Алматы (7273)495-231
Ангарск (3955)60-70-56
Архангельск (8182)63-90-72
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Благовещенск (4162)22-76-07
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Владикавказ (8672)28-90-48
Владимир (4922)49-43-18
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48
Калининград (4012)72-03-81
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Кемерово (3842)65-04-62
Киров (8332)68-02-04
Коломна (4966)23-41-49
Кострома (4942)77-07-48
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Курган (3522)50-90-47
Липецк (4742)52-20-81
Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Новокузнецк (3843)20-46-81
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Новосибирск (383)227-86-73
Омск (3812)21-46-40
Орел (4862)44-53-42
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Саратов (845)249-38-78
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Чита (3022)38-34-83
Якутск (4112)23-90-97
Ярославль (4852)69-52-93

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www.bbraun.nt-rt.ru | | bng@nt-rt.ru

Технические характеристики на инструменты и приспособления для ортопедии Trilliance, TrendHip, CoreHip, Prevision, Plasmafit, Screw Cup SC, Structan, Isocer, Plasmapore, BPMpathway, Targon компании B. BRAUN

Виды товаров: системы тазобедренного стержня, сустава, модульные ревизионные ножки, системы ацетабулярных чашек, керамические головки, биоактивные пористые покрытия, реабилитационные сенсорные системы, ретроградные бедренные стержни и др.

Targon® RF

Hans-Werner Stedtfeld, MD
Formerly: Centre for Trauma Surgery, Nuremberg, Germany
University Hospital of Rostock, Germany

'The implantation of interlocking nails from an antegrade access has become the gold standard for most fractures of the femoral shaft. In the interests of optimally expanding the indications for the antegrade procedure, the distal interlocking holes have been moved a great distance toward distal and tripled in number in the Targon® Femoral System. Nevertheless, there are still a number of very good or relative indications for the retrograde nailing procedure.

Today supracondylar and transcondylar femoral fractures (Type A and C of the AO Classification) constitute recognized indications for retrograde nailing. The advantage of intramedullary fixation of these fractures lies in the lower demands placed on the lateral articular layers of the distal femur in comparison with the soft tissue preparation required for extramedullary implant support. Because this procedure is only minimally invasive, pain-free mobilization of the knee joint is achieved very soon after surgery.

The new retrograde femoral nailing system is based on clear-cut and safe surgical steps. The nail design and instrumentation make both primary internal knee damage (caused by bore dust) and secondary internal damage (due to protruding edges of the distal nail tip) highly improbable. The screws have a strong design that can withstand prolonged maximum loads. With a new type of threaded sleeve, osteoporotic bone structure is no longer an obstacle to nailing. This reduces the danger of secondary protrusion of the implant into the knee joint and of screw loosening resulting in consecutive loss of reduction. For most forms of distal metaphyseal femoral fractures, the system offers the possibility of fixating the nail additionally at the distal end of the shaft fragment; this 'transfixation' is an effective way to neutralize the forces acting on the fracture zone. In particular, it promotes the endosteal fracture-healing processes in the metaphysis.

A long-nail version is available for the retrograde nailing of shaft fractures; this version is interlocked in the sagittal direction in the proximal femoral region. There are several recommended or even unavoidable indications for this procedure: e.g. 'floating knee', fractures seen in persons with extremely severe injuries, decubital ulcers in the trochanter region, ankylosis and arthrodesis of the hip joint, etc.

The retrograde nail rounds off the fixation options offered by the Targon® System for femoral fractures.'

August, 2011

Targon® RF
The System

Reaming debris in the knee joint?

The distribution of reaming debris in the knee joint is avoided by opening the joint with the hollow reamer.

Internal knee damage caused by implant protrusion?

Sufficiently recessed placement of the implant prevents protruding implant edges. As a result of the ventral and dorsal oblique surfaces of the Targon® RF, the nail recess can be kept small, leaving more space for interlocking.

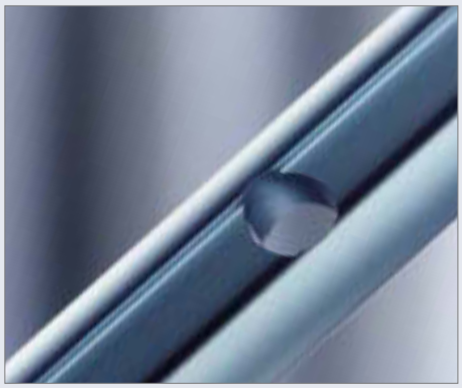
Angular play in the metaphysis?

Angular play in the metaphysis and screw sliding can cause excessive instability in the fracture area. This is prevented by locking the distal screw with the closure screw.

Shearing motions in the fracture area?

The transfixation of the fracture on the distal shaft fragment via the fourth screw cancels shearing motions between the metaphyseal and shaft fragments.

Solves the problems posed by surgical treatment of the femur from a retrograde access



Deviation of nail curvature from anatomical curvature?

If the proximal locking holes are located to one side of the large femoral shaft diameter, the groundwork is laid for incorrect drillings. Incorrect drillings are distinctly reduced by the anatomical curvature of the nail.

Screw loosening in patients with osteoporosis?

The threaded sleeves, which can be used on both sides of the metaphysis, counteract the insufficiently secure screw seating which can be a problem in patients with osteoporosis.

Excessive intramedullary pressure?

The long grooves exert a drainage effect which lowers the medullary pressure during nail insertion.

Targon® RF
The Implant

Special nail tip design

- Facilitates implantation into the cancellous trochanteric region

Long grooves

- Result in higher elasticity and therefore a more favorable distribution of forces, thereby lessening the danger of fracture
- Accelerate regeneration of the endosteal blood supply
- Help to alleviate pressure during the implantation of the nail

4-way interlocking

- Possibility for placing the transfixation screws
- Enhanced fracture stabilization

Anatomical nail design

- Easy nail implantation
- Central position of the locking holes in the medullary canal

Ventrodorsal nail tip

- Prevents nail protrusion in the knee joint

Implant material:
Titanium alloy Ti6Al4V

The threaded sleeve allows screw fixation in patients with osteoporosis

- Internal thread for secure connection between the threaded sleeve and the screw (dia. 6 mm)
- Self-tapping outer thread enables large-area bone contact

Interlocking screws

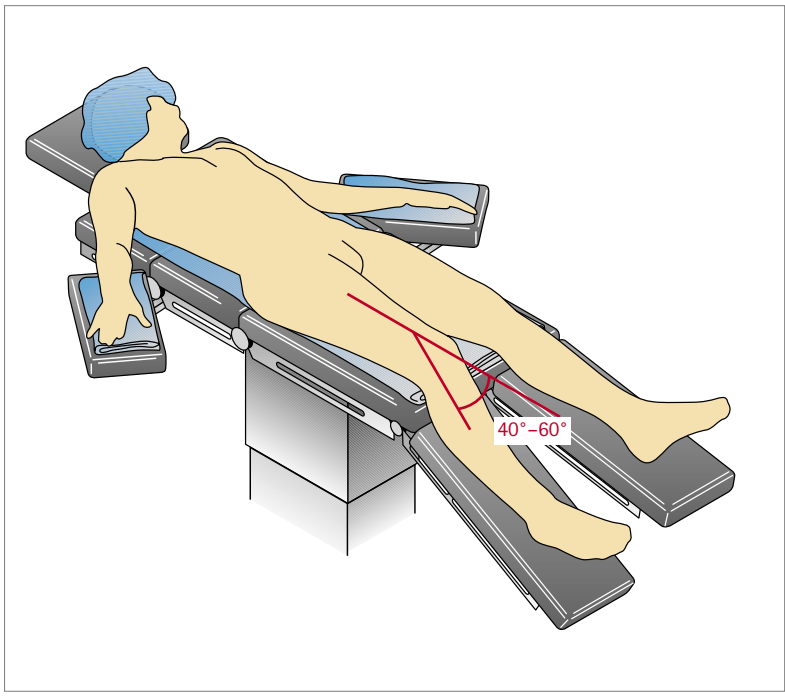
- Extremely strong titanium alloy with a proven design

Closure screw

- Locks the distal screw to prevent screw sliding and angular metaphyseal movement

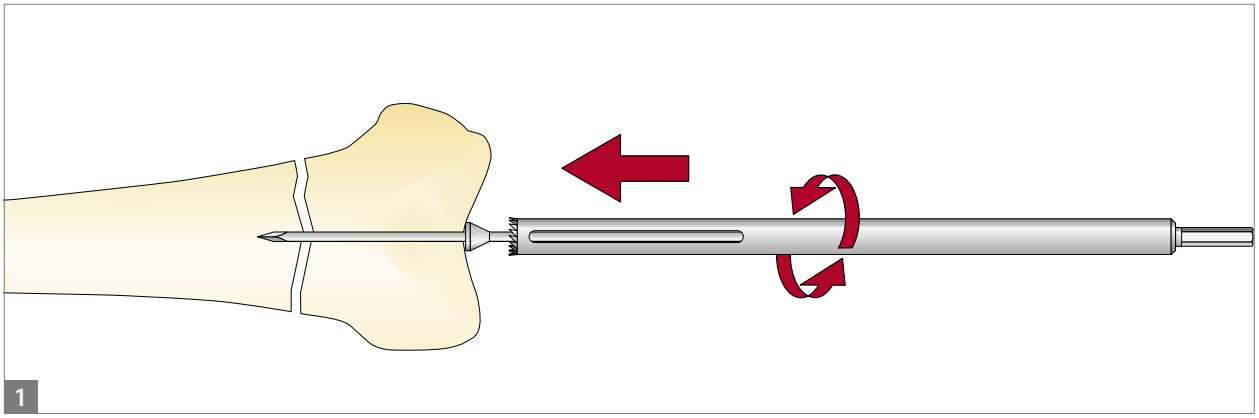
Targon® RF
Operating Technique

- Patient Positioning
- Preoperative Planning



Preoperative planning

- Nail diameters required
- Nail length
- Type of fixation
- Nail insertion point

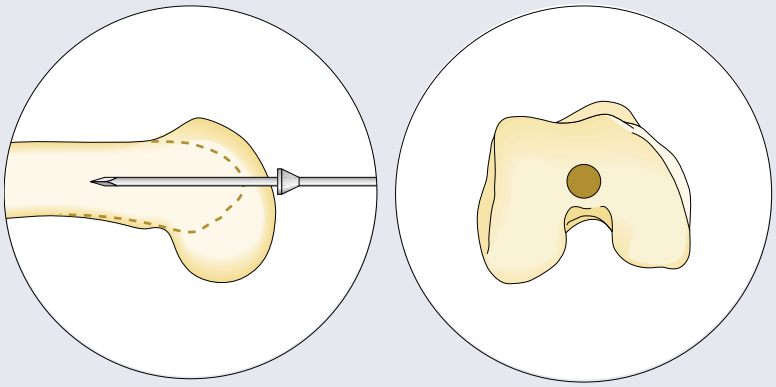

1

Access and preparation of the nail bed [1]

Access

- Hollow reamer (Ø 12.5 mm) KH392R
- Guide pin KH393R
- Universal handle KH319R

Cutaneous incision and tissue splitting. Insert the guide pin with the universal handle or a motor-driven instrument; monitor the position with an image intensifier. Open the entry hole with the hollow reamer.

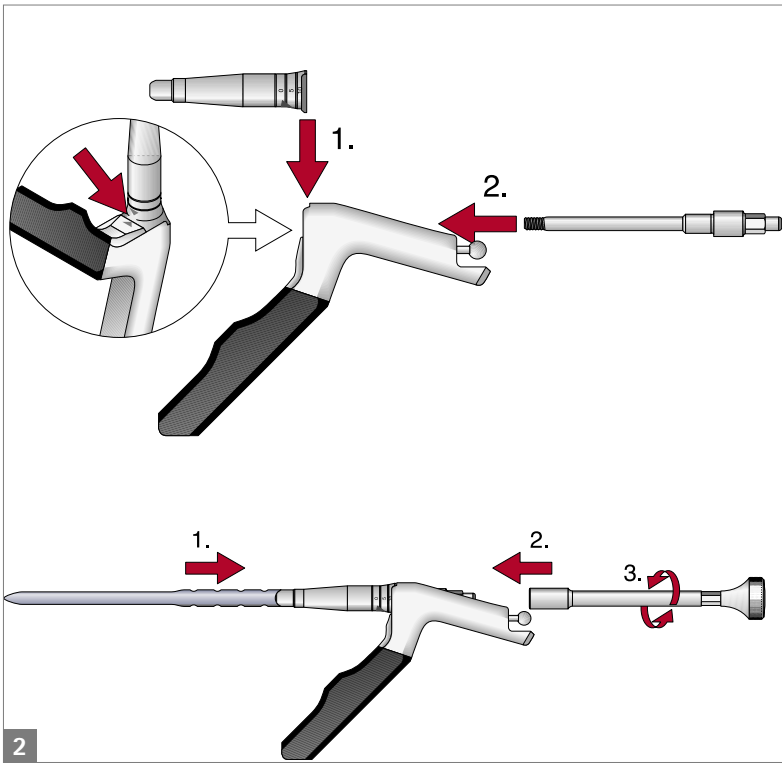


Nail insertion [2]

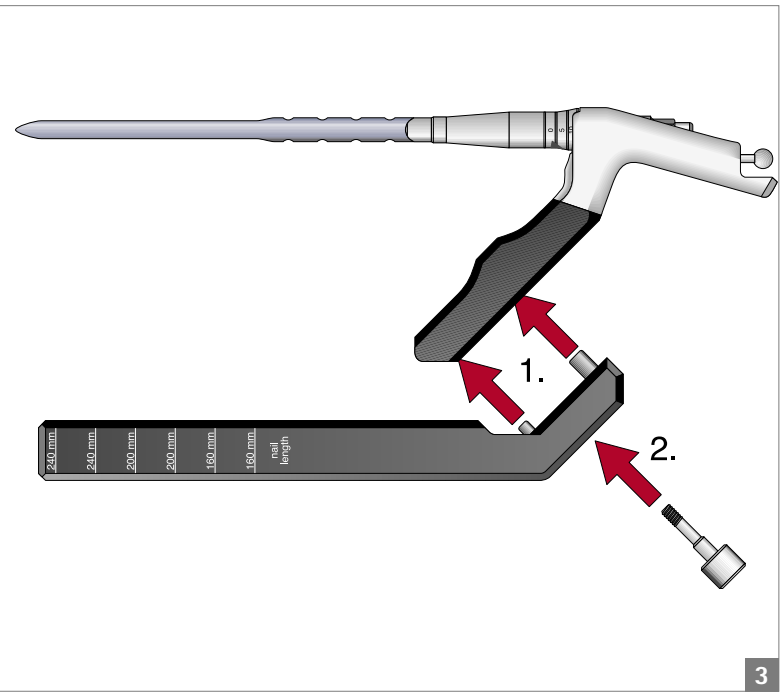
Attaching the nail to the targeting device

- Targeting device KH210
- Nail adapter KH396R
- Nail adapter screw KH397R
- Tightening sleeve KH321R

Connect the nail adapter to the targeting device. Insert the nail adapter screw until above the light pressure point. Attach the selected nail, tighten by hand with the tightening sleeve. Pay attention to the curvature of the nail and the lateral position of the targeting device.



Targon® RF
Operating Technique



3

Attaching the targeting bow to the targeting device [3]

- Targeting bow KH395P
- Screw for the targeting bow KH409R

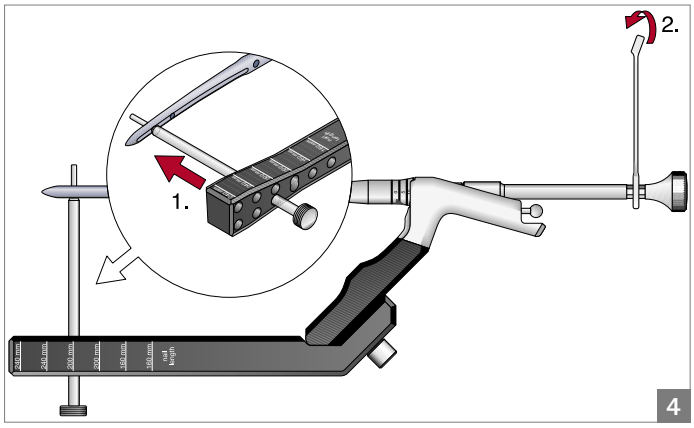
Place the targeting bow in the recess in the targeting device and fasten it with the screw for the targeting bow.

Adjust nail position with respect to the targeting bow [4]

(nail up to 240 mm in length)

- Nail centering pin KH394R
- Tightening sleeve KH321R
- Socket key KH324R

To match the locking holes on the nail with those of the targeting bow, insert the centering pin through the targeting bow and into the locking holes. Then tighten with the tightening sleeve and socket key.



4

Important:

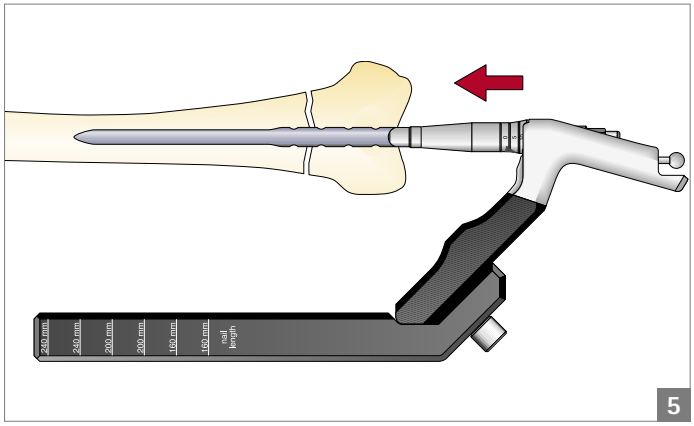
Pay attention to the nail length and the position of the centering pin in the lower row of the targeting bow.

Introduction of the nail [5]

Introduction of the nail Insert the nail manually.

Important:

If a hammer is used to insert the long-nail version, remove the targeting bow.



