Aesculap Orthopaedics

BiCONTACT®

Hip Endoprosthesis System

Bone Preservation. For Years to Come.

B BRAUN
SHARING EXPERTISE

BiCONTACT®

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Bone Preservation. For Years to Come.

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Bone preservation. For years to come.

The BiCONTACT® Hip Endoprosthesis System:
The bone-preserving operation technique
for cementless or cemented implantation.
For primary and revision surgery.

The BiCONTACT® philosophy is maximum preservation and protection of the existing bone substance. Based on the simple but crucial fact that the success of the prosthesis fixation depends on both – implant and bone. Therefore, BiCONTACT® provides unique protection for the cortical and cancellous structures. To do this, instruments were developed that compress the bone instead of removing it.

The BiCONTACT® system comprises various stem types – for different anatomic morphologies. Many surgeons worldwide confirm that BiCONTACT® is one of the most successful hip endoprostheses they have ever implanted.

BiCONTACT® – Objective: Bone preservation

There is a system for successful hip joint replacement: The BiCONTACT® hip a prosthesis design, unchanged since 1987. Special implantation instruments, the BiCONTACT® osteoprofilers, ensure that the cancellous bone in the proximal femur is preserved to a large extent. The prosthesis stem is well-anchored, proximally, through bone compression. On the distal side, the cortical bone is preserved as there is no need for reaming. The same surgical technique allows to decide intraoperatively whether you are going to implant a cementless BiCONTACT® stem or a cemented one. The BiCONTACT® system is completed by a range of modular heads and acetabular sockets.

BiCONTACT® stem, cementless and cemented

Modular head and acetabular components.

Experience decides. With or without bone cement.

BiCONTACT® stems for cementless
or cemented implantation:
Coming to the right decision during the operation.

The situation found during the surgery enables or determines the right choice of procedure. You, the surgeon, are free to make the optimum decision, not only before, but also during the operation. With BiCONTACT® you can decide intraoperatively wether to perform a cementless implantation or to implant with bone cement. The BiCONTACT® stem can be anchored in the bone either by making use of the Plasmapore® surface or by applying the most recent cementing techniques.

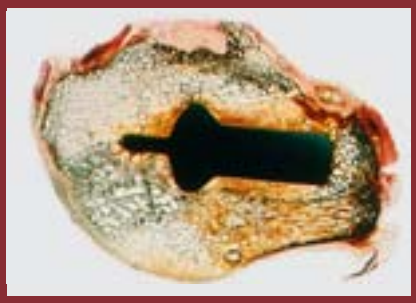
Both decisions are borne out by excellent clinical results with cementless and cemented implants, depending on the individual conditions found in each patient.

Microporous titanium
Plasmapore® surface.

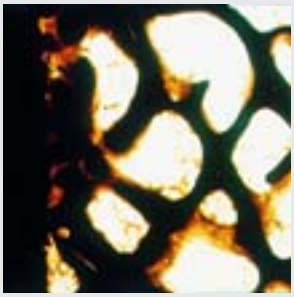
BiCONTACT® – Application: Intraoperative decision-making

Direct contact with the bone: Titanium and Plasmapore® support the intergration in the proximal bone structures.
The 0.35 mm microporous pure titanium coating with pores of 50 – 200 µm diameter and 35% porosity leads to direct bone apposition. This is confirmed by clinical experience with Plasmapore®.
For application with bone cement you use BiCONTACT® stems made of a cobalt-based alloy with a smooth prosthesis surface. The BiCONTACT® supports the formation of a complete cement mantle. The distal PMMA Centraliser and the bilateral wings guide the stem into the intermedullary canal.

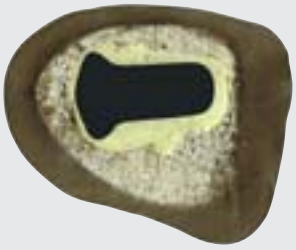
The tailor-made range of stems for various indications allows a free decision even in unforeseeable cases. With or without cement.



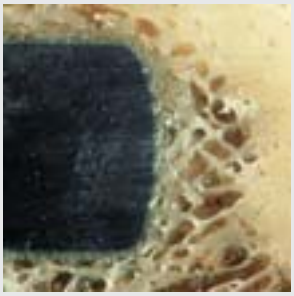
BiCONTACT® stem in cementless implantation.



Plasmapore® in direct bone contact.



BiCONTACT® cement embedding proximal and distal.



Bone compression: Preserving the bone.

The BiCONTACT® osteoprofiler system: Special instruments for preparing the implant bed while preserving the bone.

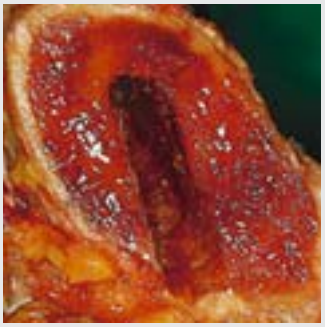
Shape and function – this is how the concept works: The bone is shaped with the osteoprofilers. The bone is compressed instead of removed, cutting instead of rasping, not all at once, but step by step. First with the A-osteoprofilers, then finished with the B-osteoprofilers. The osteoprofilers feature smooth and toothed surfaces to perform a dual function: compressing the bone and preparing the implant bed. An instrument range perfectly adapted for an implantation technique that preserves bone.

BiCONTACT® – Implantation: The osteoprofilers

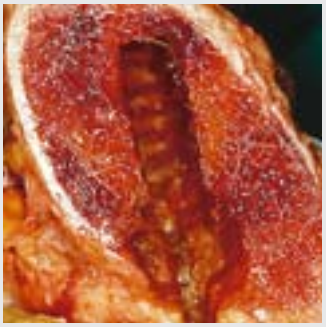
With the A-osteoprofiler you compress the metaphysal bone, define the axial stem position and antetorsion and thus obtain a figure for the distal dimension of the medullary canal. With the B-osteoprofilers you prepare the bone at the site where the prosthesis will be fixed. For this reason, the proximal part of the B-osteoprofiler shows the BiCONTACT® design. Due to the proximal anchoring concept, the B-osteoprofiler determines the dimension of the implant. Therefore, a BiCONTACT® stem does not fix distally but proximally. To achieve this objective with different stem shapes, you can also choose, intraoperatively, the appropriate prosthesis type: For instance, you can choose the SD type instead of the S type.

BiCONTACT®
A- and B-osteoprofilers.

Cancellous compression in the proximal part of the femur.



Compressing the cancellous bone structures with the A-osteoprofiler.



Finishing the proximal BiCONTACT® shape with a B-osteoprofiler.

BiCONTACT®

Different bone shapes. Optimized design solutions.

The BiCONTACT® stem design:
The stem variants tailor-made
for different bone morphologies.

Bone shapes vary with indications and patients. For different bone shapes, BiCONTACT® offers three prosthesis stem adaptation: one for normal, one for dysplastic and one for very tight conditions in the marrow cavity. The tailor-made stem variants are perfectly adapted for every bone situation. In this way, BiCONTACT® ensures optimal anchoring of the hip endoprosthesis in each case, without seizing up. Especially in the proximal-medial area, which is particularly important for prosthesis stability.

BiCONTACT® planning templates.

BiCONTACT® – Indications: The stem types

The right BiCONTACT® stem for each case. For normal medullary canal conditions, the BiCONTACT® stem design offers the standard stem type S or type H (high offset). For other conditions the BiCONTACT® SD stems are the suitable choice. For exceptional cases such as extremely severe dysplastic changes with very narrow conditions in the femoral canal, you choose from the unique range of BiCONTACT® N stems. The characteristic bilateral BiCONTACT® wings ensure secure proximal anchoring of all stem variants. The design solutions differ mainly in the upper medial section, which is responsible for anchoring the prosthesis. For all stem types, the distal stem is tapered into a flat, tapered end.

During preoperative planning care must be taken that the proximal BiCONTACT® stem shape determines the implant choice. The distal stem section only has a guiding function in the femoral canal and should have no part in force transmission.

BiCONTACT® stem types S, H, SD and N.

Computer-assisted planning.

Surgical procedure. The BiCONTACT® principle.

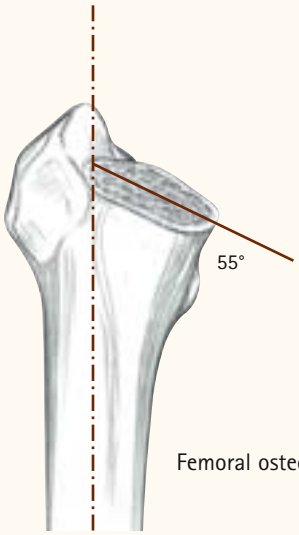
Exploiting the adaptability of the
bone to the new load situation:
Selecting the appropriate prosthesis stem.

The proximal load transfer is now a well established anchoring principle in cementless hip endoprosthetics. This is the principle that we adopted with BiCONTACT®, straight from the beginning, and which is implemented consistently with the surgical technique.

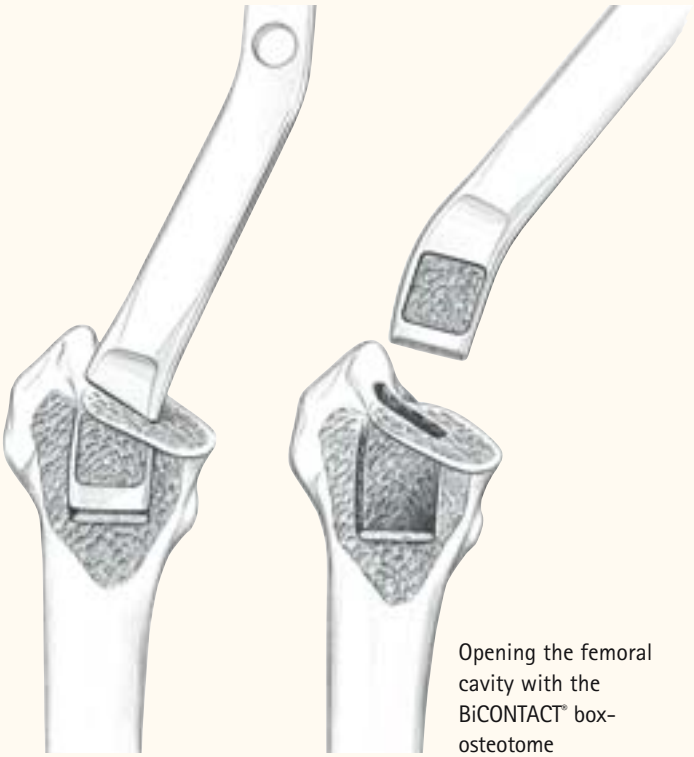
One and the same procedure for all BiCONTACT® stem types. Cementless or cemented. With A-osteoprofilers for bone compression and distal marrow cavity preparation, and B-osteoprofilers for the proximal femur.

With a stem shape selected in preoperative planning or with intraoperative stem selection in situations where the narrow conditions in the femoral stem necessitate the use of a smaller BiCONTACT® implant.

BiCONTACT® – Surgical technique: Primary



Femoral osteotomy



Opening the femoral cavity with the BiCONTACT® box-osteotome

The standard osteotomy plane for BiCONTACT® is at 55 degrees. A cutting template is provided for determining the osteotomy.

The femoral canal is opened with the BiCONTACT® box-osteotome. Opening the lateral femoral cortex is helpful in achieving sufficient lateralization and the correct antetorsion position of the A-osteoprofilers to be used subsequently.

The bone block, which is removed with the box-osteotome, is preserved and can be used at a later stage.

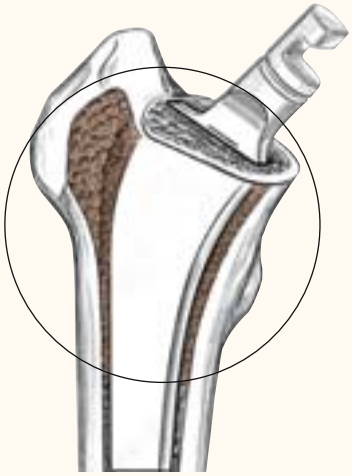
Note:

The BiCONTACT® box-osteotome is unsuitable for the smallest prosthesis sizes 9 SD, 8 N and 9 N, since the prosthesis stems of these sizes are narrower than the osteotome window.

