Aesculap Orthopaedics

Plasmacup®

Cementless Acetabular Cup System

B BRAUN
SHARING EXPERTISE

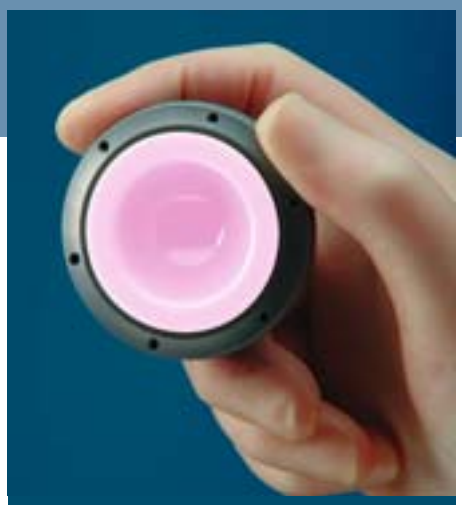
Content

Plasmacup® system

The Plasmacup® system, which has proven itself successful in clinical practice since 1992, based on three essential elements:

Plasmapore®

- Microporous Plasmapore® titanium coating for excellent primary and secondary stability



Plasmacup®

- Extensive experience with the Biolox® ceramic-ceramic THA articulation, in Biolox® forte since 1997 and in Biolox® delta since 2005.

OrthoPilot®

- The world's leading navigation technology in hip arthroplasty

Plasmacup® implants

Plasmacup® SC

The Plasmacup® SC standard implant features three holes for optional fixation with 6.5 mm screws to augment the Plasmapore® press-fit fixation.

Plasmacup® NSC

Plasmacup® NSC has no screw holes. For Plasmapore® coating with press-fit only fixation.

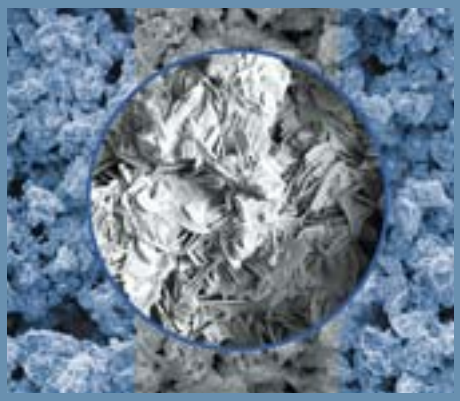
Plasmacup® MSC

Plasmacup® MSC offers additional cranial and caudal screw positions, for application in cup revision or under other difficult fixation conditions.

Plasmapore® surface

Plasmapore®

Primary stability



Plasmapore® µ-CaP

Plasmapore® coated implants have been used by Aesculap since 1986. In a vacuum coating process, pure titanium powder is applied to the surface of cementless implants, to form a 0.35 mm thick layer with up to 40% microporosity.

The pore size of the Plasmapore® coating ranges between 50 and 200 µm to allow direct bone apposition.

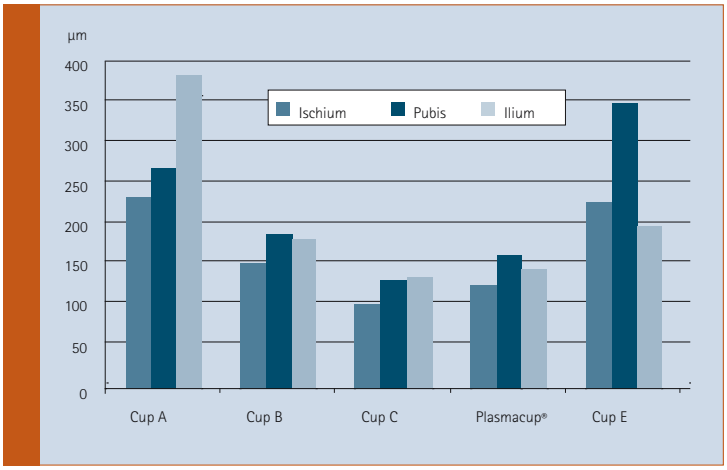
The rough surface of the Plasmapore® structure supports a more stable primary fixation of the implants than other implant surface types. Stability measurements demonstrate the superior primary stability achieved with Plasmapore® compared with other implant surfaces.

The newly developed Plasmapore® µ-CaP coating uses calcium phosphate as a coating material.

A 20 µm layer of high-purity dicalcium phosphate dihydrate (DCPD) is electrochemically applied to the Plasmapore® coating. The thin µ-CaP coating accelerates the formation of bone material at the implant surface and dissolves, within 8 to 12 weeks, without the involvement of macrophages.

The Plasmacup® SC implants are available with Plasmapore® or Plasmapore® µ-CaP surfaces.

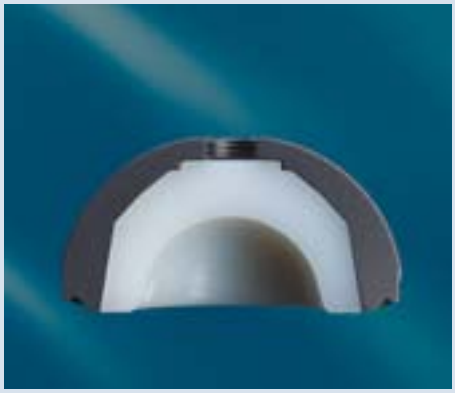
Further detailed information on Plasmapore® µ-CaP can be found in the Aesculap brochure 051002.