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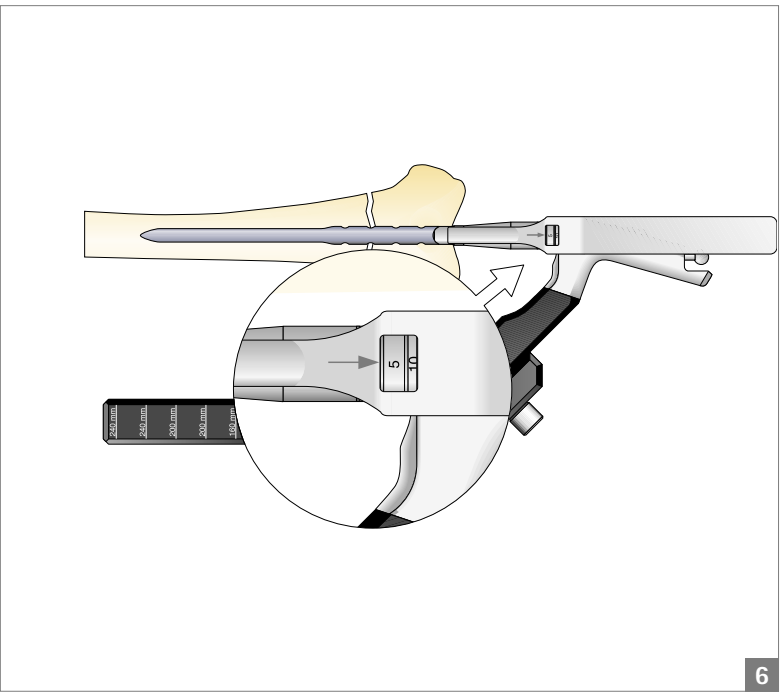

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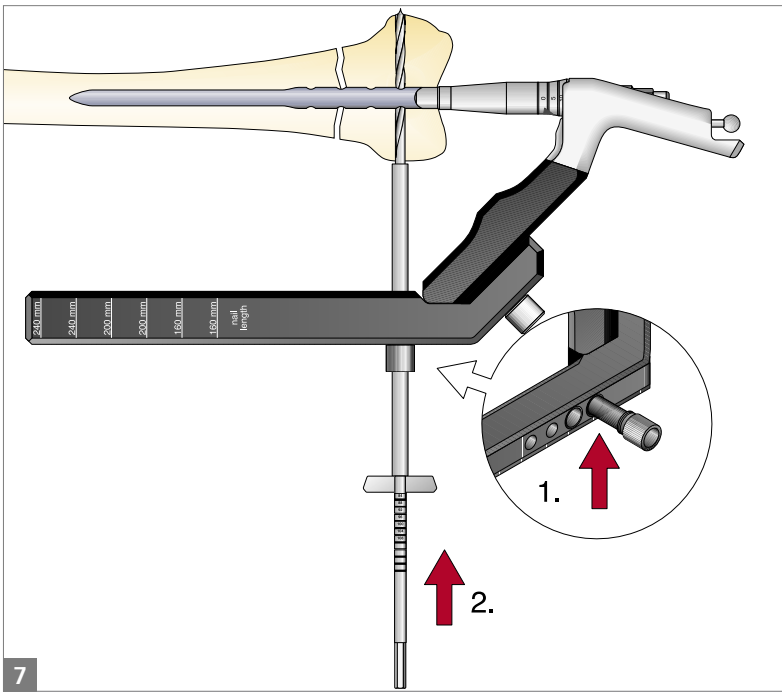


7

Precise positioning of the nail [6]

- Nail depth scale KH406R

Check the nail position with an image intensifier. Push the nail depth scale over the targeting device up to the condyles. The insertion depth of the nail (0 - 10 mm) can be read in the window of the nail depth scale.

Distal interlocking [7]

Drilling

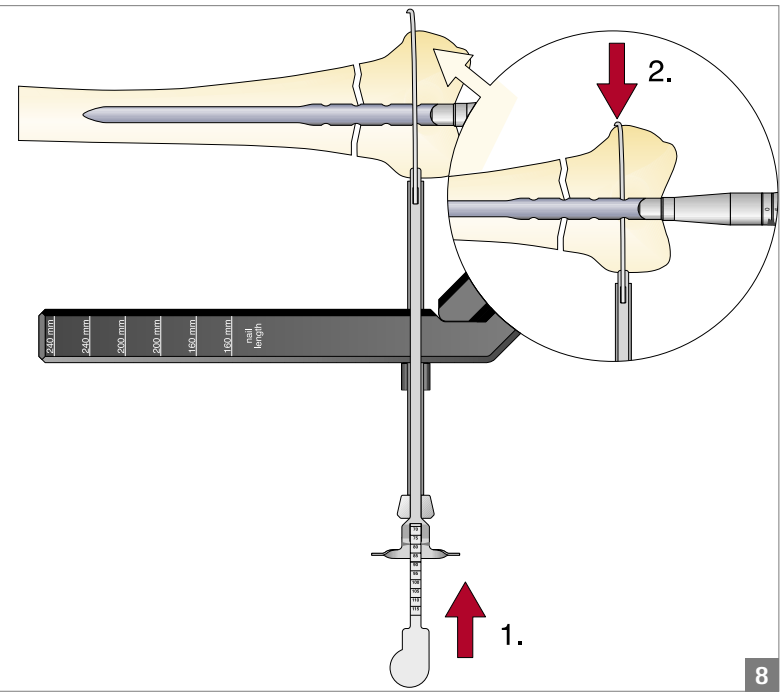
- Screw sleeve KH410P
- Tissue-protection sleeve KH429R
- Obturator KH383R
- Twist drill (Ø 5 mm) KH385R

Screw the screw sleeve into the targeting bow. Insert the tissue-protection sleeve. Make the stab incision. Widen the incision. Using the obturator, advance the tissue-protection sleeve up to the bone. Drill open the screw hole with the twist drill (Ø 5 mm).

Important:

It is essential to follow this sequence. Do not change the flexion position of the knee, since this could pull the tissue protection sleeve through the iliotibial tract and cause a drilling error.

Targon® RF
Operating Technique



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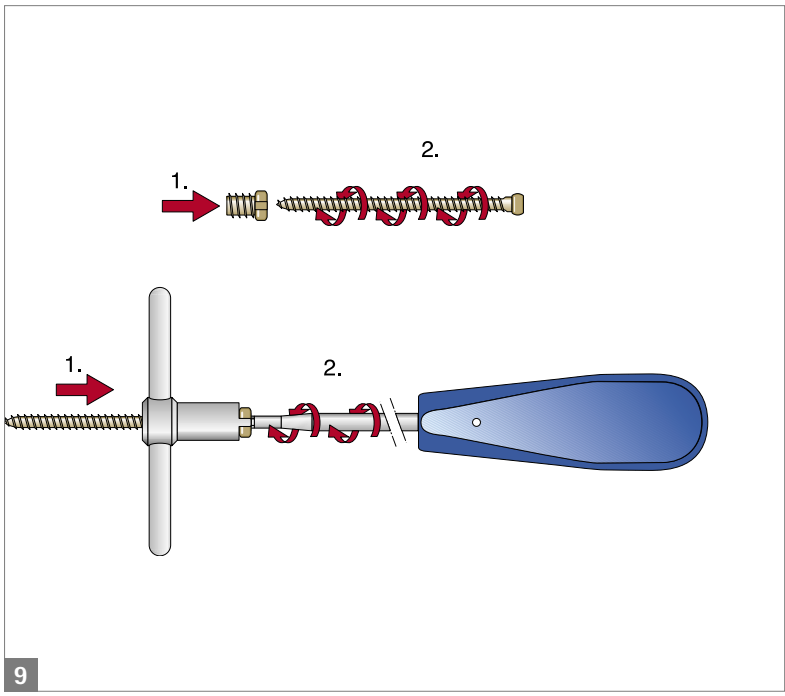


9

Interlocking [8]

- Screw scale KH274R
- Screwdriver KH322R

Determine the screw length with the screw scale. The length shown determines the distance between the cortical layers. Insert the selected screw (Ø 6 mm) with the screwdriver.

Important:

Do not manipulate using force! This could result in misalignment of the guide wire and the nail hole for proximal locking.

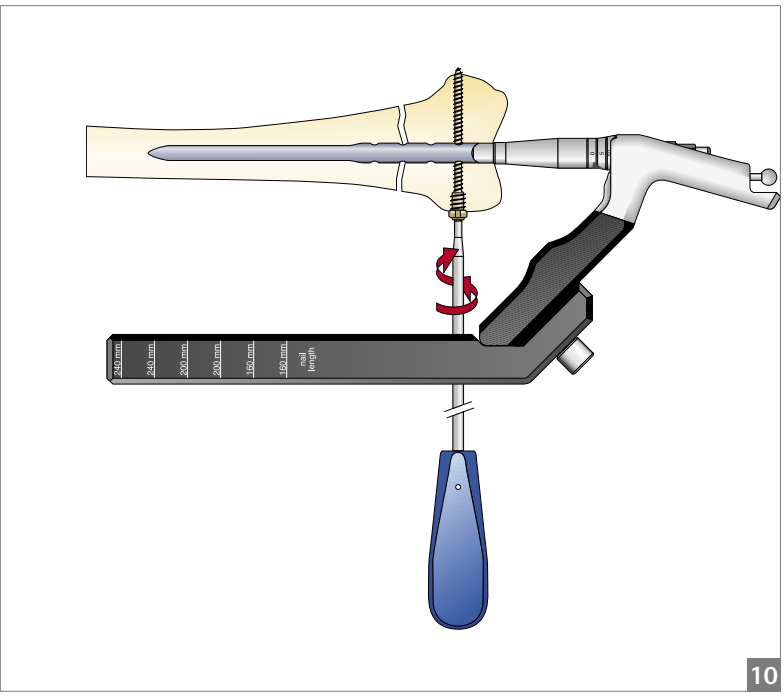
Lateral use of the threaded sleeve [9]

- Counterhandle KH405R
- Screwdriver KH322R

Screw the threaded sleeve onto the selected screw by hand. Tighten the connection with the counterhandle and screwdriver.

Important:

Before inserting the threaded sleeve from medial, insert all the required lateral screws. This prevents unnecessary moving of the targeting bow.



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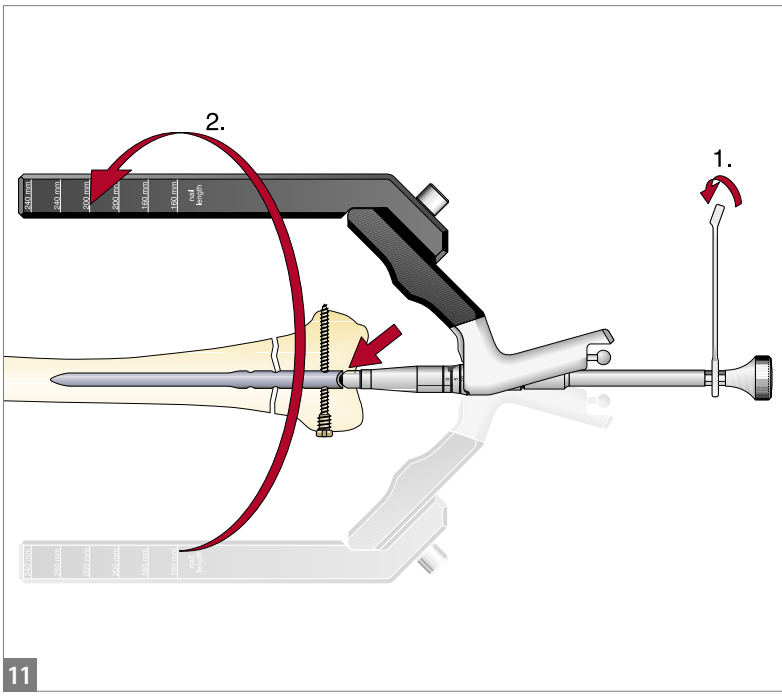


11

Insertion of the interlocking screw with the threaded sleeve from lateral [10]

- Screwdriver KH322R

Remove the screw sleeve and attach the screw/sleeve combination through the targeting bow up to the cortical stop.

Important:

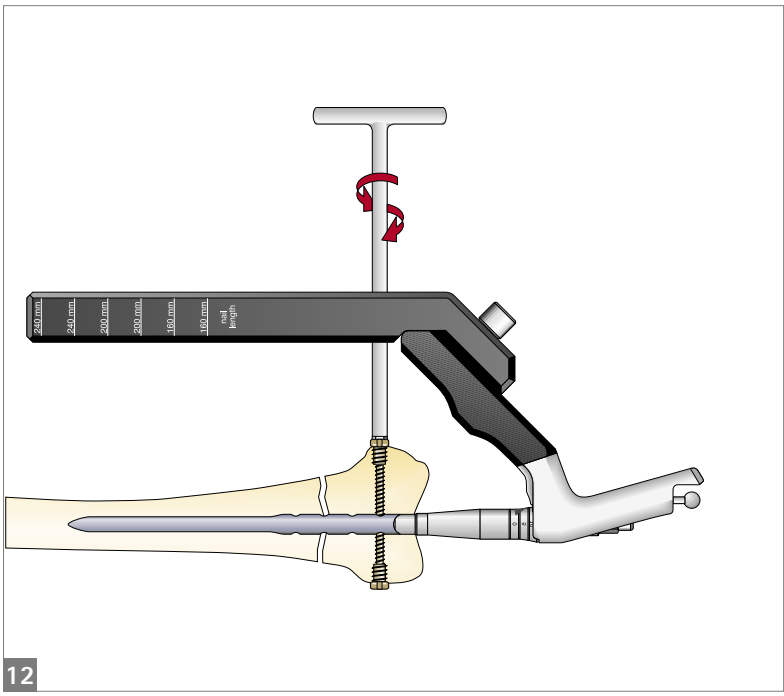
After the tissue protection sleeve has been pushed up to the bone the flexion position of the knee must not be changed, since any alteration could pull the tissue protection sleeve through the iliotibial tract and cause a drilling error.

Folding of the targeting bracket to medial [11]

- Tightening sleeve KH321R
- Socket key KH324R

When all screws are in place from lateral, the adapter screw at the targeting bracket is loosened using the tightening sleeve and the socket key (about 3 turns). Do not detach the bracket completely. The targeting bow with the targeting device is then folded to the medial side and the adapter screw is tightened again with the spanner.

Targon® RF
Operating Technique

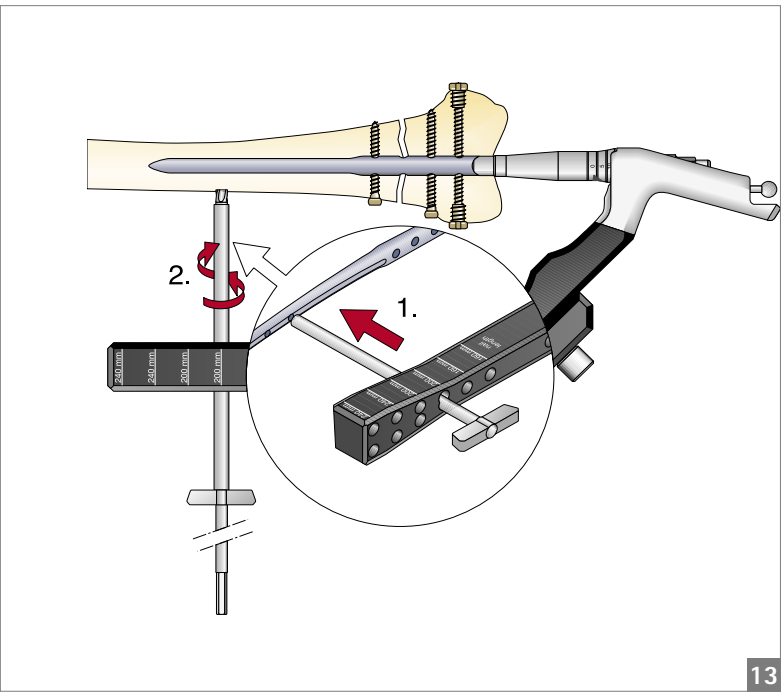


12

Insertion of the threaded sleeve from medial [12]

- Inserter for threaded sleeve KH404R

Remove the screw sleeve from the targeting bow. Screw in the threaded sleeve with the sleeve driver up to the cortical stop.



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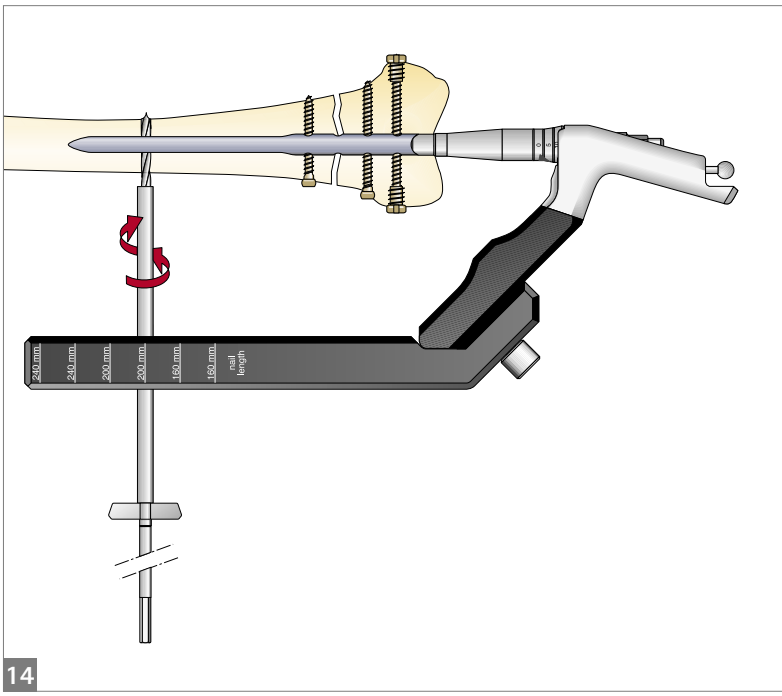


14

Proximal interlocking [13]

Preparation of the entry cortex with the facing cutter (nail up to 240 mm in length)

- Facing cutter KH376R
- Tissue protection sleeve KH429R
- Obturator KH383R

Insert the tissue protection sleeve. Make the stab incision. Widen the incision. Advance the tissue protection sleeve with the obturator up to the bone. Prepare the shaft cortex with the facing cutter.

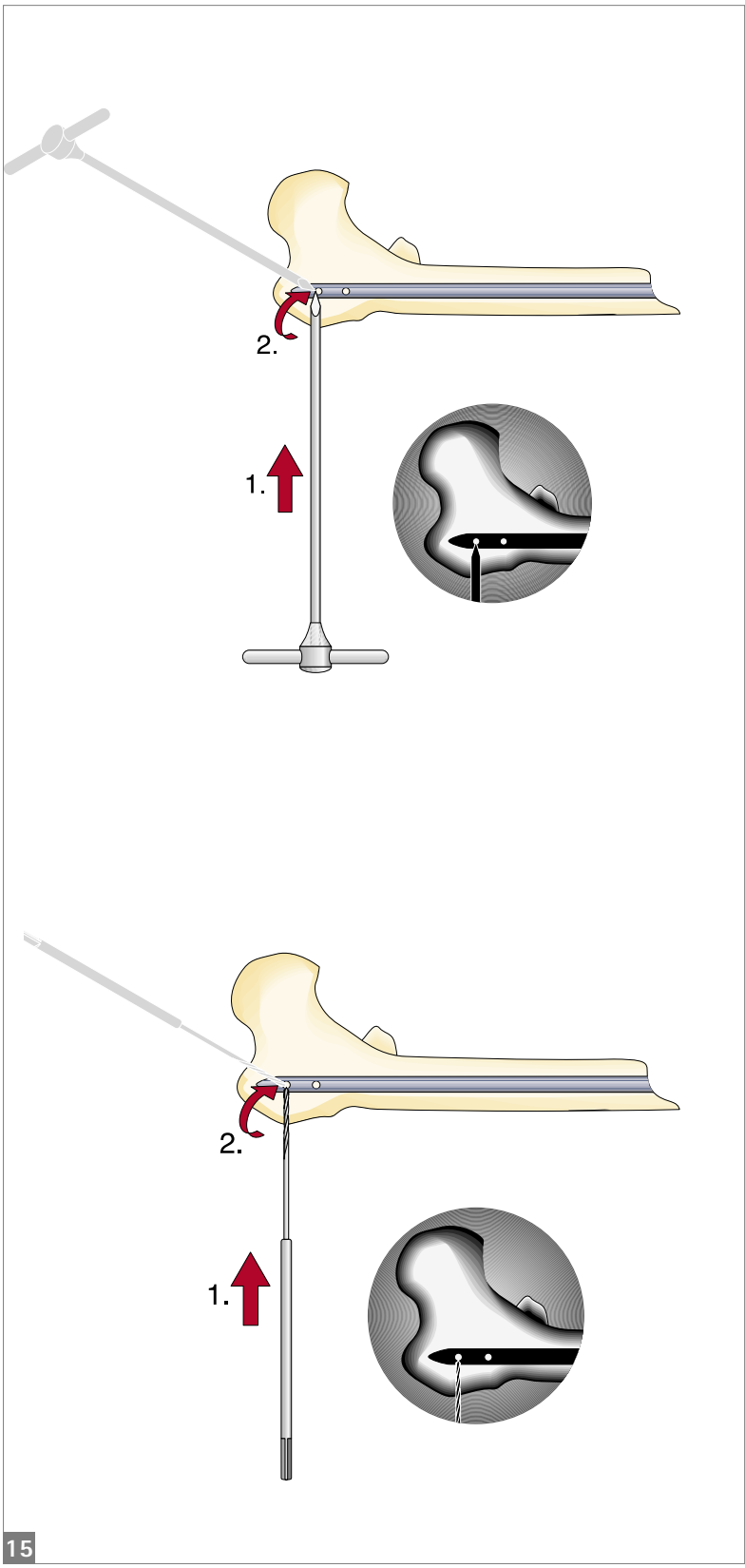
Drilling for interlocking screws [14]

(nail up to 240 mm in length)

- Twist drill (Ø 4 mm) KH384R
- Screw scale KH274R
- Screwdriver KH322R

Drill open the cortex with the twist drill (Ø 4.0 mm). Determine the screw length with the screw scale. Screw in the selected interlocking screw (Ø 4.5 mm).