For opening the femoral canal without using the box-osteotome, the tip of the smallest A-osteoprofiler (for BiCONTACT® S, SD or N) is applied on the osteotomy plane as far as possible towards the dorso-lateral side. Then the A-osteoprofiler is introduced at the correct axial orientation and antetorsion position.

BiCONTACT® – Surgical technique: A-osteoprofiler

A-osteoprofiler with proximal compression surfaces



Compression of the proximal bone structures

The A-osteoprofilers are used for compressing the intertrochanteric cancellous bone and thus preserving the bone for anchoring the BiCONTACT® prosthesis stem.

A-osteoprofilers of increasing sizes are applied, up to the size of the distal femoral canal. In doing this, tight cancellous structures and sclerotic bone regions must be worked on with particular care in order to prevent a bone fracture.

To achieve sufficient lateralisation and axis-true implantation, you can widen the proximal-lateral trochanter region with the distal cutting part of an A-osteoprofiler.

The correct insertion depth of the A-osteoprofiler is marked in relation to the standard osteotomy plane at 55°.

Note:

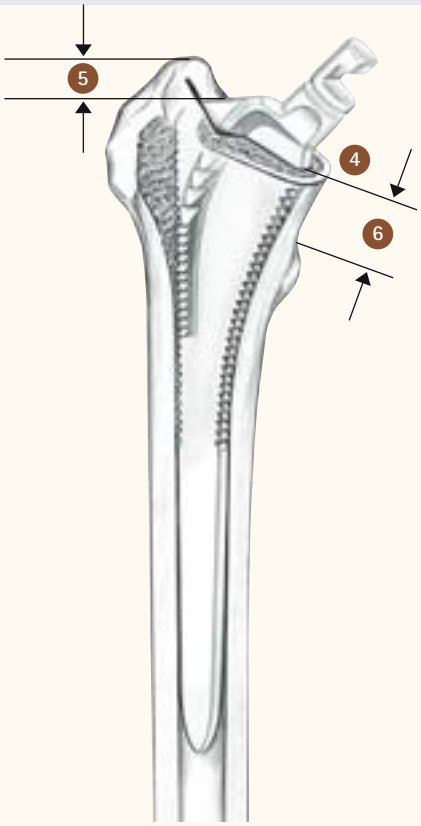
For normal bone conditions, the size of the A-osteoprofiler is usually limited by the conditions in the distal (not the proximal) femoral canal. Compared to the B-osteoprofiler and the BiCONTACT® stem, the A-osteoprofilers are cut free medially to compress the cancellous structures in this region.

In cases of narrow conditions at the distal bone and small implant sizes, the A-osteoprofiler need to be hammered in and out alternately, so that the bone chips can loosen from the profiler teeth, in the distal region.

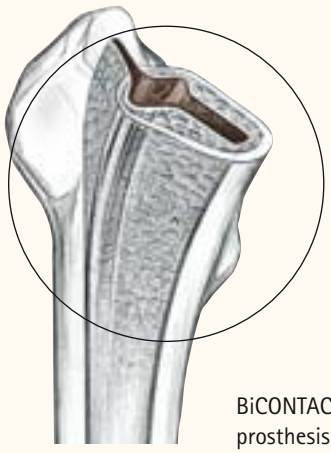
The preparation of a very narrow proximal medullary canal has to be carried out with the smallest A- and B-profilers, alternately, until both can be inserted to the required depth. Use the BiCONTACT® stem shapes SD or N in such cases. Additional advice is given on page 19 of this document.

BiCONTACT® – Surgical technique: B-osteoprofiler

B-osteoprofiler with proximal serations



Position and insertion depth of the B-osteoprofiler prior to trial reduction



BiCONTACT® proximal prosthesis seat

As soon as the selected size of the A-osteoprofiler has been inserted into the medullary canal, the finishing work is done with the B-osteoprofilers. Begin with the smallest B-osteoprofiler or with a B-osteoprofiler 3 sizes smaller than the A-osteoprofiler that was used last.

With the B-osteoprofilers you only prepare the proximal femur in the region of the medial prosthesis support surface ❶, the region of the bilateral BiCONTACT® wings ❷ and the seat of the rotation wing ❸ in the greater trochanter.

The insertion depth and the selection of the size of the B-osteoprofiler depend on the position you have planned, preoperatively, for the BiCONTACT® stem. The insertion depth can be inspected for correctness at the osteotomy plane ❹, the greater trochanter ❺ and the lesser trochanter. ❻

As a rule, the size of the B-osteoprofiler corresponds to the size of the A-osteoprofiler. Never use a larger B-osteoprofiler since this would lead to a distal bone fracture.

Note:

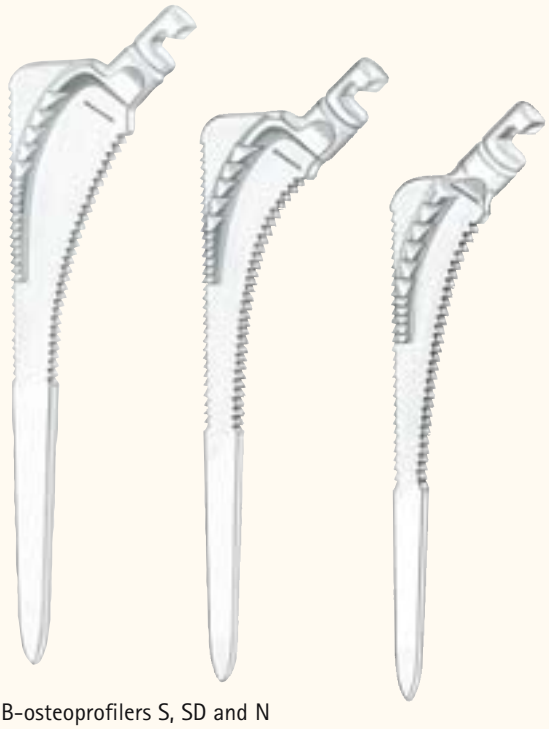
In cases of very narrow proximal bone conditions, the largest B-osteoprofiler that can be used might have to be one size smaller than the A-osteoprofiler last inserted into the bone.

This typical choice of osteoprofiler sizes used for the BiCONTACT® femur preparation ensures the best possible proximal load transmission for the BiCONTACT® prosthesis stem.

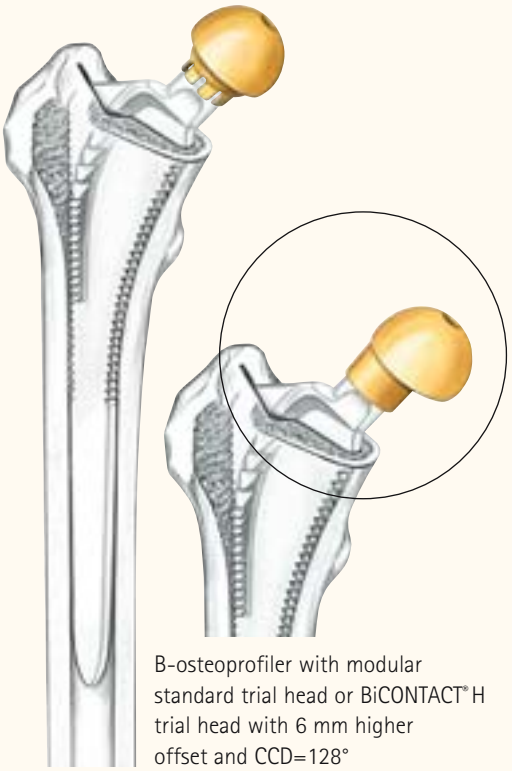
It is a procedure that is characteristic for the BiCONTACT® surgical concept.

When applying this technique, the fit and stability of the B-osteoprofiler and the BiCONTACT® stem always rest on the proximal bone region, not the distal one.

BiCONTACT® – Surgical technique: Trial reduction



B-osteoprofilers S, SD and N
for different conditions in the femoral canal



B-osteoprofiler with modular standard trial head or BiCONTACT® H trial head with 6 mm higher offset and CCD=128°

The modular BiCONTACT® osteoprofilers allow an intraoperative trial reduction with the B-osteoprofiler in its final position. To this end, the modular handle is removed and replaced with trial heads of various neck length. Then, the joint movement, muscle tension and leg length situation are inspected.

The trial heads fit the modular BiCONTACT®-osteoprofilers as well as the cone 12/14 of the BiCONTACT® S, H and SD prosthesis stems. The specially designed BiCONTACT® H trial heads simulate the difference of offset- and CCD compared to the BiCONTACT® S implants.

For the prosthesis cone 8/10 of the BiCONTACT® N stems, there is a special set of trial heads available.

Note:

It is possible, in principle, to carry out an inspection of the bone preparation (e.g. with an image intensifier) or of the trial reduction, especially in cases of problematic bone conditions, at any stage of the operation.

You can also change intraoperatively from BiCONTACT® S to SD or from BiCONTACT® SD to N.

BiCONTACT® – Surgical technique: Cementless implantation

BiCONTACT® S for normal femoral conditions

BiCONTACT® SD for narrow and dysplastic femurs

BiCONTACT® N for very narrow and small femoral canals

Use Plasmapore®-coated BiCONTACT® stems for cementless implantation. For all BiCONTACT® stem types (S, H, SD and N), the size of the cementless BiCONTACT® stem corresponds to the size of B-osteoprofiler last introduced in the optimum position.

The stem is inserted manually and then tapped in, with the punch instrument (ND360R), down to its final position. The stem has reached the correct insertion depth when the hole of the BiCONTACT® stem is in line with the osteotomy.

Finally, use a punch to introduce cancellous bone chips in the lateral region around the BiCONTACT® flanges and the trochanter wing. This can also be done, if necessary, at the osteotomy plane.

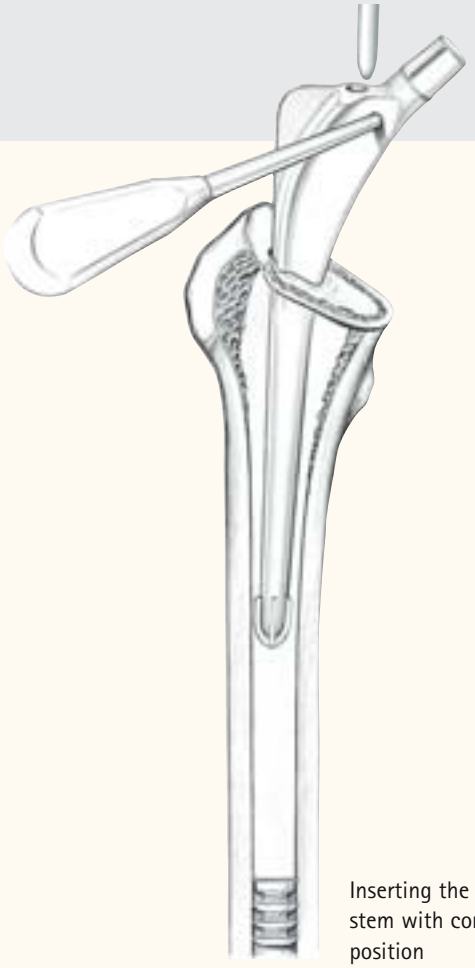
Note:

Please note that the osteotomy line, which you use for intraoperative orientation, may vary. The inspection of the prosthesis insertion depth by means of the greater trochanter or lesser is independent of how the osteotomy is performed.

Special care needs to be taken that the protective cover on the prosthesis cone remains in place during the implantation of the stem, in order to prevent any damage.

Before you put in place the prosthesis head, following another trial reduction, the prosthesis cone must be cleaned and dried. The prosthesis head, too, must be installed with the inner cone dry.

BiCONTACT® – Surgical technique: Cemented implantation



Inserting the BiCONTACT® stem with controlled rotational position

BiCONTACT® stem position with centraliser and intermedullary plug

For a cemented stem implantation, an uncoated BiCONTACT® prosthesis stem is used after an intermedullary plug has been inserted and the cement has been applied.

The size selection of the BiCONTACT® S prosthesis stems and the distal centraliser is summarized in the table below, and are also valid for BiCONTACT® H implants.

