Aesculap® e.motion®

Knee Endoprosthesis System
Manual operation technique

Aesculap Orthopaedics

B BRAUN
SHARING EXPERTISE

Inhalt

Preoperative planning

The emotion knee system provides radiographic templates which help the surgeon in determining the following parameters:

- Angle between anatomic and mechanical femur axes
- Resection height of the intact tibia joint surface
- Entry point of the intramedullary alignment rod
- Implant sizes
- Position of the osteophytes

The following x-ray images are required to conduct the radiographic analysis:

- Knee joint in AP projection: knee extended, centred over the distal patella.
- Knee joint in lateral projection: knee in 30° flexion, centred above the distal patella.
- Image of the whole leg in supported monopodal stance.
- Patella-tangential image: knee in 30° flexion, caudocranial radiation, centred over the distal patella.

The e.motion x-ray templates must be used.

The angle between the mechanical and anatomic femur axes is measured with the combination template for axis measurements. The center of the joint, the joint line and the mechanical femur axis can be measured and drawn onto the ray slide. To determine the tibia resection, the template showing representations of tibial implants is superimposed over, and aligned with, the x-ray image. The resection height is given at a 10-20 mm (FP, CS) and 10-24 mm (PS) graduation. A complete set of radiographic templates is provided for the preoperative determination of the appropriate implant sizes. The localization of the osteophytes facilitates their removal, improving the mobility of the joint.

The results of preoperative planning should be documented in the patient's file.

Positioning the tibia cutting block

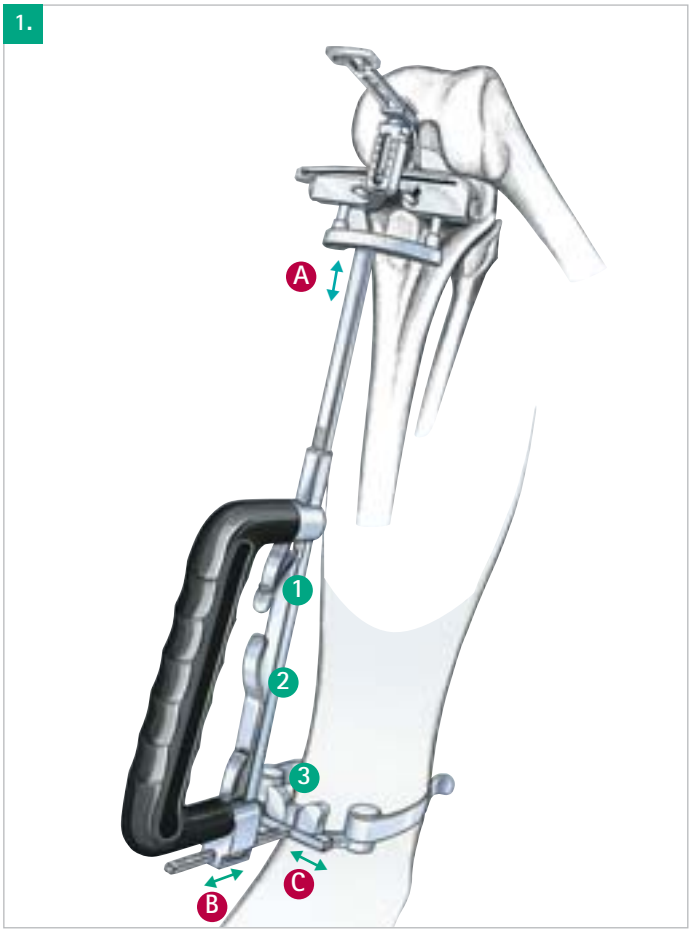
The extramedullary alignment system for the tibia cutting block is brought into position parallel to the tibia axis. The rotational alignment is carried out with the extension of the malleolary clamp, which is oriented to the second metatarsal bone.

The alignment instrument offers the possibility of adjusting the tibia cutting block in all planes:

- Height adjustment A
- Alignment in the sagittal plane B
- Varus-valgus alignment C

The surgeon can freely define the adjustment of the cutting block, according to the individual patient's requirements. However, we recommend a perpendicular position in relation to the mechanical tibia axis, both in the frontal and in the sagittal plane.

1.



A Height adjustment

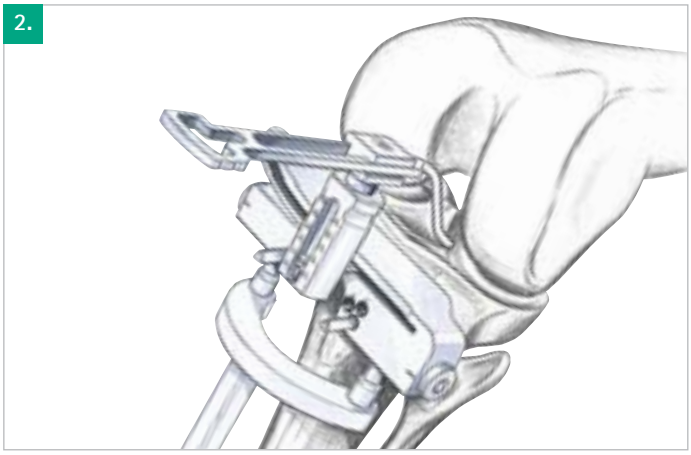
The resection height is determined in preoperative planning. The aim is to remove any defect on the tibial joint surface as completely as possible in order to create a bed for the tibia plateau on intact bone. Following this, the measured value is set on the stylus, which is then introduced into the cutting slot. The extramedullary alignment instrument is then lowered by pulling the lever 1 until the stylus comes into contact with a point corresponding to the joint line.

B Alignment of the sagittal plane

The alignment of the sagittal plane (parallel to the mechanical axis) is achieved by pulling the lever. 2 The distance between the lines on the malleolary clamp corresponds to a posterior slope of 1° for a tibia length of 40 cm.

■ Please note:
The e.motion tibial implant has
a 3° posterior slope in the plateau

2.



C Varus-valgus alignment

Lifting the lever, 3 the slide in the malleolary clamp can be shifted towards mediolateral. The distance between the lines on the scale corresponds to a 1° alteration for a tibia length of 40 cm.

Resecting the tibia plateau

The cutting block is fixed to the bone with four threaded pins as follows. Two headless threaded pins are introduced into the drill holes marked "0". Two other threaded pins with head are then inserted in the convergent holes to secure the cutting block against movement during resection.

After removing the extramedullary alignment instrument, the resection is performed with a 1.27 mm thick saw blade. Extreme care must be taking at this step, since the posterior cruciate ligament must not be damaged in case of implantation of e.motion FP components. The resection is normally performed at a slope of 0°.

While the two convergent pins are removed, the two headless pins remain in place to allow a later corrective resection of 2 or 4 mm, if necessary.

3.

Checking the tibial implant size

To ensure that compatible sizes are chosen for the implant components, the size of the tibial implant is determined, with the help of the tibia preparation plateaus, at this point of the operation. The correct implant size should offer a complete coverage of the resected plane and avoid any overhang. The femoral implant should be smaller, the same size or one size bigger than the tibial implant.

- Please note:
  Size of Meniscal Components correspond to size of femoral component.

	F2	F3	F4	F5	F6	F7	F8
T1							
T2							
T3							
T4							
T5							
T6							
T7							
T8							

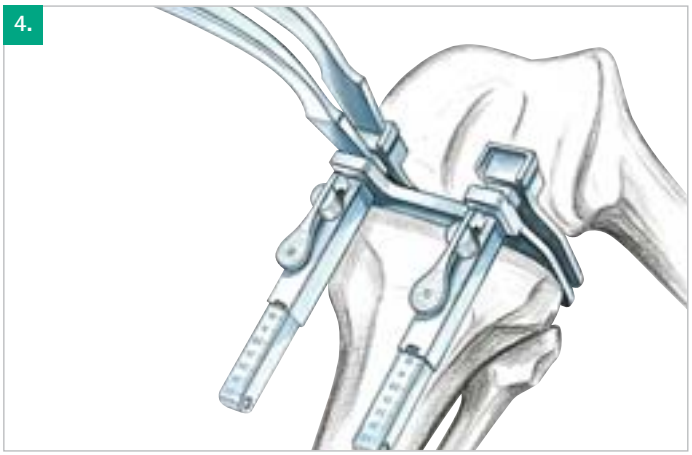
Combinations of implant sizes (tibia / femur) that are not possible

Possible combinations of implant sizes (tibia / femur)

Measuring the extension and flexion gaps

After resection of the tibia plateau, the ligament tension must be checked. The osteophytes on the tibia head and on the femoral condyles must be completely removed. The measurement makes it possible to calculate the resection height on the distal femur. The height to aim at is the thickness of the chosen implant size on the intact condyle.

4.

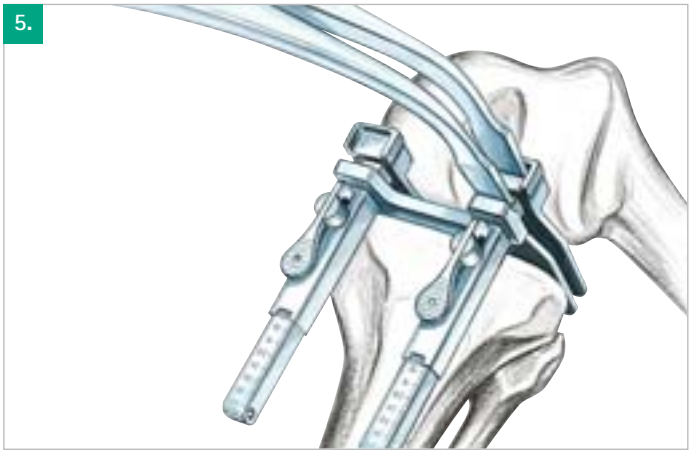


The size of the flexion and extension gaps are read medially and laterally at the distractor in 90° flexion and 0° extension. The number read is the one on the movable shoe level with the end of the sleeve.

In cases of a medio-lateral asymmetry (of more than 3 mm), ligament release should be performed on the narrower side (medial for varus deformities, lateral for valgus deformities). Following the ligament release the flexion and extension gaps should be re-measured, and the release procedure repeated if necessary. A mediolateral difference of 2 mm is acceptable.

- Please note:
  External rotation of the femoral component influences the medio-lateral gaps in flexion.

5.



The size of the flexion and extension gaps are read medially and Different solutions are possible to compensate a difference between extension and flexion gap. The extension gap can be adjusted to the flexion gap through changing the distal femoral resection height by up to + or -2 mm. The flexion gap can be adjusted to the extension gap by choosing, a smaller or larger femoral implant (preferable as the joint line is preserved).

Further possibilities exist in building up the defective distal femoral condyle e.g. with bone.

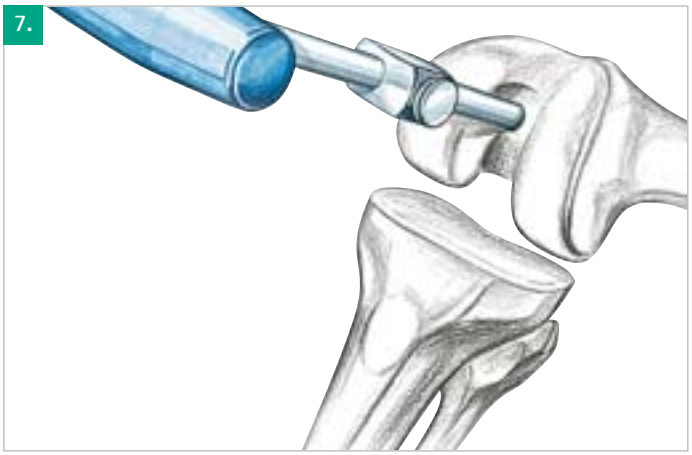
6.

Distal femur resection

The entry point into the femoral medullary cavity is prepared using a broach, according to preoperative planning.

The medullary canal is opened up with a Ø 9 mm drill. The Ø 8 mm intramedullary femur rod has been specially designed for minimizing the risk of embolisms. The rod is carefully introduced into the medullary cavity using the T-shaped handle.

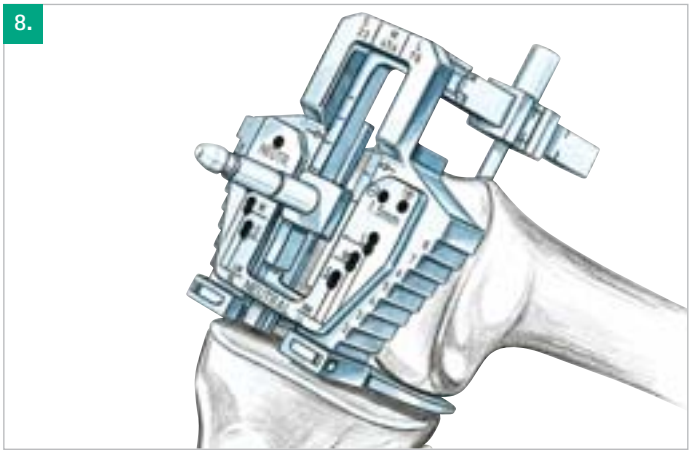
7.



To adjust the varus / valgus angle into the femur orientation block, the appropriate angle block (5°, 6°, 7°, 8° or 9°) is introduced in the block according to preoperative planning. For a left leg, the side marked with an "L" must be the upper side; for a right leg, the side marked "R" must be on top.

The femur stylus is introduced into the block from the upper side; the mounted instrument is than fixed to the femur by means of the intramedullary rod. The posterior condylar plates of the orientation block must touch the posterior condyles and at least one distal condyle.

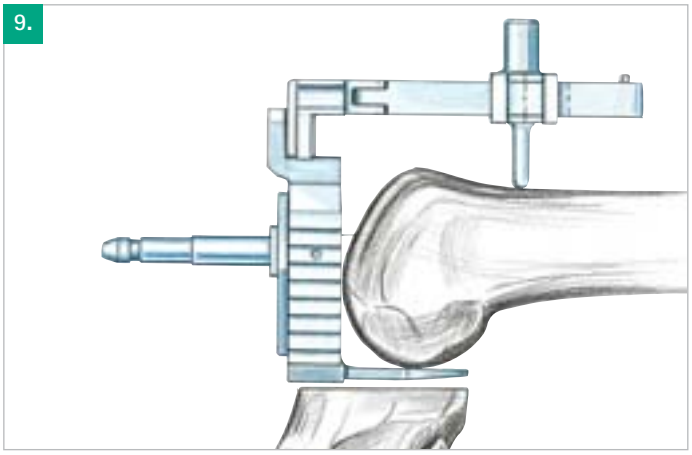
8.