Targon® RF
Operating Technique



15

Freehand interlocking [15]

(nails from 300 - 460 mm length)

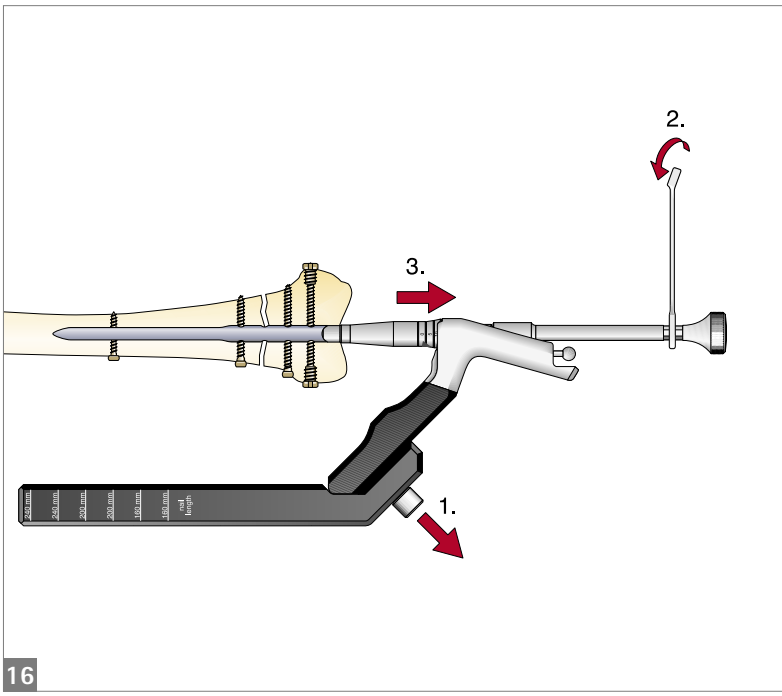
- Centering drill KH265R
- Twist drill (Ø 3.5 mm) KH267R

For nail lengths of 300 mm and above, proximal antero-posterior interlocking should be carried out with the free-hand technique. Care should be taken here to select the nail length such that the proximal interlocking lies flat in the area of the greater and lesser tubercle.

Removal of the targeting bow [16]

- Tightening sleeve KH321R
- Socket key KH324R
- Screwdriver KH322R

The connecting screw between the targeting bow and the targeting device can be loosened with the screwdriver. Loosen the nail adapter screw and remove the targeting device with the adapter.

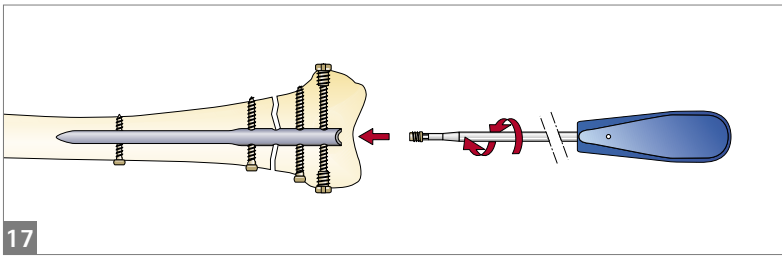


16

Insertion of the closure screw [17]

- Screwdriver KH322R

Screw in the closure screw with the screwdriver until the distal interlocking screw is firmly locked.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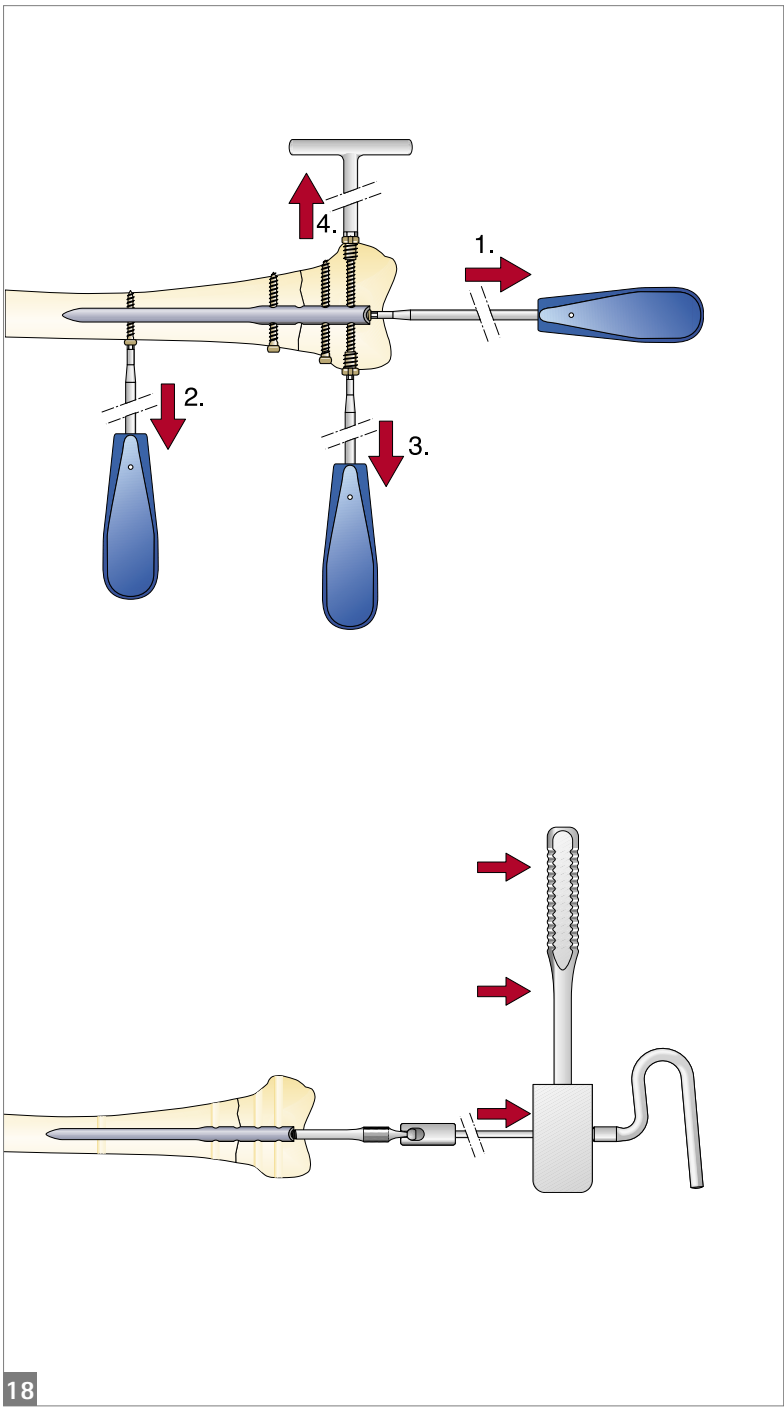
Targon® RF
Operating Technique



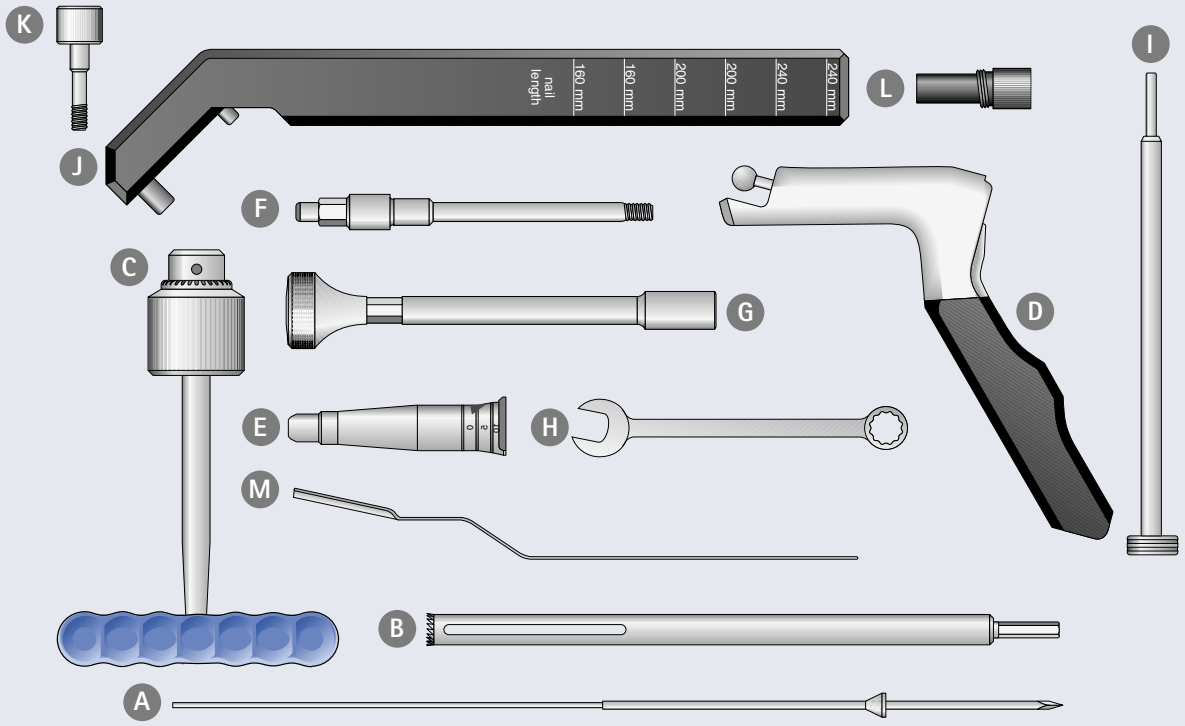
18

Removal of metal [18]

- Screwdriver KH322R
- Inserter for threaded sleeve KH404R
- Extractor adapter KH311R
- Extractor instrument KH310R
- Slotted hammer KH113R

The patient should be placed in the same positioning as for implantation. It should be assumed that there is bony overgrowth of the distal nail tip. After opening the joint via the old scar, introduce the guide pin centrally in the nail hole; monitor with the image intensifier. Cautiously expose the distal nail tip with the hollow reamer. Remove the closure screw and the distal and proximal interlocking screws. Screw in the extractor adapter. Remove the nail with the aid of the extractor instrument and the slotted hammer.

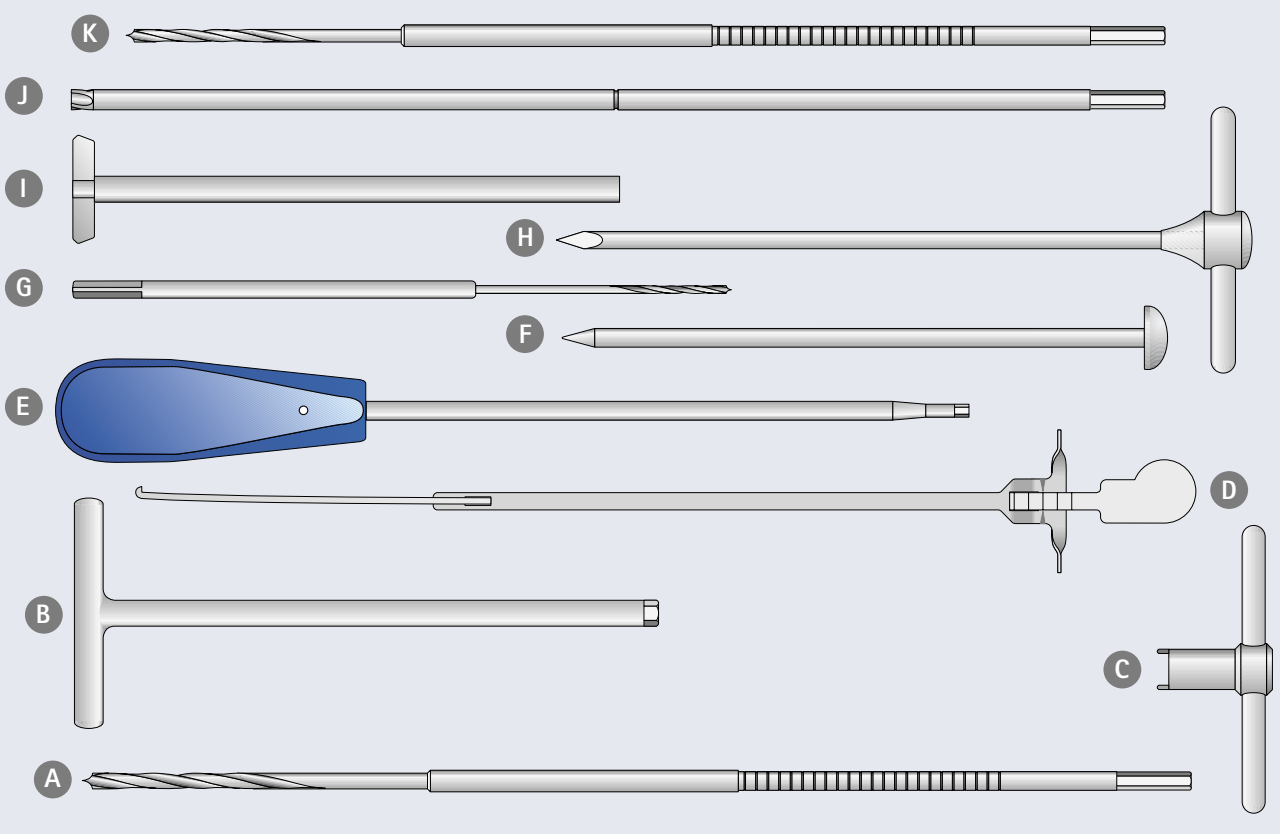
Targon® RF
Instrument Overview – Set 1



	Article No.	Description
A	KH393R	Guide pin
B	KH392R	Hollow reamer Ø 12.5 mm
C	KH319R	Universal handle
D	KH210R	Targeting device
E	KH396R	Nail adapter
F	KH397R	Nail adapter screw
G	KH321R	Tightening sleeve 10 width across flats

	Article No.	Description
H	KH324R	Socket key 10 width across flats
I	KH394R	Nail centering pin
J	KH395P	Targeting bow
K	KH409R	Screw for targeting bow
L	KH410P	Screw sleeve
M	KH406R	Nail depth scale

Targon® RF
Instrument Overview – Set 2

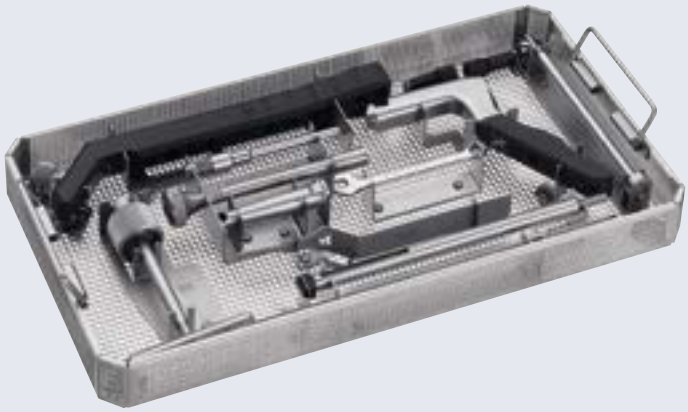


	Article No.	Description
A	KH385R	Twist drill Ø 5 mm
B	KH404R	Inserter for threaded sleeve
C	KH405R	Counter handle
D	KH274R	Screw scale
E	KH322R	Screwdriver
F	KH383R	Obturator
G	KH267R	Twist drill Ø 3.5 mm
H	KH265R	Centering drill

	Article No.	Description
I	KH429R	Tissue protection sleeve
J	KH376R	Facing cutter
K	KH384R	Twist drill Ø 4 mm

Targon® RF – Ordering Information Instrument Sets

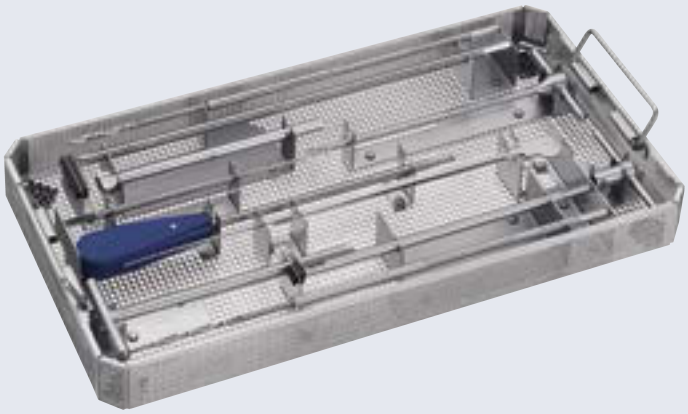
Targon® RF KH334 Basic Instrument Set 1



Consisting of:	
Targeting device	KH210R
Nail adapter screw	KH397R
Nail adapter	KH396R
Targeting bow	KH395P
Tightening sleeve 10 width across flats	KH321R
Socket key 10 width across flats	KH324R
Universalhandle	KH319R
Nail centering pin	KH394R
Hollow reamer Ø 12.5 mm	KH392R
Guide pin	KH393R
Nail depth scale	KH406R
2 x Screw sleeve	KH410P
Screw for targeting bow	KH409R
Basket with storage	KH333R
Wrapping drape	JF511
Packing template	TE600
X-ray template	KH408

recommended container for KH334 with lid:
JK442 + JK 489 (lid)
recommended lid for basket: JF217R