The stems are inserted manually and kept in a correct rotational position by means of a handle (ND362R). In the final prosthesis position, the hole is located above the osteotomy plane.

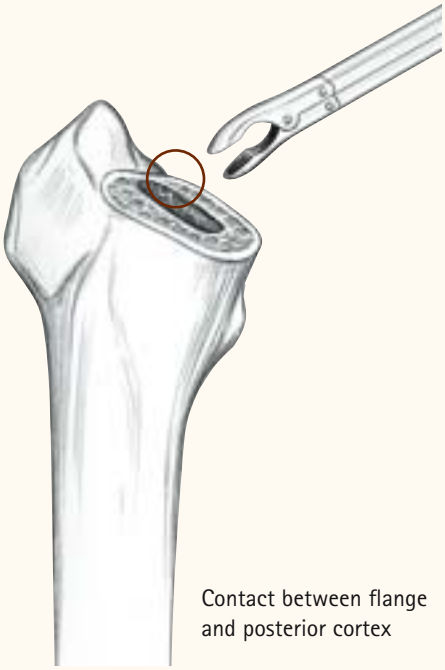
B-Osteoprofiler	10 – 11	12 – 13	14 – 15	16 – 17	18 – 19
BiCONTACT® S	10 NK610K	12 NK612K	14 NK614K	16 NK616K	18 NK618K
centraliser	8 mm NK088	10 mm NK090	12 mm NK092	14 mm NK094	16 mm NK096

Selecting the right stem and centraliser

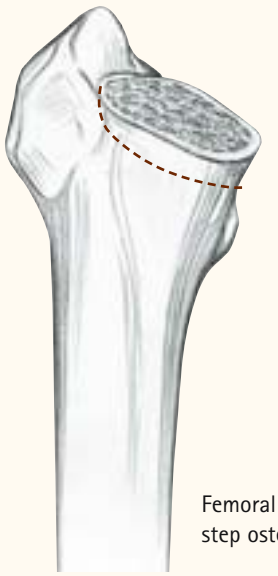
Note:

Large intramedullary bone conditions may make it necessary to use a larger centraliser (+ 2 mm) than the one suggested in the table.

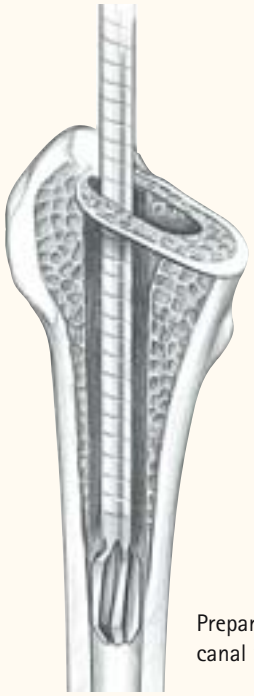
BiCONTACT® – Surgical technique: Narrow bone conditions



Contact between flange and posterior cortex



Femoral step osteotomy



Preparing the femoral canal with flexible reamers

Contact between wing and posterior cortex

The correct fit of the bilateral flanges of the BiCONTACT® stem is crucial for the stability of the BiCONTACT® prosthesis stem. If the posterior flange touches the cortex, it may become necessary to widen it with a Luer instrument. In this way, fractures can be prevented.

Femoral step osteotomy

Narrow conditions in the medullary canal may make it necessary to perform a so-called step osteotomy, which will allow inserting the osteoprofiler and the BiCONTACT® stem deeper into the cavity. If the osteotomy plane is changed, the intraoperative inspection of the insertion depth has to be performed with the lesser or greater trochanter as a reference level.

Note:

Please note that more of the bone is osteotomised in a femoral step osteotomy than in a standard osteotomy, and the force transmission area will be smaller.

Preparing the femoral canal with flexible reamers

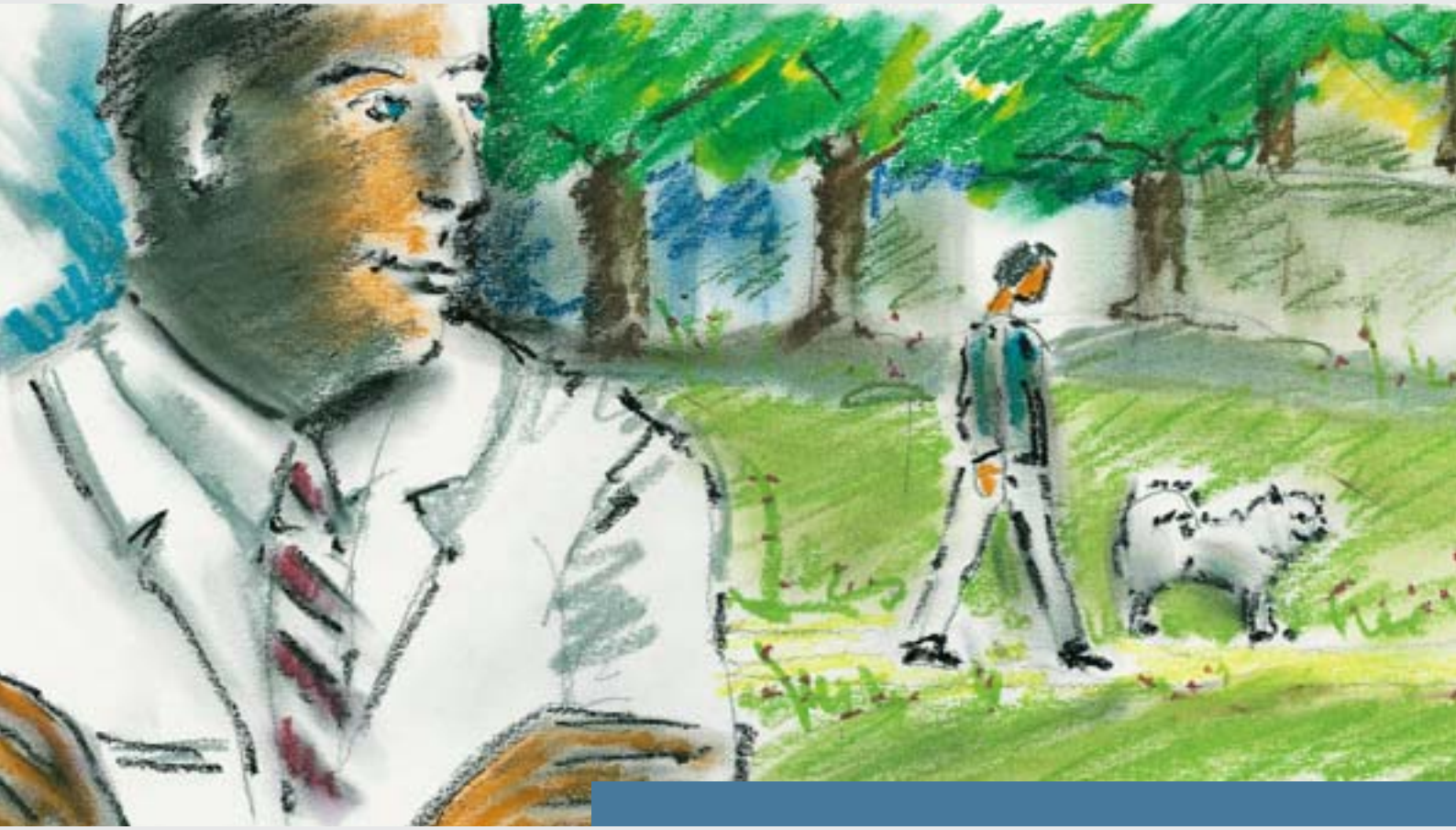
In narrower medullary conditions, you can use flexible reamers of a smaller nominal diameter for preparing the distal implant bed. Following this, the preparation is carried out with the A- and B-osteoprofilers.

Nominal size BICONTACT® S	distal (mm) ap	distal (mm) lateral
10	7.0	6.5
11	8.0	7.0
12	9.0	7.5
BICONTACT® SD and N	**distal (mm) ap**	**distal (mm) lateral**
9	7.0	6.0
10	8.0	6.5
11	9.0	7.0
12	10.0	7.5

Distal dimensions of the BICONTACT® stems for narrow medullary conditions

BiCONTACT® primary stability:

An implant position that is stable under load.
Cementless or cemented.



The paramount objective of hip joint replacement is painless movement. Especially from the perspective and in the personal perception of the patient, young or old. Talk to patients or to surgeons who have been using BiCONTACT® for many years, and compare their experience with scientific studies. Painless joint function. Immediate positive results.

With BiCONTACT® you will find hardly any difference concerning postoperative pain, no matter whether you have used the cementless or the cemented prosthesis. This experience has convinced the developers and first users of the BiCONTACT® system that they have chosen the right way.

Aftercare: New joint function

As the patient experiences so much less pain even at the early postoperative stage, you can expect a positive response from the patient right from the beginning. When comparing the findings concerning pain after the insertion of BiCONTACT® implants, you will find no evidence for any design- or concept-related thigh pain in the aftercare phase, neither during the development of the system nor in its clinical application. These results are well-documented in publications about BiCONTACT®. Among the reasons for this success is the consistent proximal force transmission, the rotational stability and the tension-free fit of the distal stem in the cortical bone.

The right choice of a stem for solid, proximal anchoring in different bone shapes will help the surgeon to use this advantage of BiCONTACT® to the benefit of the patients.

New joint functionality with BiCONTACT®.

All part of the system: Revision with bone reconstruction.

The BiCONTACT® revision stem:
The temporary distal locking mechanism has
set new standards in revision endoprosthetics.

The revision of a hip prosthesis requires a particularly careful procedure. The revision should preserve as much substance as possible and support the reconstruction of the bone. For a revision the implant requires bone substance, for stable fixation. Therefore, the principle of BiCONTACT® revision is: bridging the defect zones.

With secure locking with screws, if necessary. And, of course, with the proximal BiCONTACT® design with different stem lengths, straight or curved. A modern, cementless revision concept that offers good results.

BiCONTACT® – The System: Revision included

Bridging the bone defect, not filling it up with bone cement or oversized implants. This should be the aim when using the BiCONTACT® revision stem: Supporting the reconstruction of bone substance. The conical stem design ensures primary stability in the axial dimension. The star-shaped cross section secures the rotational dimension. The proximal BiCONTACT® stem design and the microporous Plasmapore® coating help the bone substance to regenerate. In cases of large proximal bone loss or a transfemoral operation technique, temporary distal locking with screws is possible. Temporary means, only until the implant is stabilized by the bone substance grown around it. This stabilization will then work proximally, as is the case with all BiCONTACT® implants.

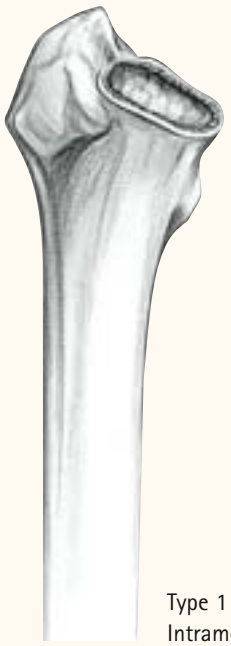
BiCONTACT® revision stem and Recon ring.

BiCONTACT® locking system with aiming device.

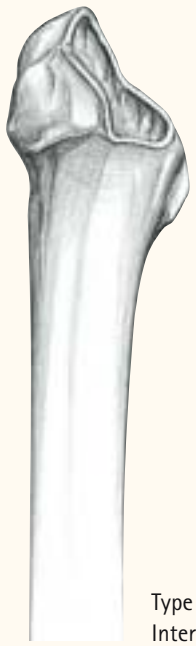
BiCONTACT®

BiCONTACT® Revision. Preoperative planning.

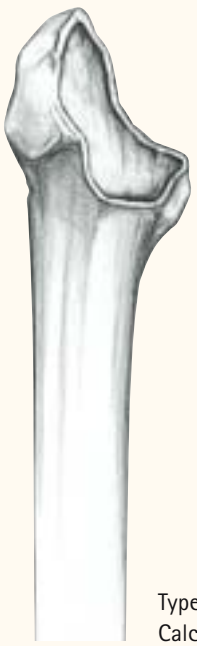
The basis for a successful procedure:
Careful preparation and planning.
Foreseeing unexpected situations.