The femur stylus must touch the anterior cortex. The point palpated at the antero-lateral cortex defines the anterior resection height and the position of the end of the femur shield. Using the graduation on the stylus, the appropriate size of the femoral implant can be defined with reference to the anterior shield. The stylus scale only correspond to the correct sizing before the distal resection has been performed.

A scale on the frontal side of the instrument shows the respective prosthesis size with reference to the AP dimension of the femur. The appropriate implant size with regard to the mediolateral width of the bone can be read from graduations on the outer ends of the femur orientation block.

9.



Distal femur resection

Having determined the appropriate femoral implant size, the anterior femur stylus is replaced by the holding device of the distal cutting block. The distal block is attached to the holding device in position S, M or L, depending on the implant size. (S = implant sizes 2 and 3; M = 4, 5 and 6; L = 7 and 8). This adjustment defines the thickness of the distal resection which is 7.0 mm for size group S, 8.5 mm for size group M and 10.0 mm for size group L.

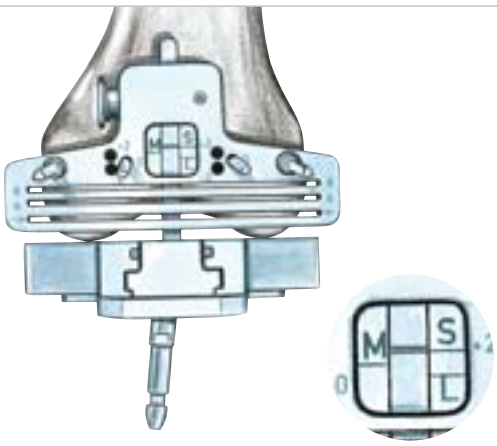
The distal cutting block must touch at least one anterior condyle. The block is then fixed onto the bone by two headless threaded pins inserted into the holes marked "0". If a different resection becomes necessary, the holes marked "-2" and "+2" and the cutting slit marked "4" and "8" allow to adapt the thickness of the distal resection by shifting the cutting block.

The stability of the fixation is ensured by screwing in two pins with head in the convergent holes on both sides of the cutting block.

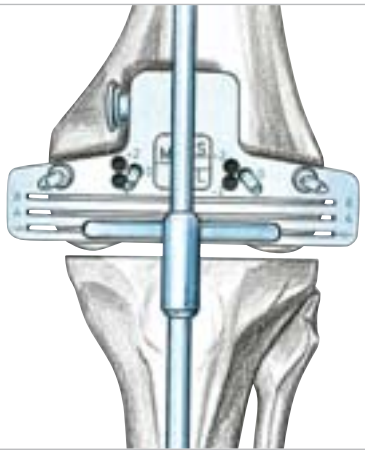
The holding system and the intra-medullary femur rod are removed, leaving only the cutting block fixed to the bone.

The axis can be checked by placing the measuring rod holder into the slit on the femoral cutting block. The measuring rod with the socket for the second measuring rod can then be inserted into the holder and the second measuring rod fixed into the socket. Before carrying out the distal resection with 1.27 mm saw blade in the cutting slit marked by arrows, the resection depth must be checked with a cutting check device. The tibia protection plate prevents damage to the tibia plateau.

10.



11.

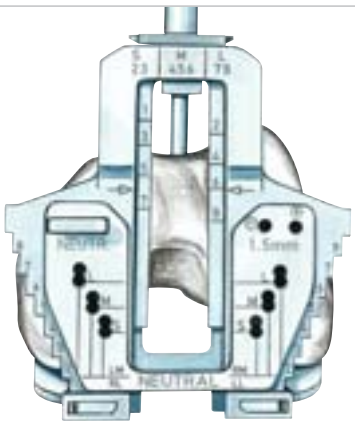


Determining the size of the femoral implant

After the distal resection, the femur orientation block with anterior stylus is placed on the distal resection surface, and the posterior condylar plates are brought into contact with the posterior condyles. The stylus must be positioned on the same point at the anterior cortex where it was prior to the distal resection.

The final size of the femoral implant is defined, according to the size readings of the AP and the mediolateral scale. If the result is a full size (e.g. 6), the fixation key must be positioned in the hole marked as "neutral". If it is an intermediate size (e.g. 5, 4), the fixation key may be positioned in one of the two holes marked "+" or "-" -1.5 mm in order to prevent anterior femoral undercutting or any protrusion of the cortex. If "+" is chosen, the position of the drill holes for the fixation pins for the APC sawing block is shifted towards anterior by 1.5 mm; if "-" is chosen, the same shift is applied towards posterior.
The box measure of the femoral implants increases by only 3 mm from one size to the next, resulting in a maximum compromise of 1.5 mm when choosing an intermediate size.

12.

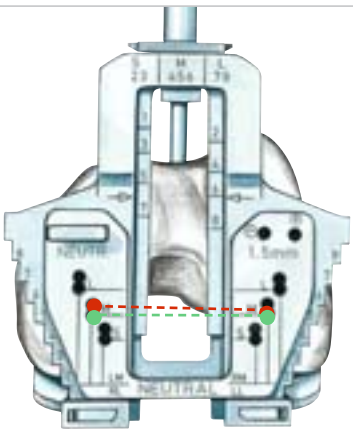


Rotational alignment of the femur component

The two holes for the fixation pins of the APC cutting block can be drilled with the 2 drills with stop Ø 3.2 mm (NE333R) parallel to the posterior condyles by choosing the lower holes (green points) for the respective size group (S, M or L).

To achieve an external rotation of 3°, the surgeon may choose the lower hole on the lateral side and the upper hole on the medial side (red points).

13.



Completing the femur resection

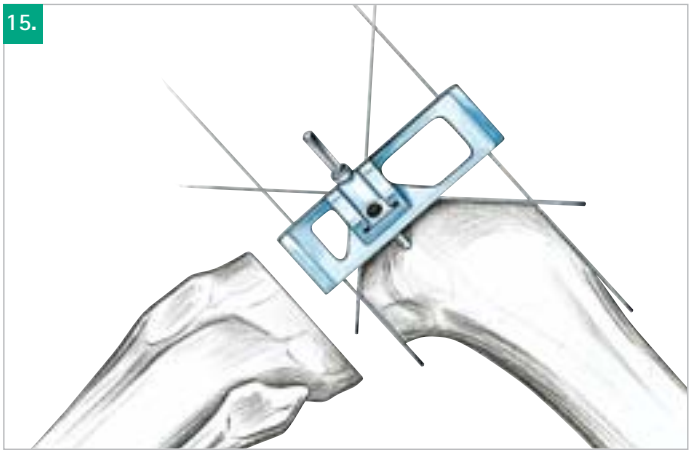
The pegs of the APC cutting block fixed in the two drill holes prepared previously, according to the femoral implant size chosen. The "ANT" marking for the anterior resection on the APC cutting block is visible. After this, the APC sawing block is fixed to the femur with the two universal handles and with two headed pins in the covergent holes.

Care must be taken that the APC sawing block is in good contact with the distal resection surface.

14.

The cutting depth check plate is used for verfying the positioning and depth of the cuts prior to resection. It is advisable to use the tibia protection plate to avoid damaging the tibia plateau.
The four femur resections are carried out with a 1.27 mm saw blade inserted into the cutting slits. The chamfer cuts are performed after the anterior and posterior cuts.

15.



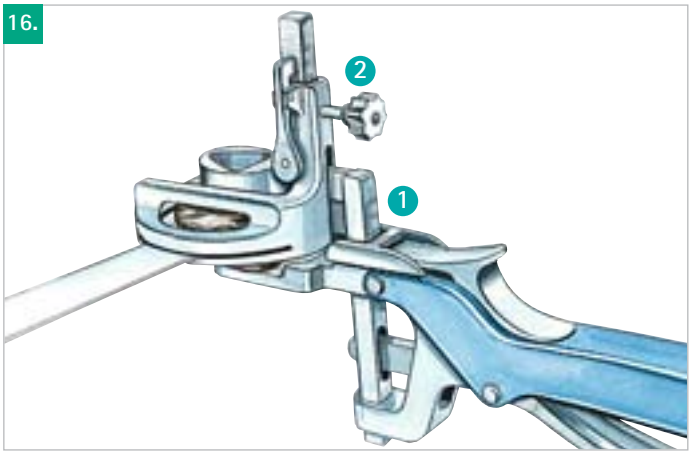
Patella preparation

1. With the patella forceps the thickness of the patella is measured.

2. After implanting the patella component, this thickness should not be exceeded. The choosen resection height can be adjusted at the forceps by means of a graduated scale.

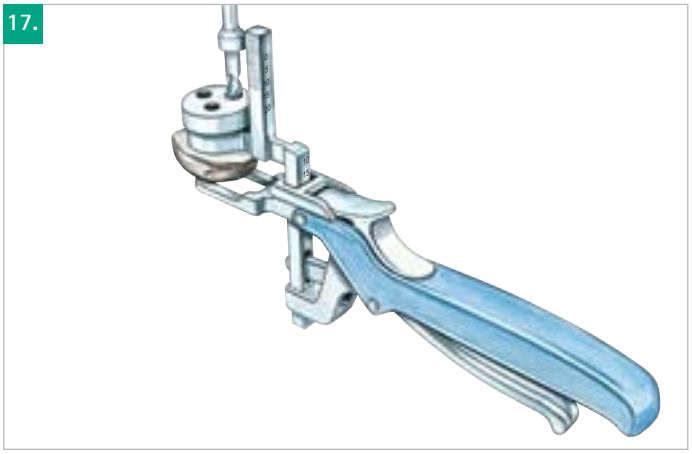
The resection is performed through the cutting slit. The patella implant is chosen either with regard to the optimum bony coverage of the patella, or it is guided by the thickness of the resection performed. The original thickness should not be exceeded after implantation of the patella rear surface.

16.



After resection the saw attachement is removed and the triple drilled sleeve is attached to the forceps. The holes for the pegs of the patella implant are drilled. The patella size is determined by using the trial patella implants as position and size of the patella pegs are the same for all sizes.

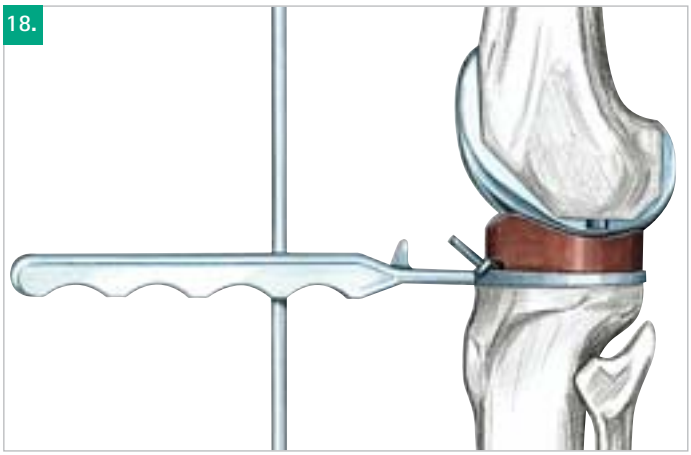
17.



Trial reposition

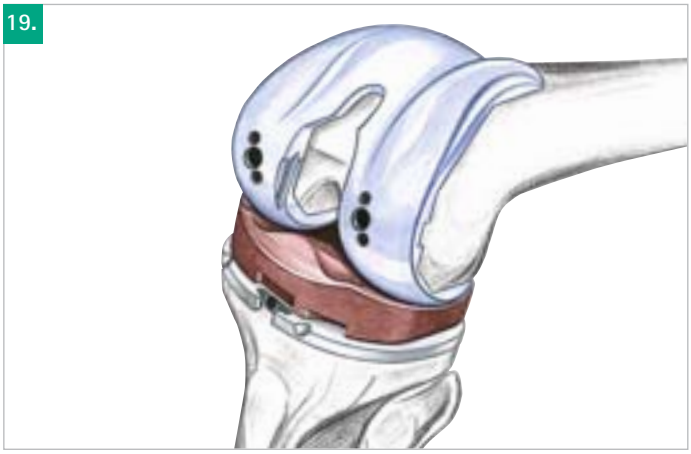
Initially, the tibia preparation plateau is coupled to the universal handle and positioned on the resection plane. After a meniscus component with size reference to the femur component is fixed on the tibia preparation plateau. Finally the femur implant is inserted and aligned mediolaterally.
Following this procedure it is advisable to test the entire joint function with the patella in its anatomical position or with a trial patella implant.
Alignment should be checked in flexion and extension by again inserting the extramedullary measuring rods into the handle attached to the tibial plateau. The position of the measuring rod is checked in relation to the midpoint of the femoral head and the ankle joint.

18.



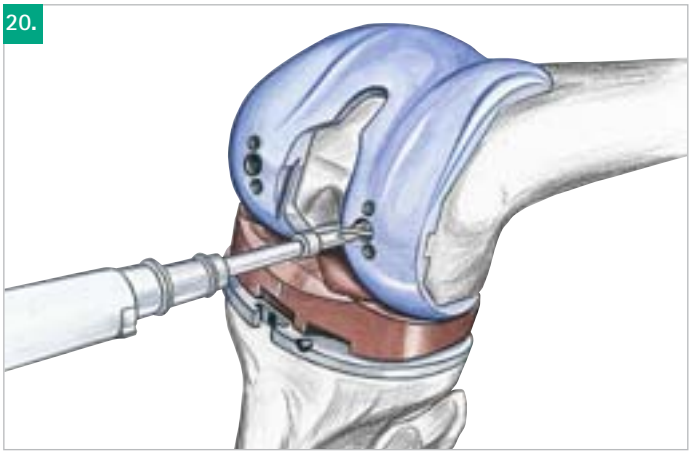
The rotational alignment of the tibia plateau is carried out with reference to the anterior marking. The latter should point to the medial third of the anterior tuberosity. The rotational alignment can also be carried out in a functional manner, with reference to the femur component, by moving the unfixed tibia plateau from extension to flexion. Internal rotation should be avoided under all circumstances.

19.



Following the functional test of the joint, and the inspection of the medio-lateral position of the femoral trial implant, the peg holes of the final femoral implant can be drilled.