Primary stability of various press-fit cups in biomechanical experiments

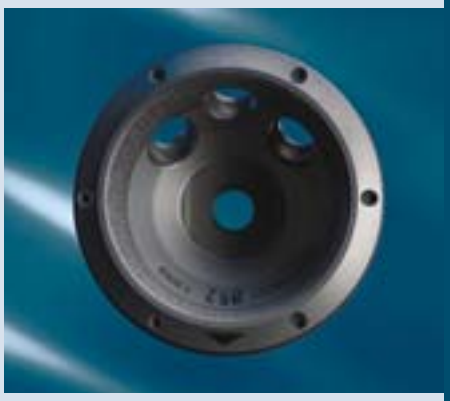
Pitto RP, Bohner J, Hofmeister V.
Factors affecting the primary stability of acetabular components. An in vitro study
Biomed Tech (Berl). 1997 Dec; 42 (12): 363-8

Plasmacup® design



Design

Stability



Inner surface

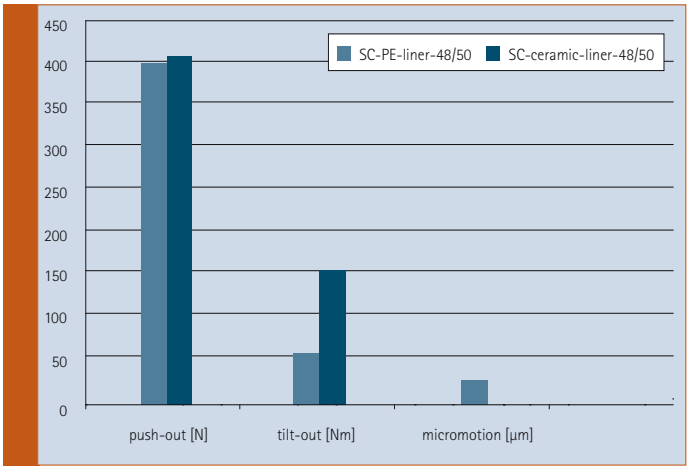
The Plasmacup® is characterized by good press-fit stability and safe attachment of modular polyethylene or ceramic liners.

The external shape of Plasmacup® is hemispherical with a slightly flattened apex. With standard liners the center of rotation is located at the exact center of the sphere. Plasmacup® is suitable for either polyethylene (PE) or ceramic cup liners.

The Plasmacup® liners are attached by a press-fit cone with a large surface area and, in case of the PE liners, throughfull contact with the base of the cup. In this way, both polyethylene and ceramic liners are safely fixed. The drill holes are located in the cranial region of the cup, outside the conical attachment surface. The rough titanium inner surface reduces relative movements to only a few microns, which prevents the formation of abrasion particles on the back side of the liner.

The conical fixation surface of the Plasmacup® polyethylene liners also forms a seal against the migration of polyethylene particles from the articulating joint, and thus reduces the risk of an osteolysis adjacent to the screw holes.

The polyethylene liners are strongest when the load is directed cranially. In the primary load area, Plasmacup® polyethylene implants are at least 6 mm thick. The fixation is highly stable against tilting and rotation forces in vivo.



Overview of the most important data regarding fixation, for Plasmacup® PE and Biolox® liners

Blömer W.
Design aspects of modular inlay fixation
Hip International 1997, Vol. 7, No. 3:110-120

Plasmacup® articulation

System SC

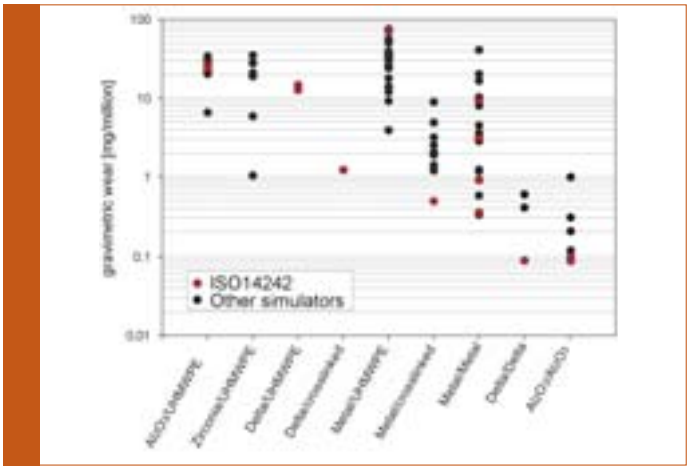
Polyethylene

Biolox® forte

Plasmacup® implants can be implanted with polyethylene or Biolox® ceramic liners. Implants with ceramic liners are marked with the letters SC (System Ceramic).

The polyethylene used by Aesculap conforms to established standards and long-term clinical experience. The implants are manufactured from high density PE plates, using CNC technology. The material is sterilized by radiation in a nitrogen atmosphere, a process that has been established in Europe since the mid-eighties.

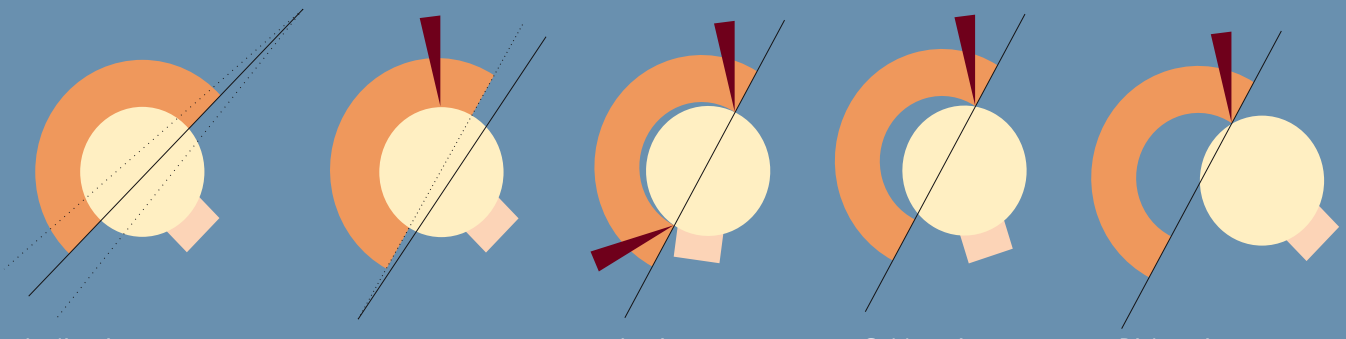
Modern packaging materials protect the polyethylene implants against oxygen during and after sterilization. In-vivo wear of the Plasmacup® polyethylene liners with a ceramic 28 mm head is 0.1 mm per year, which is below the threshold that would cause osteolysis in terms of the number of the PE particles. Higher wear can occur with metal heads, by third-body wear, through incorrect cup positioning or as a result of implant loosening.
Implantation of ceramic Plasmacup® liners made with Biolox® reduces wear in the joint to a few µm per year. This implant, correctly positioned and with stable fixation, is widely used in the treatment of young patients. Plasmacup® is one of the leading implant systems with Biolox® ceramic liners.