Type 1
Intramedullary defects



Type 2
Intertrochanteric defects



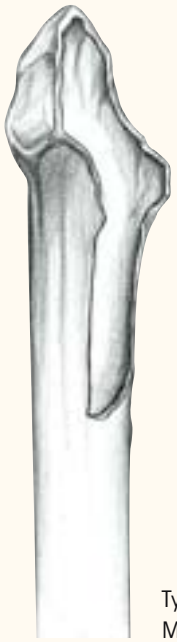
Type 3
Calcar defects

The classification of the defect is very helpful in assessing the preoperative situation to start from. It serves as a guide for choosing the right therapeutic measure (standard implant or revision implant) and helps identifying the optimal operative access (proximal or transfemoral).

In preoperative planning, the following points are taken into account:

- Determining the radiographic scale (e.g. with reference to the head diameter).
- Identifying the stem implant that has come loose. Especially in cases of a separate stem revision, it is necessary to identify the head diameter without any doubt so that new modular inserts for the cup implant can be made available.
- Identifying the cup implant. Special explantation instruments might be required.
- Planning the provision of the acetabulum with the planned new joint center.
- Planning the required leg length according to the pelvic overview and the situation on the opposite side.
- Assessing the defect situation and the bone quality to be expected in the fixation region for the prosthesis.
- Planning the surgical access (proximal access / transfemoral access).
- If necessary, planning the position of the ventral bone window or, in case of a transfemoral access, the osteotomy line.
- The BiCONTACT® stem type (standard/revision), prosthesis size and prosthesis length expected to be used.
- Curvature of the BiCONTACT® revision stem (curved to the left or to the right), if applicable.
- Anatomic reference points (usually the greater or lesser trochanter) for the intraoperative alignment of the instruments (A and B reamers) and the implant. The marks on the reamers correspond to the planned joint center.
- Assessment of the distal bone quality in relation to the distal shape of the BiCONTACT® revision stem and the possibility of applying additional locking screws.
- Assessing the necessary bone reconstruction measures (allogeneic or autogenous bone substance, bone substitutes).

BiCONTACT® – Surgical technique: Revision



Type 4
Medial femur defects

Type 5
Lateral femur defects

Type 6
Circular, segmental
femur defects

Defect classification according to Katthagen

Due to the special situation, preoperative planning can only be a rough guide. The finial decision on the procedure to be carried out will be reached intraoperatively.

Revision interventions following a failed joint replacement operation require detailed knowledge about indications, surgical access, measures to produce bone reconstruction and limits of treatment.

Note:

In situations with only minor bone defects (types 1–3), the BiCONTACT® standard stem, due to its design and length, offers good stability and is, therefore, the preferred implant.

In cases with considerable bone loss and a thinned cortex, or in replacement operations with periprosthetic fractures (types 4–6), using the BiCONTACT® revision stem is indicated.

An intraoperative switch from providing a standard implant to implanting a revision implant is possible.

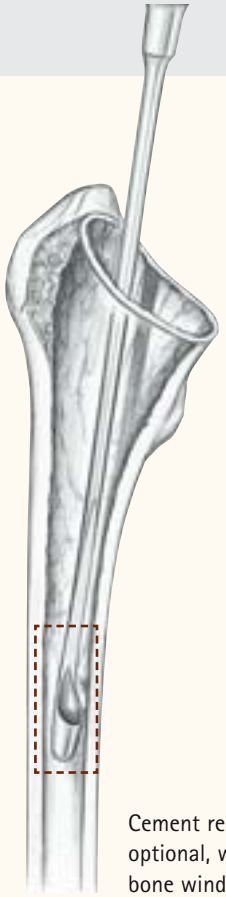
In cases of a loosened prosthesis stem with minor bone losses (types 1–4) and the bone tube is intact, proximal access is recommended for removing the implant and the bone cement.

In cases with major bone loss (types 4–6) and a partly or completely destroyed bone tube, a transfemoral access is a suitable technique.

A bone-preserving technique. When the bone situation is good.

High primary stability through existing bone substance.
The aim: Proximal implant anchoring.
BiCONTACT® standard or revision stem.

Implant removal
from proximal



Cement removal,
optional, with
bone window

The loosened prosthesis stem is removed through proximal access via the existing osteotomy. If the stem is jammed, a special extraction instrument (Endodriver-AW6) can be applied to the prosthesis cone to facilitate the explantation. Any bone cement in the bone is also removed from the proximal access.

Special cement extraction instruments such as drills, chisels, extractors, hooks and sharp spoons, as well as strong forceps, will help to break the cement casing and removing the cement in fragments. The cement must be completely removed.

Following the extraction of implants and bone cement, the sequence of bone preparation measures can vary according to the individual bone situation and the choice of implants.

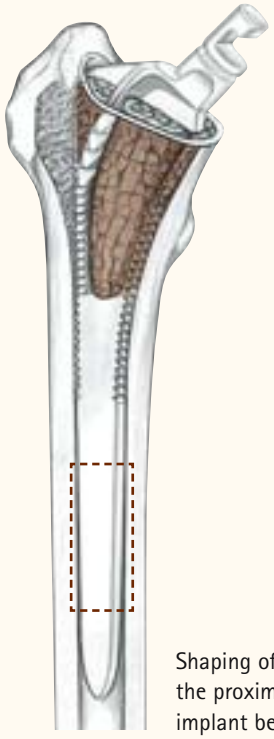
Note:

A ventral bone window may be needed for removing the bone cement or the implant. The position and length are selected in preoperative planning.

Care must be taken that the bone window does not get separated from the soft tissue.

BiCONTACT® Revision – proximal technique, standard stem

Compaction of grafting bone



Shaping of the proximal implant bed

Introducing bone blocks

The proximal defects are filled up with allogenic or autogenous bone material and gradually compacted with the A osteoprofilers. This procedure can be repeated several times.

When using a BiCONTACT® standard stem, this compaction procedure is completed with the B-osteoprofiler. In this, the B-osteoprofiler used last can also be chosen one size smaller than the implant. However, it is essential that in the preceding compaction process the A- and B-osteoprofilers corresponding to the implant size could be introduced into the marrow cavity.

Use the last B-osteoprofiler introduced to check the primary stability achieved. If this stability is found to be insufficient, change to a BiCONTACT® revision stem (surgical technique described from page 28) or to a cemented stem. If a ventral bone window had been prepared for the removal of the prosthesis, take care that the new prosthesis bridges the bone window.

After the implantation of the BiCONTACT® stem, cortico-cancellous bone wedges can provide additional stability. Bone blocks in the region of the trochanter wing will increase the rotational stability of the implant.

Note:

In cases of minor bone defects and where sufficient amounts of intertrochanteric and proximal bone substance are present, we recommend preparation with the standard osteoprofilers.

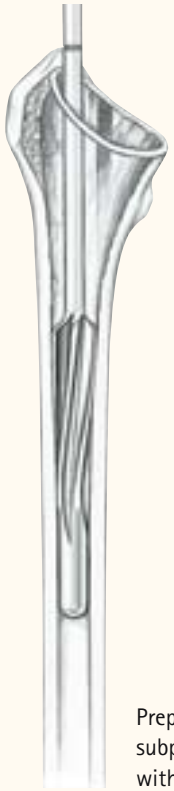
In this procedure, the B osteoprofiler usually indicates the maximum size of the proximal bone bed.

Only if you find an unstable situation with the last B-osteoprofiler the preparation for a BiCONTACT® revision stem is carried out. In this, care must be taken that the distal and subproximal bone beds are not overcut. The size of the A- and B-reamers (see next page) must be chosen according to the last B-osteoprofiler used. In this way, you take account of the limited proximal bone cavity by using the appropriate BiCONTACT® revision prosthesis.

First principle: Primary stability. Distal locking.

An important option for ensuring primary stability:
The method of temporary locking. In the proximal technique,
it is the exception; in the transfemoral technique, it is the rule.

Preparing the distal femoral canal with the A reamers



Preparing the subproximal cone with the B reamer

Implantation of the BiCONTACT® revision prosthesis

For implanting a BiCONTACT® revision stem, the distal implant bed is prepared manually, with the A reamers in ascending size, until a slight cortical contact can be felt. The insertion depth can be checked with reference to the greater trochanter or any other orientation point that was defined preoperatively. The two marking rings on the A reamers correspond to the joint center of the revision stem. The distal ring applies to the short revision stems of 220–250 mm length, the proximal ring to lengths 290 mm and 300 mm.

In the proximal revision technique, the subproximal anchoring is prepared with the B-reamer. The size is selected according to the A-reamer used last. The insertion depth of the B reamer is marked by a ring.

The final preparation of the proximal implant bed is carried out with the BiCONTACT® B-osteoprofilers. The size is selected according to the reamers and the BiCONTACT® revision stem to be implanted.

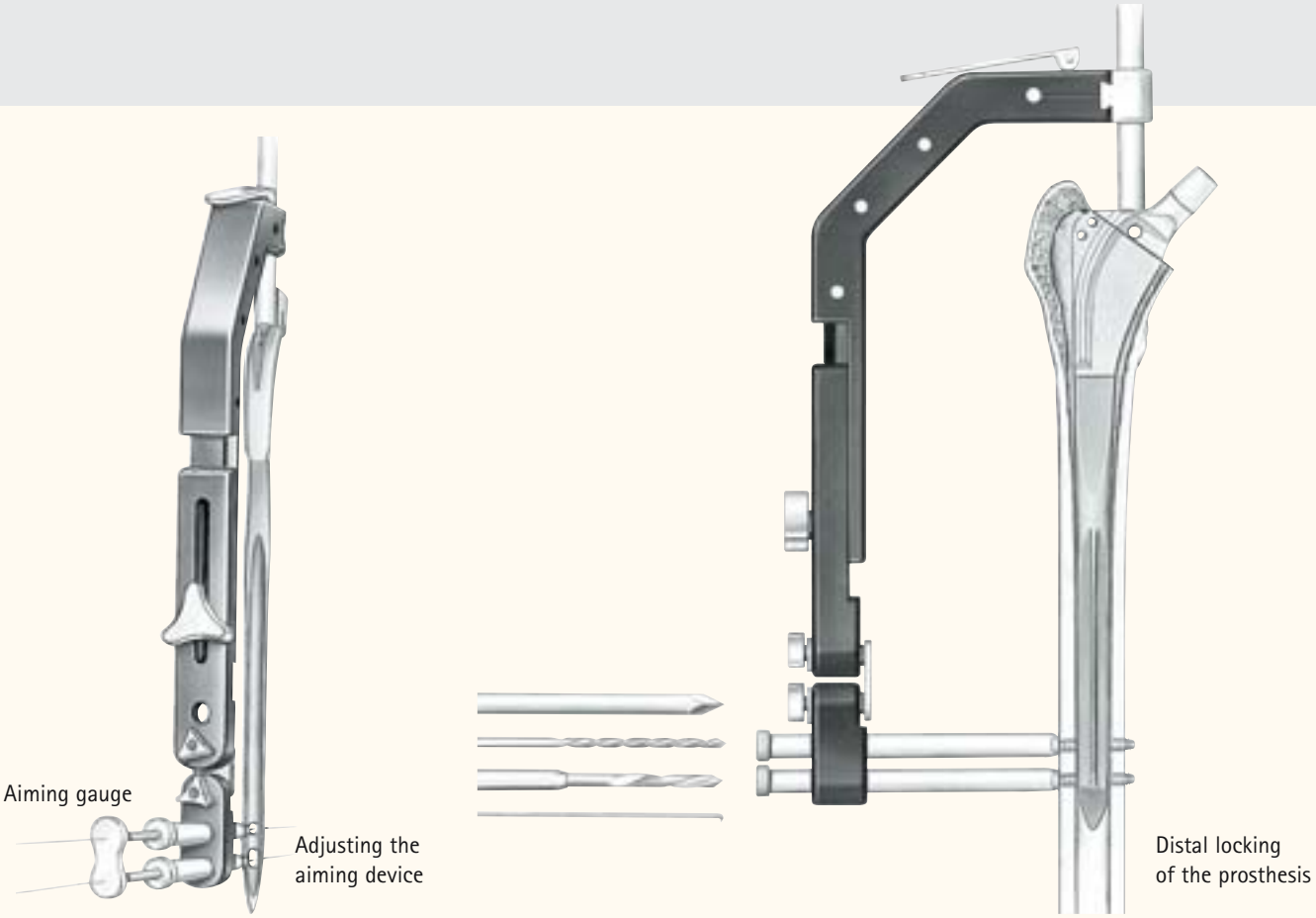
Note:

For the distal femoral canal preparation with the A-reamer, we recommend limiting or determining the proximal prosthesis size with the B-osteo-profilers. Cases of over-cutting or large distal femoral canal may lead to the selection of a prosthesis size that is too large to be inserted into the closed proximal femoral.