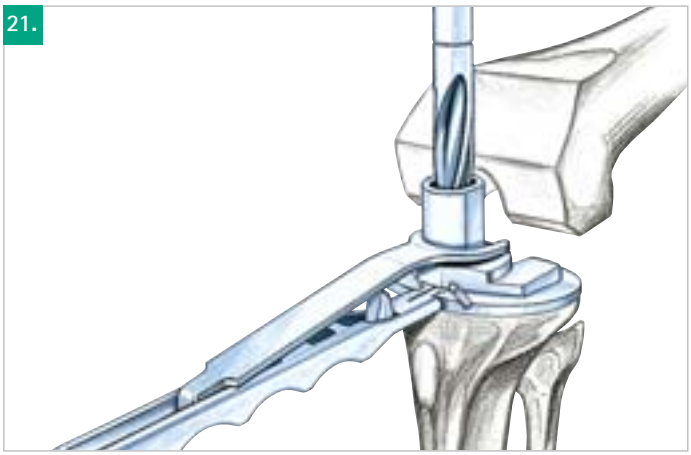
20.



Tibia preparation

The tibia plateau is fixed in the desired position with short threaded pins with head. The correct size is chosen considering the best bony coverage of the resected plain. Additional stabilization is provided with the universal handle. The cylindrical drill guide with the desired diameter is positioned on the tibia preparation plateau. The holding clamp stabilizes the guide in position during the drilling process. The drill guides as well as the drills are available in diameter 10, 12, 14 and 16 mm.

21.



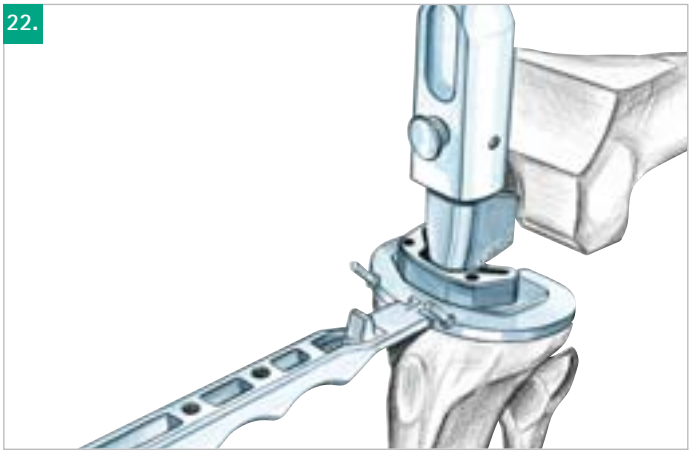
Tibia preparation without stem extension

The selection of the correct diameter of drill and drill guide depends on the size of the final tibia implant and the diameter of its wing stem.

Size Group S	(T1, T2, T3)	wing stem diameter of 12 mm
Size Group M	(T3, T4, T5)	wing stem diameter of 14 mm
Size Group L	(T7, T8)	wing stem diameter of 16 mm

On the modular drills the first mark corresponds to the wing stem length. Please drill until the first mark is in line with the upper border of the drill guide.

22.



Tibia preparation with stem extension

In case of a tibia preparation with the use of extension stems, the choice of the correct drill and drill guide diameter depends on the wing and the extension stem diameter. The e.motion product portfolio offers extension stems in 4 diameters (10, 12, 14 and 16 mm) and 3 different lengths (Short: 52 mm, Middle 92 mm und Long 132 mm).

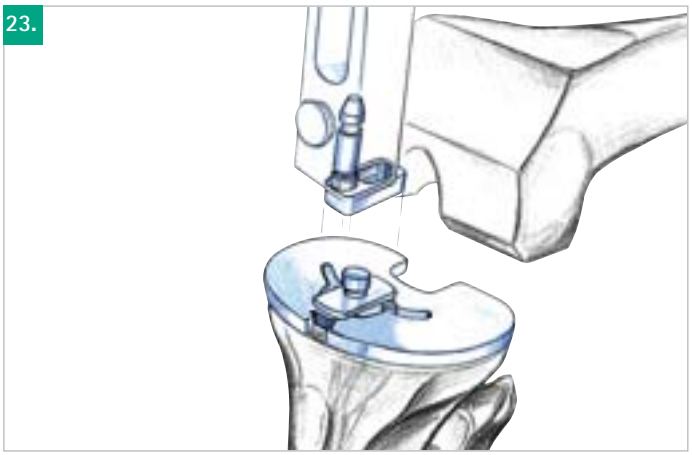
For the preparation of the wing stem (until the first mark) the diameter of drill and drill guide should correspond to the implant stem size. In cases where the intramedullary canal diameter is smaller, a drill with a smaller diameter is chosen to prepare the canal for the extension stem implantation. The drills have 4 different marks showing the wing stem, small, middle and long stem length.

■ Please note:
There is full interchangeability of stems and obturators between the sizes with reference to the threat connection.

For the preparation of the wings the size of the correct chisel is chosen and the corresponding chisel guide is positioned on the tibia preparation plateau. The wing chisel are available for the size group S (1, 2, 3), size group M (4, 5, 6) and size group L (7, 8).

After the tibia preparation the modular trial implant can be inserted. The trial components consists of the trial plateau being suitable for left or right knees and the wing stem with the possibility to connect trial extension stem if needed. The modular trial implant is inserted with the help of an adapter that is fixed to the impaction handle.

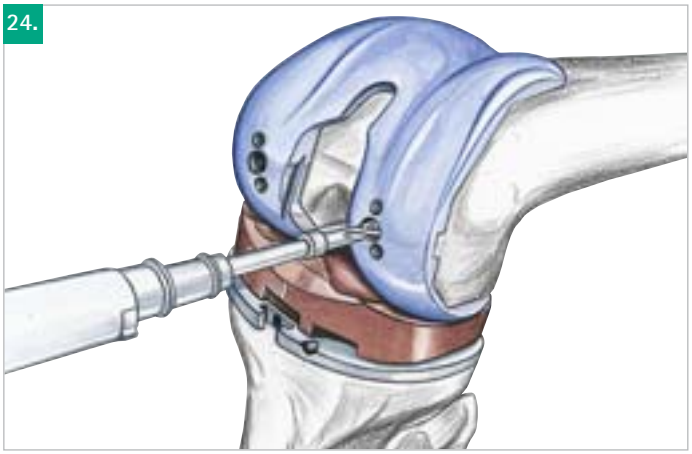
23.



Posterior stabilized PS version

The holes drilled through the trial femur implant are used to fix the box preparation base to the femur. There is one box preparation base available for each femoral size group (S= 2, 3 M= 4, 5, 6 L = 7, 8). Before putting the base in place, the femur trial implant must be removed.

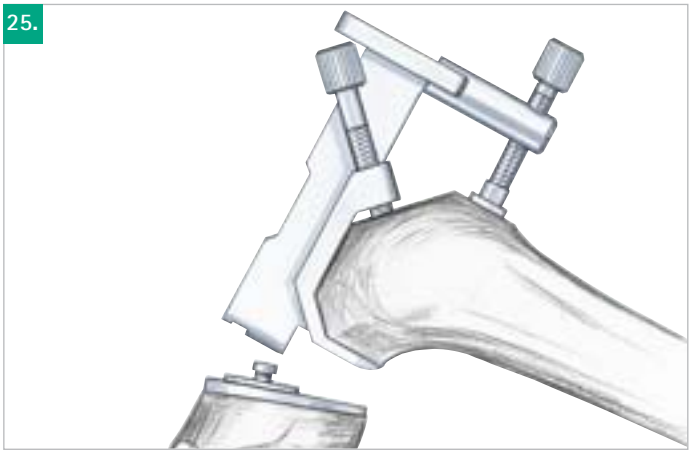
24.



In case of the use of a posterior stabilized implant the medial-lateral orientation of the trial femur implant in the trial reposition step is decisive for the box preparation.

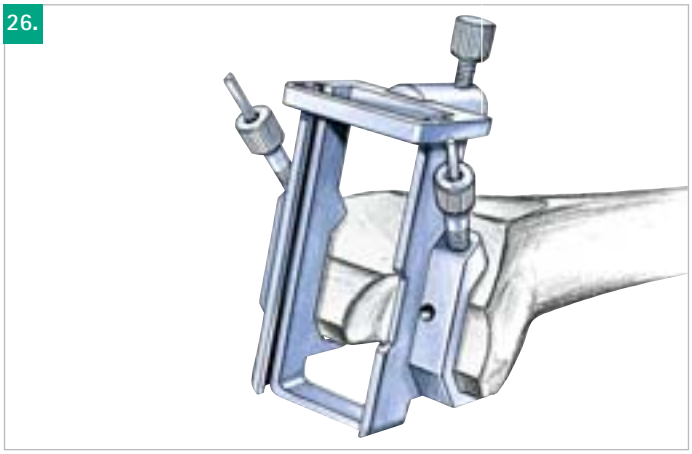
- Please note:
  For a proper alignment of the post-cam mechanism the final preparation of the tibia is recommended before the trial reposition and box preparation step.

25.



For fixation of the base to the femur the ventral clamping screw is fixed to the anterior cortex. Additional stability is obtained by introducing 2 convergent pins on the medial and lateral side of the base.

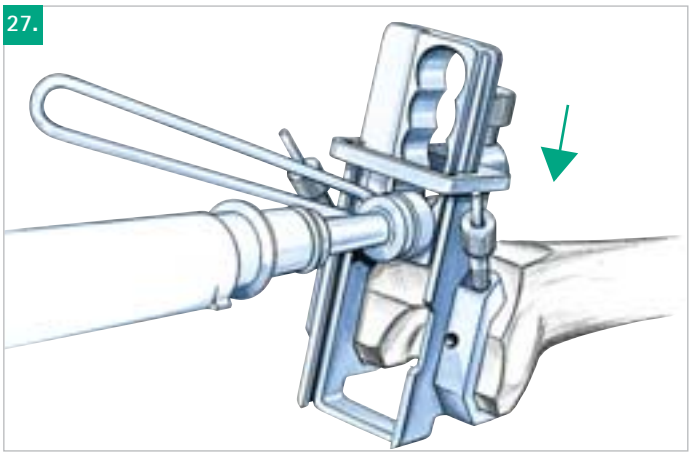
26.



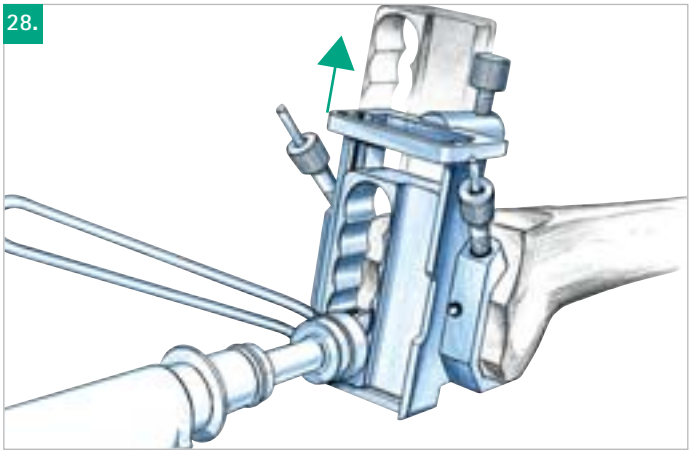
Milling templates are available for every femur size individually. The correct milling template is chosen and inserted into the preparation base. The milling procedure is done in two stages starting on the left stage. After performing the first stage, the milling template is removed, turned and inserted in the preparation base again. With the help of a guiding sleeve and the 15 mm diameter cutter the box preparation can be performed directly cutting through the bone. In the case of hard or sclerotic bone several holes can be drilling before guiding the cutter directly through the prepared stage to smoothen the borders.

■ Please note:
When preparing and smoothening the box, the cutter must be guided in a clockwise direction.

27.

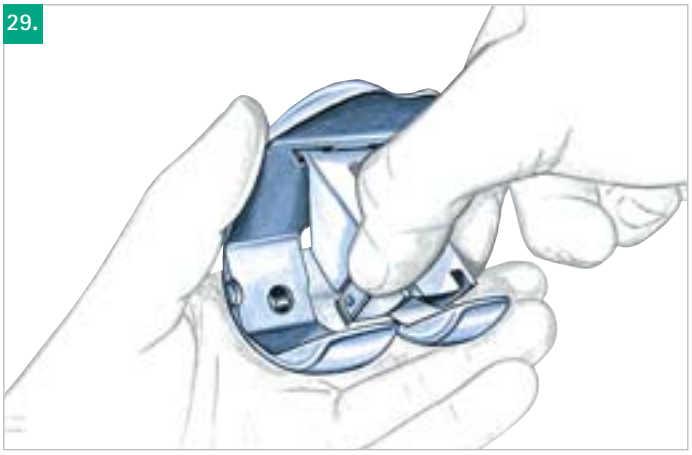


28.



For verification of the proper intercondylar preparation of the femur, the appropriated box is connected to the trial femur implant with the help of a special forceps or by pressing it in the foreseen space by hand.

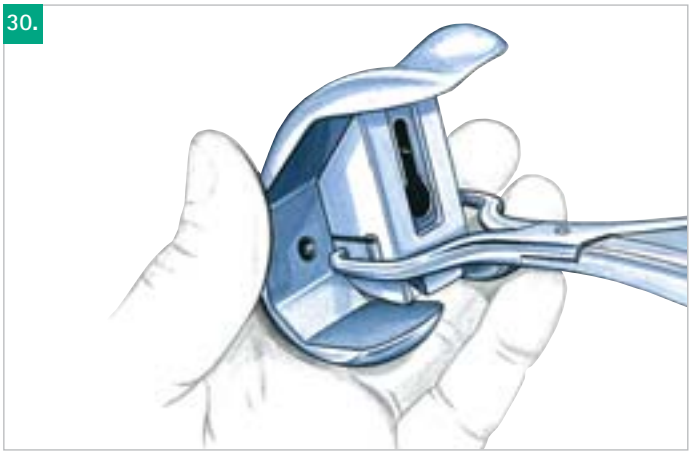
29.



Posterior stabilized PS version

For the removal of the box from the femur trial implant the forceps is used.
After putting the trial femur and meniscal components implants in place, the quality of the preparation and the joint stability are checked in a functional test. The trial implants consists of the modular tibia implant (plateau, wing stem, extension stem if needed), the femur trial implant with connected box and the trial meniscal component in the desired height with post.

