	NR471K	-	NR561K	NR571K	-
F2	NR462K	NR472K	-	NR562K	NR572K	-
F3	NR463K	NR473K	-	NR563K	NR573K	-
F4	NR464K	NR474K	NR484K	NR564K	NR574K	NR584K
F5	NR465K	NR475K	NR485K	NR565K	NR575K	NR585K
F6	NR466K	NR476K	NR486K	NR566K	NR576K	NR586K
F7	NR467K	NR477K	NR487K	NR567K	NR577K	NR587K

## Femur spacer posterior with screw



Types:	5 mm	10 mm	15 mm
F1-F7	NR400K	Offset NR401K	



## Femur nut for ext. stems

Types:	Neutral	Offset
F1-F7	NR400K	NR401K



## Patella 3-Peg

Types:	P0	P1	P2	P3
F1-F7	Ø 27 mm NN481	Ø 30 mm NN482	Ø 33 mm NN483	Ø 36 mm NN484

**Tibia, cemented**  
20 Nm for tibia stems



Types:	T0	T0+	T1	T1+	T2	T2+	T3	T3+	T4	T4+	T5
NR070K	NR068K	NR071K	NR072K	NR073K	NR074K	NR075K	NR076K	NR077K	NR078K	NR079K	

**Possible Combination Femur/Tibia**

Types:	F1	F2	F3	F4	F5	F6	F7
T0/T0+	OK	OK	OK	+	+	+	+
T1/T1+	OK	OK	OK	OK	+	+	+
T2/T2+	-	OK	OK	OK	OK	OK	+
T3/T3+	-	-	OK	OK	OK	OK	+
T4/T4+	-	-	+	+	OK	OK	OK
T5	-	-	+	+	OK	OK	OK

**Tibia offset stems, cemented**



Types:	Ø 12 mm		Ø 15 mm		Ø 18 mm	
FO-F5	NR191K	NR194K	NR192K	NR195K	NR193K	NR196K

- not compatible  
+ possible, but not recommended by Asculap

**Tibia offset stems, cementless**



Types:	Ø 11 mm		Ø 12 mm		Ø 13 mm		Ø 14 mm		Ø 15 mm	
T0-T5	NR171K	NR181K	NR172K	NR182K	NR173K	NR183K	NR174K	NR184K	NR175K	NR185K

Types:	Ø 16 mm		Ø 17 mm		Ø 18 mm		Ø 19 mm	
T0-T5	NR176K	NR186K	NR177K	NR187K	NR178K	NR188K	NR179K	NR189K

**PE Gliding Surface Medium Constraint**  
with screw/10 Nm for PE



Types:	10 mm	12 mm	14 mm	16 mm	18 mm	20 mm	24 mm	28 mm	32 mm	36 mm
T0/0+	NR100M	NR101M	NR102M	NR103M	NR104M	NR105M	NR106M	-	-	-
T1/1+	NR110M	NR111M	NR112M	NR113M	NR114M	NR115M	NR116M	-	-	-
T2/2+	NR120M	NR121M	NR122M	NR123M	NR124M	NR125M	NR126M	NR127M	-	-
T3/3+	NR130M	NR131M	NR132M	NR133M	NR134M	NR135M	NR136M	NR137M	-	-
T4/4+	NR140M	NR141M	NR142M	NR143M	NR144M	NR145M	NR146M	NR147M	NR148M	-
T5	NR150M	NR151M	NR152M	NR153M	NR154M	NR155M	NR156M	NR157M	NR158M	-

**PE Gliding Surface High Constraint**  
with screw/10 Nm for PE



Types:	10 mm	12 mm	14 mm	16 mm	18 mm	20 mm	24 mm	28 mm	32 mm
T0/0+	NR600M	NR601M	NR602M	NR603M	NR604M	NR605M	NR606M	-	-
T1/1+	NR610M	NR611M	NR612M	NR613M	NR614M	NR615M	NR616M	-	-
T2/2+	NR620M	NR621M	NR622M	NR623M	NR624M	NR625M	NR626M	NR627M	-
T3/3+	NR630M	NR631M	NR632M	NR633M	NR634M	NR635M	NR636M	NR637M	-
T4/4+	NR640M	NR641M	NR642M	NR643M	NR644M	NR645M	NR646M	NR647M	NR648M
T5	NR650M	NR651M	NR652M	NR653M	NR654M	NR655M	NR656M	NR657M	NR658M

**Tibia Hemi Spacer RM/LL** with screws



Types:	5 mm		10 mm		15 mm	
T0/0+	NR040K	NR041K	NR042K	NR043K	NR044K	NR045K
T1/1+	NR046K	NR047K	NR048K	NR049K	NR050K	NR051K
T2/2+	NR052K	NR053K	NR054K	NR055K	NR056K	NR057K
T3/3+	NR058K	NR059K	NR060K	NR061K	NR062K	NR063K
T4/4+	NR064K	NR065K	NR066K	NR067K	NR068K	NR069K
T5	NR070K	NR071K	NR072K	NR073K	NR074K	NR075K

**Tibia Hemi Spacer RL/LM** with screws



Types:	5 mm		10 mm		15 mm	
T0/0+	NR240K	NR241K	NR242K	NR243K	NR244K	NR245K
T1/1+	NR246K	NR247K	NR248K	NR249K	NR250K	NR251K
T2/2+	NR252K	NR253K	NR254K	NR255K	NR256K	NR257K
T3/3+	NR258K	NR259K	NR260K	NR261K	NR262K	NR263K
T4/4+	NR264K	NR265K	NR266K	NR267K	NR268K	NR269K
T5	NR270K	NR271K	NR272K	NR273K	NR274K	NR275K

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