When using curved BiCONTACT® revision stems, the distal canal preparation is carried out with common flexible reamers. As the size description of the BiCONTACT® revision stems does not indicate the distal stem diameter, the relevant dimensions are listed in the table below.

BiCONTACT® Revision							
Stem size	11	13	15	17	19	19+	19++
distal diameter	10.0 mm	11.5 mm	13.0 mm	14.5 mm	16.0 mm	17.5 mm	19 mm

BiCONTACT® Revision – proximal technique, revision stem



The choice of the stem size to be used is based on the instrument size used last and the required stem length.

The BiCONTACT® revision stem is connected to the insertion instrument and introduced into the femur.

The proximal revision technique is usually characterized by sufficient primary stability, so that additional distal locking is not required in most cases. If the primary stability is still insufficient, distal locking of the prosthesis is possible.

The distal locking can be achieved either in a freehand way, monitored with an image intensifier, or with a special distal aiming device.

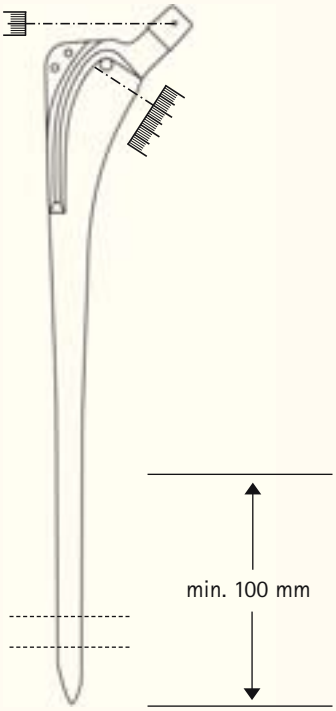
For locking the BiCONTACT® revision prosthesis the screw hole is drilled bicortically with a 3.5-mm drill, while the entry cortex is prepared with a 5-mm drill. The screw length is determined with the appropriate screw measuring instrument. Two self-tapping locking screws are introduced with the screwdriver (SW 4.5).

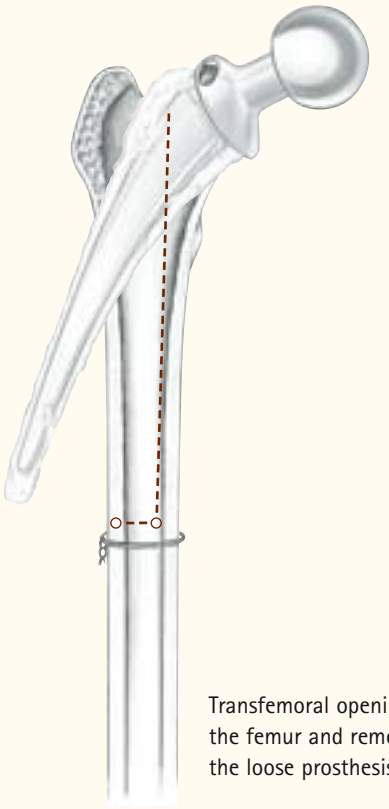
Note:

When performing the screw locking with the aiming device, the aiming arm must be adjusted to the individual prosthesis prior to implanting the stem. To this end, the insertion instrument is attached to the prosthesis and the aiming device is attached. Then it is aligned with the prosthesis hole, by means of the aiming gauge. The screws of the aiming arm are securely tightened from proximal to distal. If the aiming gauge gets braced between the prosthesis and the aiming device, all screws must be loosened and the aiming device has to be re-aligned and fixed again in order to ensure proper function. Prior to implanting the prosthesis shaft, the aiming device is slid from the insertion instrument and put down carefully. After the implantation of the prosthesis, it is installed on the insertion instrument again. The tissue protection sleeves serve as working guides for drilling, measuring and introducing the locking screws. Concerning the removal of the locking screws, see note on page 31.

A bone-reconstruction technique. When the bone situation is poor.

Primary stability not provided by proximal bone substance:
Temporary distal anchoring of the BiCONTACT® revision stem.
Bridging the defect zones and secondary bone reconstruction.





Transfemoral opening of the femur and removing the loose prosthesis

The length of the longitudinal femoral osteotomy is determined in the preoperative planning. As a rule, it corresponds to the length of the loose implant; it has to be chosen such that it extents from the osteotomy ca. 10 cm towards distal. The poorer the bone quality and the more weakly the stem is guided in the femoral canal, the longer it should be.
Two distal holes (ventral and lateral) are drilled distally for limiting the osteotomy. To protect the femoral bone, a cerclage wire is applied distal to the holes.

The lateral osteotomy to the lateral, distal limit hole is performed with an oscillating saw. The two drill holes are connected. The medial osteotomy is done transmuscularly or transosseously with a narrow osteotome. In the transosseous osteotomy, the chisel is introduced through the lateral osteotomy opening and led to the opposite cortex, where the bone is perforated from inside. The osteotomised bone shell remains fully connected to the soft tissue environment, and is opened medially.

To protect the femoral bone distally from the osteotomy, a cerclage wire is applied immediately below the osteotomy. The prosthesis, bone cement, and any granulation tissue that is present are removed and the femoral canal and the osteotomy shell are cleaned.

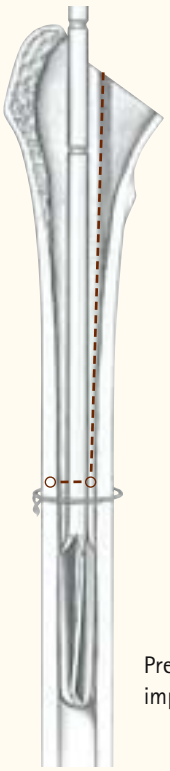
The distal implant bed is manually prepared, step by step, with the A reamers until cortical contact can be felt. The marking on the A reamers corresponds to the intended joint center or, usually, with the tip of the greater trochanter. The proximal marking applies for revision prostheses 290–300 mm long.

Note:

The osteotomised bone shell is weakened significantly. Therefore, it has to be fixed carefully with bone levers; all manipulations at the leg must be carried out with extreme caution.

Because the femur has been opened, the preparation step with the B reamers is unnecessary in the technique with transfemoral access.

BiCONTACT® Revision – transfemoral technique



Preparing the distal implant bed

Inserting the BiCONTACT® revision prosthesis and distal locking screw

Closing the osteotomy and applying the cerclages

The BiCONTACT® revision stem to be used is chosen according to the last A-reamer used and the required stem length. Prior to implantation, the proximal medullary canal may be filled up with bone grafts.

The implant is introduced carefully so that a fracture of the femur is avoided. Since preparation with the B-osteoprofilers is not carried out in the transfemoral technique, it may become necessary to adapt, manually, the proximal bone parts to the BiCONTACT® design.

The position of the prosthesis and of the bone graft is inspected again prior to distal locking and closing the osteotomy. Larger gaps, which can appear because the osteotomy cover touches the implant, are made narrower by adjusting the bone cover or by further filling with bone graft. With the joint reposition completed, the osteotomy is closed with cerclages. The two anchoring holes in the trochanter wing allow an additional fixation on the implant. As a rule, in the transfemoral technique the BiCONTACT® revision stem is locked distally.

Note:

The primary stability is reduced due to the initial situation and to transfemoral access. This has to be taken into consideration at the aftercare stage. The condition of the bone substance grown around/on the implant (usually during a period of 6 to 24 months) must be assessed in regular postoperative checkups.

The objective of a treatment with the locked BiCONTACT® revision stem is to remove the distal locking screws as soon as sufficient bone substance has grown around/on the stem.

Load transmission through the locking screws is only possible for a limited period. As soon as osseous implant stabilization is in place, the screws lose their biomechanical function, i.e. primary stabilization, and may affect the force transmission in the middle and proximal bone structures. The surgeon has to decide if or when their explantation becomes necessary, depending on the individual, initial situation and the progress of the treatment.

Good design. Excellent long term results.

BiCONTACT® results:
Implanted in its present design for more than 15 years.

Many things change, for the good however certain things, should stay the same. For their constancy is one of the excellent qualities that distinguish them from others. The BiCONTACT® prosthesis design for cementless implantation has been in clinical use since 1987, without any modifications. The success of this design for hip endoprosthetics is proven and well-documented. It means reliability and durability. It means, this design gives the patient a new quality of life under normal, everyday activities, and for the surgeon it is the promise of a successful operation. The excellent results achieved with BiCONTACT® speak for themselves.

BiCONTACT® – The Result: Longevity

Results are what matters in hip endoprosthetics. Surgeons are convinced by clinical experience.

BiCONTACT® has been shown to provide stable proximal anchoring in primary implantations. X-ray images show the fit of the implant and the adaptation of the surrounding bone structures.

The results achieved with cementless BiCONTACT® prosthesis design and operational technique, both unchanged since 1987, are convincing.

The BiCONTACT® system was built on these successful principles, leading to the development of more implant components, the latest of which is the BiCONTACT® revision prosthesis.

Results achieved with BiCONTACT® have been published in various specialist periodicals and books. The list of publications is regularly updated and can be found on the B. Braun – Aesculap homepage.

Experiences with BiCONTACT® are regularly presented at conferences and user meetings.

Specialist journals and books in which BiCONTACT® results have been published.

OrthoPilot®. With BiCONTACT® and Plasmacup®.

Navigation in hip replacement:
More security for every operation.

Computer-assisted planning and operation procedures help the surgeon in modern hip replacement. Intelligent instruments support his manual skills. In this way, experience and operating techniques are developed further.

Implanting a hip prosthesis requires manual skill and making the right intraoperative decisions. By using a navigation system, the surgeon gains implantation data, which he can compare to his operative procedure, in all surgeries especially the ones where he encounters some difficulties.

The navigation system allows recognizing what could be done better not after, but during the operation – better in the sense of different, different in the sense of a better intraoperative decision.

For simple operations and more difficult conditions have one thing in common: In both cases, the surgeon strives to provide the best and safest outcome. A successful prosthesis. Fulfilling the expectations of the patients.

BiCONTACT® – Navigation: Strength with OrthoPilot®

Computer-aided implantation of hip implants came after the successful application of computerized navigation systems in knee prosthetics. OrthoPilot® uses the principles of kinematic navigation and intraoperative referencing to optimize the position of cup and stem implants.

OrthoPilot® helps the surgeon with his decision as to what is optimal in each case. Preparing the cup and stem beds in standard, dysplasia and revision cases. Cup position with intraoperative referencing of the pelvic plane. Implanting the stem with controlled antetorsion position and navigation support for finding the relative or absolute head center and positioning of the acetabular implant.

All leg length and offset changes, as well as the axial stem position, are displayed on the real-time monitor.

As a result, OrthoPilot® provides a simulation of the range of motion and the joint stability. With OrthoPilot® hip navigation, this result is prepared during the operation and thus provides real time input for intraoperative decision-making.

OrthoPilot® is the leading navigation system in joint replacement.

BiCONTACT®

A powerful, comprehensive concept. Multiple support.

Modern joint endoprosthetics with BiCONTACT®:
Professional customer service and partnership.

The first step on the prepared way ... New instruments and operation techniques present surgeons and operation room staff with new tasks and challenges. To facilitate the entry into this new era as far as possible, Aesculap offers effective, practical support for your hospital, yourself and the operation room staff involved. Trust springs from an intelligent and forward thinking partnership. This trust is based on good clinical results and professional customer care. Aesculap meets your challenges with our experience and a unequalled service offers.