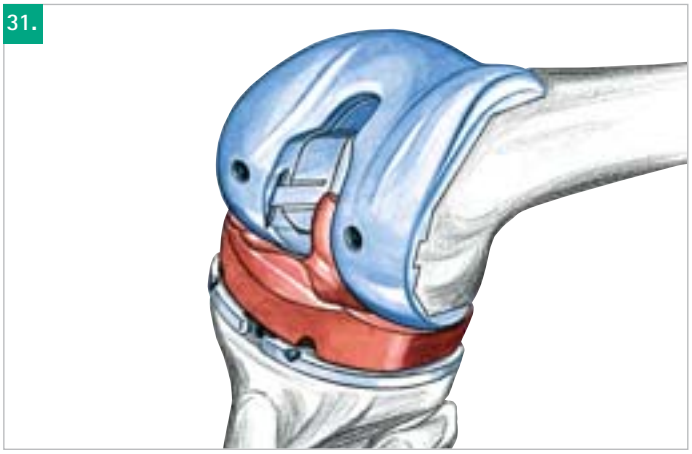
30.



The trial PS meniscal components are available in 10, 12 and 14 mm height. 2 additional complementary plate of 6 mm each can be connected to the trial PS meniscal components to reach the remaining heights of the available final PS meniscal component range.

meniscal component	complementary plate	trial component
10	1 x 6	16
12	1 x 6	18
14	1 x 6	20
10	2 x 6	22
12	2 x 6	24

31.



Final Implantation

The e.motion femoral and tibial implants can be implanted with or without cement as desired. The surgeon makes the decision according to the bone quality of the patient.

Because of the precision and congruence of the resection surfaces and the implants, only a small amount of cement should be used. This is particularly important in the posterior regions of the femur and tibia implants e.motion FP and PS as well around the box in the case of e.motion PS to prevent cement getting into the periarticular gap.

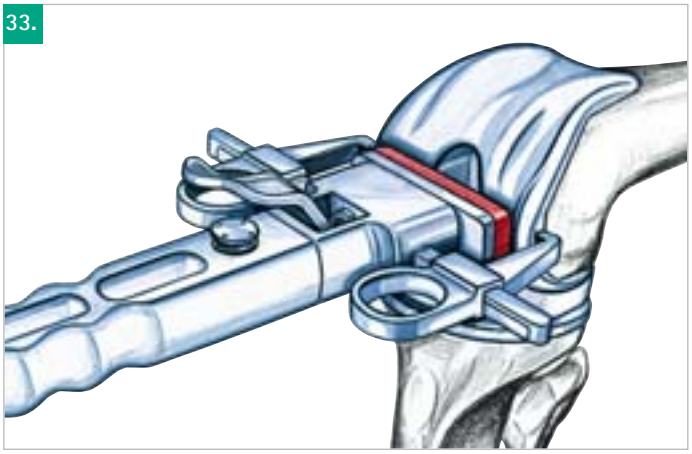
■ Please note:
In order to prevent third-body wear, any cement residues must be removed thoroughly.

32.

The following implant sequence is recommended in the case of e.motion FP:

Tibia implant
Meniscal component
Femoral component
Patella implant

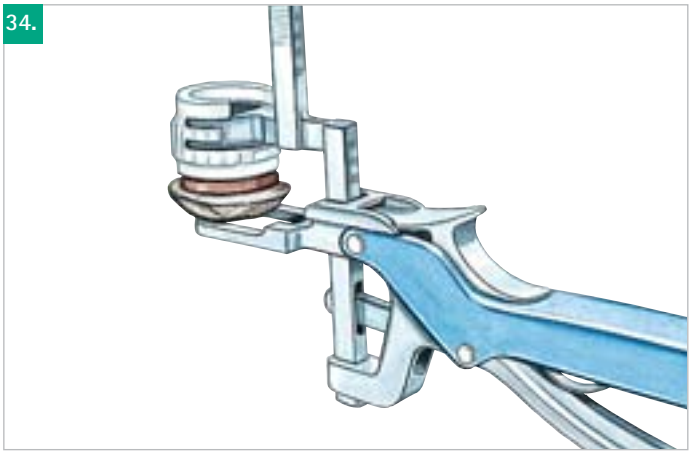
33.



The tibia final implant is connected to the holding device and brought precisely into the predefined position using the impaction handle. The final positioning is done with the tibia impactor. After the meniscal component is placed in position.

With the same holding device using the correct insert, the femur final implant is brought into alignment and implanted. The femoral impactor is used to knock the implant into place. In case of no stem application for cemented PS femurs a closing clip for the femur box is available by request to prevent the leakage of cement into the joint articulation area (Art. No.: NB700P).

34.



The patella is implanted using the patella preparation forceps and the concave plastic cap, which allows good transmission of forces during the cement hardening process.

Final Implantation

The following implant sequence is recommended in the case of e.motion PS / CS:

Tibia implant
Femoral component
Meniscal component
Patella implant

The modular tibia implant e.motion PS is connected to a obturator screw or an extension stem if needed. Screw and stem are fixed to the wing stem of the final implant with the tightening key in the appropriated diameter (10, 12, 14 or 16 mm). Additionnally the bearing pin packed together with the meniscal component is screwed into the tibia plateau and fixed with a torque wrench applying 10 Nm. A scale at the instrument show the amount of force that is used.

In order to facilitate the handling, the tibia trial gliding surface mounted on the universal handle can be used as holding device for the final tibia implant assembling.

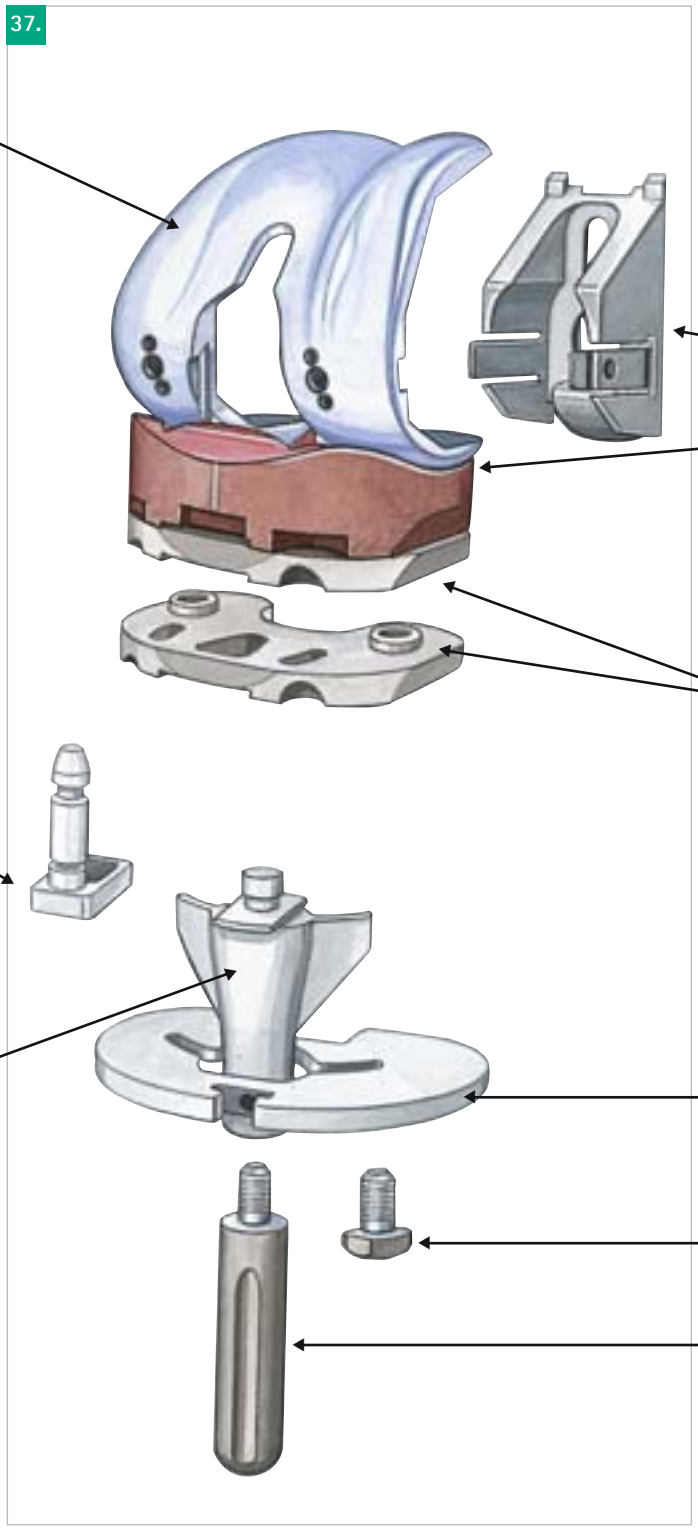
■ Please note:
The bearing pin is fixed to the tibia plateau with a torque wrench applying 10 Nm.

35.

After the femoral implant is put into place with the help of the holding device and then the meniscal component.

36.

Overview trial implants

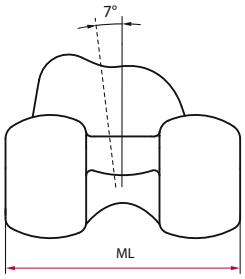


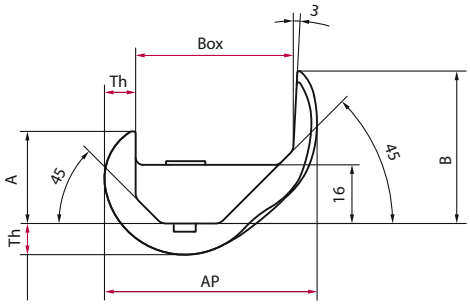
e.motion implant sizes

e.motion FP and PS implant sizes

Femoral component

The table gives an overview on the most important dimensions of the e.motion femoral implants



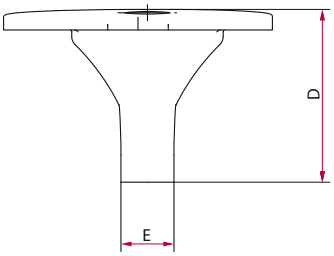


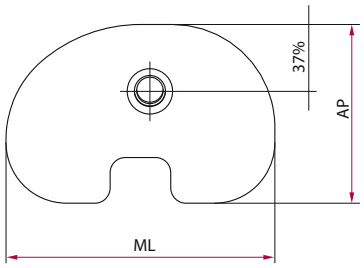
Measurements in (mm)

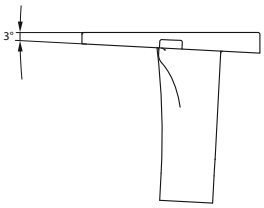
Size	ML	AP	Box	Th	Trochlear Depth
F2 L / R	56	49.9	37	7	4
F3 L / R	60	53.8	40	7	4.5
F4 L / R	64	58	43	8.5	4.5
F5 L / R	68	61.8	46	8.5	5
F6 L / R	72	65.6	49	8.5	5
F7 L / R	76	69.7	52	10	5.5
F8 L / R	80	73.8	55	10	6

Tibial component

The table gives an overview on the most important dimensions of the e.motion tibial implants







Measurements in (mm)

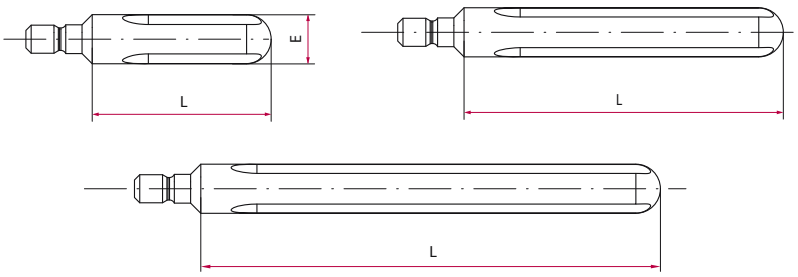
Size	ML	AP	AP / ML	D	E
T1 L / R	59	38	0.64	40	12
T2 L / R	63	41	0.65	40	12
T3 L / R	67	44	0.66	40	12
T4 L / R	71	47	0.66	45	14
T5 L / R	75	50	0.67	45	14
T6 L / R	79	53	0.67	45	14
T7 L / R	83	56	0.67	50	16
T8 L / R	87	59	0.68	50	16

Tibia extension stem

The table gives an overview on the most important dimensions of the e.motion tibia extension stems

Measurements in (mm)

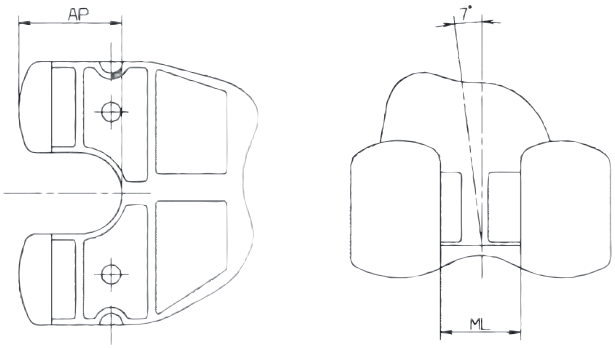
Size	L	D
Short	52	10, 12, 14, 16
Middle	92	10, 12, 14, 16
Long	132	10, 12, 14, 16



AP- / ML-Dimensions [mm] of the e.motion® femoral implants for necessary application of intra medullary nails

Measurements in (mm)

	AP	ML
F2	19.89	18
F3	22.23	19
F4	24.36	20
F5	26.64	21
F6	28.8	22
F7	31.05	23
F8	33.40	25

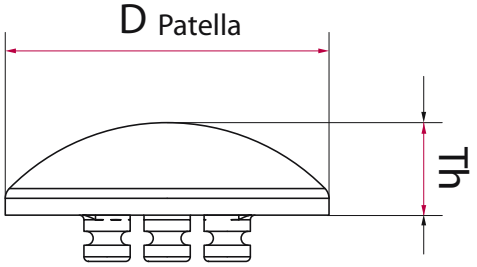


Patella component

The table gives an overview on the most important dimensions of the e.motion patella implants

Measurements in (mm)