Targon® RF KH334 Basic Instrument Set 2

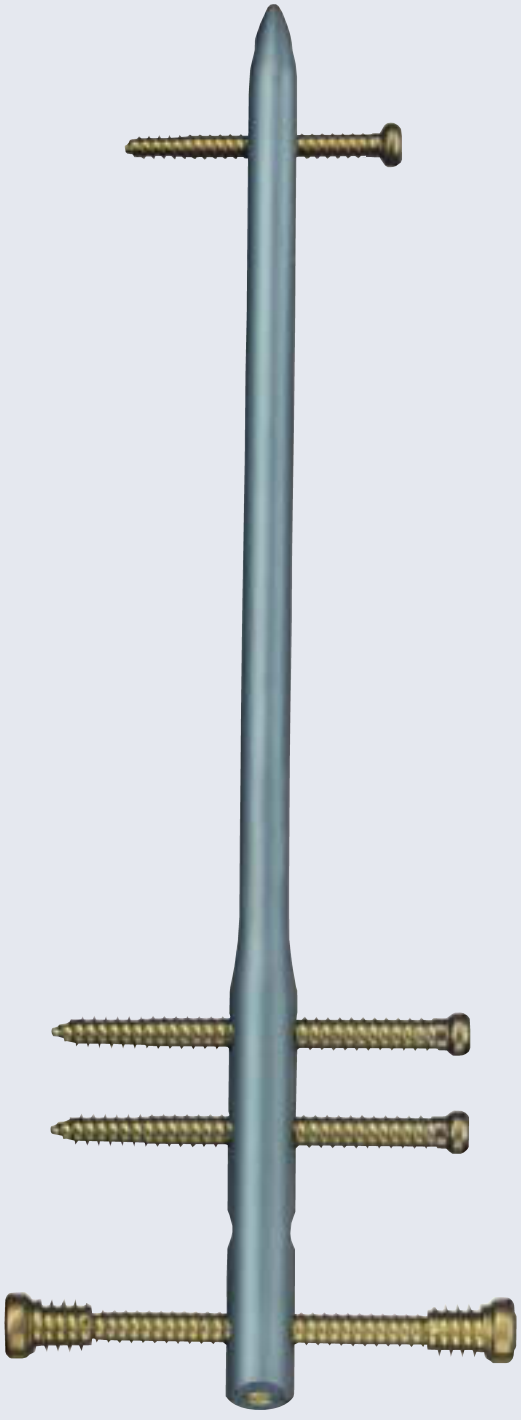


Consisting of:	
Twist drill Ø 4 mm	KH384R
Facing cutter	KH376R
Tissue protection sleeve	KH429R
Obturator	KH383R
Centering drill	KH265R
Twist drill Ø 3.5 mm	KH267R
Screwdriver	KH322R
Screw scale	KH274R
Inserter for threaded sleeve	KH404R
Counter handle	KH405R
Twist drill Ø 5 mm	KH385R
Basket with storage	KH335R
Wrapping drape	JF511
Identification label	JG785B
Identification label	JG756B
Packing template	TE607

Please order separately: Extraction instruments	
Extraction instrument	KH310R
Extraction adapter	KH311R
Slotted hammer	KH113R

recommended container for KH334 with lid:
JK442 + JK 489 (lid)
recommended lid for basket: JF217R

Targon® RF – Ordering Information Implant Sets



KH336 Set Targon® RF nails

Consisting of:	
10 x 160 mm	KD902T
10 x 200 mm	KD904T
10 x 240 mm	KD906T
10 x 300 mm	KD388T
10 x 320 mm	KD390T
10 x 340 mm	KD392T
10 x 360 mm	KD394T
10 x 380 mm	KD396T
10 x 400 mm	KD398T
10 x 420 mm	KD400T
10 x 440 mm	KD402T
Basket with storage	KH337R
Wrapping drape	JF511
Identification label	JG785B
Identification label	JG786B
Packing template	TE606

recommended container for KH156 or KH154:
JK440 + JK489 (lid)
recommended lid for basket: JF217R

KH338 Set Components

Locking screw, Ø 6 mm 		
36 mm	KB636T	2
40 mm	KB640T	2
44 mm	KB644T	2
48 mm	KB648T	2
52 mm	KB652T	4
56 mm	KB656T	4
60 mm	KB660T	4
64 mm	KB664T	4
68 mm	KB668T	4
72 mm	KB672T	4
76 mm	KB676T	4
80 mm	KB680T	4
84 mm	KB684T	4
88 mm	KB688T	4
92 mm	KB692T	4
96 mm	KB696T	2
100 mm	KB700T	2
104 mm	KB704T	2
108 mm	KB708T	2
112 mm	KB712T	2
116 mm	KB716T	2

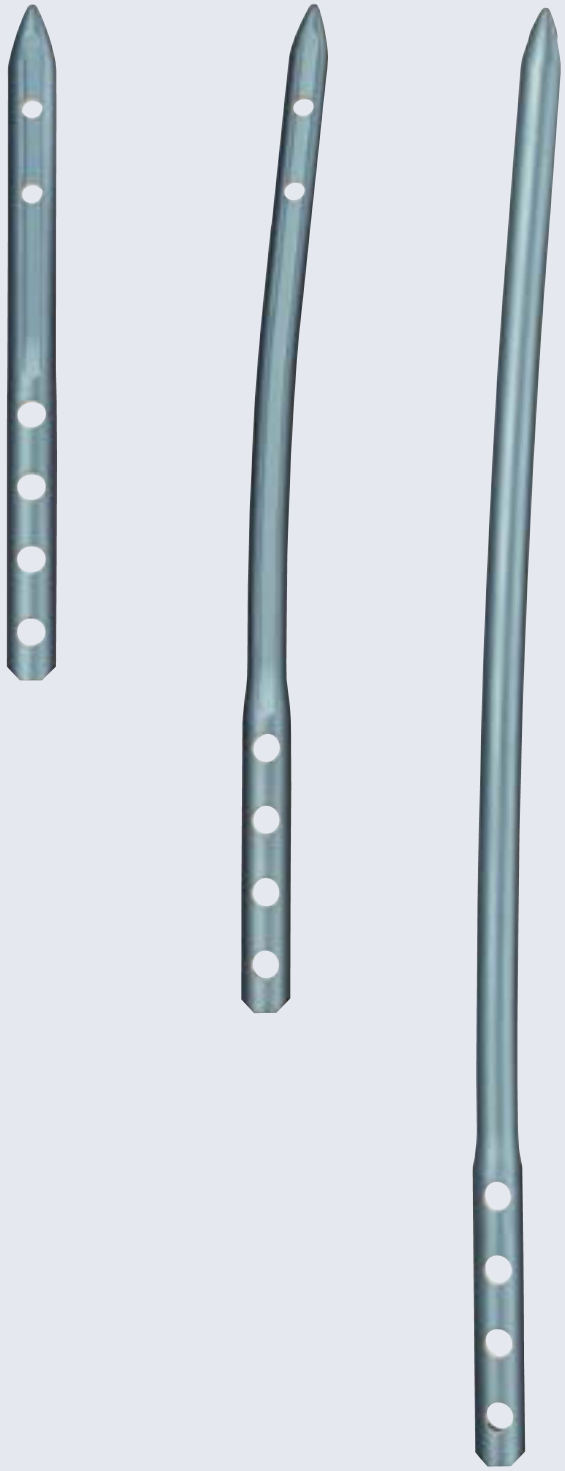
recommended container for KH338: JK440 + JK489 (lid)
recommended container for KH336 or KH338: JK444 + JK489 (lid)

Locking screw, Ø 4.5 mm 		
20 mm	KB320T	2
24 mm	KB324T	2
28 mm	KB328T	2
32 mm	KB332T	4
36 mm	KB336T	4
40 mm	KB340T	4
44 mm	KB344T	4
48 mm	KB348T	2
52 mm	KB352T	2
56 mm	KB356T	2
60 mm	KB360T	2
64 mm	KB364T	2
68 mm	KB368T	2
72 mm	KB372T	2
76 mm	KB376T	2
80 mm	KB380T	2

Closure screw 		Threaded sleeve 	
KB630T	2	KB616T	6

Storaging:		
Basket with storage/lid	KH339R	1
Wrapping drape	JF511	1
Identification label	JG785B	2

Targon® RF – Ordering Information Implant Program



Targon® RF Nail, Ø 10 mm	
160 mm	KD902T
200 mm	KD904T
240 mm	KD906T
300 mm	KD388T
320 mm	KD390T
340 mm	KD392T
360 mm	KD394T
380 mm	KD396T
400 mm	KD398T
420 mm	KD400T
440 mm	KD402T
Targon® RF Nail, Ø 11 mm	
340 mm	KD492T
360 mm	KD494T
380 mm	KD496T
400 mm	KD498T
420 mm	KD500T
440 mm	KD502T
460 mm	KD504T
Targon® RF Nail, Ø 12 mm	
160 mm	KD922T
200 mm	KD924T
240 mm	KD926T

Locking screw, Ø 6 mm 	
36 mm	KB636T
40 mm	KB640T
44 mm	KB644T
48 mm	KB648T
52 mm	KB652T
56 mm	KB656T
60 mm	KB660T
64 mm	KB664T
68 mm	KB668T
72 mm	KB672T
76 mm	KB676T
80 mm	KB680T
84 mm	KB684T
88 mm	KB688T
92 mm	KB692T
96 mm	KB696T
100 mm	KB700T
104 mm	KB704T
108 mm	KB708T
112 mm	KB712T
116 mm	KB716T

Locking screw, Ø 4.5 mm 	
20 mm	KB320T
24 mm	KB324T
28 mm	KB328T
32 mm	KB332T
36 mm	KB336T
40 mm	KB340T
44 mm	KB344T
48 mm	KB348T
52 mm	KB352T
56 mm	KB356T
60 mm	KB360T
64 mm	KB364T
68 mm	KB368T
72 mm	KB372T
76 mm	KB376T
80 mm	KB380T

Threaded sleeve 	KB616T

Closure screw 	KB630T

Aesculap® Targon® F/T

Interlocking Nail System for Femur and Tibia

Aesculap Orthopaedics

B BRAUN
SHARING EXPERTISE

Aesculap® Targon® F/T

PD Dr. med. Hans-Werner Stedtfeld
Formerly: Centre for Trauma Surgery, Nuremberg, Germany
University Hospital of Rostock, Germany

The Targon® interlocking nail system is the result of years of clinical experience in the application of interlocking nails combined with the high technical competence of Aesculap. The implants are anatomically adapted and easy to implant thanks to simple and logical instrumentation. Quality and modern manufacturing processes enable load-bearing capacity in all relevant dimensions. The drilled implantation technique is supplemented by the drill-free technique for situations with a high degree of soft-parts damage, high blood loss (polytrauma) or severe thoracic trauma.

For the slender nails to withstand alternating flexion loads, the nails and locking screws are made of high-strength titanium alloys – and can still be applied with the same instrument set.

To reduce stock-keeping requirements, for each of the two bones – femur and tibia – implants have been developed that can be used in either the left or the right leg.
As a result, the Targon® interlocking nail system combines enhanced anatomic adaptation, easy handling, biomechanical strength and "last not least" economy.

February, 2011

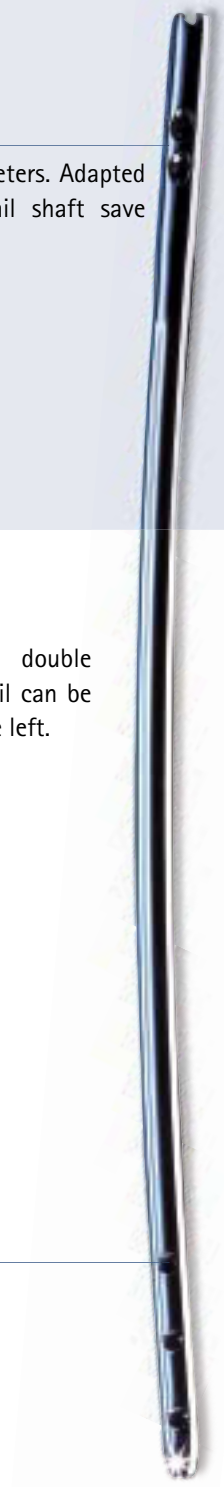
Aesculap® Targon® F/T

Universal Interlocking Nail

Femur

Nail diameter

Only 2 adapters for all nail diameters. Adapted diameters of nail head and nail shaft save subsequent proximal re-drilling.



Wall thickness and profile

The wall thicknesses and profiles permit high strengths and sufficient flexibility with all nail diameters.

Reduced stock-holding through double oblique holes, i.e. the femoral nail can be used both on the right and on the left.

Fixation hole positioning

The position of the lower fixation holes allows effective utilization of the procedure distally. No harm to the extensor tendons and to the anterior vessels through sagittal drilling.

Proximal interlocking

The position of the 3 transverse holes permits good utilization of the procedure proximally. No danger to popliteal vessels through sagittal holes. No danger to harm the tibiofibular joint through diagonal holes.

Tibia

Proximal nail design

No irritation of the patella ligament through bevelled proximal nail design.

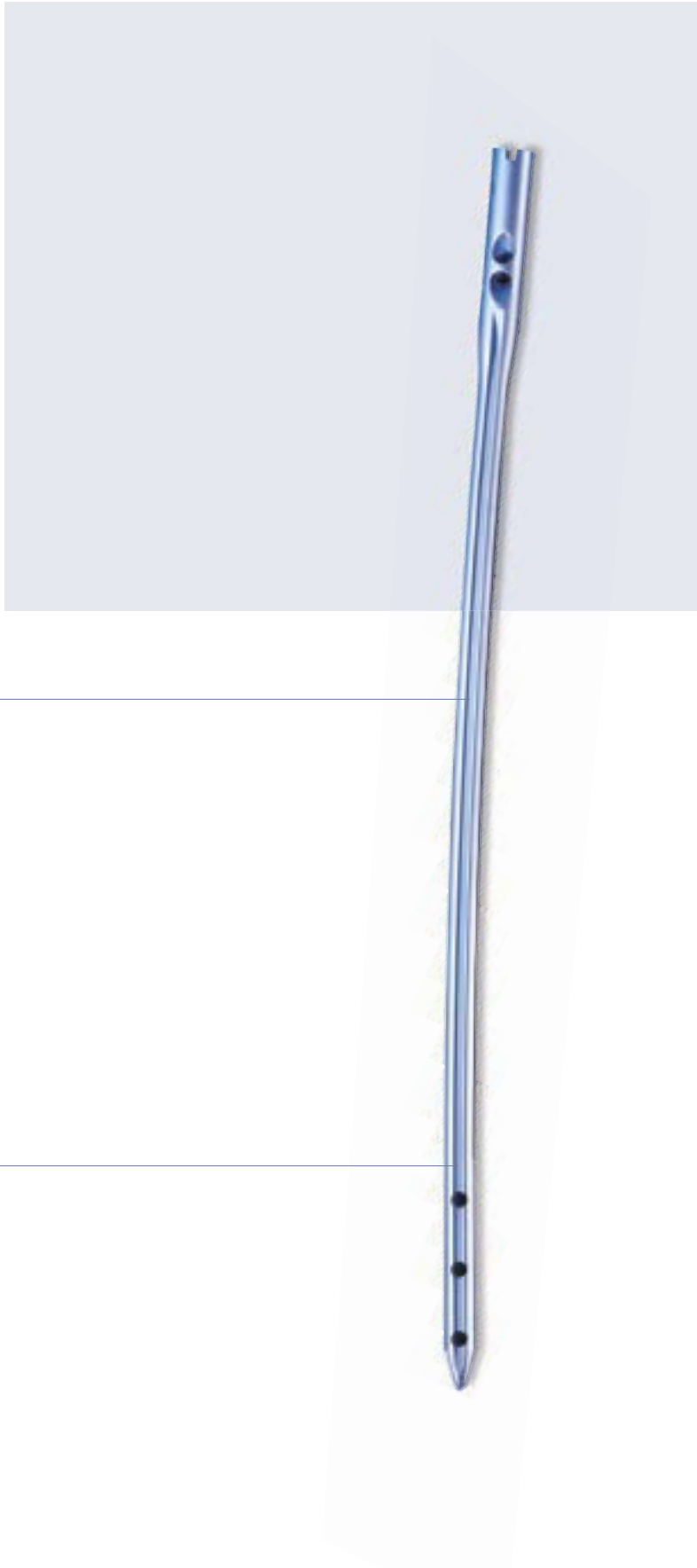
Nail curvature

The three anatomical curves at 14°, 6° and 3° enable easy insertion into the medullary canal.

Aesculap® Targon® F/T

Solid Titanium Interlocking Nail

Femur

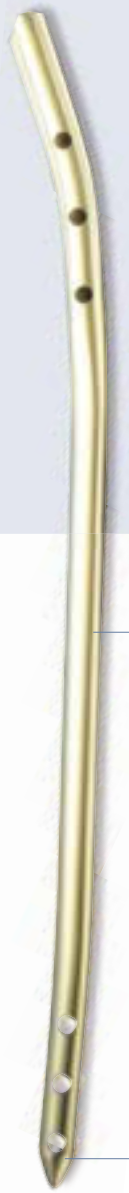


Grooves

Grooves along the nail (drainage effect) reduce the intramedullary pressure during implantation. Better endosteal revascularization.

Solid nail

Solid nail made of titanium alloy (Ti6Al4V) reduces the risk of infection with open fractures.



Tibia

Nail insertion

Good cancellous penetration with pointed nail end (ice breaker effect). Effective dynamization almost always possible.

Nail profile

Polygonal profile of the tibia nail enables high strength with small diameter.

Aesculap® Targon® F/T

Closure and Fixation Screw

Targon® Closure Screw

Prevents bony ingrowth

Targon® Fixation Screw

Continuous flat thread facilitates removal of the screw. Nail wedges in flat thread. No lateral migration. Deeper self-tapping thread for opposite cortical layer. Only one drilling process required.

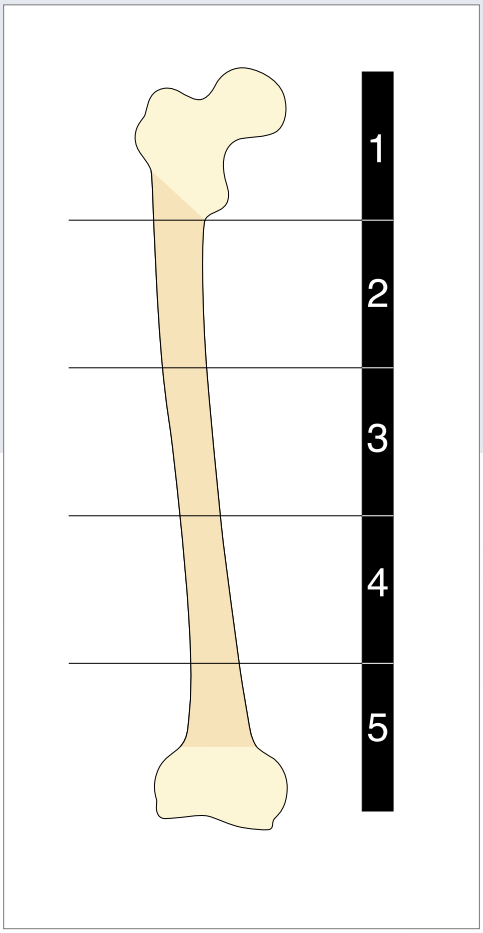
Aesculap® Targon® F/T

Universal

Femur

Reaming of the medullary cavity should be performed with an appropriate reaming system (deep notches in the reaming head) able to reduce the intramedullary pressure. It should be stopped as soon as the reamer gets in contact with the cortex. Enhanced stability of fixation is obtained thanks to the good adaptation of the nail to the anatomy of the femur and to enhanced fitting of the locking screws in the distal holes.