BiCONTACT® – Service: Partnership with Aesculap

Aesculap supports and accompanies you, at all times, with a multitude of different services. With visits to reference hospitals, to make you familiar with the operation technique. With regular training courses for you and your O.R. staff.
Through the first operation with BiCONTACT®, the surgeon and the O.R. team are accompanied by a competent Aesculap representative. After that, you will be promptly and comprehensively supplied with everything you need. This is guaranteed by our 24-hour implant supply service. Secondly, there is the loan service, which provides you with special instruments in difficult cases. For the patient, we offer an easily comprehensible brochure about the joint disorder, the implants and what to do after the operation – everything to help you with your patient information.

The Aesculap documentation center supports you in recording and evaluating the results of operations and follow-up. This service can help you with scientific questions as well as with routine quality control. The BiCONTACT® user meetings are an important forum, where our customers can share their experiences. And, of course, you can always approach our marketing, product management and development staff with issues of special patient provisions, scientific information or special products. Good clinical results and professional customer service go hand in hand.

AESCULAP AKADEMIE

Aesculap Academy – the forum for sharing specific, theoretical and practical experience and information between physicians, medical technicians and operation room staff.

BiCONTACT®

Instrument sets – BiCONTACT® basic instruments and osteoprofilers

BiCONTACT®
General instruments

Please order separately:	
Femoral osteotomy saw guide	ND003R
Box osteotome	ND760R
Impactor	ND360R
Insertion handle	ND362R
Impactor for prosthesis heads	ND050
Cross pin for osteoprofiler	ND017R
Extraction instrument for prosthesis heads	ND375
Extractor for BiCONTACT® stems	ND383R
Slotted hammer	KH113R
Basket tray 485 x 253 x 56 mm	JF212R

BiCONTACT® S
A-osteoprofiler NG656

comprising:	
BiCONTACT® S, A-osteoprofiler 10	NG660R
BiCONTACT® S, A-osteoprofiler 11	NG661R
BiCONTACT® S, A-osteoprofiler 12	NG662R
BiCONTACT® S, A-osteoprofiler 13	NG663R
BiCONTACT® S, A-osteoprofiler 14	NG664R
BiCONTACT® S, A-osteoprofiler 15	NG665R
BiCONTACT® S, A-osteoprofiler 16	NG666R
BiCONTACT® S, A-osteoprofiler 17	NG667R
BiCONTACT® S, A-osteoprofiler 18	NG668R
Basket tray 76 mm with supports	NG657R

Please order separately:	
BiCONTACT® S, A-osteoprofiler 19	NG669R
BiCONTACT® S, A-osteoprofiler 21	NG671R
Handle (for lateral access)*	FS915R
Handle (for posterior access)*	FS917R

* also suitable for OrthoPilot® THA navigation

BiCONTACT® S
B-osteoprofiler NG676

comprising:	
BiCONTACT® S, B-osteoprofiler 10	NG680R
BiCONTACT® S, B-osteoprofiler 11	NG681R
BiCONTACT® S, B-osteoprofiler 12	NG682R
BiCONTACT® S, B-osteoprofiler 13	NG683R
BiCONTACT® S, B-osteoprofiler 14	NG684R
BiCONTACT® S, B-osteoprofiler 15	NG685R
BiCONTACT® S, B-osteoprofiler 16	NG686R
BiCONTACT® S, B-osteoprofiler 17	NG687R
BiCONTACT® S, B-osteoprofiler 18	NG688R
Basket tray 76 mm with supports	NG677R

Please order separately:	
BiCONTACT® S, B-osteoprofiler 19	NG689R
BiCONTACT® S, B-osteoprofiler 21	NG691R

Trial heads for cone 12 / 14

	22.2 mm	28 mm	32 mm	36 mm
short	–	NG296	NG306	NG326
medium	NG277	NG297	NG307	NG327
long	NG278	NG298	NG308	NG328
x-long	–	NG299	NG309	NG329
xx-long	–	NG300	NG310	–

X-ray templates BiCONTACT®

Please order separately:	
BiCONTACT® S, cementless	ND692
BiCONTACT® S, cemented	ND693
BiCONTACT® S and H, cementless	ND746
BiCONTACT® S and H, cementless	ND747
BiCONTACT® SD, cementless	NF704
BiCONTACT® N, cementless	NG207
BiCONTACT® N, cemented	NG227

Please order separately:	
BiCONTACT® Revision, AP Gr.11-15	NF454
BiCONTACT® Revision, ML Gr.11-15	NF455
BiCONTACT® Revision, AP sz.17-19++	NF456
BiCONTACT® Revision, ML sz.17-19++	NF457
BiCONTACT® Revision, AP L:340/380mm	NF452
BiCONTACT® Revision, ML L:340/380mm	NF453
BiCONTACT® Revision, AP/ML SD series	NF458

Trial heads for cone 12 / 14 for BiCONTACT® H

		28 mm	32 mm	
short		NG186	NG196	
medium		NG187	NG197	
long		NG188	NG198	
x-long		NG189	NG199	
xx-long		NG190	NG200	

BiCONTACT® SD Osteoprofiler NF636

comprising:	
BiCONTACT® SD, A-osteoprofiler 10	NF640R
BiCONTACT® SD, A-osteoprofiler 11	NF641R
BiCONTACT® SD, A-osteoprofiler 12	NF642R
BiCONTACT® SD, A-osteoprofiler 13	NF643R
BiCONTACT® SD, B-osteoprofiler 10	NF650R
BiCONTACT® SD, B-osteoprofiler 11	NF651R
BiCONTACT® SD, B-osteoprofiler 12	NF652R
BiCONTACT® SD, B-osteoprofiler 13	NF653R
Handle (for lateral access)	NG115R
Basket tray 76 mm with supports	NF631R

Please order separately:	
BiCONTACT® SD, A-osteoprofiler 9	NF639R
BiCONTACT® SD, A-osteoprofiler 14	NF644R
BiCONTACT® SD, A-osteoprofiler 15	NF645R
BiCONTACT® SD, A-osteoprofiler 16	NF646R
BiCONTACT® SD, B-osteoprofiler 9	NF649R
BiCONTACT® SD, B-osteoprofiler 14	NF654R
BiCONTACT® SD, B-osteoprofiler 15	NF655R
BiCONTACT® SD, B-osteoprofiler 16	NF656R

Recommended container for general instruments
Aesculap basic container 592 x 285 x 108 mm

Recommended container for NG656 and NG676
Aesculap basic container 592 x 285 x 205 mm

All BICONTACT® basket trays come with identification label JG645B, wrapping cloth JF511 and packing template.

BiCONTACT® N General instruments NG110

comprising:	
Femoral osteotomy template	ND004R
Osteotome	ND760R
Punch instrument	ND360R
Insertion handle	ND363R
Punch for prosthesis heads	ND050
Extractor for BiCONTACT® N stems	ND387R
Preparation drill	ND390R
Puller for prosthesis heads	ND382R
Basekt tray 56 mm with supports	NG111R

Please order separately: Trial heads for cone 8 / 10			
	22.2 mm	28 mm	32 mm
short	NG281	NG301	NG316
medium	NG282	NG302	NG317
long	NG283	NG303	NG318
x-long	–	NG304	NG319
xx-long	–	NG305	NG320

Recommended container for NF636
Aesculap basic container 592 x 285 x 108 mm

Recommended container for NG110 and NG112
Aesculap basic container 592 x 285 x 153 mm

All BICONTACT® basket trays come with identification label JG645B, wrapping cloth JF511 and packing template.

BiCONTACT® N Osteoprofiler NG112

comprising:	
BiCONTACT® N, A-osteoprofiler 9	NG119R
BiCONTACT® N, A-osteoprofiler 10	NG120R
BiCONTACT® N, A-osteoprofiler 11	NG121R
BiCONTACT® N, A-osteoprofiler 12	NG122R
BiCONTACT® N, A-osteoprofiler 13	NG123R
BiCONTACT® N, A-osteoprofiler 14	NG124R
BiCONTACT® N, A-osteoprofiler 15	NG125R
BiCONTACT® N, A-osteoprofiler 16	NG126R
BiCONTACT® N, B-osteoprofiler 9	NG139R
BiCONTACT® N, B-osteoprofiler 10	NG140R
BiCONTACT® N, B-osteoprofiler 11	NG141R
BiCONTACT® N, B-osteoprofiler 12	NG142R
BiCONTACT® N, B-osteoprofiler 13	NG143R
BiCONTACT® N, B-osteoprofiler 14	NG144R
BiCONTACT® N, B-osteoprofiler 15	NG145R
BiCONTACT® N, B-osteoprofiler 16	NG146R
2 handles (lateral access)	NG115R
Basket tray 76 mm with supports	NG113R

Please order separately: Trial heads for osteoprofilers		
	22.2 mm	28 mm
short	NG311	NG331
medium	NG312	NG332
long	NG313	NG333
x-long	–	NG334

Instrument sets – BiCONTACT® revision and cup systems

BiCONTACT® Revision Instruments NF420

comprising:	
Insertion instrument	NF332R
Hexagonal socket key for NF332R	NF334R
Slotted hammer for NF332R	NF275R
Impactor	NF333R
Handle for reamer, Harris	ND145R
Drill, ø 3.5 mm, with AO chuck	KH287R
Drill, ø 5.0 mm, with AO chuck	KH288R
Screw driver, hex 4.5mm	KH322R
Screw measuring instrument	KH295R
Drill guide	LS110R
2 locking screws ø5 x 24mm	KB424T
2 locking screws ø5 x 28mm	KB428T
2 locking screws ø5 x 32mm	KB432T
2 locking screws ø5 x 36mm	KB436T
2 locking screws ø5 x 40mm	KB440T
Basket tray 56 mm with supports	NF419R

Please order separately:	
Flexible Harris chuck	
ø11.5 x 480mm	GE743R
ø13.0 x 480mm	GE746R
ø14.5 x 480mm	GE749R
ø16.0 x 480mm	GE752R
ø17.5 x 480mm	GE755R
ø19.0 x 480mm	GE758R
Guide wire ø3,4mm	GC791S

BiCONTACT® Revision Reamers NF422

comprising:	
BiCONTACT® Revision, A-reamer 13	NF463R
BiCONTACT® Revision, A-reamer 15	NF465R
BiCONTACT® Revision, A-reamer 17	NF467R
BiCONTACT® Revision, A-reamer 19	NF469R
BiCONTACT® Revision, A-reamer 19+	NF472R
BiCONTACT® Revision, A-reamer 19++	NF473R
BiCONTACT® Revision, B-reamer 13	NF433R
BiCONTACT® Revision, B-reamer 15	NF435R
BiCONTACT® Revision, B-reamer 17	NF437R
BiCONTACT® Revision, B-reamer 19	NF439R
BiCONTACT® Revision, B-reamer 19+	NF442R
BiCONTACT® Revision, B-reamer 19++	NF443R
Basket tray 56 mm with supports	NF421R

Please order separately:	
BiCONTACT® Revision, A-reamer 11	NF461R
BiCONTACT® Revision, B-reamer 11	NF431R

BiCONTACT® Revision Aiming device NF510

comprising:	
Aiming arm	NF505P
Insertion instrument	NF504R
Screw measuring gauge	NF514R
2 drilling sleeves, ø 3.5 mm	NF506R
2 drilling sleeves, ø 5.0 mm	NF507R
Trocar	NF508R
Aiming gauge	NF509R
Drill, ø 3.5 mm	NF512R
Drill, ø 5.0 mm	NF513R
Basket tray 56 mm with supports	NF511R

Instruments for Recon ring (no illustration)

Please order separately:	
Insertion instrument	NG338R
Compression cup ø 48 mm	NG048
Compression cup ø 52 mm	NG052
Compression cup ø 58 mm	NG058
Compression cup ø 64 mm	NG064
Cup impactor	ND160R
Instrument shaft for Compression cup and impactor	ND170R
Bending lever	LS207R
Joint screwdriver	NF285R
Screw holding forceps	NF287R
Screw measuring instrument	NF269R
Drill ø 3.2 mm with AO chuck	GC319R
Basket tray 485 x 253 x 56mm	JF212R

Recommended container for NF420, NF422 and NF510
Aesculap basic container 592 x 285 x 205 mm

Recommended container for NF270, NF360 or NG034, NG360
Aesculap basic container 592 x 285 x 153 mm

All BICONTACT® and Plasmacup® basket trays come with identification label JG645B, wrapping cloth JF511 and packing template.