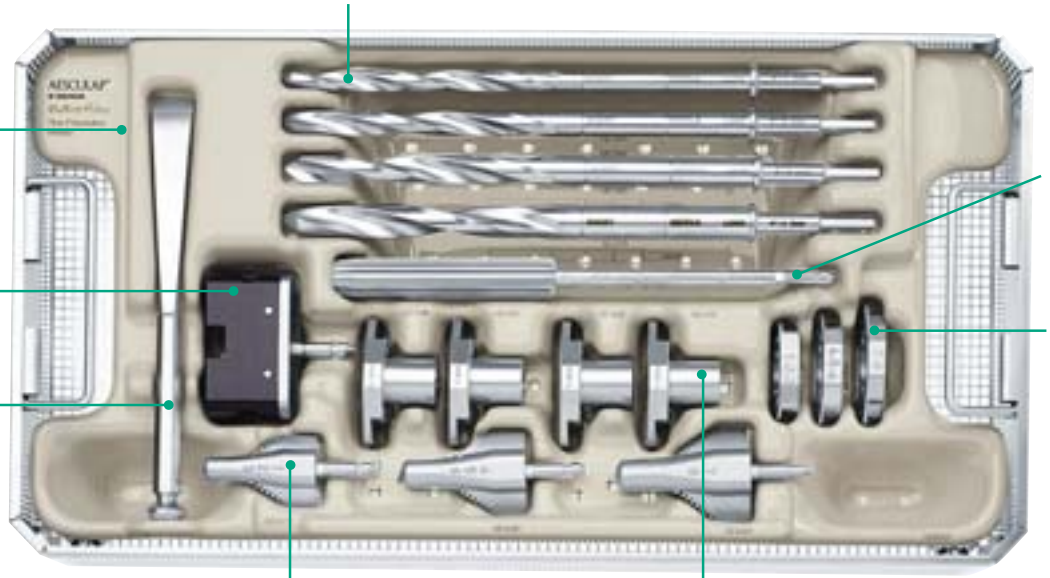
Size	D	Th
1	26	7
2	29	8
3	32	9
4	35	10
5	38	11
6	41	12



Instrumentarium

NE410 e.motion® FP

NM982 Tibia Preparation Instruments



Drill
Ø 10 mm: NE134R
Ø 12 mm: NE135R
Ø 14 mm: NE136R
Ø 16 mm: NE137R

NM992P
Storage

NE182
Tibial impactor

FL556R
Chisel
20 x 203 mm

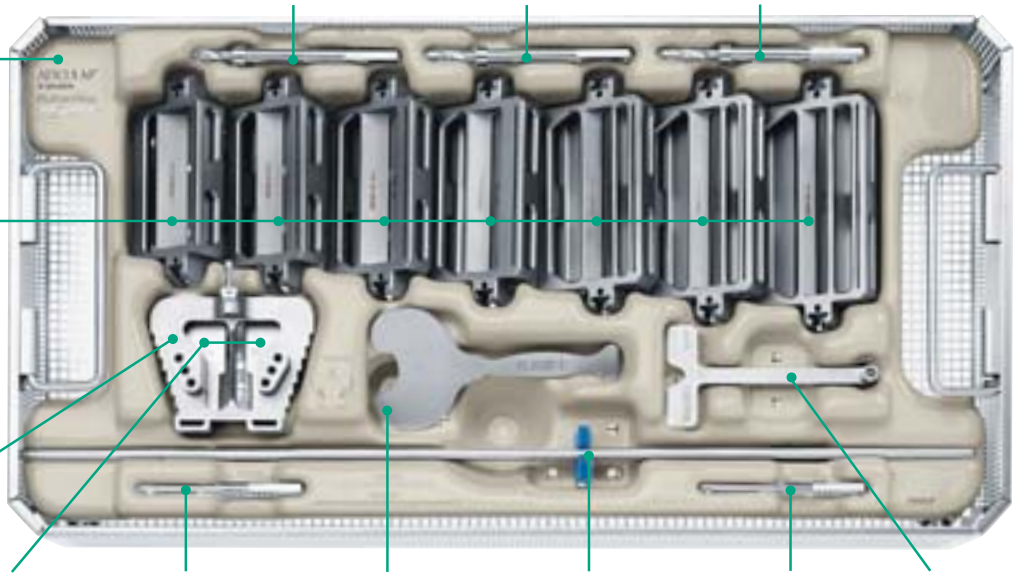
NE158R
Reamer Ø 18 mm

Tibial winglet rasp guide
T1 / T2 / T3: NE434R
T4 / T5 / T6: NE435R
T7 / T8: NE436R

Winglet rasp tibia
T1 / T2 / T3: NE437R
T4 / T5 / T6: NE438R
T7 / T8: NE439R

Drilling guide
Ø 10 mm: NE144R
Ø 12 mm: NE145R
Ø 14 mm: NE146R
Ø 16 mm: NE147R

NM983 Femur Preparation Instruments



NE457R
Drill with stop
diam. 5 x 20
mm F1 / F2 / F3

NE458R
Drill with stop
diam. 5 x 25 mm
F4 / F5 / F6

NE459R
Drill with stop
diam. 5 x 30 mm
F7 / F8

NM993P
Storage

Cutting guides
A-P and chamfers
F2: NE512R
F3: NE513R
F4: NE514R
F5: NE515R
F6: NE516R
F7: NE517R
F8: NE518R

NE440R
Nav. femoral
orientating bloc

NE441RM
NE442RM
Posterior condylar
plate left and right

NE333R
Drill with stop,
D 3.2 mm

NP741R
Tibia protect. plate

NP471R
NE331R (with shell)
Extramed. alignment
rod

NE333R
Drill with stop,
D 3.2 mm

NE456R
Extramed. alignment
control plate

NM984 Trial Tibia Components (left / right)

NM994P
Storage

Trial modular tibial plateau
T2: NE612R
T3: NE613R
T4: NE614R
T5: NE615R
T6: NE616R
T7: NE617R
T8: NE618R

Tibial preparation plateau, right
T2R: NE632R
T3R: NE633R
T4R: NE634R
T5R: NE635R
T6R: NE636R
T7R: NE637R
T8R: NE638R

Tibial preparation plateau, left
T2L: NE532R
T3L: NE533R
T4L: NE534R
T5L: NE535R
T6L: NE536R
T7L: NE537R
T8L: NE538R

Trial keel
T1 / T2 / T3: NE187R
T4 / T5 / T6: NE188R
T7 / T8: NE189R

Trial obturator
D12: NE105T
D14: NE106T
D16: NE107T

NP731R
Stem tightening key D10 and D12

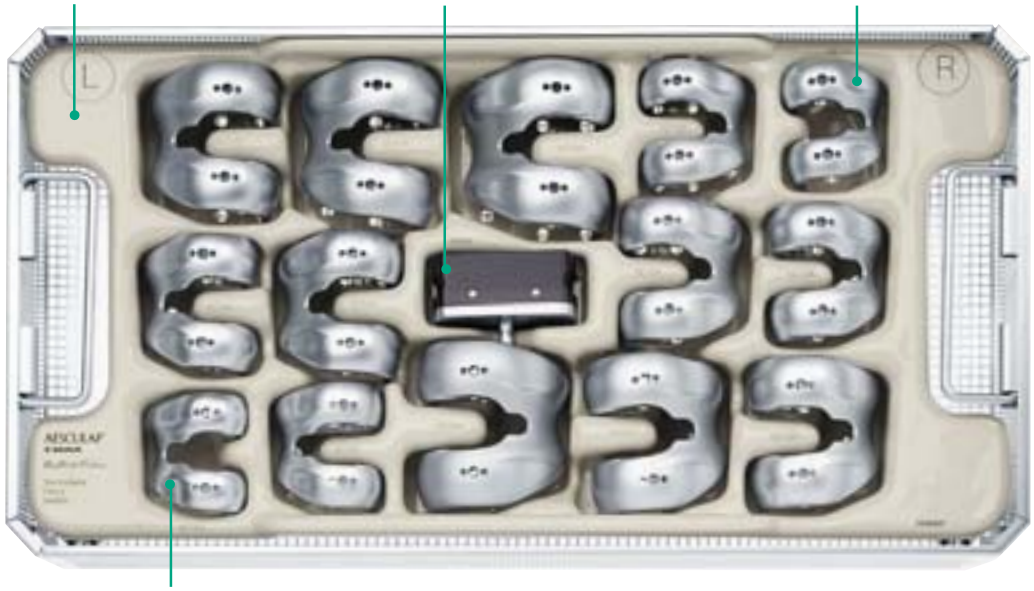
NE186R
Impaction / extraction adapter

Trial extension stem
D10 mm, S 52 mm: NE114T
M 92 mm: NE094T
L 132 mm: NE124T
D14 mm, S 52 mm: NE116T
M 92 mm: NE096T
L 132 mm: NE126T

NP732R
Stem tightening key D14 and D16

Trial extension stem
D12 mm, S 52 mm: NE115T
M 92 mm: NE095T
L 132 mm: NE125T
D16 mm, S 52 mm: NE117T
M 92 mm: NE097T
L 132 mm: NE127T

NM984 Trial Tibia Components (left / right)



NM995P
Storage

NE383
Femoral impactor

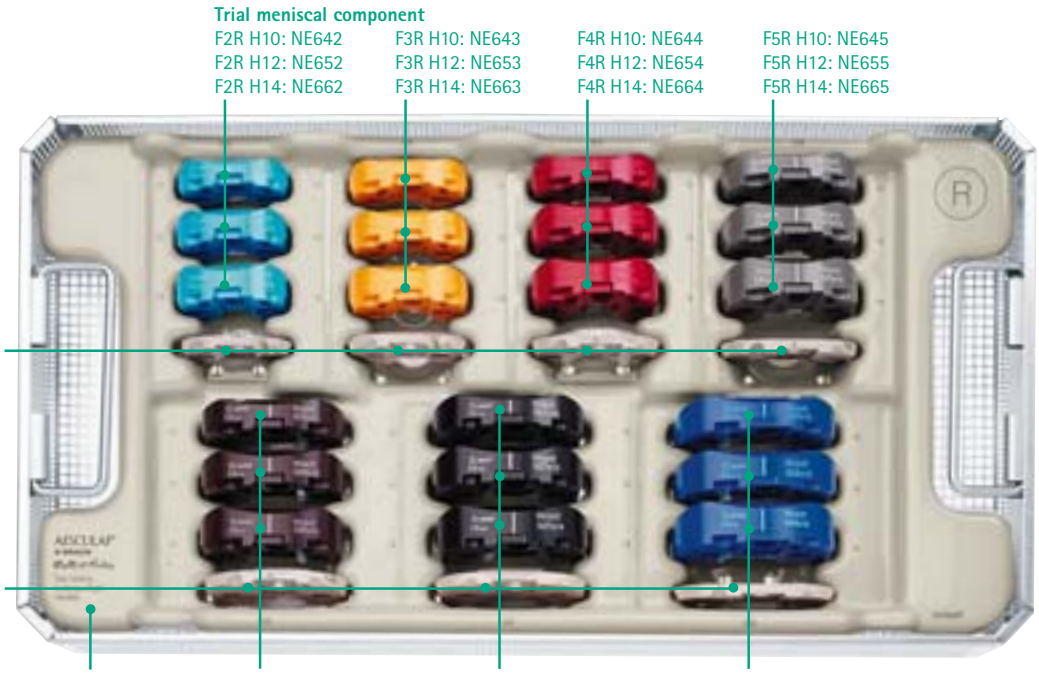
Trial femoral componant
F2R: NE752K
F3R: NE753K
F4R: NE754K
F5R: NE755K
F6R: NE756K
F7R: NE757K
F8R: NE758K

Trial femoral componant
F2L: NE702K
F3L: NE703K
F4L: NE704K
F5L: NE705K
F6L: NE706K
F7L: NE707K
F8L: NE708K

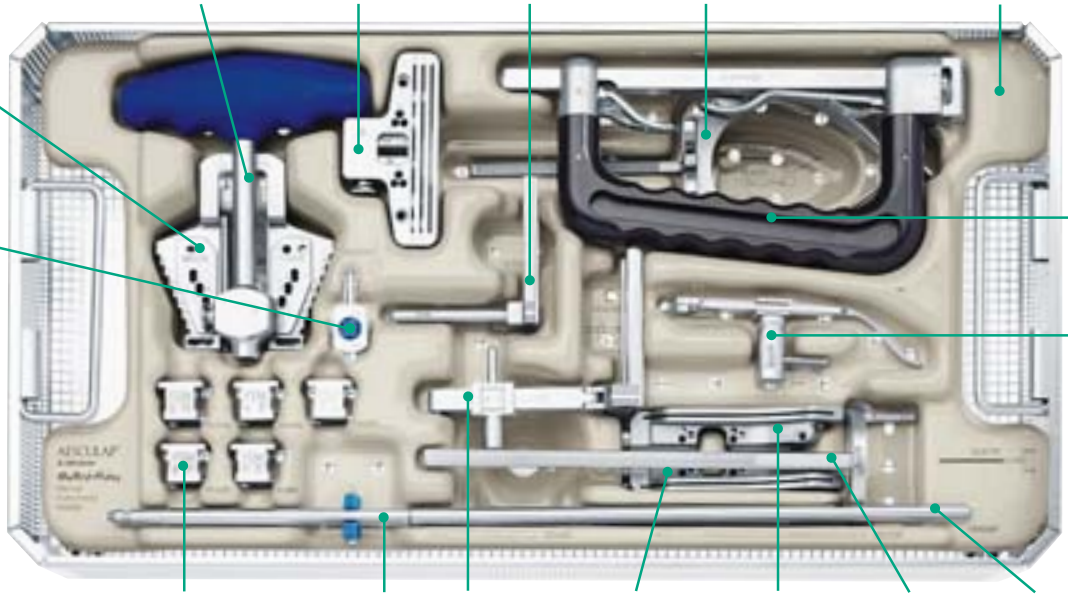
Instrumentarium

NM987 Trial Meniscal Components left

NM988 Trial Meniscal Components right



NM989 Manual Instruments



NE381 Modular T-handle

NE455R Femoral distal cutting guide

NE454R Holding device for distal cutting guide

NE421R Bimalleolar clamp

NM999P Storage

NE450R Femoral alignment block

NE451R Fixation key for femoral alignment block

NE420R Handle for extramed. alignment system

NE425R Tibial cutting guide stylus

Insert for femoral alignment block
5°: NE445R 7°: NE447R 9°: NE449R
6°: NE446R 8°: NE448R