ISO 14242 hip simulator wear maesurements and data referring to other studies

Kaddick C.
Results of hip simulator testing with various wear couples
in J.P. Garino, G. Willmann (Editors) Bioceramics in joint arthroplasty
Thieme Stuttgart 2002:16-20

Biolox® ceramic-ceramic THA



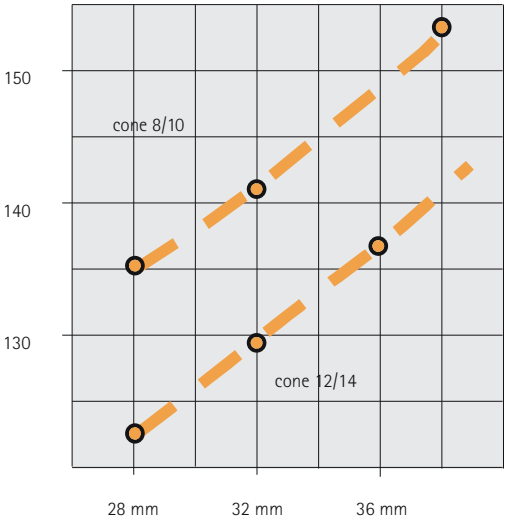
Plasmacup® SC was specially designed for the use of ceramic Biolox® liners. The conical inner shape of Plasmacup® is also used for attaching polyethylene liners, which means that the surgeon is always free to choose the bearing material that is best for the patient.

28 mm Biolox® liners are available for Plasmacup® implants from size 44 mm, 32 mm Biolox® liners for implants from size 48 mm and 36 mm Biolox® liners for Plasmacup® SC implants from size 56 mm.

Range of motion and dislocation stability of the hip implant depend on the head diameter and the trunnion size of the prosthesis. For the ceramic-ceramic bearing surfaces, Aesculap recommends using 32 mm and 36 mm heads. Additionally, stems with 8/10 trunnion are available, which enhances the implant range of motion even more, up to 150 degrees with a 36 mm head.

Since the design of the ceramic-ceramic THA articulation does not provide anti-dislocation elements, any tendency towards subluxation or dislocation of the joint constitutes a contraindication for this articulating surface.

The implantation of ceramic liners is also contraindicated in cases of a socket position of more than 55° inclination, retroversion or excessive anteversion of more than 25°. Such implant situations can lead to excessive load on the articular surface of the prosthesis head and on the rim of the cup liner. This load cannot be corrected, even through implanting a larger head.

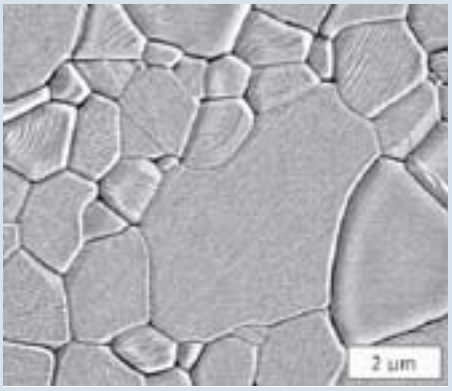


Hip range of motion with different head diameters and prosthesis cone sizes.