Plasmacup® Instruments NF270

comprising:	
Insertion instrument	NF284R
Aiming device 45° / 12.5°	NF277R
Slotted hammer 12 mm	NF275R
Drilling guide ø 3.2 mm	NF278R
Drilling guide ø 4.0 mm	NF279R
Flexible drill ø 3.2 mm, 32 mm	NF280R
Flexible drill ø 3.2 mm, 44 mm	NF281R
Flexible drill ø 4.0 mm, 32 mm	NF282R
Screw measuring instrument	NF289R
Joint screwdriver	NF285R
Screw holding forceps	NF287R
Shaft for polyamide attachments	ND170R
Polyamide head ø 32 mm	ND172
Polyamide head ø 28 mm	ND174
Basket tray 56 mm with supports	NF271R

Please order separately:	
T-handle for NF284R	NF283R
Aiming device posterior approach	NF292R
Ratchet handle	FW509R
Screwdriver for FW509R	NF263R
Cardan-jointed screwdriver f. FW509	NF265R
Polyamide head ø 22.2 mm	ND178

Plasmacup® Additional instruments NG360

comprising:	
Trial liner, 44/46, ø 28mm, sym.	NG391
Trial liner, 48/50, ø 28mm, sym.	NG392
Trial liner, 52/54, ø 28mm, sym.	NG393
Trial liner, 56/58, ø 28mm, sym.	NG394
Trial liner, 60/62, ø 28mm, sym.	NG395
Removal forceps f. PE inlays	NG430R
Impulse remover f. ceram. liners 44/46	NG421R
Impulse remover f. ceram. liners 48/50	NG422R
Impulse remover f. ceram. liners 52/54	NG423R
Impulse remover f. ceram. liners 56/58	NG424R
Impulse remover f. ceram. liners 60/62	NG425R
Center punch f. remov. ceram	ND401R
Basket tray 56 mm with supports	NG361R

Please order separately:	
Impuls remover for ceram. liners 64/68	NG426R
Removal forceps for trial liners	NG437R

Plasmacup® Trial cups NG034

comprising:	
Plasmacup®, trial cup 44 mm	NG444R
Plasmacup®, trial cup 46 mm	NG446R
Plasmacup®, trial cup 48 mm	NG448R
Plasmacup®, trial cup 50 mm	NG450R
Plasmacup®, trial cup 52 mm	NG452R
Plasmacup®, trial cup 54 mm	NG454R
Plasmacup®, trial cup 56 mm	NG456R
Plasmacup®, trial cup 58 mm	NG458R
Plasmacup®, trial cup 60 mm	NG460R
Plasmacup®, trial cup 62 mm	NG462R
Plasmacup®, trial cup 64 mm	NG464R
Plasmacup®, trial cup 66 mm	NG466R
Plasmacup®, trial cup 68 mm	NG468R
Basket tray 56 mm with supports	NG035R

Please order separately:	
Plasmacup®, trial cup 40 mm	NG440R
Plasmacup®, trial cup 42 mm	NG442R

X-ray templates Plasmacup®					
Standard symmetrical		with shoulder		asymmetrical	
size 40-52	NG400	size 44-54	NG418	size 40-52	NG403
size 54-62	NG401	size 56-62	NG419	size 54-62	NG404
size 64-68	NG402	size 64-68	NG420		

Trial cup inserts	ø 22.2 mm		ø 28 mm			ø 32 mm			ø 36 mm
	Standard	with shoulder	Standard	with shoulder	asymmetrical	Standard	with shoulder	asymmetrical	Standard
40/42	–	NG600	–	–	–	–	–	–	–
44/46	NG371	NG601	NG391*	NG641	NG491	–	–	–	–
48/50	NG372	NG602	NG392*	NG642	NG492	NG502	–	–	–
52/54	NG373	NG603	NG393*	NG643	NG493	NG503	NG513	NG573	–
56/58	NG374	NG604	NG394*	NG644	NG494	NG504	NG514	NG574	NG509
60/62	NG375	NG605	NG395*	NG645	NG495	NG505	NG515	NG575	NG510
64-68	NG376	NG606	NG396	NG646	NG496	NG506	NG516	NG576	NG511

Instrument sets – trial cups

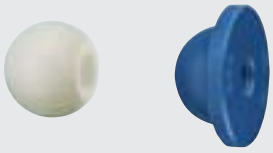
Basket tray for trial cups NG031

Please order separately:	
Trial cups for cemented PE-cups	
Plasmacup® trial cup 42 mm	NF902
Plasmacup® trial cup 44 mm	NF904
Plasmacup® trial cup 46 mm	NF906
Plasmacup® trial cup 48 mm	NF908
Plasmacup® trial cup 50 mm	NF910
Plasmacup® trial cup 52 mm	NF912
Plasmacup® trial cup 54 mm	NF914
Plasmacup® trial cup 56 mm	NF916
Plasmacup® trial cup 58 mm	NF918
Insertion instrument	ND170R

Please order separately:	
Trial cups for Bipolar Cup	
Trial cup 42 mm	ND912
Trial cup 43 mm	ND913
Trial cup 44 mm	ND914
Trial cup 45 mm	ND915
Trial cup 46 mm	ND916
Trial cup 47 mm	ND917
Trial cup 48 mm	ND918
Trial cup 49 mm	ND919
Trial cup 50 mm	ND920
Trial cup 51 mm	ND921
Trial cup 52 mm	ND922
Trial cup 53 mm	ND923
Trial cup 54 mm	ND924
Trial cup 55 mm	ND925
Insertion instrument	ND170R

Bipolar trial cups 28 mm NF760

comprising:	
Trial Bipolar Cup inner diameter 28 mm	
43 mm trial Bipolar Cup, 28 mm	NF743
44 mm trial Bipolar Cup, 28 mm	NF744
45 mm trial Bipolar Cup, 28 mm	NF745
46 mm trial Bipolar Cup, 28 mm	NF746
47 mm trial Bipolar Cup, 28 mm	NF747
48 mm trial Bipolar Cup, 28 mm	NF748
49 mm trial Bipolar Cup, 28 mm	NF749
50 mm trial Bipolar Cup, 28 mm	NF750
51 mm trial Bipolar Cup, 28 mm	NF751
52 mm trial Bipolar Cup, 28 mm	NF752
53 mm trial Bipolar Cup, 28 mm	NF753
54 mm trial Bipolar Cup, 28 mm	NF754
55 mm trial Bipolar Cup, 28 mm	NF755
Insertion instrument, straight	NF770R
Insertion instrument, curved	NF771R
Forcepts to remove inner ring	ND930
Basket tray 56 mm with supports	NF761R



Please order separately:	
Pressurizer heads	
ø 22,2 mm	ND178
ø 28 mm	ND174
ø 32 mm	ND172
Pressurizer heads with rim	
ø 22,2 mm	NF130
ø 28 mm	NF131
ø 32 mm	NF132
Insertion instrument	ND170R

Note:

The previous acetubulum reamers are only delivered as replacements

Acetabulum reamers			
ø 40 mm	NG540R	ø 60 mm	NG560R
ø 42 mm	NG542R	ø 62 mm	NG562R
ø 44 mm	NG544R	ø 64 mm	NG564R
ø 46 mm	NG546R	ø 66 mm	NG566R
ø 48 mm	NG548R	ø 68 mm	NG568R
ø 50 mm	NG550R		
ø 52 mm	NG552R		
ø 54 mm	NG554R		
ø 56 mm	NG556R		
ø 58 mm	NG558R		

Reamer shanks ø 40–48 mm	
Harris	NG621R
AO	NG623R
triangular	NG627R
Hudson	NG629R
Reamer shanks ø 50–68 mm	
Harris	NG631R
AO	NG633R
triangular	NG637R
Hudson	NG639R
sleeve	ND429

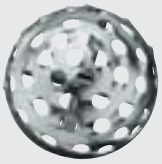
Acetabulum reamers

NF932R
Storage tray for 13 acetabulum reamers
Aesculap basket tray 485 x 253 x 76 mm
with supports for:
13 reamers (e. g. 44 to 68 mm)
2 reamer shanks FS959R or FS960R or FS961R
standard reamer sleeve for FS974
OrthoPilot® reamer sleeve FS939
curved reamer shank NF935R or NF936R
or NF937R

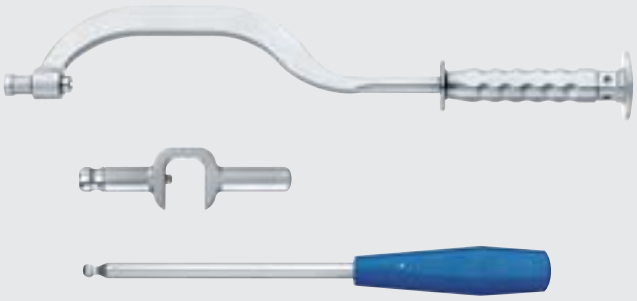
FS939 or FS974

Please order separately:	
OrthoPilot® standard reamer shank ZIMMER	FS959R
OrthoPilot® standard reamer shank HARRIS	FS960R
OrthoPilot® standard reamer shank AO	FS961R
OrthoPilot® sleeve for FS959R to FS961R	FS939
Standard sleeve for FS959R to FS961R	FS974
Curved reamer shank ZIMMER	NF935R
Curved reamer shank HARRIS	NF936R
Curved reamer shank AO	NF937R

Standard full profile reamer



Please order separately:	
	Standard
Acetabulum reamer, ø 38 mm	NF938R
Acetabulum reamer, ø 40 mm	NF940R
Acetabulum reamer, ø 42 mm	NF942R
Acetabulum reamer, ø 44 mm	NF944R
Acetabulum reamer, ø 46 mm	NF946R
Acetabulum reamer, ø 48 mm	NF948R
Acetabulum reamer, ø 50 mm	NF950R
Acetabulum reamer, ø 52 mm	NF952R
Acetabulum reamer, ø 54 mm	NF954R
Acetabulum reamer, ø 56 mm	NF956R
Acetabulum reamer, ø 58 mm	NF958R
Acetabulum reamer, ø 60 mm	NF960R
Acetabulum reamer, ø 62 mm	NF962R
Acetabulum reamer, ø 64 mm	NF964R
Acetabulum reamer, ø 66 mm	NF966R
Acetabulum reamer, ø 68 mm	NF968R



MIOS Minimally Invasive Orthopaedic Solutions

Please order separately:	
Curved Plasmacup® impactor	FS947R
Hexagonal ball screw driver 8 mm for FS947R	NF371R
Optional T-handle for FS947R	FS948R

Implants – BiCONTACT® prosthesis stems

BiCONTACT® S and H

cementless		
	BiCONTACT® S	BiCONTACT® H
10	NK510T	NK110T
11	NK511T	NK111T
12	NK512T	NK112T
13	NK513T	NK113T
14	NK514T	NK114T
15	NK515T	NK115T
16	NK516T	NK116T
17	NK517T	NK117T
18	NK518T	NK118T
19	NK519T	NK119T
21	NK521T	NK121T

ISOTAN®F with Plasmapore®

cemented	
	BiCONTACT® S
10	NK610K
12	NK612K
14	NK614K
16	NK616K
18	NK618K
	BiCONTACT® H
10	NK310K
12	NK312K
14	NK314K
16	NK316K
18	NK318K

ISODUR®F

BiCONTACT® SD

cementless	
9	NK709T*
10	NK710T*
11	NK711T
12	NK712T
13	NK713T
14	NK714T
15	NK715T
16	NK716T

ISOTAN®F with Plasmapore®

BiCONTACT® N

cementless	
9	NJ009T
10	NJ010T
11	NJ011T
12	NJ012T
13	NJ013T
14	NJ014T
15	NJ015T
16	NJ016T

ISOTAN®F with Plasmapore®

cemented	
8	NJ028K
9	NJ029K
10	NJ030K
11	NJ031K
12	NJ032K
13	NJ033K
14	NJ034K

ISODUR®F

The BiCONTACT® S hip stems have a 135° CCD angle and a linear progressing offset from 39.1 mm (size 10) to 50.1 mm (size 21). BiCONTACT® H implants (high offset) have an increased offset of 6 mm compared with BiCONTACT® S and a reduced CCD angle of 128°.