Intramedullary drill Ø 9 mm

NE453R Anterior femoral palpator

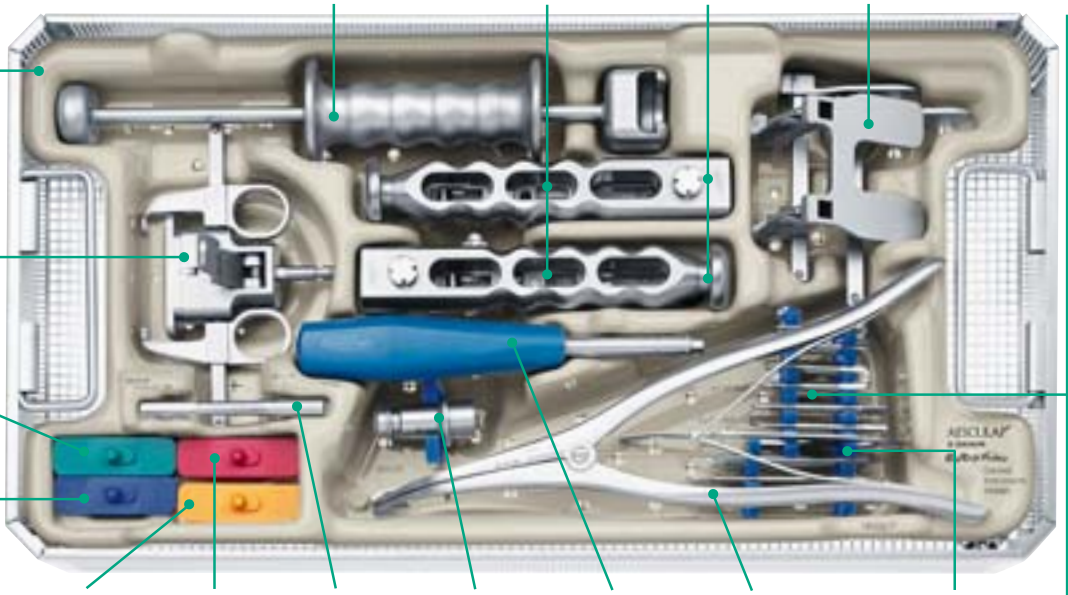
NE479R Asymmetric tibia cutting guide RM / LL

NE478R Asymmetric tibia cutting guide LM / RL

NE477R Holder f. asym. tibial cutting guide

NE376R Intramedullary rod Ø 8 mm

NM990 General Instruments



NP684R Universal extractor

NE510R Removable handle

NE380T Impaction handle

NP604R Femoro-tibial distractor

NM991P Storage

NE330R Holding instrument

NE366 Femoral insert for holding instr. F2 / F3

NE368 Femoral insert for holding instr. F7 / F8

NP585R (4 x) Threaded pin with head 3.2 x 30 mm

NP582R (4 x) Threaded head-less pin 3.2 x 38 mm

NP586R (4 x) Threaded pin with head 3.2 x 50 mm

NP583R (6 x) Threaded head-less pin 3.2 x 63 mm

NP587R (2 x) Threaded pin with head 3.2 x 75 mm

NE369 Tibial insert for holding instr.

NE367 Femoral insert for holding instr. F4 / F5 / F6

NP613R Pin driver motor adapter

GB413R Hexagonal quick chuck

NP614R Manual pin driver

NP609R Distraction clamp

NM350R Cutting depth check plate

Instrumentarium

NM395 e.motion® UC

NM046 Trial Meniscal Components left

Trial meniscal component
F2L H10: NQ802
F2L H12: NQ812
F2L H14: NQ822

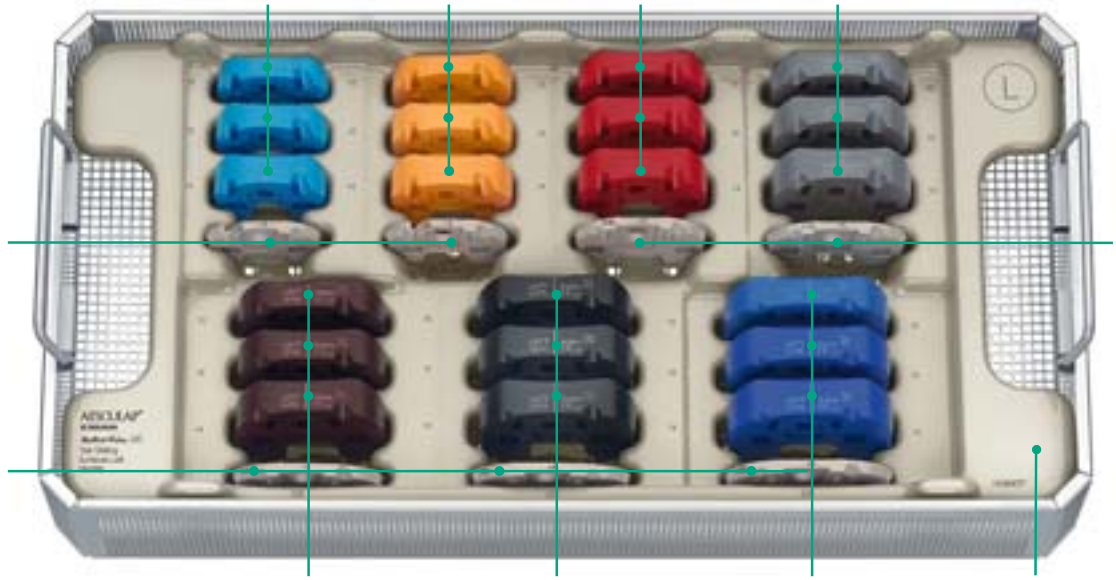
F3L H10: NQ803
F3L H12: NQ813
F3L H14: NQ823

F4L H10: NQ804
F4L H12: NQ814
F4L H14: NQ824

F5L H10: NQ805
F5L H12: NQ815
F5L H14: NQ825

Compl. plate meniscal comp.
F2L 6 mm: NE892
F3L 6 mm: NE893

Compl. plate meniscal comp.
F4L 6 mm: NE894
F5L 6 mm: NE895



Compl. plate meniscal comp.
F6L 6 mm: NE896
F7L 6 mm: NE897
F8L 6 mm: NE898

Trial meniscal component
F6L H10: NQ806
F6L H12: NQ816
F6L H14: NQ826

F7L H10: NQ807
F7L H12: NQ817
F7L H14: NQ827

F8L H10: NQ808
F8L H12: NQ818
F8L H14: NQ828

NM047P
Storage left

NM048 Trial Meniscal Components right

Trial meniscal component
F2R H10: NQ902
F2R H12: NQ912
F2R H14: NQ922

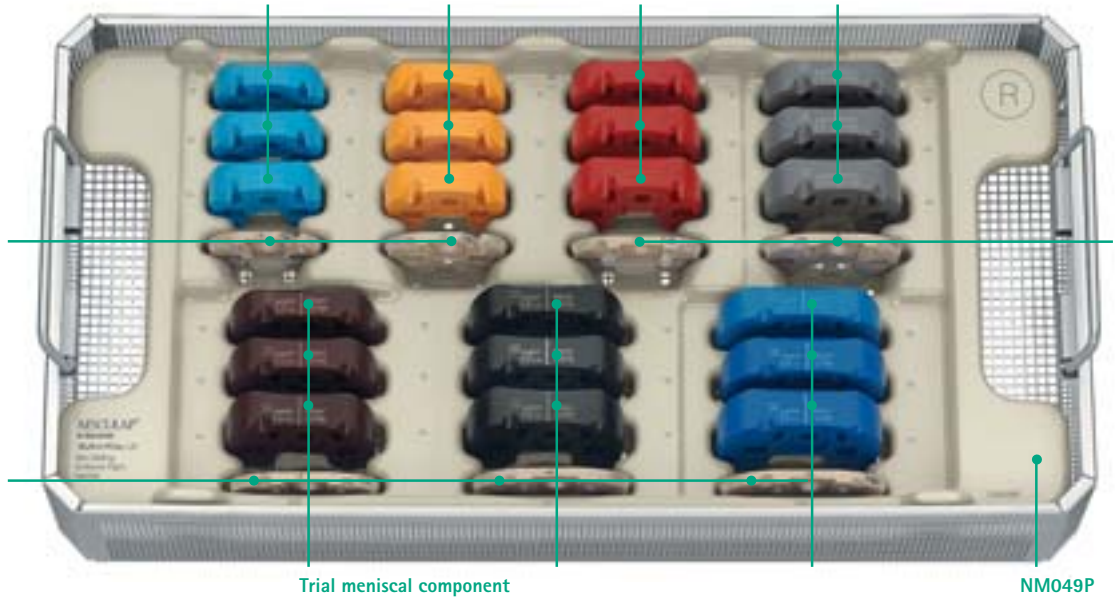
F3R H10: NQ903
F3R H12: NQ913
F3R H14: NQ923

F4R H10: NQ904
F4R H12: NQ914
F4R H14: NQ924

F5R H10: NQ905
F5R H12: NQ915
F5R H14: NQ925

Compl. plate meniscal comp.
F2R 6 mm: NE992
F3R 6 mm: NE993

Compl. plate meniscal comp.
F4R 6 mm: NE994
F5R 6 mm: NE995



Compl. plate meniscal comp.
F6L 6 mm: NE996
F7L 6 mm: NE997
F8L 6 mm: NE998

Trial meniscal component
F6R H10: NQ906
F6R H12: NQ916
F6R H14: NQ926

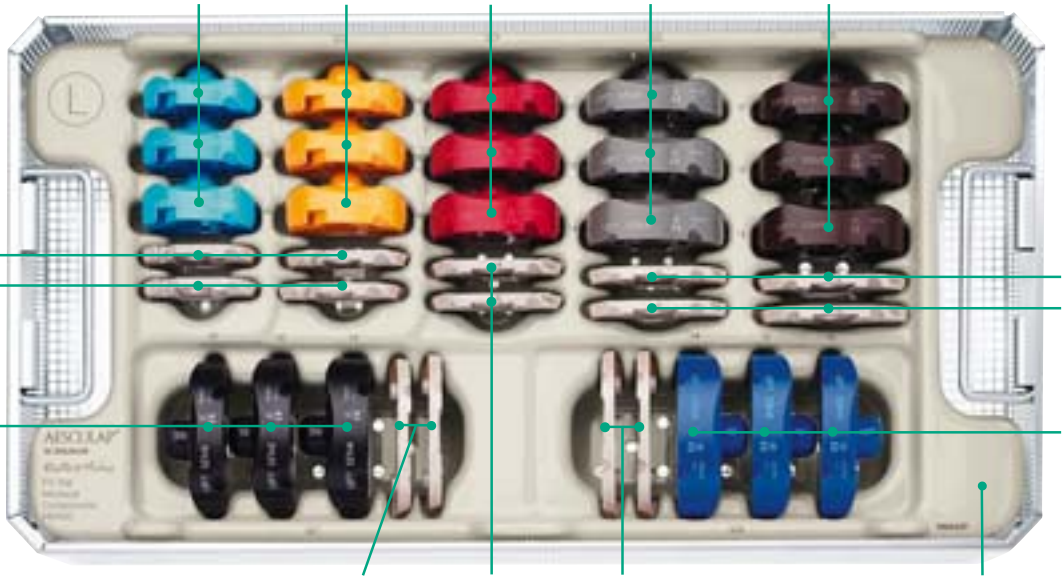
F7R H10: NQ907
F7R H12: NQ917
F7R H14: NQ927