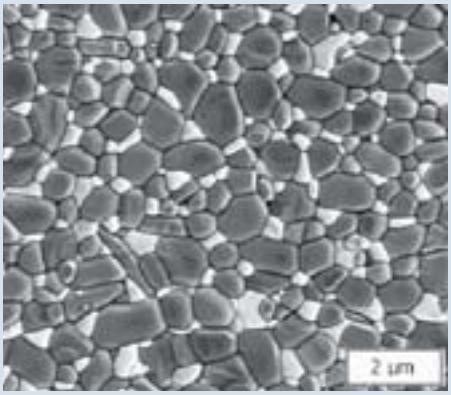
Biolox® implants

Biolox® delta ceramics

Biolox® delta

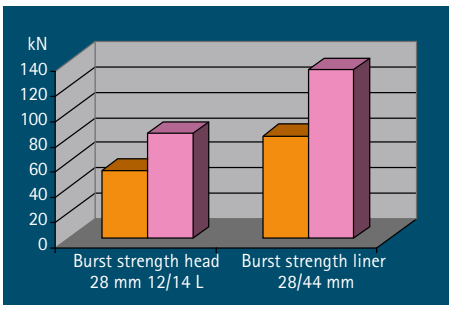


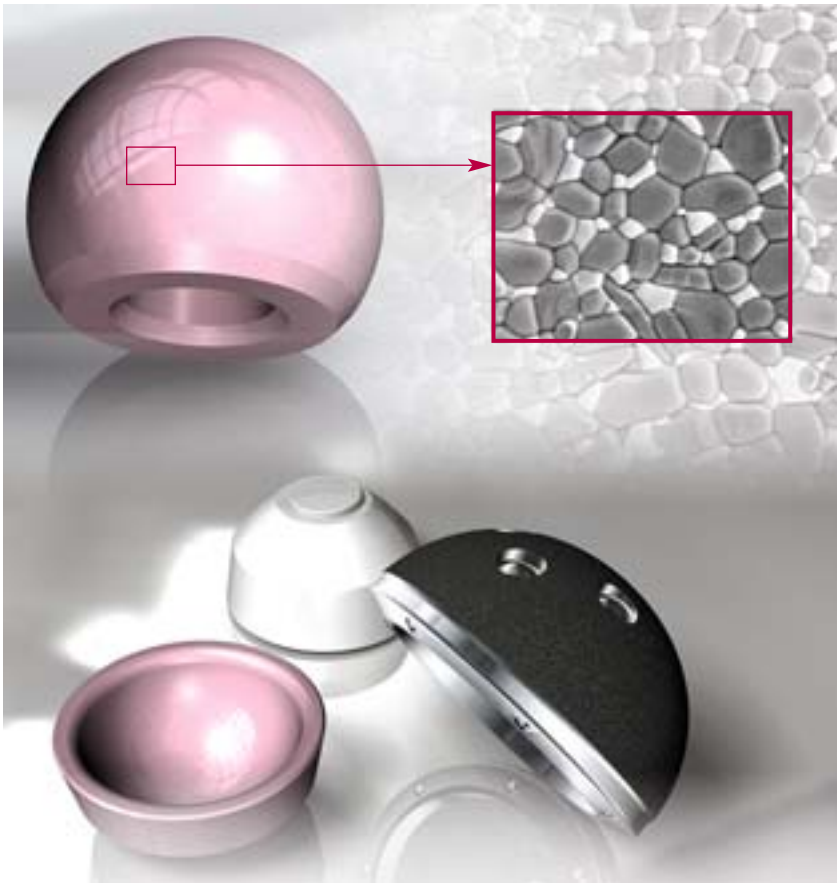
Biolox® forte



Biolox® delta

Biolox® delta, the latest generation of ceramics in THA, is a high strength aluminium oxide matrix ceramic. Finest ZiO_2 particles represent the matrix material. This leads to an increased material strength in direct comparison with Biolox® forte. Biolox® delta prosthesis heads and inserts can articulate with each other and without any limitations also with Biolox® forte implant components.
Biolox® delta offers a higher implant strength while keeping the excellent ceramic wear characteristics. Therefore cup inserts for larger head diameters and prosthesis heads with XL neck length can be provided with Biolox® delta ceramics.
The Biolox® delta ceramic articulation sets a new benchmark for high demand hip arthroplasty.





Biolox® delta 36 mm ceramic-ceramic THA

Biolox® delta is the trendsetting material development for a low wear high demand hip joint replacement.

Biolox® delta implants feature superior ceramic characteristics for hip arthroplasty.

Biolox® delta reduces the risk of any articulation failure. High strength, larger head diameters and new developed acetabular components will achieve and contribute to a new standard of ceramic implant components.

The new Plasmacup® delta implants extend the ratio of surgeries which are preoperatively planned and indicated for a 36 mm ceramic on ceramic THA for cup sizes 52 and 54. Smaller implant sizes are in preparation.
Plasmacup® delta and 36 mm ceramic Biolox® delta insert are delivered in one package. For cup sizes 52 and 54 as a modular system and for smaller cup sizes 48 and 50 preassembled.

Plasmacup® delta features a thinner shell thickness. The Plasmapore® coating covers the complete cup surface as there are no additional holes for screw fixation.
Plasmacup® delta is implanted with the instruments of the Plasmacup® System using the same surgical technique. The preassembled implants are inserted with special cup attachements. The implantation can be naturally navigated with OrthoPilot®.

Further information on Plasmacup® delta can be found in the brochure 032602.

Plasmacup® surgical technique

Acetabular reamers

Trial cups

Plasmacup® implant

The Plasmacup® implantation instruments have undergone continuous development during more than 10 years of clinical application. The optional use of the OrthoPilot® hip navigation system sets the trend for a safe and reproducible operating technique (see p. 16).

In order to have a good press-fit fixation of the Plasmacup® implant, there must be a good bony structure and proper surgical technique. Acetabular exposure removal of the articular cartilage and osteophytes are required for the proper preparation of the acetabulum.

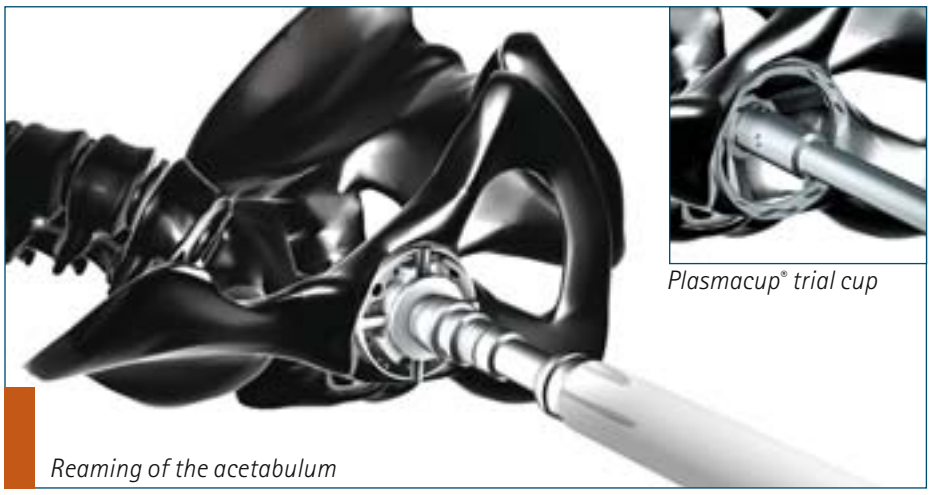
This is done using spherical reamers, which are driven by a low-speed motor handpiece. During the reaming procedure, all cartilaginous material must be ablated down to the subchondral bone until bleeding occurs.

For non-dysplastic cases, care must be taken that the center of rotation of the joint is not medialized unnecessarily. The socket edges should be prepared for a sufficiently large bony fixation surface.