*Notice weight limitation for the patient and instructions for use for NK709T, NK710T and NK210T.

Centraliser

7 mm	NK077
8 mm	NK088
9 mm	NK089
10 mm	NK090
11 mm	NK091
12 mm	NK092
13 mm	NK093
14 mm	NK094
16 mm	NK096

Recommended Centralizers for BiCONTACT®		
BiCONTACT® S	BiCONTACT® H	BiCONTACT® N
–	–	NJ028K
NK610K	NK310K	NJ029K
–	–	NJ030K
NK612K	NK312K	NJ031K
–	–	NJ032K
NK614K	NK314K	NJ033K
–	–	NJ034K
NK616K	NK316K	–
NK618K	NK318K	–

PMMA

Note:
The modular centralisers can be combined with all cemented BiCONTACT® stems from size 8.

Imset Plug

8 mm	NK908
10 mm	NK910
12 mm	NK912
14 mm	NK914
16 mm	NK916
18 mm	NK918

Materials composition:
50% gelatin (from pigs), 30% glycerin, 20% water, 2‰ methylparahydroxy-benzonate

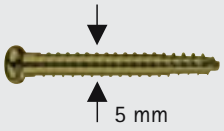
BiCONTACT® Revision

	220 – 250 mm straight	290 – 300 mm straight	290 – 300 mm right	290 – 300 mm left	distal diameter
11 SD	NK210T*	–	–	–	10.0 mm
11	NK211T	–	–	–	10.0 mm
13 SD	NK212T	–	–	–	11.5 mm
13	NK213T	–	–	–	11.5 mm
15	NK215T	NK235T	NK275T	NK375T	13.0 mm
17	NK217T	NK237T	NK277T	NK377T	14.5 mm
19	NK219T	NK239T	NK279T	NK379T	16.0 mm
19+	–	NK242T	NK282T	NK382T	17.5 mm
19++		NK243T	NK283T	NK383T	19.0 mm

	340 mm right	340 mm left	380 mm right	380 mm left	
17	NK224T	NK334T	NK225T	NK335T	14.5 mm
19	NK226T	NK336T	NK227T	NK337T	16.0 mm
19+	NK228T	NK338T	NK229T	NK339T	17.5 mm
19++	NK230T	NK340T	NK231T	NK341T	19.0 mm

ISOTAN®$_F$ with Plasmapore®

BiCONTACT® Revision locking screws



Length 24 mm	28 mm	32 mm	36 mm	40 mm	44 mm	48 mm	52 mm	56 mm	60 mm
KB424T	KB428T	KB432T	KB436T	KB440T	KB444T	KB448T	KB452T	KB456T	KB460T

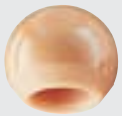
ISOTAN®$_F$

Implant materials:

ISOTAN®$_F$	Titanium forged alloy (Ti6Al4V / ISO 5832-3)
ISOTAN®$_P$	Pure titanium (Ti / ISO 5832-2)
Plasmapore®	Pure titanium (Ti / ISO 5832-2)
ISODUR®$_F$	Cobalt-chromium forged alloy (CoCr29Mo / ISO 5832-12)
ISODUR®$_S$	Implant steel alloy (ISO 5832-1)
Biolox® forte	Aluminium oxide ceramic (Al_2O_3 / ISO 6474)
Biolox® delta	Aluminium oxide matrix ceramic Al_2O_3
UHMWPE	Ultra high molecular weight polyethylene (ISO 5834-2)

Implants – head components

Ceramic heads



12/14

	28 mm	32 mm
short	NK460	NK560
medium	NK461	NK561
long	NK462	NK562

BIOLOX® forte

12/14

	28 mm	32 mm
short	–	NK560D
medium	–	NK561D
long	–	NK562D
x-long	–	NK563D

BIOLOX® delta

Metal heads

12/14

	22.2 mm	28 mm	32 mm
short	–	NK429K	NK529K
medium	NK330K	NK430K	NK530K
long	NK331K	NK431K	NK531K
x-long	–	NK432K	NK532K
xx-long	–	NK433K	NK533K

ISODUR®F

Ceramic heads

8/10

	22.2 mm	28 mm	32 mm
short	NJ081	NJ101	NJ106
medium	NJ082	NJ102	NJ107
long	–	NJ103	NJ108

BIOLOX® forte

Metal heads

8/10

	22.2 mm	28 mm	32 mm
short	NJ111K	NJ131K	NJ126K
medium	NJ112K	NJ132K	NJ127K
long	NJ113K	NJ133K	NJ128K
x-long	–	NJ134K	NJ129K
xx-long	–	NJ135K	NJ130K

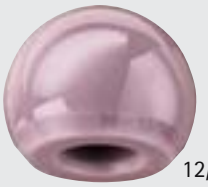
ISODUR®F

	28 mm for the cones 8/10	32 mm/36 mm and 12/14
short	- 3,5 mm	- 4,0 mm
medium	± 0 mm	± 0 mm
long	+ 3,5 mm	+ 4,0 mm
x-long	+ 7,0 mm	+ 8,0 mm
xx-long	+ 10,5 mm	+ 12,0 mm

	22.2 mm cone 8/10	22.2 mm cone 12/14
short	- 3,5 mm	–
medium	± 0 mm	± 0 mm
long	+ 3,5 mm	+ 4,0 mm

Relative values for modular head necklength dependant from headdiameter and cone

Ceramic heads 36 mm



12/14

	36 mm
short	NK650D
medium	NK651D
long	NK652D
x-long	NK653D

BIOLOX® delta

BIOLOX® Option heads

12/14

	28 mm	32 mm	36 mm
short	NK435	NK535	NK635
medium	NK436	NK536	NK636
long	NK437	NK537	NK637
x-long	NK438	NK538	NK638

BIOLOX® delta with sleeve Ti6Al4V

Unipolar – heads

12/14

42 mm	NK542K
44 mm	NK544K
46 mm	NK546K
48 mm	NK548K
50 mm	NK550K
52 mm	NK552K
54 mm	NK554K

ISODUR®F

Bipolar – heads

	22.2 mm	28 mm
39 mm	NK019S	–
40 mm	NK020S	–
41 mm	NK021S	–
42 mm	NK022S	–
43 mm	NK023S	NK043S
44 mm	NK024S	NK044S
45 mm	NK025S	NK045S
46 mm	NK026S	NK046S
47 mm	NK027S	NK047S
48 mm	NK028S	NK048S
49 mm	NK029S	NK049S
50 mm	NK030S	NK050S
51 mm	NK031S	NK051S
52 mm	NK032S	NK052S
53 mm	NK033S	NK053S
54 mm	NK034S	NK054S
55 mm	NK035S	NK055S

ISODUR®S and UHMWPE

Implants – cup components

Plasmacup® SC

40 mm	NH040T
42 mm	NH042T
44 mm	NH044T
46 mm	NH046T
48 mm	NH048T
50 mm	NH050T
52 mm	NH052T
54 mm	NH054T
56 mm	NH056T
58 mm	NH058T
60 mm	NH060T
62 mm	NH062T
64 mm	NH064T
66 mm	NH066T
68 mm	NH068T

ISOTAN®F

Plasmacup® NSC

40 mm	NH340T
42 mm	NH342T
44 mm	NH344T
46 mm	NH346T
48 mm	NH348T
50 mm	NH350T
52 mm	NH352T
54 mm	NH354T
56 mm	NH356T
58 mm	NH358T
60 mm	NH360T
62 mm	NH362T
64 mm	NH364T
66 mm	NH366T
68 mm	NH368T

ISOTAN®F

Plasmacup® MSC

40 mm	NH140T
42 mm	NH142T
44 mm	NH144T
46 mm	NH146T
48 mm	NH148T
50 mm	NH150T
52 mm	NH152T
54 mm	NH154T
56 mm	NH156T
58 mm	NH158T
60 mm	NH160T
62 mm	NH162T
64 mm	NH164T
66 mm	NH166T
68 mm	NH168T

ISOTAN®F

Screw socket SC

44 mm	NH444T
46 mm	NH446T
48 mm	NH448T
50 mm	NH450T
52 mm	NH452T
54 mm	NH454T
56 mm	NH456T
58 mm	NH458T
60 mm	NH460T
64 mm	NH464T
68 mm	NH468T

ISOTAN®F

Polyethylene – inserts

	symmetrical			with shoulder			asymmetrical	
	Ø 22.2 mm	Ø 28 mm	Ø 32 mm	Ø 22.2 mm	Ø 28 mm	Ø 32 mm	Ø 28 mm	Ø 32 mm
40 mm 42 mm	NH170	–	–	NH300	–	–	–	–
44 mm 46 mm	NH171	NH191	–	NH301	NH401	–	NH471	–
48 mm 50 mm	NH172	NH192	NH202	NH302	NH402	–	NH472	–
52 mm 54 mm	NH173	NH193	NH203	NH303	NH403	NH413	NH473	NH323
56 mm 58 mm	NH174	NH194	NH204	NH304	NH404	NH414	NH474	NH324
60 mm 62 mm	NH175	NH195	NH205	NH305	NH405	NH415	NH475	NH325
64 mm 66 mm 68 mm	NH176	NH196	NH206	NH306	NH406	NH416	NH476	NH326

UHMWPE

Ceramic – inserts

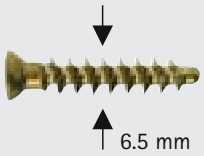
	symmetrical		
	Ø 28 mm	Ø 32 mm	Ø 32 mm
44 mm 46 mm	NH091	–	–
48 mm 50 mm	–	NH102	NH102D
52 mm 54 mm	–	NH103	NH103D
56 mm 58 mm	–	NH104	NH104D
60 mm 62 mm	–	NH105	NH105D
64 mm 66 mm 68 mm	–	NH106	NH106D

BIOLOX® forte | BIOLOX® delta

	symmetrical		Ø 36 mm
56 mm 58 mm	–	–	NH109D
60 mm 62 mm	–	–	NH110D
64 mm 66 mm 68 mm	–	–	NH111D

BIOLOX® delta

Anchoring screws
for Plasmacup® and Recon Ring



16 mm	NA766T	44 mm	NA794T
20 mm	NA770T	48 mm	NA798T
24 mm	NA774T	52 mm	NA802T
28 mm	NA778T	56 mm	NA806T
32 mm	NA782T	60 mm	NA810T
36 mm	NA786T	64 mm	NA814T
40 mm	NA790T	68 mm	NA818T

ISOTAN® F

Recon Ring

	right	left	recommended PE cup
52 (48)	NH212T	NH222T	Ø 46 mm
58 (54)	NH233T	NH243T	Ø 52 mm
64 (60)	NH254T	NH264T	Ø 58 mm

ISOTAN® P

cemented PE cups
Low profile / standard

	22.2 mm	28 mm	32 mm
40 mm	NK810	–	–
42 mm	NK812	NK842	–
44 mm	NK814	NK844	–
46 mm	NK816	NK846	NK946
48 mm	NK818	NK848	NK948
50 mm	NK820	NK850	NK950
52 mm	NK822	NK852	NK952
54 mm	NK824	NK854	NK954
56 mm	NK826	NK856	NK956
58 mm	NK828	NK858	NK958
60 mm	–	NK870	–
62 mm	–	NK872	–
64 mm	–	NK874	–

UHMWPE

cemented PE cups
Full profile / Isofar®

	22.2 mm	28 mm	28 mm with snap effect	32 mm	32 mm with snap effect
40 mm	NH900	–	–	–	–
42 mm	NH902	–	–	–	–
44 mm	NH904	–	–	–	–
46 mm	NH906	NH946	NH947	–	–
48 mm	NH908	NH948	NH949	NH968	NH969
50 mm	NH910	NH950	NH951	NH970	NH971
52 mm	NH912	NH952	NH953	NH972	–
54 mm	NH914	NH954	NH955	NH974	–
56 mm	NH916	NH956	NH957	NH976	–
58 mm	NH918	NH958	NH959	NH978	–
60 mm	NH920	NH960	NH961	NH980	–
62 mm	NH922	NH962	NH963	NH982	–

UHMWPE

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