The universal interlocking nail for the femur covers all indications for reamed nailing in the shaft region. The oblique direction of the proximal interlocking hole and the availability of three holes far distally allow use of this standard method for fixation in the femur, even in borderline indications.

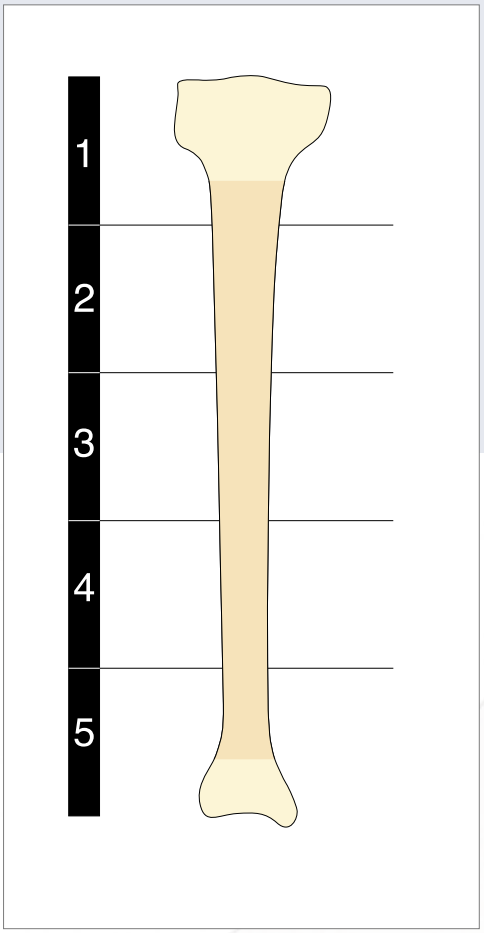


Classification of fracture localisation according to one fifth method. Targon® range of indications shown in dark beige.

Tibia

Reaming of the medullary cavity damages the blood flow through the inner cortex. Within a short time this damage is compensated by an increased blood supply from the periosteal vessels. Reaming should not make the cortex any thinner but only allow contact between nail and cortex. The product of reaming, containing living bone cells, accumulates in the fracture haematoma and thus promotes the formation of callus.

The universal interlocking nail for the tibia covers all indications for reamed nailing in the shaft region, except for fractures with severe soft tissue damage. The anatomical shape makes the insertion of the nail easy. The arrangement of the interlocking holes both proximally and distally allows use of this standard method for fixation of the tibia, even for borderline indications.

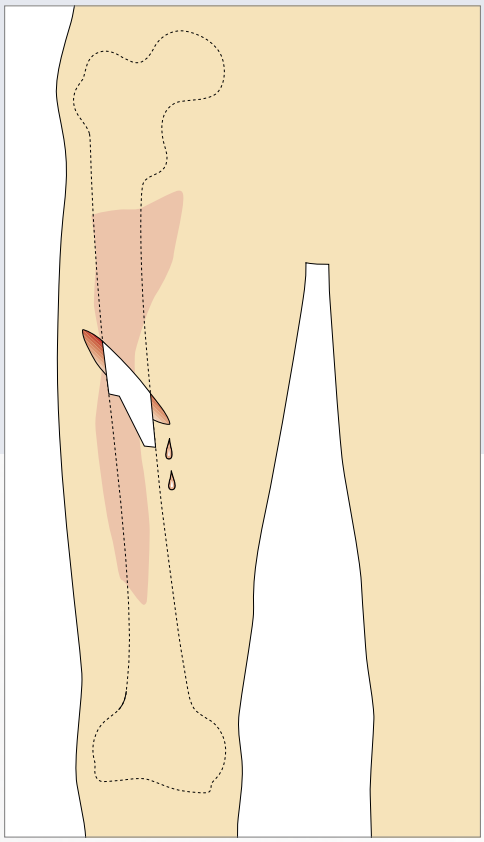


Classification of fracture localisation according to one fifth method. Targon® range of indications shown in dark beige.

Aesculap® Targon® F/T

Solid Titanium

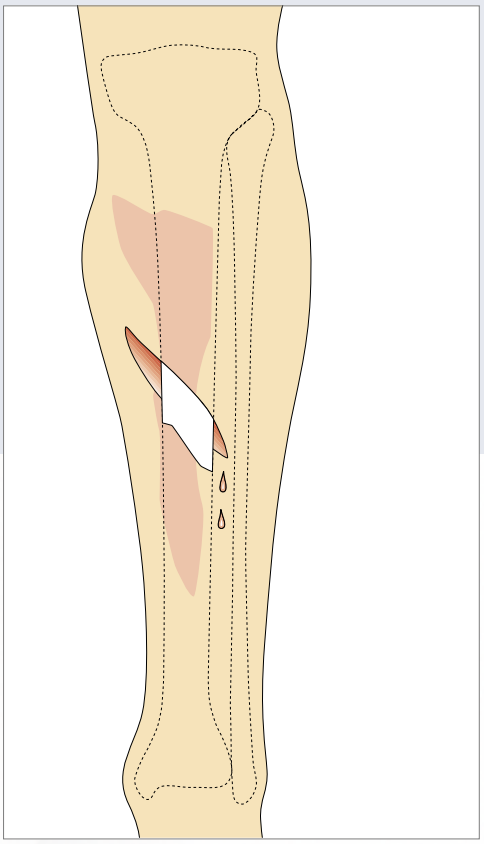
Femur



When the femoral medullary cavity is reamed, bone fat is mobilized and enters the venous blood stream. In most cases this process is neutralized by physiological mechanismus but, after extensive blood loss (polytrauma) and in case of severe chest trauma, such mechanisms may be insufficient and ARDS can occur. The use of an unreamed femoral interlocking nail, with its thinner diameter and less forceful introduction, the raise of the intramedullary pressure and hence the negative pulmonary consequences. As the endosteal vessels are mainly preserved, the unreamed femoral nail is also indicated for fracture stabilization in case of severe soft tissue damage.

The thin solid femoral nail, made of a robust titanium alloy, is mainly recommended for the primary treatment of femoral shaft fractures both in case of polytrauma and severe soft tissue damage. The three gooves along the nail set drainage and thus keep the intramedullary pressure low. In addition, they make the regeneration of the intramedullary vessels possible.

Tibia



Similar to the femur the insertion of a thin nail into the tibia minimizes the destruction of the endosteal blood supply. This aspect is important in case of grade II and III open fractures or in case of grade III closed fractures. In addition, stably fixed fragments which are kept "alive" offer the enhanced protection against multiplying of bacterias in the contaminated area of open fractures. A meticulous soft tissue debridement must precede fracture stabilization.

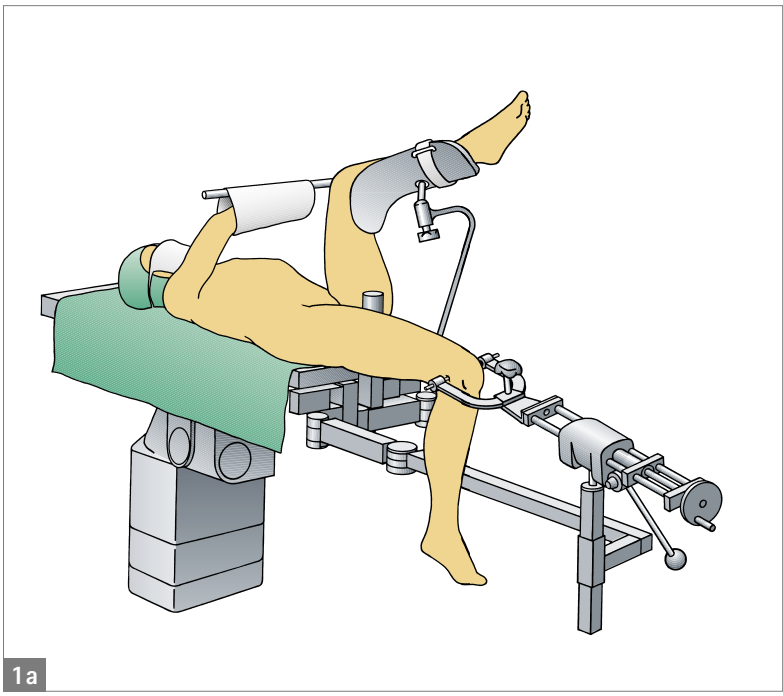
The titanium nail for the tibia covers all indications for unreamed interlocking nailing in the shaft region. The anatomical shape makes insertion of the nail easy. Three interlocking holes both proximally and distally allow appropriate use of this implant. The high capability of the titanium alloy to withstand alternate loads reduces the risk of metal fatigue.

Aesculap® Targon® F/T

OP-Manual Femur

Operation Technique for Targon®
"Femur" Interlocking Nails

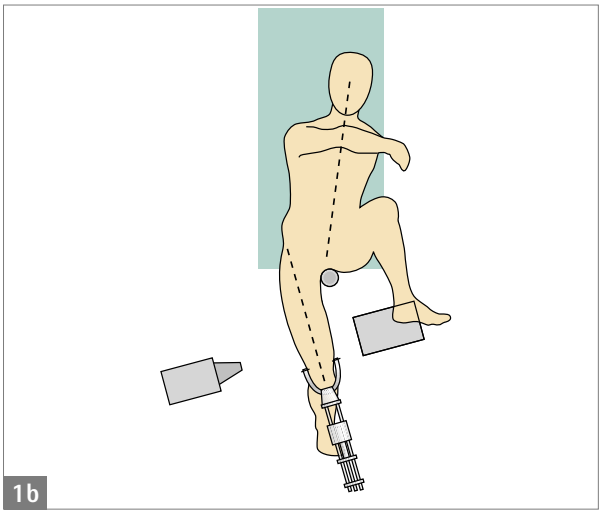
1



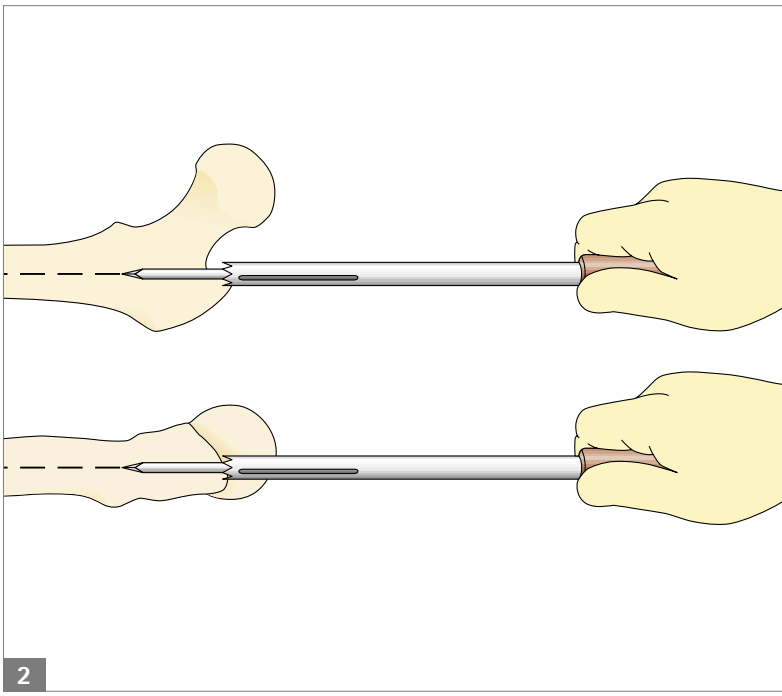
1a

Patient Positioning

The patient is placed on the traction table in a supine position. (Fig. 1) Traction is exerted on the leg through a supra- or transcondylar Steinmann pin extension applied in the OR under sterile conditions. The leg should be extended in abduction or neutral position. By means of a traction device or a thorax brace, the upper part of the body is shifted to the opposite, healthy side. This positioning permits reliable reduction and fixation. The inclination of the upper body towards the opposite side permits easy access to the trochanter major. (Fig. 1b)
In certain cases extension can be achieved with the help of a leather shoe (abduction and inclination!)
It is also possible to perform interlocking nailing without a traction table, if the patient is in a lateral position. This position is recommended in case of open fractures and polytrauma (on a normal operation table), i. e. in cases where an unreamed nail is indicated.



1b



2

Access

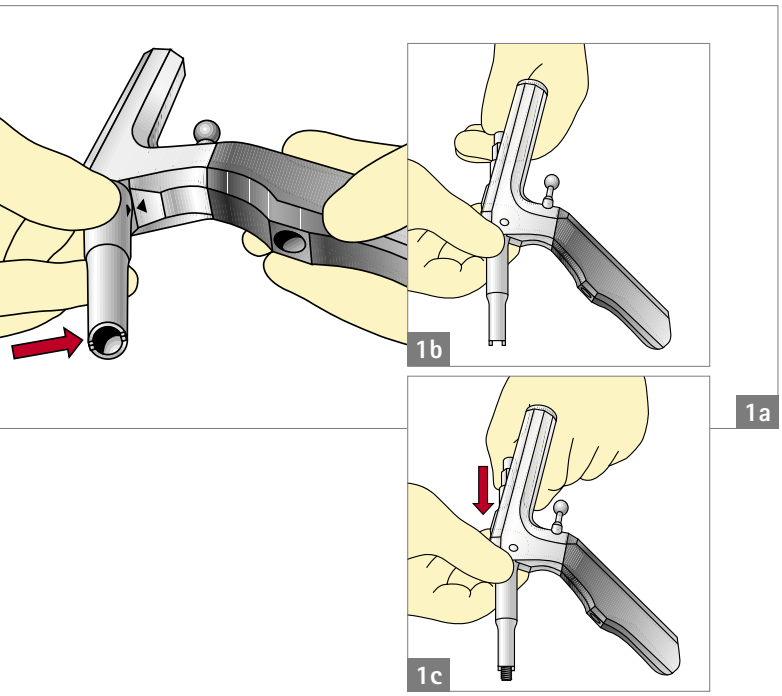
The area of the trochanter tip is approached by a 5 cm long skin incision proximally of the trochanter major. The fascia lata and the attachment of the M. gluteus medius are split parallelly to the fibres. Controlled by X-ray, the guide for the reamer is inserted at the medial incline of the trochanter major, in direction of the center of the medullary canal up to the guide plate sitting on the trochanter tip. (Fig. 2) In the axial beam path of the image intensifier the point of entry should be at the transition from the middle to the dorsal third of the trochanter. In the anteroposterior beam path it should be at the mediocranial border of the trochanter tip, so that the guide plate is placed on the trochanter with its half surface lying free. The reamer is now moved over the guide to open the medullary canal. The diameter of the hole of entry corresponds to the proximal outer diameter of the solid titanium nail.

Reaming

After reduction, the guide wire for the intramedullary reamer is inserted into the medullary canal. The guide wire is guided past the fracture zone and the thick end is driven centrally between the femoral condyles into the compacted spongiosa above the intercondylar notch. Using the flexible intramedullary reamer, the intramedullary canal is drilled open in steps of 0.5 mm (which is different from the conventional Küntscher nailing) up to the corticalis of the medullary isthmus. With interlocking nailing it is not necessary to guide the nail all along the corticalis of the diaphysis. The required nail diameter equals the diameter of the last reamer used minus 1 mm. With distal fractures, a disproportion can result between the curvature of the nail and the antecurvature of the proximal fragment of the femoral shaft, which causes torsion of the slotted nail. In such situations, one should choose a nail diameter that is 1.5 to 2 mm smaller than the diameter of the last reamer used. Upon completion of the reaming procedure, the teflon tube is applied to replace the guide wire with the spike for the nail. The teflon tube is removed. The exact central positioning of the spike for the nail is checked distally using the image intensifier. The nail length equals to the difference between the total length of the spike (90 cm) and the length of the part which is overlapping of the bone. In case of comminuted fractures, the correct nail length is determined preoperatively on the healthy femur with the help of the image intensifier and a X-ray scale.

Aesculap® Targon® F/T

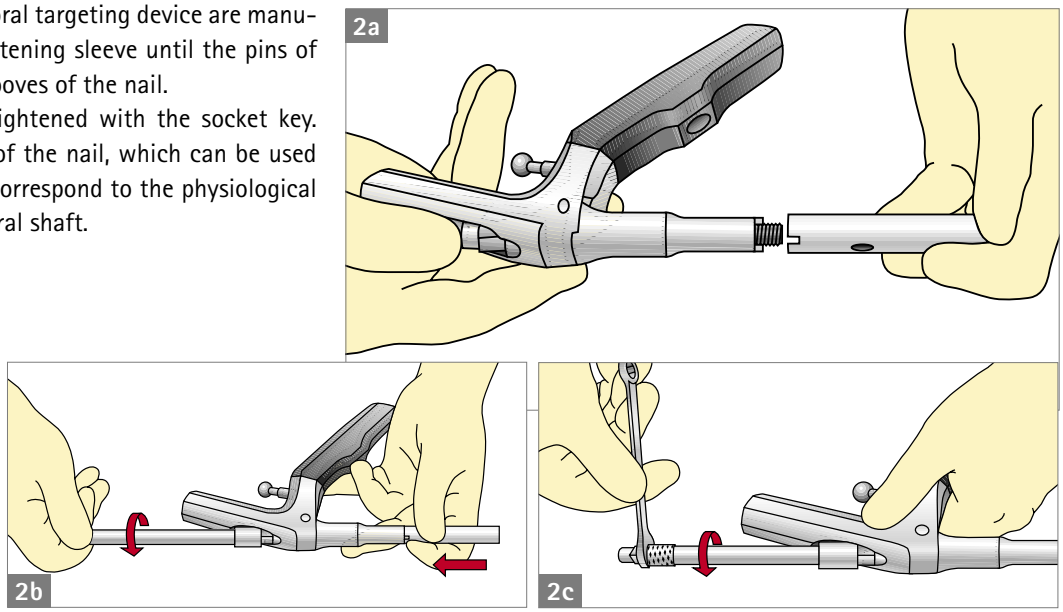
OP-Manual Femur

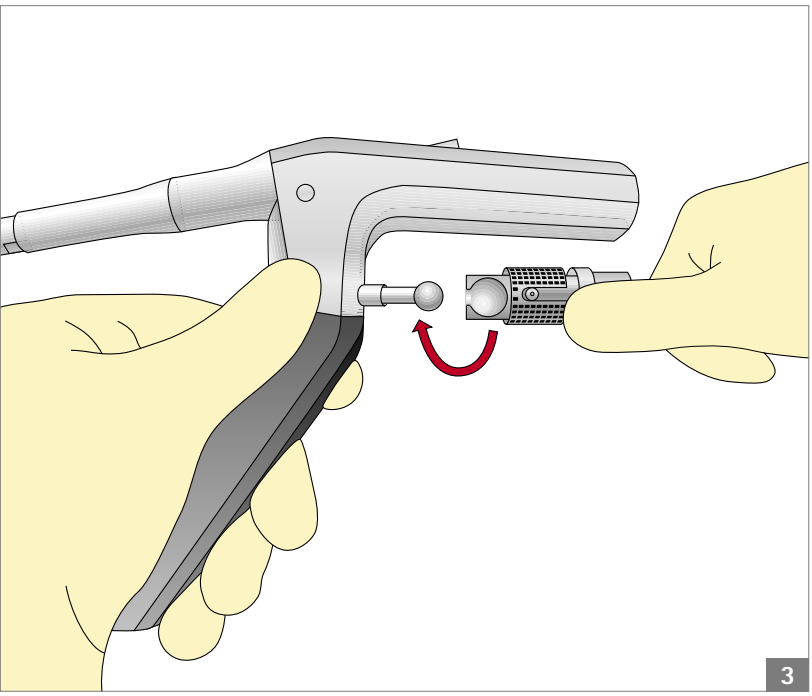


Assembling the targeting and insertion instrument

A nail of the suitable length and diameter is mounted on the combined proximal targeting and insertion instrument. First the appropriate adapter for the nail is selected (A for nail diameters 8 – 11 mm; B for nail diameters 12 – 15 mm).
The adapter is inserted into the targeting instrument so that the arrow on the adapter points to the arrow on the targeting instrument.
Next, the appropriate adapter screw is pushed through the targeting instrument and adapter, thus coupling the system (Fig. 1a-c).