F8R H10: NQ908
F8R H12: NQ918
F8R H14: NQ928

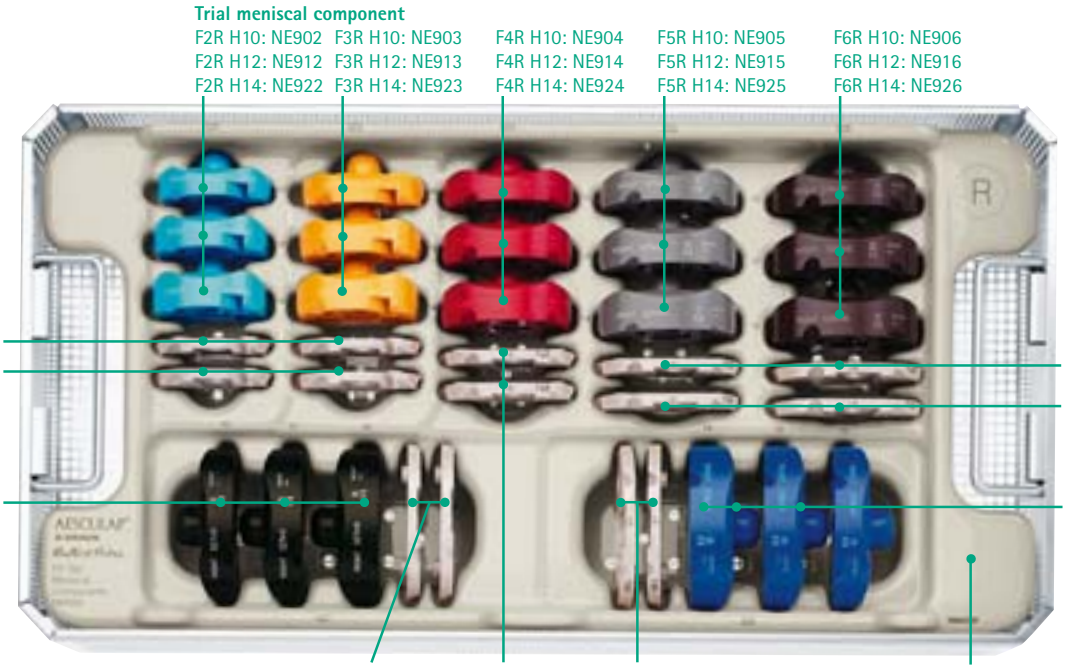
NM049P
Storage right

NM700 e.motion® PS

NM450 Trial Meniscal Components left

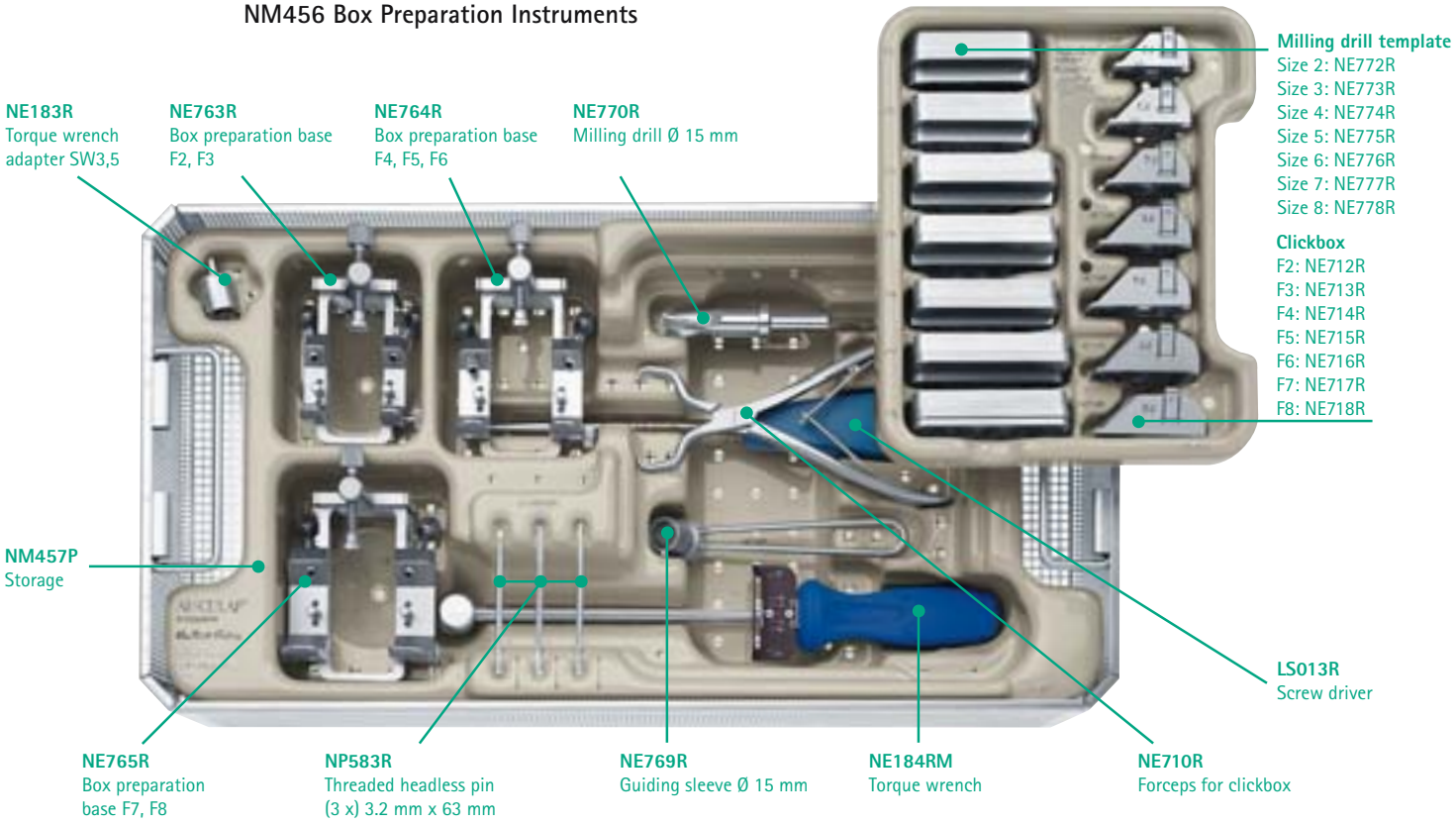


NM450 Trial Meniscal Components right



Instrumentarium

NM456 Box Preparation Instruments



NP502 e.motion® FP / PS / Revision

NP502 Patella Preparation Instruments

NQ282
Trial patella
3 pegs P2,
Ø 29 x 8 mm

NQ281
Trial patella
3 pegs P1,
Ø 26 x 7 mm

NQ284
Trial patella
3 pegs P4,
Ø 35 x 10 mm

NQ283
Trial patella
3 pegs P3,
Ø 32 x 9 mm

NQ285
Trial patella
3 pegs P5,
Ø 38 x 11 mm

NQ286
Trial patella
3 pegs P6,
Ø 41 x 12 mm

NP503P
Storage

NE347
Patella
impactor

NE480R
Drill with stop
6 x 25 mm

NQ478R
Drilling guide
3 pegs

NE346R
Patella preparation
clamp

Instrumentarium

NM150 e.motion® PS / Revision

NM398 Femur Stem Preparation Instruments

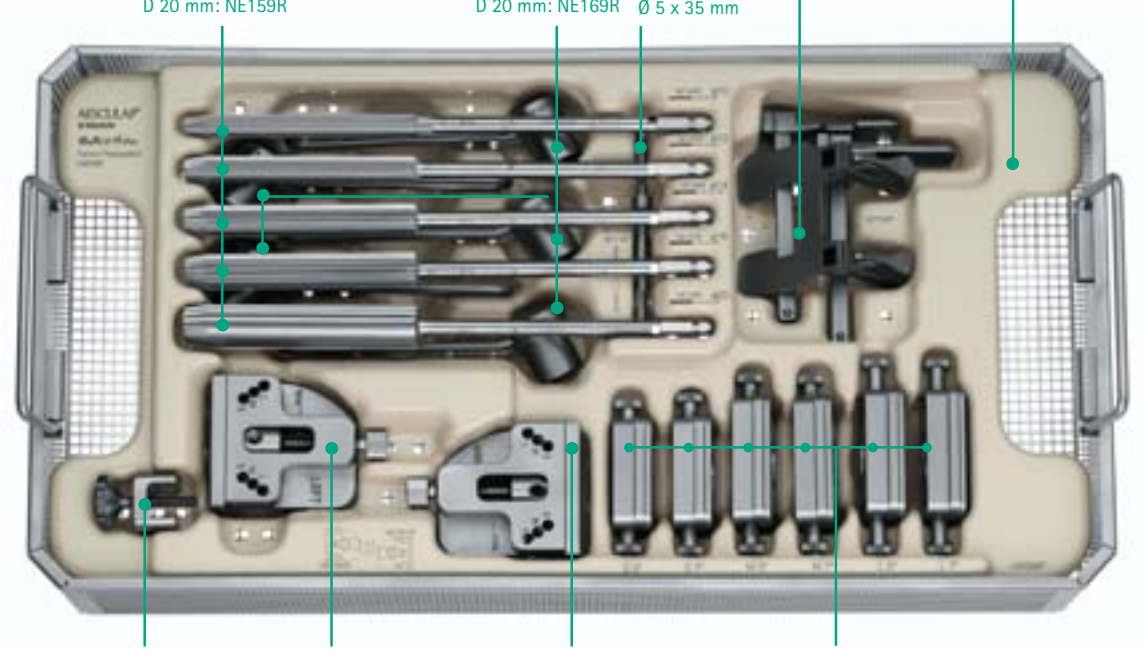
Reamer for femur extension stem
D 10 mm: NE154R
D 12 mm: NE155R
D 14 mm: NE156R
D 16 mm: NE157R
D 20 mm: NE159R

Reamer guide for femur extension stem
D 12 mm: NE165R
D 14 mm: NE166R
D 16 mm: NE167R
D 18 mm: NE168R
D 20 mm: NE169R

NE151R
Drill with stop
Ø 5 x 35 mm

NE750R
Femoro-tibial distractor

NM399P
Storage



NE170R
Clamping piece for femur drill templates

NE760R
Femur stem alignment block, left

NE761R
Femur stem alignment block, right

Reamer templates for femur ext. stem
S 5°: NE174R
M 5°: NE175R
L 5°: NE176R
S 7°: NE177R
M 7°: NE178R
L 7°: NE179R

NM454 Instruments and Trial Implants

Adapter piece for trial femoral stem
5° NM875T
7° NM895T

Trial femoral augment, distal
F2 / F3,4 mm: NE972R
F4-F6, 4 mm: NE973R
F7 / F8,4 mm: NE974R
F2 / F3,8 mm: NE975R
F4-F6, 8 mm: NE976R
F7 / F8,8 mm: NE977R

Trial femoral augment, postero-distal
F2 / F3, 4 x 4 mm: NE978R
F4-F6, 4 x 4 mm: NE979R
F7 / F8, 4 x 4 mm: NE980R
F2/F3, 4 x 8 mm: NE981R
F4-F6, 4 x 8 mm: NE982R
F7 / F8, 4 x 8 mm: NE983R

Trial femoral augment, postero-distal
F2 / F3, 8 x 4 mm: NE984R
F4-F6, 8 x 4 mm: NE985R
F7 / F8, 8 x 4 mm: NE986R
F2 / F3, 8 x 8 mm: NE987R
F4-F6, 8 x 8 mm: NE988R
F7 / F8, 8 x 8 mm: NE989R

NE164R
Screw for trial extension stems

NE180R
Screw for trial wedges

NE181R
Screw driver SW 3.0

Trial extension stem
D 20 mm S: NE119T
M: NE099T
L: NE129T

Trial extension stem
D 18 mm S: NE118T
M: NE098T
L: NE128T

Trial extension stem
D 16 mm S: NE117T
M: NE097T
L: NE127T

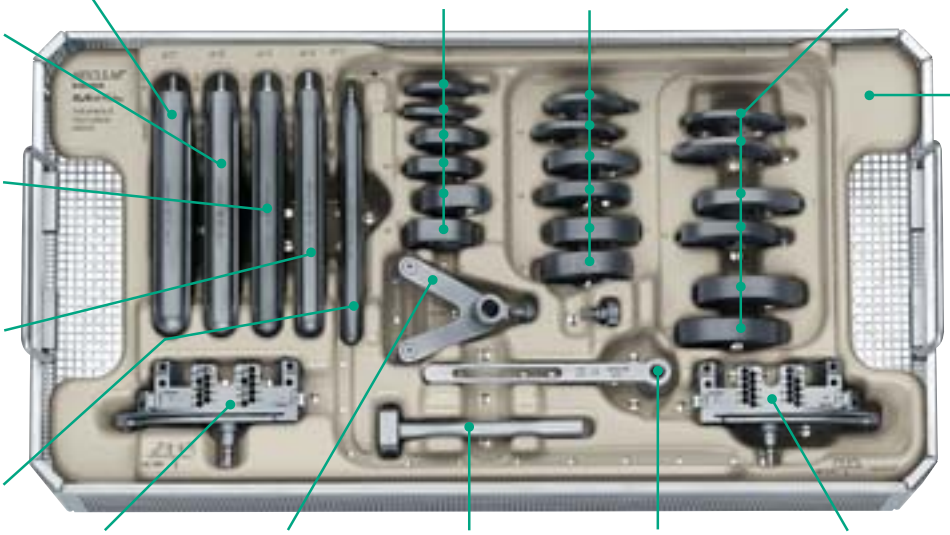
Trial extension stem
D 14 mm S: NE116T
M: NE096T
L: NE126T

Trial extension stem
D 12 mm S: NE115T
M: NE095T
L: NE125T

Trial tibial augment
T1-3 Lateral 4 mm: NE881T
8 mm: NE884T
12 mm: NE887T
T1-3 Medial 4 mm: NE871T
8 mm: NE874T
12 mm: NE877T

Trial tibial augment
T4-6 Lateral 4 mm: NE882T
8 mm: NE885T
12 mm: NE888T
T4-6 Medial 4 mm: NE872T
8 mm: NE875T
12 mm: NE878T

Trial tibial augment
T7-8 Lateral 4 mm: NE883T
8 mm: NE886T
12 mm: NE889T
T7-8 Medial 4 mm: NE873T
8 mm: NE876T
12 mm: NE879T



NM455P
Storage left

NE196R
Tibial revision cutting guide, right

NE195R
Adapter for tibial rev. cutting guide

NP678R
Search Ev. Rev. connection block

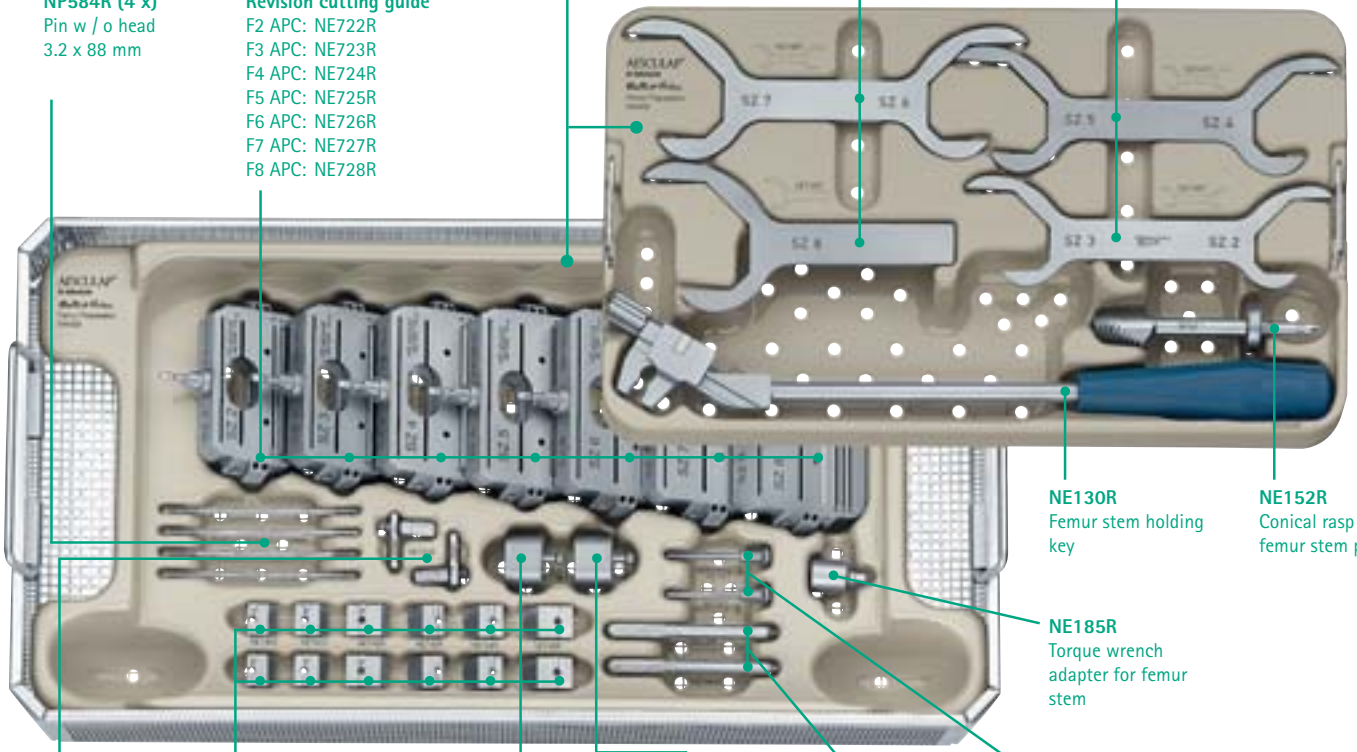
NP677R
Search Ev. Rev. connector

NE197R
Tibial revision cutting guide, left

Instrumentarium

NM150 e.motion® PS / Revision

NM458 Femur Preparation Instruments



NM459P
Storage left

Revision femur gauge
F2 / F3: NE746R
F4 / F5: NE747R
F6 / F7: NE748R
F8: NE749R

NP584R (4 x)
Pin w / o head
3.2 x 88 mm

Revision cutting guide
F2 APC: NE722R
F3 APC: NE723R
F4 APC: NE724R
F5 APC: NE725R
F6 APC: NE726R
F7 APC: NE727R
F8 APC: NE728R

NE130R
Femur stem holding key

NE152R
Conical rasp for femur stem prep.