In cases of dysplastic changes, a cup position in the region of the primary socket is recommened, as far as a shortening of the leg can be compensated. The caudal edge of the socket should be at the level of the tear drop figure. A cranial bone graft is performed, if necessary, before the socket base is deepened to provide sufficient cranial roofing.

The size of the Plasmacup® implant corresponds to the size of the last acetabular reamer used and includes the proper press-fit conditions.

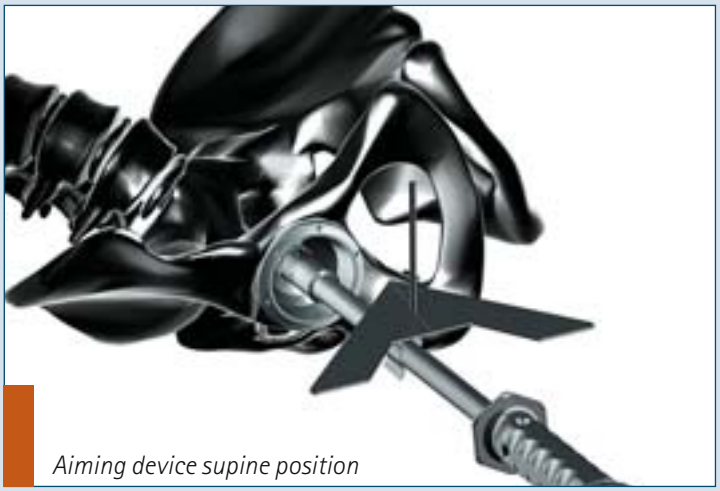
The final selection of the implant is only determined after a trial cup has been seated firmly. A stable fit of this trial cup is achieved when the pelvis of the patient can be moved by gently moving the trial cup by about 10 degrees. The trial implant can be easily levered out from the in-vivo trial position by moving beyond this angle.



Reaming of the acetabulum

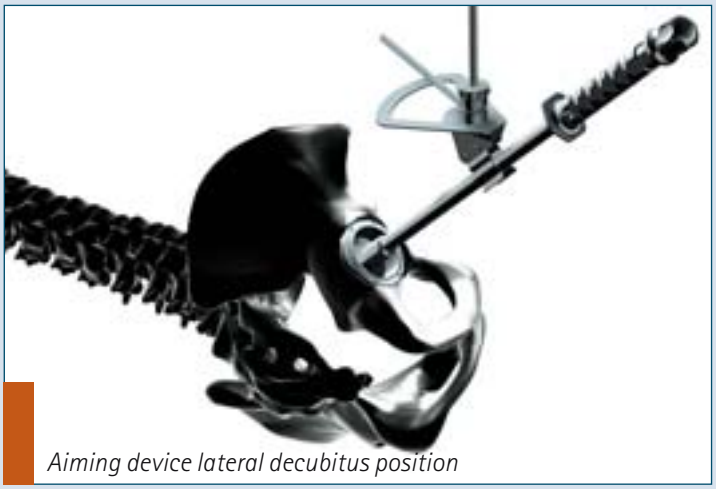
Plasmacup® trial cup

Plasmacup® cup position



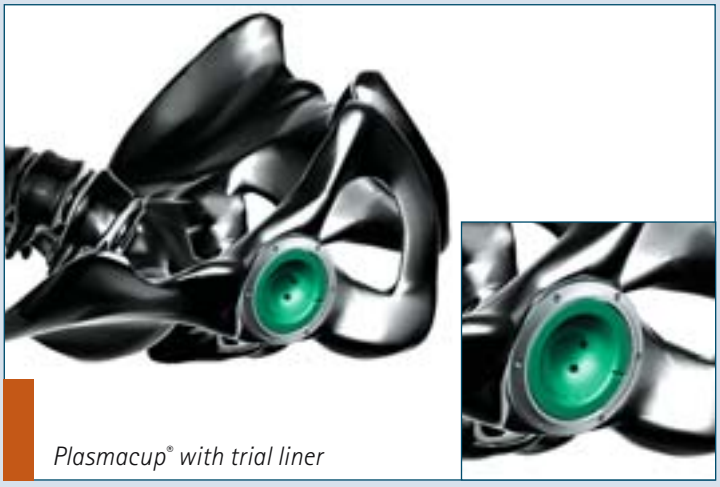
Aiming device supine position

Aiming devices are available for Plasmacup® to measure inclination and anteversion for both standard and navigated surgeries. These devices, which have been designed for supine or lateral decubitus position, can be mounted on the cup impactor shaft.



Aiming device lateral decubitus position

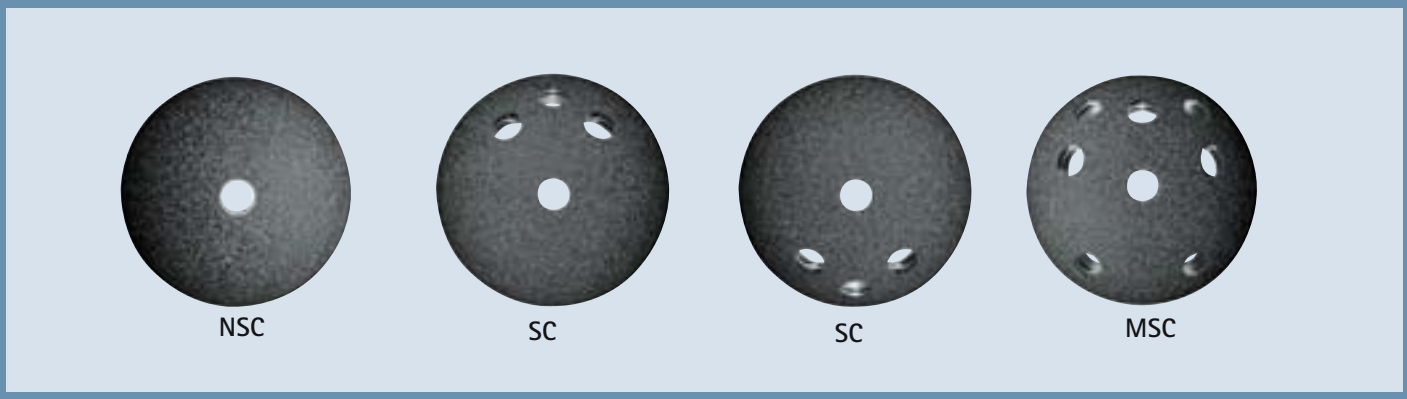
The safe and stable assembly of the Plasmacup® implant on the impactor shaft must be checked by a surgical assistant and the surgeon prior to implantation. A slotted hammer on the impactor shaft is suitable for shifting and correcting the position of the Plasmacup® implant.