Now, the nail and the femoral targeting device are manually connected with a tightening sleeve until the pins of the adapter fit into the grooves of the nail.
The tightening sleeve is tightened with the socket key. Important: The curvature of the nail, which can be used both right and left, must correspond to the physiological antecurvature of the femoral shaft.





3

Inserting the nail

The nail is smoothly inserted with the hammer (in case of a reamed hollow nail over the spike).

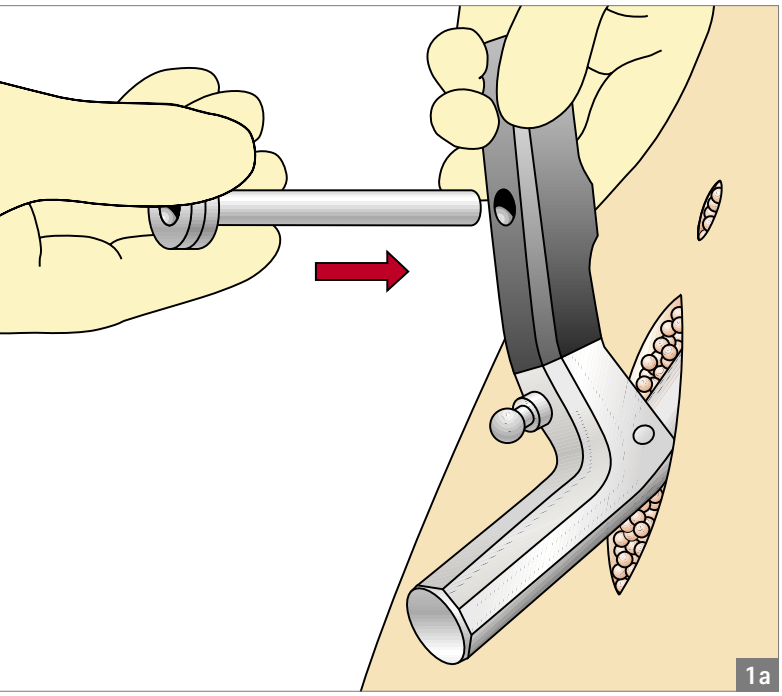
Important:

The hammer must always hit the inserter boss. It must never hit the targeting instrument because this would cause the targeting instrument to deform plastically and loose accuracy. The same applies should it be necessary to strike back the nail. To do this, always use the knock-out ball next to the inserter boss, applying the knocking out instrument and the slotted hammer. In this case the knocking out instrument is connected with the knock-out ball of the targeting instrument. Never knock out the nail by striking the hammer on the teflon handle of the targeting device.

Tap in the nail until the adapter approaches the entry of the medullary canal up to 1 cm, controlled by image intensifier.

Aesculap® Targon® F/T

OP-Manual Femur

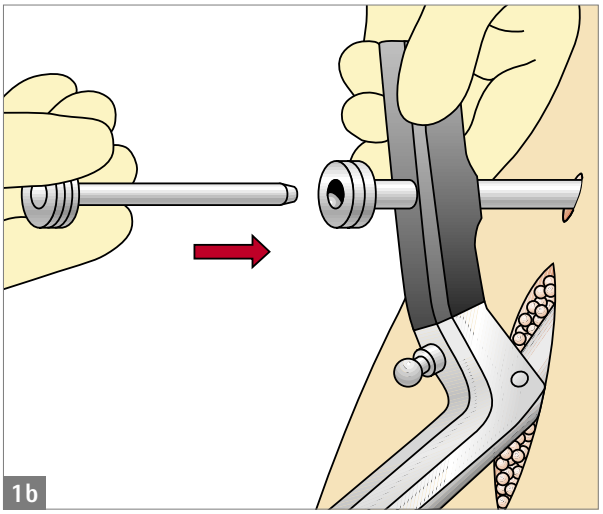


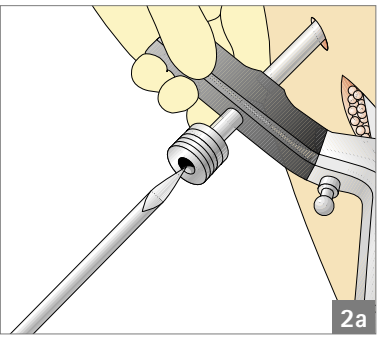
Interlocking

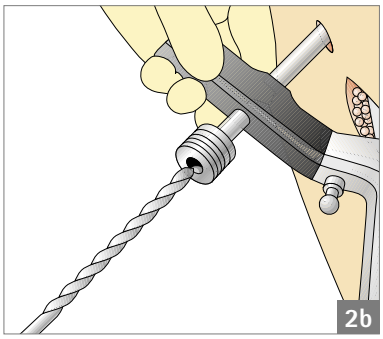
For proximal fixation the tissue protecting sleeve with an inner diameter of 8 mm (1 ring) is inserted into the diagonal hole of the targeting instrument and pushed through the soft tissue until it reaches the lateral side of the trochanter major.

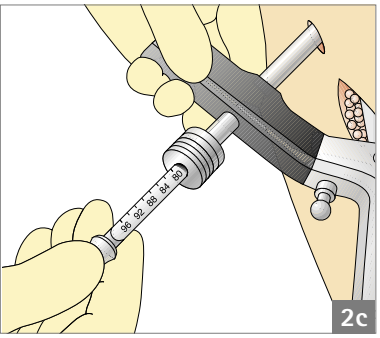
The inner drill sleeve, which has an inner diameter of 6 mm (2 rings), is inserted into the tissue protecting sleeve.

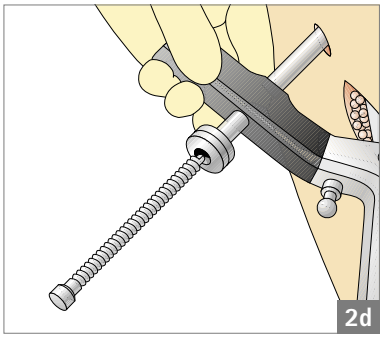
The bone is marked using the trocar. The necessary drilling and the measuring of the length of the screw are both done through the inner drill sleeve. The length is indicated on the screw scale at the edge of the drill sleeve. Precise measurement of length is possible only if the inner drill sleeve touches the bone (verification with image intensifier possible!). After removal of the drill sleeve, the appropriate interlocking screw is inserted through the tissue protecting sleeve.











After removal of the targeting instrument, the proximal end of the nail is closed with the appropriate closure screw to prevent bony ingrowth (Table 1 and 2).

Distal fixation is done free-hand (similar to the lower leg) at the lateral side of the upper leg.

Important:

The image intensifier must be adjusted so that the nail hole through which fixation is to be performed is centered and circular in the image on the monitor.

Nail removal

The patient is placed in a semi-lateral position. The fixation screws are removed first. The access incision is made in the old scar area. The upper end of the nail is exposed and the closure screw removed. To remove the nail, the appropriate adapter is screwed into the proximal nail thread and the nail is extracted with the knocking-out instrument and the slotted hammer.

Unreamed nailing

In case of unreamed nailing, the solid titanium nail and the targeting device are connected in the same way. The length of the nail is measured either with a previously inserted nail spike as explained above or preoperatively with a X-ray scale to be applied on the healthy femur using image intensifier. The interlocking of the solid titanium nail is performed as described above.

Aesculap® Targon® F/T

Ordering Information – Femur

Femur

Femur "Universal"

Description	Technical specifications	
	ø 10 – 11 mm	**ø 12 – 15 mm**
Adapter	A	B
Adapter screw	A	B
Interlocking screw		
prox.	ø 6 mm	ø 6 mm
dist.	ø 5 mm	ø 6 mm
Drill		
prox.	ø 4.5 mm	ø 4.5 mm
dist.	ø 3.5 mm	ø 4.5 mm
Closure screw	ø 8 mm	ø 10 mm
Knock-out adapter	ø 8 mm	ø 10 mm

Table 1

Femur "Solid Titanium"

Description	Technical specifications
	ø 8 – 11 mm
Adapter	A
Adapter screw	A
Interlocking screw	
prox.	ø 6 mm
dist.	ø 4.5 mm
Drill	
prox.	ø 4.5 mm
dist.	ø 3.5 mm
Closure screw	ø 8 mm
Knock-out adapter	ø 8 mm

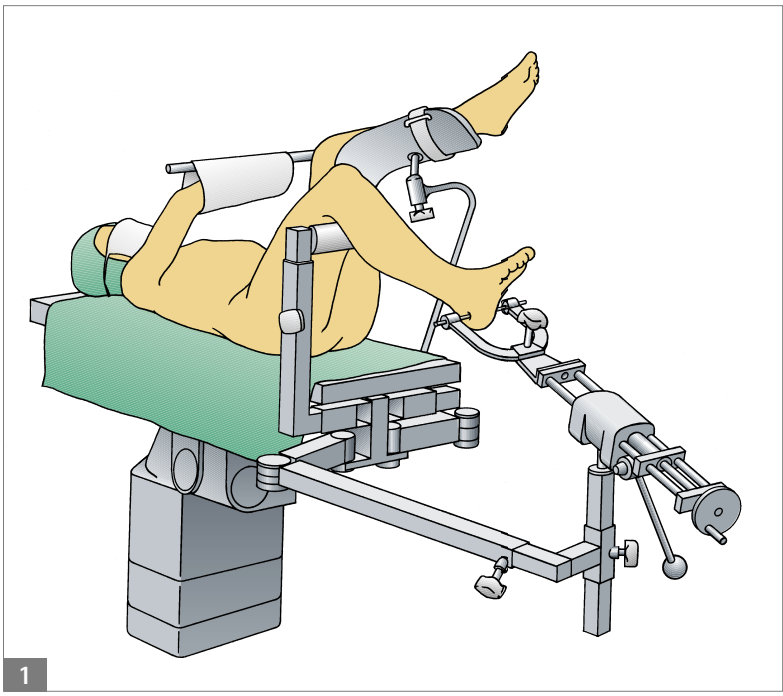
Table 2

Aesculap® Targon® F/T

OP-Manual Tibia

Operation Technique for Targon® "Tibial" Interlocking Nails

2



1

Positioning

The patient is placed on the traction table in supine position. Traction is exerted on the leg by means of a calcaneus extension. The flexion of the knee must be at least 80°.
In order to get a good exposure of the fractured leg under image intensifier, the healthy leg is held upwards (with the help of a leg support), the hip and knee joint being in flexion.

Access

A longitudinal skin incision is made between the tip of the patella and the tuberositas tibiae. The patella tendon is split longitudinally in the medial third. Alternatively, access can be done medially past the patella tendon. After inserting a blunt retractor, the medullary cavity is opened with the opening reamer on the front side of the head of the tibia, after having mobilized Hoffa`s fat pads towards cranial.

Drilling

Once the fracture has been reduced, the guide wire is introduced into the medullary cavity. The guide wire must be precisely centered distally. The insertion of the reamer with rotating reamer head increases too much the entrance hole towards distal (attachment of the patella tendon). Therefore in a first step the reamer head is pushed into the medullary cavity without any rotation.

In a variation from the conventional Küntscher (Kuentscher) nailing procedure, the medullary cavity is drilled only up to the corticalis of the medullary isthmus. Due to interlocking, it is not necessary to guide the nail all along the corticalis of the diaphysis. The required nail diameter equals the diameter of the last reamer used minus 1 mm.

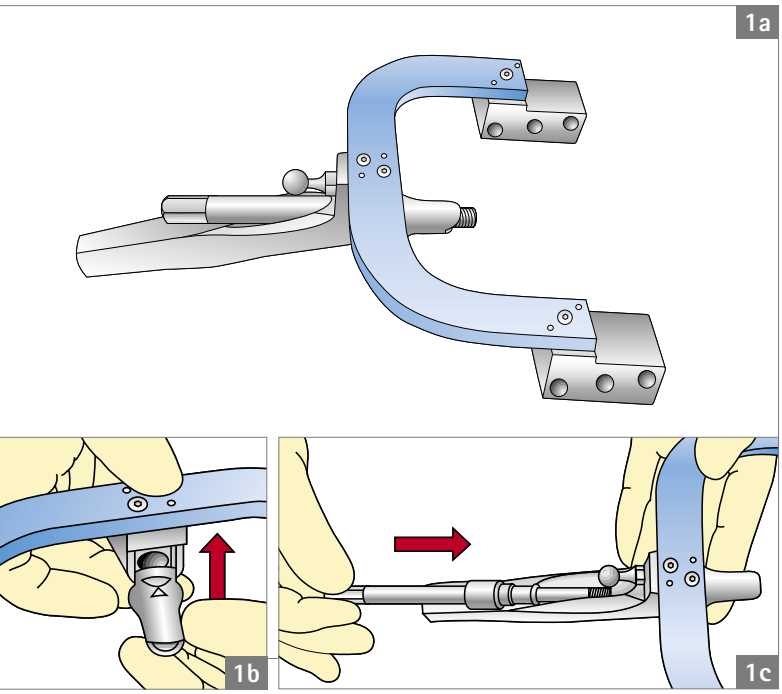
Upon completion of the drilling procedure, the teflon tube is used to replace the guide wire with the nail spike. The required nail length equals the difference between the total length of the nail spike (80 cm) and the length of that part of the spike which projects out of the bone.

Important:

In case of comminuted fractures, the required nail length is determined preoperatively on the healthy tibia, using an image intensifier and a X-ray scale.

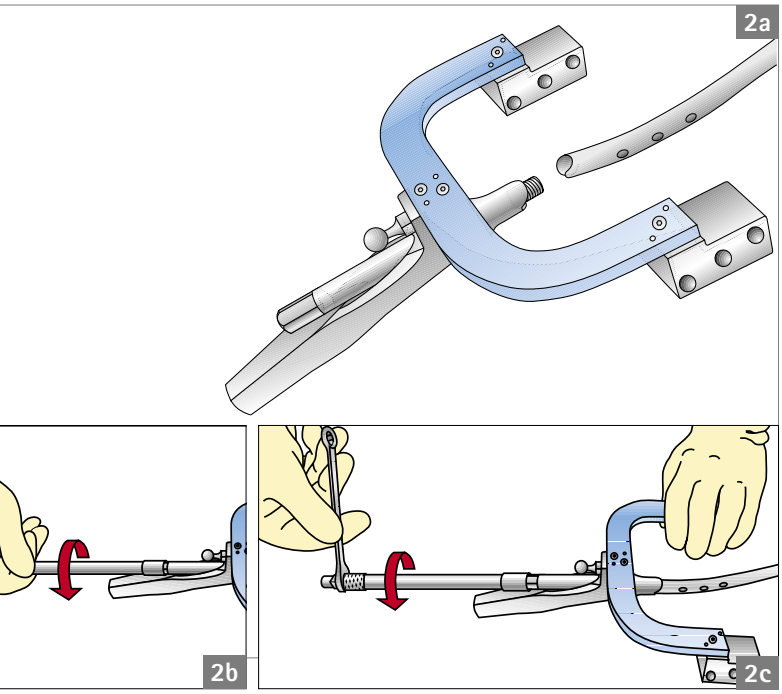
Aesculap® Targon® F/T

OP-Manual Tibia

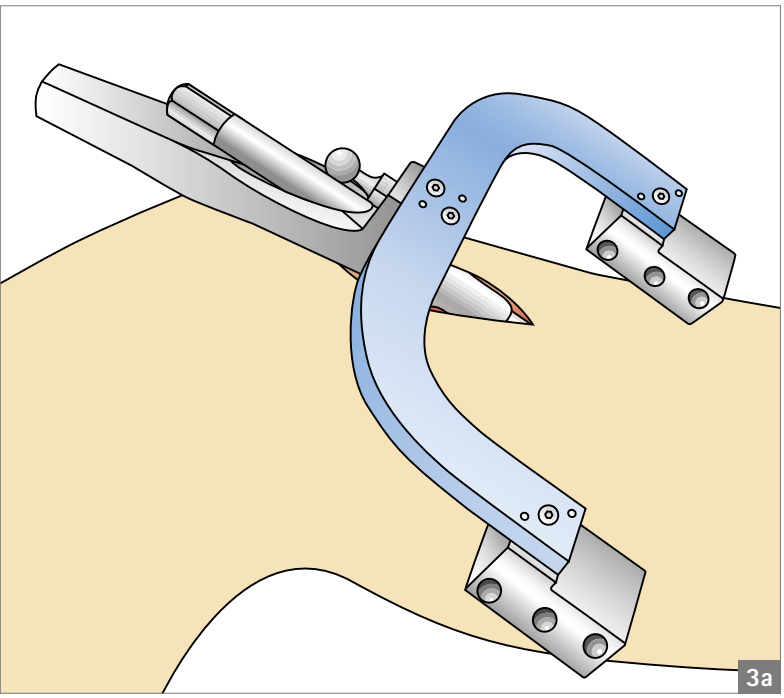


Assembling the targeting and insertion instrument

First the appropriate adapter is selected (A for nail diameters 8 – 11 mm, B for nail diameters 12 – 14 mm). The adapter is inserted into the targeting instrument so that the arrow on the adapter points to the arrow on the targeting instrument. Next, the appropriate adapter screw is pushed through the targeting instrument and the adapter, thus coupling the system (Fig. 1a-c).

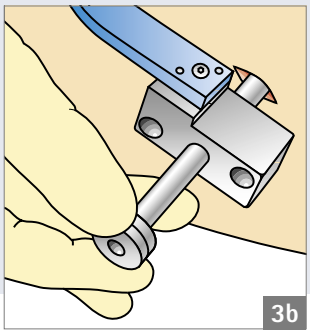


Now a nail of appropriate length and diameter is connected with the targeting device. The cambered, bevelled, proximal end of nail fits in the fish-jaw-type groove of the adapter. Afterwards, the adapter screw is tightened with the tightening sleeve using the socked key. Only in this case targeting accuracy for proximal interlocking can be enabled.

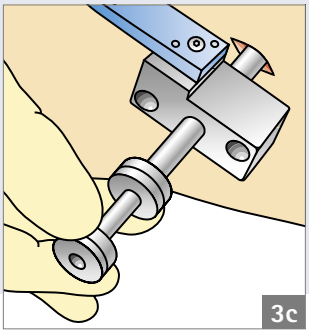


3a

For proximal interlocking the tissue protecting sleeve with an inner diameter of 8 mm (1 ring) is inserted into the hole of the targeting instrument and pushed through the soft tissue via a 1.5 cm long skin incision until it reaches the medial corticalis of the tibia head. The inner drill sleeve, which has an inner diameter of 6 mm (2 rings), is inserted into the tissue protecting sleeve and pushed forward to the bone (Fig. 3c).