NE185R
Torque wrench adapter for femur stem

NE731R (2 x)
Fixation strap for cutting guide

Spacer
F2 / F3,4 mm: NE740R
F4-F6, 4 mm: NE741R
F7 / F8,4 mm: NE742R

F2 / F3,8 mm: NE743R
F4-F6, 8 mm: NE744R
F7 / F8,8 mm: NE745R

NE173R
AP orientation sleeve for femur extension stem, excentric

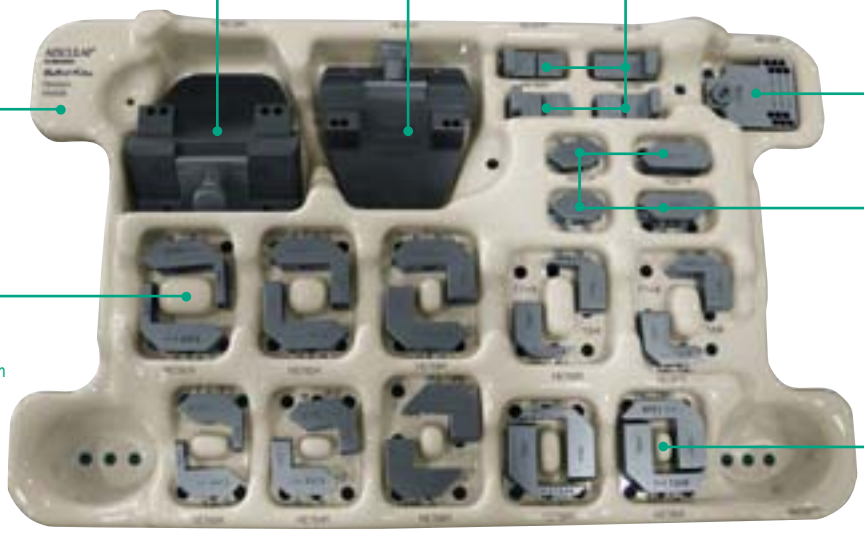
NE172R
AP orientation sleeve for femur extension stem, neutral

NE730R
Cutting guide handle

NE732T
Alignment peg for cutting guide

NM396 e.motion® PS / Revision

NM396 Trial Femur Augments 12 mm



NE739R
Add. Instrument
post 12 mm res. F7 / F8

NE721R
Add. Instrument
post 12 mm res. F4-F6

Spacer 12 mm
NE767R F7 / F8 left
NE766R F4-F6 left

NE277R F7 / F8 right
NE276R F4-F6 right

NM397P
Tray

NE720R
Add. Instrument
dist 12 mm res.

Trial Fem. Augment distal
NE970R (2 x) F4-F6 12 mm
NE971R (2 x) F7 / F8 12 mm

Trial Fem. Augment
post / dist F7 / F8

NE781R (2 x) 4 x 12 mm
NE785R (2 x) 8 x 12 mm
NE789R (2 x) 12 x 12 mm
NE783R (2 x) 12 x 4 mm
NE787R (2 x) 12 x 8 mm

Trial Fem. Augment
post / dist F4-F6
NE780R (2 x) 4 x 12 mm
NE784R (2 x) 8 x 12 mm
NE788R (2 x) 12 x 12 mm
NE782R (2 x) 12 x 4 mm
NE786R (2 x) 12 x 8 mm

e.motion® Implant Matrix-Femur-Parts

Femur FP cemented

Types:	F2	F3	F4	F5	F6	F7	F8
Left	NO502K	NO503K	NO504K	NO505K	NO506K	NO507K	NO508K
Right	NO602K	NO603K	NO604K	NO605K	NO606K	NO607K	NO608K

Femur FP cementless

Types:	F2	F3	F4	F5	F6	F7	F8
Left	NO582K	NO583K	NO584K	NO585K	NO586K	NO587K	NO588K
Right	NO682K	NO683K	NO684K	NO685K	NO686K	NO687K	NO688K

Nut for Femur Ext. Stem

NB140K

Femur PS cemented

Types:	F2	F3	F4	F5	F6	F7	F8
Left	NB702K	NB703K	NB704K	NB705K	NB706K	NB707K	NB708K
Right	NB752K	NB753K	NB754K	NB755K	NB756K	NB757K	NB758K

Femur PS cemented

Types:	F2	F3	F4	F5	F6	F7	F8
Left	NB702K	NB703K	NB704K	NB705K	NB706K	NB707K	NB708K
Right	NB752K	NB753K	NB754K	NB755K	NB756K	NB757K	NB758K

Femur Ext. Stems cemented

	5°		7°	
Types:	Ø 14	Ø 16	Ø 14	Ø 16
Short	NB145K	NB144K	NB135K	NB134K
Middle	NB150K	NB149K	NB137K	NB136K
Long	NB155K	NB154K	NB139K	NB138K

Gliding Surfaces

	FP-left							UC-left							PS-left						
Types:	F2	F3	F4	F5	F6	F7	F8	F2	F3	F4	F5	F6	F7	F8	F2	F3	F4	F5	F6	F7	F8
10	NO542	NO543	NO544	NO545	NO546	NO547	NO548	NR802	NR803	NR804	NR805	NR806	NR807	NR808	NB802	NB803	NB804	NB805	NB806	NB807	NB808
12	NO552	NO553	NO554	NO555	NO556	NO557	NO558	NR812	NR813	NR814	NR815	NR816	NR817	NR818	NB812	NB813	NB814	NB815	NB816	NB817	NB818
14	NO562	NO563	NO564	NO565	NO566	NO567	NO568	NR822	NR823	NR824	NR825	NR826	NR827	NR828	NB822	NB823	NB824	NB825	NB826	NB827	NB828
16	NO572	NO573	NO574	NO575	NO576	NO577	NO578	NR832	NR833	NR834	NR835	NR836	NR837	NR838	NB832	NB833	NB834	NB835	NB836	NB837	NB838
18	NO592	NO593	NO594	NO595	NO596	NO597	NO598	NR842	NR843	NR844	NR845	NR846	NR847	NR848	NB842	NB843	NB844	NB845	NB846	NB847	NB848
20	NO782	NO783	NO784	NO785	NO786	NO787	NO788	NR852	NR853	NR854	NR855	NR856	NR857	NR858	NB852	NB853	NB854	NB855	NB856	NB857	NB858
22																	NB864	NB865	NB866	NB867	NB868
24																	NB874	NB875	NB876	NB877	NB878

Gliding Surfaces

	FP-right							UC-right							PS-right						
Types:	F2	F3	F4	F5	F6	F7	F8	F2	F3	F4	F5	F6	F7	F8	F2	F3	F4	F5	F6	F7	F8
10	NO642	NO643	NO644	NO645	NO646	NO647	NO648	NR902	NR903	NR904	NR905	NR906	NR907	NR908	NB902	NB903	NB904	NB905	NB906	NB907	NB908
12	NO652	NO653	NO654	NO655	NO656	NO657	NO658	NR912	NR913	NR914	NR915	NR916	NR917	NR918	NB912	NB913	NB914	NB915	NB916	NB917	NB918
14	NO662	NO663	NO664	NO665	NO666	NO667	NO668	NR922	NR923	NR924	NR925	NR926	NR927	NR928	NB922	NB923	NB924	NB925	NB926	NB927	NB928
16	NO672	NO673	NO674	NO675	NO676	NO677	NO678	NR932	NR933	NR934	NR935	NR936	NR937	NR938	NB932	NB933	NB934	NB935	NB936	NB937	NB938
18	NO692	NO693	NO694	NO695	NO696	NO697	NO698	NR942	NR943	NR944	NR945	NR946	NR947	NR948	NB942	NB943	NB944	NB945	NB946	NB947	NB948
20	NO792	NO793	NO794	NO795	NO796	NO797	NO798	NR952	NR953	NR954	NR955	NR956	NR957	NR958	NB952	NB953	NB954	NB955	NB956	NB957	NB958
22																	NB964	NB965	NB966	NB967	NB968
24																	NB974	NB975	NB976	NB977	NB978

Distal Femur Wedges

Types:	F2	F3	F4	F5	F6	F7	F8
4 mm	NB282K	NB283K	NB284K	NB285K	NB286K	NB287K	NB288K
8 mm	NB292K	NB293K	NB294K	NB295K	NB296K	NB297K	NB298K
12 mm			NB274K	NB275K	NB276K	NB277K	NB278K

Patella

Types:	F2-F8
P1	NO481
P2	NO482
P3	NO483
P4	NO484
P5	NO485
P6	NO486

Postero-Distal Femur Wedges

Types:	F2	F3	F4	F5	F6	F7	F8
4 x 4 mm	NB302K	NB303K	NB304K	NB305K	NB306K	NB307K	NB308K
4 x 8 mm	NB312K	NB313K	NB314K	NB315K	NB316K	NB317K	NB318K
4 x 12 mm			NB340K	NB341K	NB342K	NB343K	NB344K
8 x 4 mm	NB322K	NB323K	NB324K	NB325K	NB326K	NB327K	NB328K
8 x 8 mm	NB332K	NB333K	NB334K	NB335K	NB336K	NB337K	NB338K
8 x 12 mm			NB350K	NB351K	NB352K	NB353K	NB354K
12 x 4 mm			NB359K	NB360K	NB361K	NB362K	NB363K
12 x 8 mm			NB364K	NB365K	NB366K	NB367K	NB368K
12 x 12 mm			NB394K	NB395K	NB396K	NB397K	NB398K

Femur Extension Stems cemented

	5°				7°			
Types:	Ø 14	Ø 16	Ø 18	Ø 20	Ø 14	Ø 16	Ø 18	Ø 20
Short	NB236K	NB237K	NB238K	NB239K	NB256K	NB257K	NB258K	NB259K
Middle	NB241K	NB242K	NB243K	NB244K	NB261K	NB262K	NB263K	NB264K
Long	NB246K	NB247K	NB248K	NB249K	NB266K	NB267K	NB268K	NB269K

Tibia FP Monobloc cemented

Types:	T1	T2	T3	T4	T5	T6	T7	T8
Left	NO521K	NO522K	NO523K	NO524K	NO525K	NO526K	NO527K	NO528K
Right	NO621K	NO622K	NO623K	NO624K	NO625K	NO626K	NO627K	NO628K

Tibia FP Modular cemented

Types:	T1	T2	T3	T4	T5	T6	T7	T8
Left	NB521K	NB522K	NB523K	NB524K	NB525K	NB526K	NB527K	NB528K
Right	NB621K	NB622K	NB623K	NB624K	NB625K	NB626K	NB627K	NB628K

Tibia PS Modular cemented

Types:	T1	T2	T3	T4	T5	T6	T7	T8
Left	NB731K	NB732K	NB733K	NB734K	NB735K	NB736K	NB737K	NB738K
Right	NB781K	NB782K	NB783K	NB784K	NB785K	NB786K	NB787K	NB788K

Tibia FP Modular cementless

Types:	T1	T2	T3	T4	T5	T6	T7	T8
Left	NB591K	NB592K	NB593K	NB594K	NB595K	NB596K	NB597K	NB598K
Right	NB691K	NB692K	NB693K	NB694K	NB695K	NB696K	NB697K	NB698K

Tibia PS Modular cementless

Types:	T1	T2	T3	T4	T5	T6	T7	T8
Left	NB741K	NB742K	NB743K	NB744K	NB745K	NB746K	NB747K	NB748K
Right	NB791K	NB792K	NB793K	NB794K	NB795K	NB796K	NB797K	NB798K

Tibia Ext. Stems cemented

Types:	Ø 12	Ø 14	Ø 16
Short	NB213K	NB214K	NB215K
Middle	NB218K	NB219K	NB220K
Long	NB223K	NB224K	NB225K

Tibia Ext. Stems cementless

Types:	Ø 10	Ø 12	Ø 14	Ø 16
Short	NB114K	NB115K	NB116K	NB117K
Middle	NB094K	NB095K	NB096K	NB097K
Long	NB124K	NB125K	NB126K	NB127K

Tibia-Obturator

Types:	Ø 12	Ø 14	Ø 16
T1 / T2 / T3	NB105K	--	--
T4 / T5 / T6	--	NB106K	--
T7 / T8	--	--	NB107K

Tibial Wedges Medial

				4 mm				
Types:	T1	T2	T3	T4	T5	T6	T7	T8
Left + Right	NB401K	NB402K	NB403K	NB404K	NB405K	NB406K	NB407K	NB408K
				8 mm				
Types:	T1	T2	T3	T4	T5	T6	T7	T8
Left	NB421K	NB422K	NB423K	NB424K	NB425K	NB426K	NB427K	NB428K
Right	NB431K	NB432K	NB433K	NB434K	NB435K	NB436K	NB437K	NB438K
				12 mm				
Types:	T1	T2	T3	T4	T5	T6	T7	T8
Left	NB461K	NB462K	NB463K	NB464K	NB465K	NB466K	NB467K	NB468K
Right	NB471K	NB472K	NB473K	NB474K	NB475K	NB476K	NB477K	NB478K

Tibial Wedges Lateral

				4 mm				
Types:	T1	T2	T3	T4	T5	T6	T7	T8
Left + Right	NB411K	NB412K	NB413K	NB414K	NB415K	NB416K	NB417K	NB418K
				8 mm				
Types:	T1	T2	T3	T4	T5	T6	T7	T8
Left	NB441K	NB442K	NB443K	NB444K	NB445K	NB446K	NB447K	NB448K
Right	NB451K	NB452K	NB453K	NB454K	NB455K	NB456K	NB457K	NB458K
				12 mm				
Types:	T1	T2	T3	T4	T5	T6	T7	T8
Left	NB461K	NB462K	NB463K	NB464K	NB465K	NB466K	NB467K	NB468K
Right	NB471K	NB472K	NB473K	NB474K	NB475K	NB476K	NB477K	NB478K

Aesculap AG | Am Aesculap-Platz | 78532 Tuttlingen | Germany
Phone +49 (0) 74 61 95-0 | Fax +49 (0) 74 61 95-26 00 | www.aesculap.com

Aesculap – a B. Braun company

Brochure No. 025902 0910/0.5/3