Plasmacup® with trial liner

After completing the Plasmacup® surgery steps of acetabular exposure, reaming, assessment of the cup bed with the trial implant and implantation of the cup (Plasmacup® SC, NSC or MSC), the trial liner is inserted. The final selection of the modular liner (PE or ceramics) is determined only after the stem is implanted and a final trial reduction has been performed.

Plasmacup® implantation



Plasmacup®
fixation screws

The pivot angle of the 6.5 mm Plasmacup® screws is 20 degrees. Before implanting the modular liner the surgeon has to make sure that none of the screw heads protrude into the liner anchoring zone.

Generally, in good bone Plasmacup® can be implanted without additional screws. As a stability check the cup impactor is moved through ± 20 degrees until the patient's pelvis moves. Under these conditions, Plasmacup® SC can also be rotated 180° prior to implantation, placing the screw holes in the non load bearing caudal region since they are not needed cranially. If there is any doubt concerning the intraoperative primary stability, fixation screws must be used or the implant must be replaced.

For cases where additional stability with fixation screws is necessary, Plasmacup® SC features three holes in the cranial region. To protect the medial blood vessels, the middle and lateral screw positions can be used and the medial hole is usually left open. Plasmacup® MSC offers further additional screw holes in the cranial and caudal region. The cranial holes are located further laterally or medially with this implant.

Prior to inserting the self-tapping 6.5 mm screws, the drill holes are prepared with a flexible 3.2 mm drill (or with a 4 mm drill for severely sclerotic bone). The required screw length is measured and the screws are implanted using a screw holding forceps and a cardan-jointed screwdriver.

Instruments for screw implantation

Plasmacup® liners

PE standard liner

PE posterior wall liner

PE asymmetrical 10 deg. liner

Biolox® delta ceramic liner

Fingertip check of ceramic liner position

Posterior wall (hooded) Plasmacup® PE liners increase luxation stability e.g. towards posterior for implantations using the posterior surgical approach. The asymmetrical liners correct the cup position by 10 degrees.

When using ceramic liners the final check for seating is assessed with a fingertip check. After seating, the liner is fixed using an impactor with a plastic head.

Instruments for removing ceramic liners

The ceramic Plasmacup® liners can be removed with the impulse extractors or with a punch. When doing this it is important to place the instruments correctly in the pits on the edge of the implant, and separate the liner from the cup with several sharp blows or impulses*.

* Also see the instructions for use enclosed with every Plasmacup® implant.

OrthoPilot® THA navigation

OrthoPilot® referencing of the anterior pelvic plane

OrthoPilot® navigation of acetabular reaming

All Plasmacup® components can be used with OrthoPilot® navigation technology. OrthoPilot® cup navigation works without CT or fluoroscopy, following the principles of kinematic referencing.

In navigated Plasmacup® surgeries the system measures the inclination and anteversion angles relative to the anterior pelvic plane. During the acetabular reaming stage, the joint center, the reaming depth and the orientation of the reamer are measured and displayed.

Plasmacup® navigation with OrthoPilot® is suitable for different patient positions and surgical approaches. It also supports less invasive surgical procedures and surgeries on dysplastic cases. Navigation of the cup is an integral part of OrthoPilot® THA navigation.

OrthoPilot® transmitter referencing

OrthoPilot® hip navigation of leg length and offset

The new OrthoPilot® THA Plus navigation combines the data on the position of Plasmacup® with the position of the stem. The surgeon obtains information regarding leg length and offset of the hip joint. Especially in less invasive procedures OrthoPilot® THA Plus supports the surgeon during surgery. Further information on OrthoPilot® hip navigation can be found in the hip navigation brochure 021902.

Plasmacup® implants




Plasmacup® SC

Plasmapore®	
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® SC µ-Cap

40 mm	--
42 mm	--
44 mm	NC444T
46 mm	NC446T
48 mm	NC448T
50 mm	NC450T
52 mm	NC452T
54 mm	NC454T
56 mm	NC456T
58 mm	NC458T
60 mm	NC460T
62 mm	NC462T
64 mm	NC464T
66 mm	NC466T
68 mm	NC468T

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

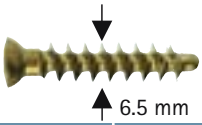
ISOTAN ®F

Plasmacup® MSC

Plasmapore®	
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

Plasmacup® screws 6.5 mm



Length 16 mm	20 mm	24 mm	28 mm	32 mm	36 mm	40 mm	44 mm	56 mm	60 mm
NA766T	NA770T	NA774T	NA778T	NA782T	NA786T	NA790T	NA794T	KB456T	KB460T

ISOTAN®F

Plasmacup® delta implants

		Liner
48 mm	NH648D	ø 36 mm
50 mm	NH650D	ø 36 mm
52 mm	NH652D	ø 36 mm
54 mm	NH654D	ø 36 mm

BIOLOX® delta

Plasmacup® delta implants complete the Plasmacup® SC program with 36 mm ceramic liners. These implants can not be combined with Plasmacup® SC components and are only supplied together with the Biolox® delta cup component. Special liners with shoulder are available for revision operations.