3b



3c

Inserting the nail

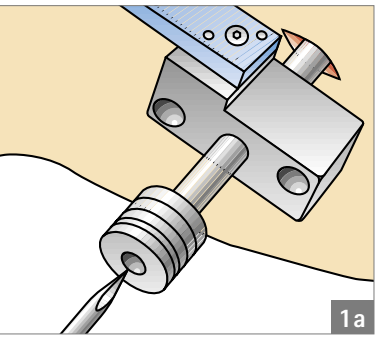
Important:

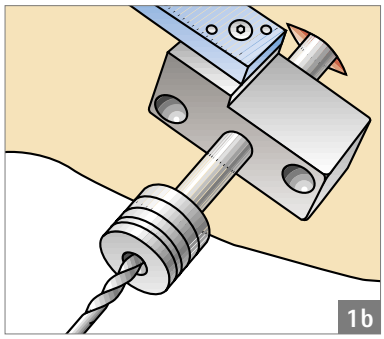
The hammer must always hit the inserter boss. It must never hit the targeting instrument, because this would cause the targeting instrument to deform plastically and loose accuracy. The same applies should it prove necessary to knock out the nail. To do this, always use the knock-out ball next to the inserter boss, the knocking out instrument, and a slotted hammer. The knocking out instrument is coupled to the knock-out ball at the bottom of the targeting instrument (as shown in Fig. F3, page 17). Never knock out the nail by striking the hammer on the teflon handle of the targeting device!

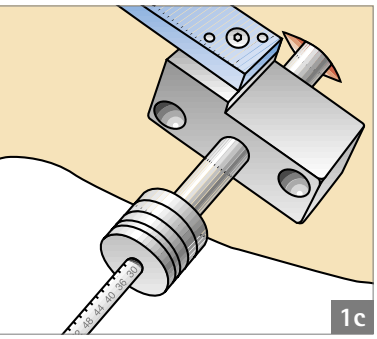
Tap in the nail under image intensifier, until the proximal nailend is at the same height as the corticalis of the tibia head.

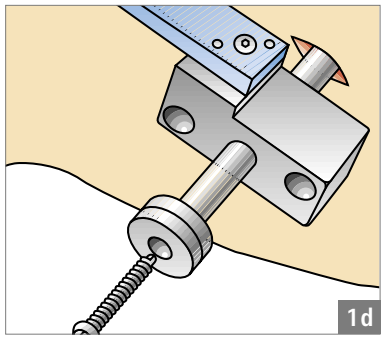
Aesculap® Targon® F/T

OP-Manual Tibia





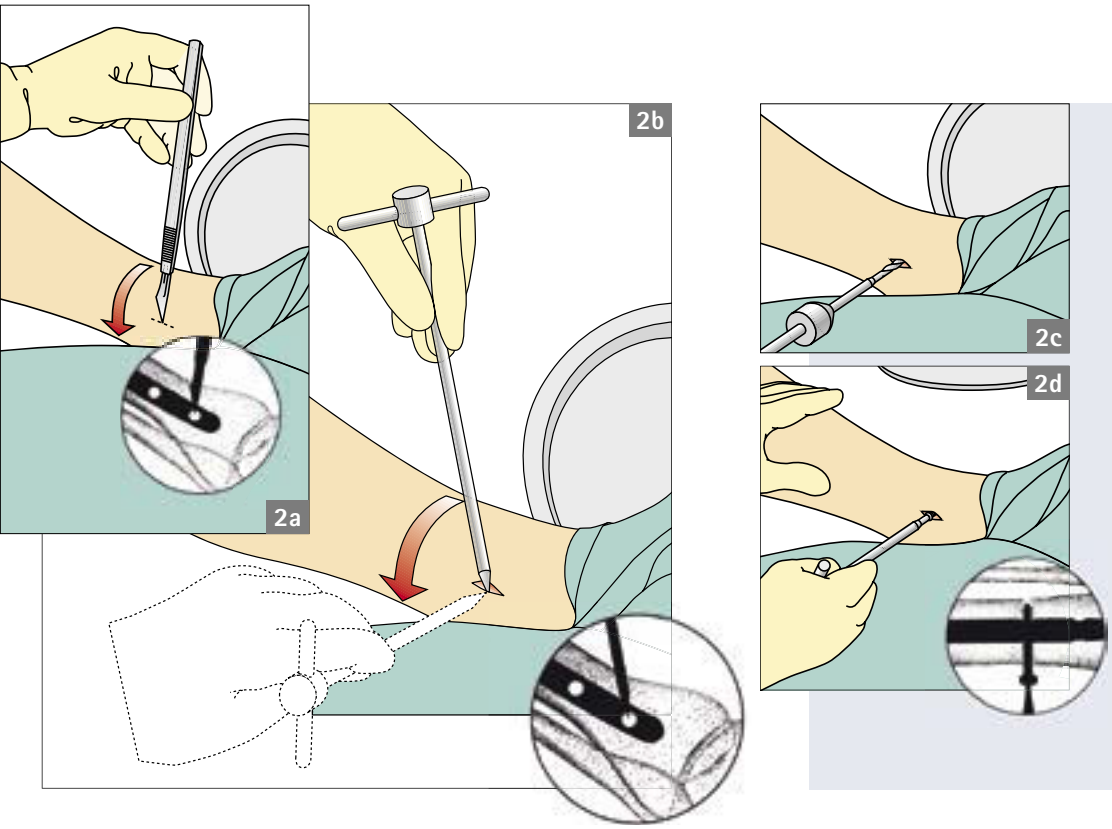




Interlocking

The corticalis is marked with the trocar and the interlocking hole drilled. The screw is measured through the inner drill sleeve. The inner drill sleeve is removed and the appropriate interlocking screw is inserted through the tissue protecting sleeve (Fig. 1a-d).

After removal of the targeting instrument the proximal end of the nail is closed with the appropriate closure screw to avoid bony ingrowth (Table 3 and 4).



Interlocking is done free-hand at the medial side of the lower leg. The image intensifier must be adjusted so that the nail hole through which interlocking is done appears centered and circular in the image on the monitor. The scalpel with the long handle is held with its tip in the beam path until the X-ray shadow of the tip appears in the middle of the interlocking hole. Thus, the point for incision is localised. Make a 1.5 cm long skin incision. The subcutaneous tissue is split bluntly down to the bone with scissors.

Under X-ray beam, the tip of the trocar is guided to the point where it is in the middle of the interlocking hole. The tip is then pressed firmly against the bone and the trocar is straightened so that it points to the middle of the camera housing. The bone is thoroughly marked by slightly rotating the trocar while gently tapping it with the hammer. The tip of the twist drill is held against the marked hole (repeat check with image intensifier) and is drilled forward through both corticalia and the nail hole. When drilling has been done properly, the interlocking hole should appear considerably brighter in the X-ray image than before. Measuring of the screw length and insertion of the appropriate screw complete the distal interlocking procedure. The screw is placed correctly if its X-ray shadow disappears in the shadow of the nail. Afterwards, the proper fit and correct length of the interlocking screw should always be verified in the a.p. beam path. To reduce the amount of radiation, this well-tried freehand technique with trocar and drill can be made safer with the help of a targeting trocar and a radiolucent drill attachment.

Nail removal

The interlocking screws are removed first. The longitudinal incision and splitting of the patella tendon are carried out in the old position. The proximal nail end is exposed and the closure screw removed. To remove the nail, the appropriate knock-out adapter is screwed into the proximal nail thread and removed with the attached extraction instrument and the slotted hammer.

Unreamed nailing

In case of unreamed nailing, the solid titanium nail and the targeting instrument are connected in the same way. The length of the nail is determined either with a previously inserted nail spike as explained above, or preoperatively, by applying a X-ray scale on the healthy tibia under image intensifier. The solid titanium nail is interlocked as described above.

Aesculap® Targon® F/T

Ordering Information – Tibia

Tibia

Tibia "Universal"

Description	Technical specifications		
	ø 9 mm	**ø 10 – 11 mm**	**ø 12 – 14 mm**
Adapter	A	A	B
Adapter screw	A	A	B
Interlocking screw			
prox.	ø 4.5 mm	ø 5 mm	ø 5 mm
dist.	ø 4.5 mm	ø 5 mm	ø 5 mm
Drill			
prox.	ø 3.5 mm	ø 3.5 mm	ø 3.5 mm
dist.	ø 3.5 mm	ø 3.5 mm	ø 3.5 mm
Closure screw	ø 8 mm	ø 8 mm	ø 10 mm
Knock-out adapter	ø 8 mm	ø 8 mm	ø 10 mm

Table 3

Tibia "Solid Titanium"

Description	Technical specifications
	ø 8 – 10 mm
Adapter	A
Adapter screw	A
Interlocking screw	
prox.	ø 4.5 mm
dist.	ø 4.5 mm
Drill	
prox.	ø 3.5 mm
dist.	ø 3.5 mm
Closure screw	ø 8 mm
Knock-out adapter	ø 8 mm

Table 4

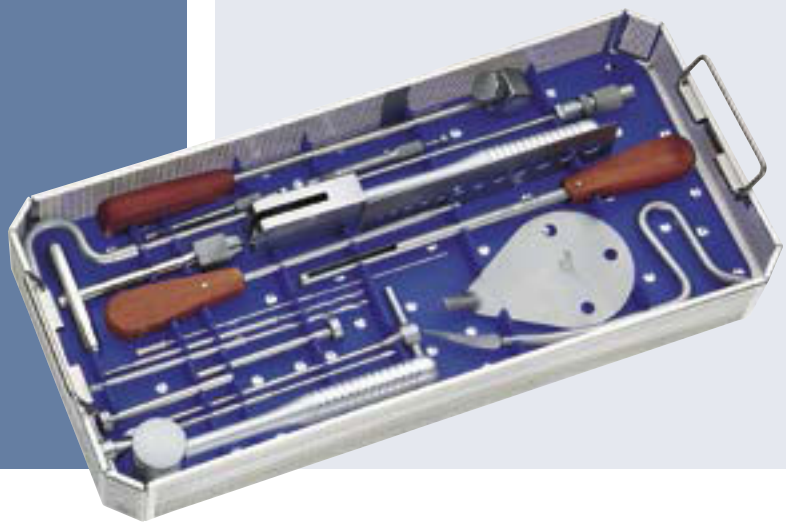
Ordering Information

Instruments

KH200

Basic-Instrument-Set

3



Article no.	Description	Pieces
KH099R	Drill and nail gauge	1
KH301R	Screw scale	1
KH320S	Guide wire for tibia nail 2.5 mm x 80 cm	1
KH304S	Guide wire for femur nail 4 mm x 90 cm	1
KH305P	Teflon tube	1
KH322R	Screw driver SW 4.5 mm	1
KH310R	Knocking-out instrument	1
KH311R	Knock-out adapter for nail 8 – 11 mm	1
KH312R	Knock-out adapter for nail 12 – 15 mm	1
KH314R	Targeting trocar f. distal targeting instr., 3 mm	1
KH317R	Opening reamer	1
KH318R	Hollow reamer	1
KH323R	Guide pin	1
KH113R	Slotted hammer for knock-out instr.	1

Article no.	Description	Pieces
FL066R	Hammer 550 g	1
LX202S	Handle with three jaw chuck ø 6.3 mm	1
AA809	Plastic X-ray scale	1
KH265R	Trocar 6 mm	1
KH285R	Trocar 4.5 mm	1
KH266S	Drill sleeve 6 mm	1
KH271R	Tissue protecting sleeve	1
KH267R	Twist drill 3.5 mm	1
KH268R	Twist drill 4.5 mm	1
KH201R	Wire basket with silicon storage	1
JF511	Wrapping cloth	1
JG645B	Identification plate	1
JG646B	Identification plate	1

KH202

Targeting Instruments

4

Article no.	Description	Pieces
KH210R	Femur targeting device	1
KH211R	Adapter for femur nail 8 – 11 mm	1
KH213R	Adapter for femur nail 12 – 15 mm	1
KH280R	Tibia targeting device	1
KH281R	Adapter for tibia nail 8 – 11 mm	1
KH283R	Adapter for tibia nail 12 – 14 mm	1
KH262R	Adapter screw for tibia nail 8 – 11 mm	1
KH264R	Adapter screw for tibia nail 12 – 14 mm	1
KH212R	Adapter screw for femur nail 8 – 11 mm	1
KH214R	Adapter screw for femur nail 12 – 15 mm	1
KH324R	Socket key SW 10	1
KH308R	Tightening sleeve SW 10	1
KH203R	Wire basket with storage	1
JF511	Wrapping cloth	1
JG645B	Identification plate	1

recommended container for KH202 (storage KH203): JK442 (tray) + JK489 (lid)

recommended container for KH200 + KH202 (storage KH203 + KH201R): JK444 (tray) + JK489 (lid)

Ordering Information

Implants

Basic-Sets Universal Nail

5

KH220 Femur

ø	Article no.	Length	Pieces
11	KA464S	360	1
	KA466S	380	1
	KA468S	400	1
	KA470S	420	1
	KA472S	440	1

ø	Article no.	Length	Pieces
12	KA564S	360	1
	KA566S	380	1
	KA568S	400	1
	KA570S	420	1
	KA572S	440	1

ø	Article no.	Length	Pieces
13	KA664S	360	1
	KA666S	380	1
	KA668S	400	1
	KA670S	420	1
	KA672S	440	1

Includes tray KH221R

KH222 Tibia

ø	Article no.	Length	Pieces
	KC356S	285	1
	KC358S	300	1
10	KC359S	315	1
	KC361S	330	1
	KC362S	345	1

ø	Article no.	Length	Pieces
	KC456S	285	1
	KC458S	300	1
11	KC459S	315	1
	KC461S	330	1
	KC462S	345	1

ø	Article no.	Length	Pieces
	KC556S	285	1
	KC558S	300	1
12	KC559S	315	1
	KC561S	330	1
	KC562S	345	1

Includes tray KH223R

Ordering Information

Implants

Basic-Sets Solid Titanium

6

KH224 Femur

ø	Article no.	Length	Pieces	ø	Article no.	Length	Pieces
	KD264T	360	1		KD364T	360	1
	KD266T	380	1		KD366T	380	1
9	KD268T	400	1	10	KD368T	400	1
	KD270T	420	1		KD370T	420	1
	KD272T	440	1		KD372T	440	1

Includes tray KH225R

KH226 Tibia

ø	Article no.	Length	Pieces
8	KE156T	285	1
	KE158T	300	1
	KE159T	315	1
	KE161T	330	1
	KE162T	345	1

ø	Article no.	Length	Pieces
9	KE256T	285	1
	KE258T	300	1
	KE259T	315	1
	KE261T	330	1
	KE262T	345	1

Includes tray KH227R

recommended container for storage of the basic implant sets: JK442 (tray) + JK489 (lid)

Ordering Information

Implants

Interlocking Screws

7

includes tray KH209R

ø		Special lengths	
Titanium	4.5	KB364T	64
		KB368T	68
		KB372T	72
		KB376T	76
		KB380T	80
Steel	5	KB464S	64
		KB468S	68
		KB472S	72
		KB476S	76
		KB480S	80

to be ordered separately

recommended container for KH208 (storage KH209R):
JK441 (tray) + JK489 (lid)

KH208

ø	Steel Article no.	Length	Pieces	Titanium Article no.
4.5	KB720S	20	2	KB320T
	KB724S	24	2	KB324T
	KB728S	28	2	KB328T
	KB732S	32	2	KB332T
	KB736S	36	4	KB336T
	KB740S	40	4	KB340T
	KB744S	44	4	KB344T
	KB748S	48	4	KB348T
	KB752S	52	4	KB352T
	KB756S	56	2	KB356T
	KB760S	60	2	KB360T
5	KB420S	20	2	
	KB424S	24	2	
	KB428S	28	2	
	KB432S	32	2	
	KB436S	36	4	
	KB440S	40	4	
	KB444S	44	4	
	KB448S	48	4	
	KB452S	52	4	
	KB456S	56	2	
	KB460S	60	2	

ø	Steel Article no.	Length	Pieces	Titanium Article no.
6	KB236S	36	2	KB636T
	KB240S	40	2	KB640T
	KB244S	44	2	KB644T
	KB248S	48	4	KB648T
	KB252S	52	4	KB652T
	KB256S	56	4	KB656T
	KB260S	60	4	KB660T
	KB264S	64	4	KB664T
	KB268S	68	4	KB668T
	KB272S	72	2	KB672T
	KB276S	76	2	KB676T
	KB280S	80	2	KB680T
	KB284S	84	2	KB684T
	KB288S	88	2	KB688T
	KB292S	92	2	KB692T
	KB296S	96	2	KB696T

	Closure screws		
To be used with	for nail ø	Article no.	Pieces
Solid Titanium nail	8 – 11	KB200T	2
Universal nail	9 – 11	KB201S	2
	12 – 15	KB202S	2

Interlocking Nails

Femur

8

Femur Universal

ø	Article no.	Length
10	KA351S	240
	KA354S	260
	KA356S	280
	KA358S	300
	KA360S	320
	KA362S	340
	KA364S	360
	KA366S	380
	KA368S	400
	KA370S	420
	KA372S	440
	KA374S	460
11	KA458S	300
	KA460S	320
	KA462S	340
	KA464S	360
	KA466S	380
	KA468S	400
	KA470S	420
	KA472S	440
	KA474S	460
12	KA558S	300
	KA560S	320
	KA562S	340
	KA564S	360
	KA566S	380
	KA568S	400
	KA570S	420
	KA572S	440
	KA574S	460
	KA576S	480
	Special lengths	
12	KA500S	max. 600 mm for arthrodesis
13	KA600S	

ø	Article no.	Length
13	KA662S	340
	KA664S	360
	KA666S	380
	KA668S	400
	KA670S	420
	KA672S	440
	KA674S	460
	KA676S	480
14	KA764S	360
	KA766S	380
	KA768S	400
	KA770S	420
	KA772S	440
	KA774S	460
	KA776S	480
15	KA864S	360
	KA866S	380
	KA868S	400
	KA870S	420
	KA872S	440
	KA874S	460
	KA876S	480

Femur Solid Titanium

ø	Article no.	Length
8	KD152T	240
	KD154T	260
	KD156T	280
	KD158T	300
	KD160T	320
	KD162T	340
	KD164T	360
	KD166T	380
9	KD252T	240
	KD254T	260
	KD256T	280
	KD258T	300
	KD260T	320
	KD262T	340
	KD264T	360
	KD266T	380
	KD268T	400
	KD270T	420
	KD272T	440
	KD274T	460
	KD276T	480

ø	Article no.	Length
10	KD362T	340
	KD364T	360
	KD366T	380
	KD368T	400
	KD370T	420
	KD372T	440
	KD374T	460
	KD376T	480
11	KD462T	340
	KD464T	360
	KD466T	380
	KD468T	400
	KD470T	420
	KD472T	440
	KD474T	460
	KD476T	480