Plasmacup® delta	PE cup liner
48 mm	NH417 (32 mm)
50/52/54 mm	NH418 (32 mm)

Plasmacup® liners

Polyethylene cup liners

	symmetric			posterior wall			asymmetric	
	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 liners

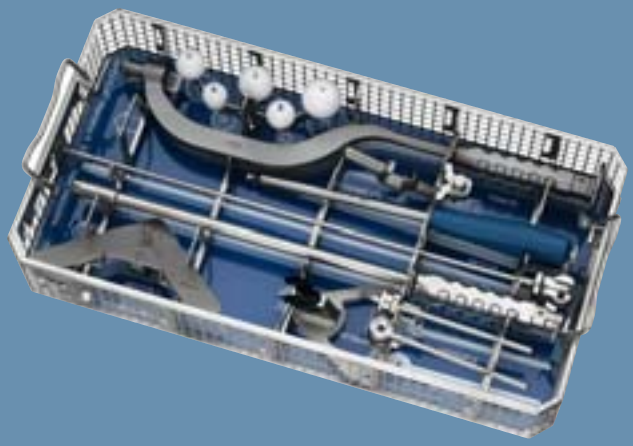
	40 mm 42 mm	44 mm 46 mm	48 mm 50 mm	52 mm 54 mm	56 mm 58 mm	60 mm 62 mm	64 mm 66 mm 68 mm
ø 28 mm	–	NH091D	–	–	–	–	–
ø 32 mm	–	–	NH102D	NH103D	NH104D	NH105D	NH106D
ø 36 mm	–	–	–	–	NH109D	NH110D	NH111D

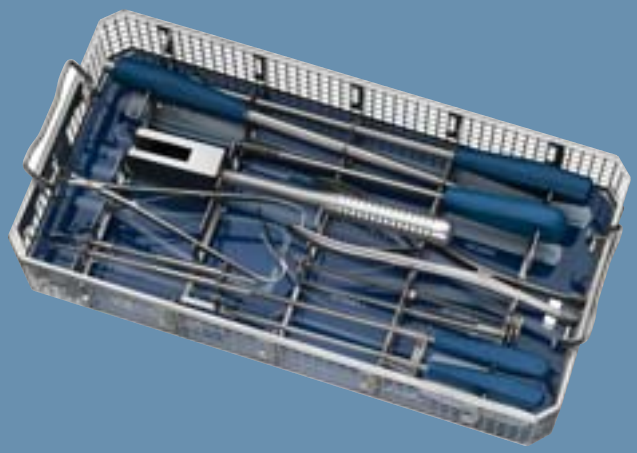
BIOLOX® delta

Implant materials:

ISOTAN®$_F$	Titanium forged alloy (Ti6Al4V / ISO 5832-3)
Plasmapore®	Pure titanium (Ti / ISO 5832-2)
Plasmapore® µ-cap	Pure titanium surface with 20 µm coating dicalcium phosphate dihydrate ($CaHPO_4 \times 2H_2O$)
Biolox® delta	Aluminium oxide matrix ceramic Al_2O_3
UHMWPE	Ultra high molecular weight polyethylene (ISO 5834-2)

Plasmacup® instruments





Plasmacup® instrument set NF240

Comprising	
Insertion instrument straight	FS944R
Tray for NF240 (48 x 253 x 74 mm)	NF241R
Grafic template for NF241R (NF240)	TE912
Cloth for lining deep containers	JF511

Please order separately	
1/1 size wide perforated basket lid	JH217R
Aiming device for supine position	NF277R
Aiming device for posterior approach	NF292R
Insertion instrument curved	FS947R
T-Handle for insertion instrument	FS948R
Screw driver for FS947R	NF371R
Cup pressing head ø 32 mm	ND172
Cup pressing head ø 28 mm	ND174
Cup pressing head ø 22.2 mm	ND178
Cup pressing head ø 26 mm	ND179
Cup pressing head ø 36 mm	ND166

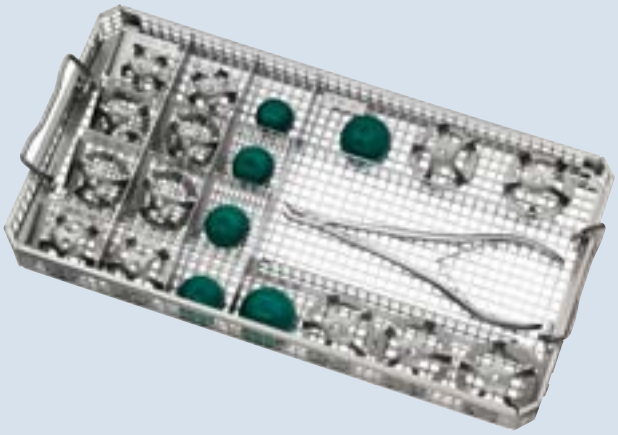
Recommended container for NF240 and NF242
Aesculap basic container 592 x 274 x 187 mm
(e.g. JK444)

Plasmacup® instrument set NF242

Comprising	
Cup inserting and pressing instrument	ND170R
Impaction/extraction instrument	ND401R
Slotted hammer	NF275R
Removal forceps for PE-inserts	NG430R
Articulated screw driver SW 3.5	NF285R
Screw holding forceps	NF287R
Screw gauge	NF269R
Drill guide for srew ø 3.2 mm	NF278R
Drill guide for screw ø 4.0 mm	NF279R
Flexible drill ø 3.2 /32 mm	NF280R
Flexible drill ø 3.2 /44 mm	NF281R
Flexible drill ø 4.0 /32 mm	NF282R
Tray for NF242 (48 x 253 x 74 mm)	NF243R
Grafic template for NF243R (NF242)	TE913
Cloth for lining deep containers	JF511

Please order separately	
1/1 size wide perforated basket lid	JH217R

Plasmacup® instruments



Plasmacup® Trial cups and trial inserts NG036

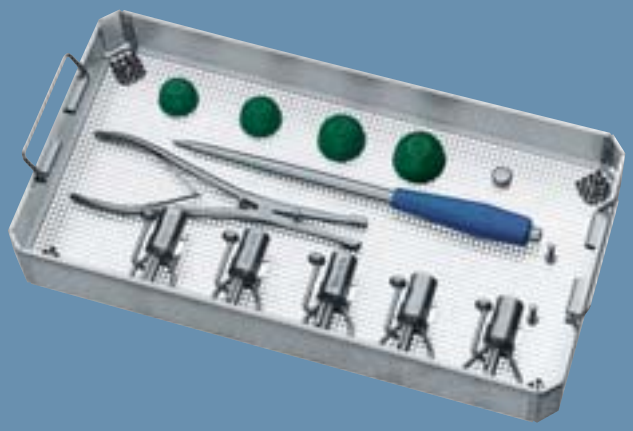
Comprising	
Plasmacup SC/MSC trial cup size 44 mm	NG944R
Plasmacup SC/MSC trial cup size 46 mm	NG946R
Plasmacup SC/MSC trial cup size 48 mm	NG948R
Plasmacup SC/MSC trial cup size 50 mm	NG950R
Plasmacup SC/MSC trial cup size 52 mm	NG952R
Plasmacup SC/MSC trial cup size 54 mm	NG954R
Plasmacup SC/MSC trial cup size 56 mm	NG956R
Plasmacup SC/MSC trial cup size 58 mm	NG958R
Plasmacup SC/MSC trial cup size 60 mm	NG960R
Plasmacup SC/MSC trial cup size 62 mm	NG962R
Plasmacup SC/MSC trial cup size 64 mm	NG964R
Plasmacup SC/MSC trial cup size 66 mm	NG966R
Plasmacup SC/MSC trial cup size 68 mm	NG968R
Tray for NG036 (489 x 253 x 48 mm)	NG037R
Cloth for lining deep containers	JF511

Please order separately	
1/1 size wide perforated baset lid	JH217R
Silicone basket liner fitting JF159R	JF946
SC/MSC tight forceps for asym. trial inserts	NG437R
Plasmacup SC/MSC trial cup size 40 mm	NG940R
Plasmacup SC/MSC trial cup size 42 mm	NG942R

Recommended container for NG036
and the acetabulum reamer set
Aesculap basic container 592 x 274 x 187 mm
(e.g. JK444)

Please order separately									
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

Plasmacup® instruments

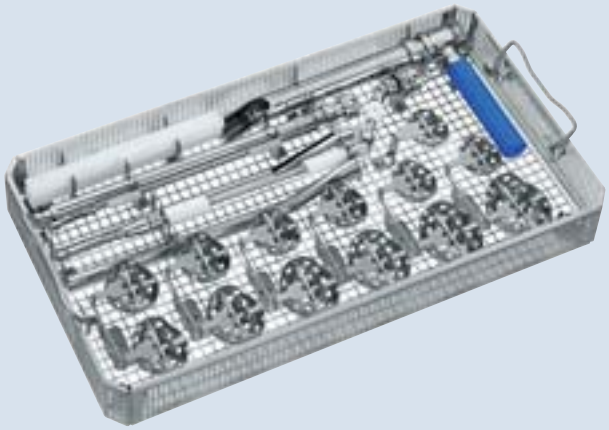


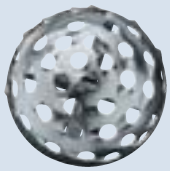
Plasmacup® additional instruments NG360

Comprising	
Trial liner, 44/46, ø 28 mm, sym.	NG391
Trial liner, 48/50, ø 28 mm, sym.	NG392
Trial liner, 52/54, ø 28 mm, sym.	NG393
Trial liner, 56/58, ø 28 mm, sym.	NG394
Trial liner, 60/62, ø 28 mm, sym.	NG395
Removal forceps for PE-inserts	NG430R
Impulse remover for ceramic liner 44/46	NG421R
Impulse remover for ceramic liner 48/50	NG422R
Impulse remover for ceramic liner 52/54	NG423R
Impulse remover for ceramic liner 56/58	NG424R
Impulse remover for ceramic liner 60/62	NG425R
Punch for removing ceramic liners	ND401R
Basket 56 mm with storage aid	NG361R

Please order separately	
Impulse reamer for ceramic liner 64/68	NG426R
Forceps for trial inserts	NG437R

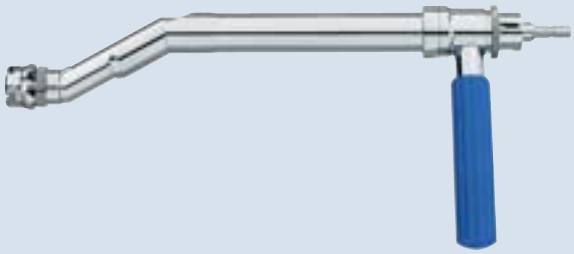
Plasmacup® acetabulum reamer





standard
full profile reamer

FS939 oder FS974



Basket tray NF932R

Aesculap basket tray 485 x 253 x 76 mm
with supports for:

- 13 reamers (e.g. 44 to 68 mm)
- 2 straight reamer shanks (e.g. FS960R)
- 2 straight reamer sleeves (e.g. FS974)
- 1 curved reamer shank (e.g. NF936R)

Please order separately	
OrthoPilot® reamer shank ZIMMER	FS959R
OrthoPilot® reamer shank HARRIS	FS960R
OrthoPilot® reamer shank AO	FS961R
OrthoPilot® sleeve for FS959R to FS961R	FS939
Standard sleeve for FS959R to FS961R	FS974
OrthoPilot® curved reamer shank ZIMMER	FS935R
OrthoPilot® curved reamer shank HARRIS	FS956R
OrthoPilot® curved reamer shank AO	FS957R
Curved reamer shank ZIMMER	NF935R
Curved reamer shank HARRIS	NF936R
Curved reamer shank AO	NF937R

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

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		

Note: The acetubulum reamers are only delivered as replacements

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

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B BRAUN
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