Ordering Information

Implants

Interlocking Nails

Tibia

9

Tibia Universal

ø	Article no.	Length
9	KC255S	270
	KC256S	285
	KC258S	300
	KC259S	315
	KC261S	330
	KC262S	345
	KC264S	360
	KC265S	375
	KC267S	390
	KC268S	405
10	KC352S	240
	KC353S	255
	KC355S	270
	KC356S	285
	KC358S	300
	KC359S	315
	KC361S	330
	KC362S	345
	KC364S	360
	KC365S	375
	KC367S	390
	KC368	405
11	KC455S	370
	KC456S	285
	KC458S	300
	KC459S	315
	KC461S	330
	KC462S	345
	KC464S	360
	KC465S	375
	KC467S	390
	KC468S	405

ø	Article no.	Length
12	KC556S	285
	KC558S	300
	KC559S	315
	KC561S	330
	KC562S	345
	KC564S	360
	KC565S	375
	KC567S	390
	KC568S	405
13	KC656S	285
	KC658S	300
	KC659S	315
	KC661S	330
	KC662S	345
	KC664S	360
	KC665S	375
	KC667S	390
	KC668S	405
14	KC756S	385
	KC758S	300
	KC759S	315
	KC761S	330
	KC762S	345
	KC764S	360
	KC765S	375
	KC767S	390
	KC768S	405
Special lengths		
10	KC300S	max. 420 mm
11	KC400S	
12	KC500S	
13	KC600S	

Tibia Solid Titanium

ø	Article no.	Length
8	KE152T	240
	KE153T	255
	KE155T	270
	KE156T	285
	KE158T	300
	KE159T	315
	KE161T	330
	KE162T	345
	KE164T	360
	KE165T	375
	KE167T	390
	KE168T	405
9	KE252T	240
	KE253T	255
	KE255T	270
	KE256T	285
	KE258T	300
	KE259T	315
	KE261T	330
	KE262T	345
	KE264T	360
	KE265T	375
	KE267T	390
	KE268T	405
10	KE355T	270
	KE356T	285
	KE358T	300
	KE359T	315
	KE361T	330
	KE362T	345
	KE364T	360
	KE365T	375
	KE367T	390
	KE368T	405

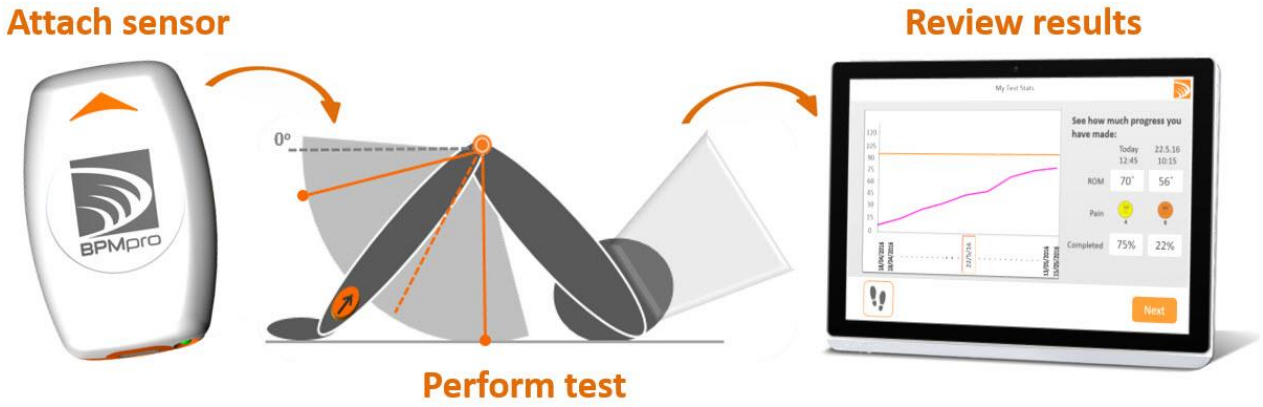
ø	Article no.	Length
Special lengths		
8	KE100T	max. 420 mm
9	KE200T	

BPMpathway Professional User Guide

What is BPMpathway?

Before a patient leaves hospital or during the pre-operative period, BPMpathway helps the clinician to create them a personalised rehabilitation programme designed to give them the best possible post-operative support programme to meet their individual needs. The patient is issued with a sensor, which has a unique system identifier that means their software will only download settings and transmit data relating to that particular sensor. This ensures that no PHI is transmitted outside of the hospital.

Using the sensor and the patient-centric software, the patient's daily test programme is a combination of tests to assess range of motion and physiotherapy exercises to help with rehabilitation. They will probably be asked to do their routine three times each day. The easy-to-use system is designed to encourage patient engagement by clearly explaining what they have to do at each stage of their recovery and displaying their progress via easy to understand graphics. During the programme, the sensor is attached to the limb on which they had surgery, which transmits movement results to their tablet.



The test results from the sensor are also transmitted securely via the internet to the clinician. This enables them to remotely review their patient's recovery as they undertake their personalised daily rehabilitation programme. By reviewing the remotely gathered data, the clinician can assess the patient's progress and recovery trends and adjust their rehabilitation schedule as appropriate. **Remote reporting means the clinician can prioritise resources to those who need them most, whilst the patients progressing well can recover and undertake regular physiotherapy in the comfort of their home.**

A two-way messaging system means that patients and professionals can stay in touch throughout the recovery period. Should either one have questions or concerns, they can send a message, just like an SMS.

Professional and patient software

BPMpathway has two different types of software with individually designed user interfaces:

Professional software

This is designed for the set up and review of patient test programmes and for the remote reviewing of patient progress and compliance during their rehabilitation. The professional has an overview of and detailed information about all of their patients' progress. Should a patient fail to progress through their programme or undertake their tests, alerts appear in the software so that the clinician can take action.

Using BPMpathway wearable technology, clinicians remotely review the patient's post-surgical recovery and set them stretch goals accordingly. When they're progressing well at home, the clinician can decide that the patient can continue their rehabilitation in the comfort of their own home, thereby freeing up the resources that would otherwise have been allocated to them for those who need them most.

In the case of those patients who are struggling with their recovery, BPMpathway provides a means of identifying the potential need for early intervention and a communication link between the patient and clinician to establish whether they need to be prioritised for outpatient support.

Patient software

This is designed to take the patient through a clear path of what they need to do throughout the rehabilitation process, with videos to help them with the set up and performance of tests and exercises. All the patient sees are the test and exercises they are required to undertake at each stage in their recovery, as they are gently progressed through their programme with ever increasing test limits as they achieve their targets. After they complete their daily routine, they are provided with a clear graphical depiction of their progress and recovery trends.

During their tests, the patients have the opportunity to record points of discomfort or restriction which are recorded against the session data for comparison. After their test, they are required to record a pain score as required for PROMs using the internationally recognised Wong-Baker Pain Rating Scale. During the rehabilitation process, the sensor can also be used as a general activity tracker as it has been shown that joints heal in motion.[1,2]

[1] *AAOS. Ortho Info. Your connection to expert orthopaedic information. 2014. [Internet, 10.02.2017] http://orthoinfo.aaos.org/topic.cfm?topic=a00233&_sm_au_=i5V6dBqPpL7NrtZr.*
[2] *Pozzi F, Snyder-Mackler L, Zeni J. Physical exercise after knee arthroplasty: a systematic review of controlled trials. Eur J Phys Rehabil Med. 2013 Dec;49(6):877-92.*

Personalised patient programmes

What is a patient programme?

A programme is a combination of one or more tests to assess range of motion and physiotherapy exercises to help with rehabilitation. Normally the patient will be asked to do their programme three times each day. The patient is gradually stepped through their programme as they reach their targets.

How is it personalised to the patient?

The purpose of personalised programmes is to set the patient realistic tests, targets and exercises appropriate to the stage of recovery and their overall fitness.

There are several ROM tests for each joint, which can be selected depending on the degree of mobility post medical intervention. For each test, the clinician can specify exercises and targets. The target ROM for the test is gradually increased through the use of phases. The difference between the start target ROM and the end target ROM for the test is divided by the number of phases into increments. Upon successful completion of a phase, the limits are automatically increased by an increment. A motivational comment can be set up against each phase.

If a programme needs to be adjusted, this can be done via the professional software and transmitted over the air to the patient. The programme is linked to the patient's sensor, which means the patient software downloads only the settings for that sensor.

Default Patient Programmes

Default programmes enable you to set up predefined tests, limits and exercises stored against each joint depending on the patient's capabilities. This removes the need to create personalised programmes for each individual patient. A patient can be assigned a default programme when they are created in the system for speed and ease of use, which can then be modified to their specific requirements if required.

Appendix 2 - EC Declaration of Conformity (Annex VII)

We, *270 Vision Ltd.* of Unit 34, Basepoint Business Centre, Caxton Close, Andover, SP10 3FG, UK, registered number 7505941, declare in our sole responsibility as manufacturer that the products listed in the schedule below meet all the applicable requirements of the Medical Devices Directive 93/42/EEC (amended), and its transposition into national laws.

The BPMpro Mk2 sensor additionally meets all applicable requirements of the European Directive 2011/65/EU (RoHS 2).

Classification: Class I according to Rule 12, Annex IX of Directive 93/42/EEC.

Conformity assessment procedure was performed according to Annex VII of Directive 93/42/EEC.

Applied Standards

ISO 60601-1 Medical Electrical Equipment
ETSI EN 300 328 V2.1.1 Wideband Transmission Systems
ETSI EN 301 489-1 V2.2.0 Electromagnetic Compatibility for radio equipment
ETSI EN 301 489-17 V3.2.0 Broadband Data Transmission Systems
IEC 62133:2012 Safety requirements for portable sealed secondary cells

	For 270 Vision Ltd:	
	Name:	Peter Davidson
	Position:	Engineering Director
	Date:	5/11/2020

And as the appointed EU Authorised Representative for 270 Vision Limited:

EC REP	Company:	Emergo Europe
	Address:	Prinsessegracht 20 2514 AP The Hague The Netherlands

This declaration is valid for all products manufactured after the date of signature until a new declaration of conformity is issued.

Product Schedule

- BPMpathway system
  - GMDN Classification code: 33652-Clinical goniometer, electric

Consisting of:

- BPMpro Mk2 Sensor
  - Shipped as BPMpathway Sensor Kit

And

- BPMpathway Application, in two forms:
  - BPMpathway Professional Application (v2.2.60)
  - BPMpathway Patient Application (v2.2.60)

Plasmapore®

Bioactive porous coating

Plasmapore® Oberflächenbeschichtung

Plasmapore® coated orthopaedic implants have been used successfully in joint replacement arthroplasty since 1986. The cementless implants are coated with a layer of fine titanium powder applied in a plasmaspray process under vacuum. The Plasmapore® pore sizes range from 50 to 200 µm with a microporosity of 35 % and a thickness of 0.35 mm.
These characteristics are optimal for bone ingrowth. Plasmapore® is a very rough surface and supports primary stability better than alternative coatings.
All cementless Aesculap hip stem systems and acetabular cup systems are offered with this coating.
Highly crystallized calcium phosphate (CaP) is used as the bioactive material for Plasmapore® µ-CaP. The Plasmapore® surface is combined with a very thin CaP layer of 20 µm, which is applied electrochemically. This Plasmapore® µ-CaP surface accelerates direct bone-implant contact and resorbs without giant cell reactions within 8-12 weeks.
The modular Prevision® revision hip stem and the short hip stem Metha® are coated exclusively with Plasmapore® µ-CaP.

Plasmapore® with Dicalcium Phosphate
The well-known characteristics of calcium phosphates such as HAC (hydroxylapatite) and TCP (tricalcium phosphate), and various HAC/TCP combinations led to Aesculap's selection of dicalcium phosphate dehydrate ($CaHPO_4 \times 2H_2O$) for use with Plasmapore®.
Dicalcium phosphate dehydrate (DCPD) is very soluble in vivo, and dissolves into calcium and phosphate ions. During the acellular dissolving process, calcium and phosphate ions are continuously released in a ratio of 1:1, which are then available for bone modeling.
In contrast, the poorly soluble hydroxyapatite (HAC) releases only calcium ions from non-HAC calcium compounds (CaO) resulting from the manufacturing process, but almost no phosphate ions.
The resorbable tricalcium phosphate (TCP) stimulates giant cell reactions, and is therefore not optimal for use with orthopaedic implants. In orthopaedic implants the transition between primary and secondary implant stability is a continuous process of bone remodeling, characterized by apposition and resorption at the implant surface. The DCPD layer supports the continuous release of calcium and phosphate ions and encourages the formation of new bone structures at the bone-implant interface. Due to the continuous dissolving process of the calcium phosphate, the pores of the Plasmapore® coating remain open for bony ingrowth.

Improved bone contact
The features of thin calcium phosphate surfaces are important in the short postoperative term. The dicalcium phosphate µ-CaP layer is resorbed within 8-12 weeks in vivo. The dissolving process takes place without any giant cell activity. Simulation tests of the solution behavior of HAC and µ-CaP show a different ion release of µ-CaP in comparison to hydroxylapatite ceramic surfaces. HAC surfaces do not release phosphate ions but in th initial solution phase, calcium ions are released from non-HAP calcium compounds (CaO) resulting from certain manufacturing processes. In contrast, µ-CaP dicalcium phosphate releases phosphate and calcium ions during the entire resorption period with a ratio of 1:1. These ions are available for bone synthesis. Due to the osteoconductive characteristics of calcium phosphate, the bone is brought into direct contact with the implan surface.

B BRAUN
SHARING EXPERTISE

AESCULAP® Isocer®

Ceramic Heads

AESCULAP® Isocer®

Ceramic Heads

Isocer® Ceramic with
Vitelene® Polyethylene

High demand hip endoprosthetic treatment

with Isocer® ceramic heads in combination with highly-crosslinked Vitelene® Polyethylene with Vitamin E

✓ **High wear resistance**
2.4 mg / mio. load cycles with 36 mm Isocer® head against Vitelene® (1)

✓ **In vivo oxidation stability**
Vitelene® with stable oxidation index up to 5 weeks of aging 70°C / O_2 / 5 bar (ASTM F2003-02) (2)

✓ **Proven fracture resistance**
Statistic / dynamic fracture resistance 89.3 kN / 72.6 kN Isocer® head 28L / TiAl6V4 12/14 (3)

✓ **More corrosion resistant taper connection**
Reduced ion transfer of ceramic heads compared to metal heads (4)

Material Properties	Isocer®	ISO 6474-2 Type X
Al_2O_3 [Vol. %]	75 ± 2	60 – 90
$ZrO_2 + HfO_2 + Y_2O_3$ [Vol. %]	25 ± 2	10 – 30
TD theoretical density [g / cm^3]	4.37 (100 %)	≥ 99 % of TD
Average grain size [µm]	0.8	≤ 1.5
Biaxial bending strength [MPa]	≥ 700	≥ 600
Fracture toughness [MPa√m]	≥ 5.0	≥ 4.0

Size	28 mm	32 mm	36 mm
S	NK324	NK424	NK524
M	NK325	NK425	NK525
L	NK326	NK426	NK526
XL	–	NK427	NK527

Isocer® 12/14

Isocer®: Zirconia-toughened alumina ceramic (Al_2O_3 / ZrO_2 / ISO 6474-2).
Isocer® heads are approved with PE / XLPE articulation only. No ceramic-ceramic articulation.

(1) Data on file; Aesculap AG; Testreport T443 März 2014.
(2) Grupp TM et al. Biotribology of a vitamin E-stabilized polyethylene for hip arthroplasty – Influence of artificial ageing and third-body particles on wear. Acta Biomater. 2014 Jul;10(7):3068-78.
(3) Data on file; Aesculap AG; Testreport V1659 März 2015.
(4) Kocagoz SB et al. Ceramic heads decrease metal release caused by head-taper fretting and corrosion. Clin Orthop Relat Res. 2016 Apr;474(4):985-94.

B BRAUN
SHARING EXPERTISE

ORTHOPAEDIC
SURGERY

AESCULAP® Structan®

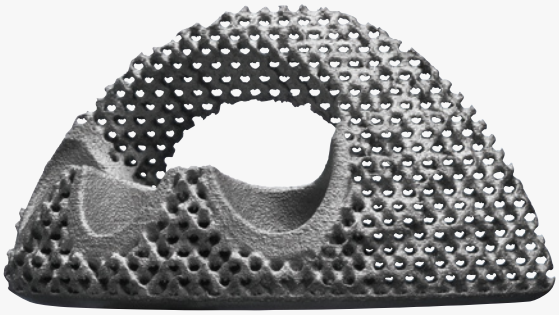
AUGMENTS FOR ACETABULAR REVISION

AESCULAP® Structan®

ACETABULAR AUGMENTS

Acetabular revision surgeries on joints with moderate segmental defects have specific requirements when it comes to selecting an implant and filling the defect with augments.

The goal is to establish stable anchoring of the acetabular augment component in the area of the bone defect, which may exceed the dimensions of the revision cup in both shape and size.



- ✓ Structan® augments are made of a titanium alloy
- ✓ Enable defect filling with stable grid structure and high surface roughness
- ✓ Precisely aligned functional elements for implantation and screw fixation

Cranial defect situations (contained or uncontained) are well-suited to the combined implantation of a cementless hemispherical pressfit cup with an augment.

The augment filling the defect is screwed into place, forming a stable hemispherical compartment with the anterio-superior and posterio-inferior implant bed.

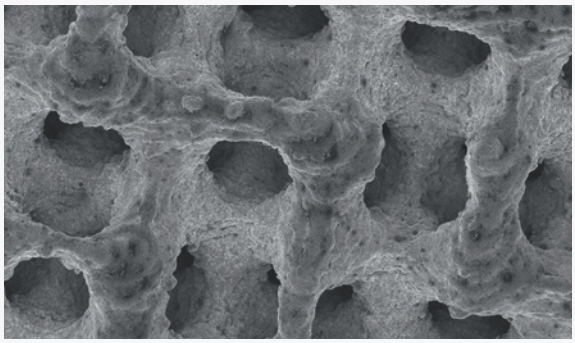
The cementless pressfit anchorage of the spherical revision cup is supplemented by a cement layer on the augment in order to transfer loads over the entire surface and prevent relative movement of the two implant components.

An additional transfixing anchoring screw, going from the revision cup through the opening in the augment designed for this purpose, increases implant stability.

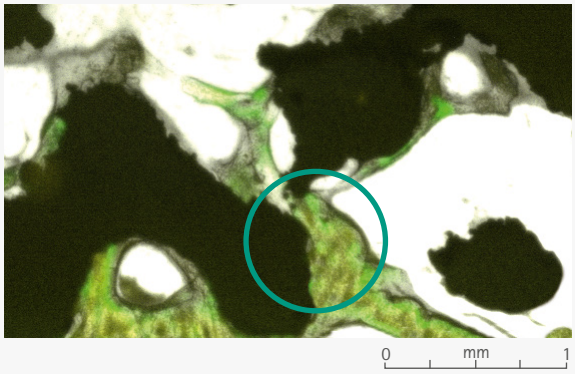
Cranial defect situations (contained) are appropriate for the combined implantation of a cemented PE cup and an augment.

AESCULAP® Structan®

STRUCTURE & IMPLANT DESIGN



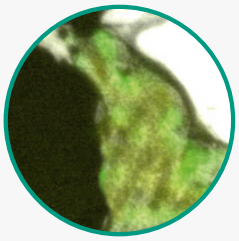
Structan® titanium structure with approx. 1.5 - 2.5 mm pores and 0.8 - 1.0 mm grid struts.
Manufactured using a laser sintering process that allows precise, consistent shaping of the porous, dense implant design structures.

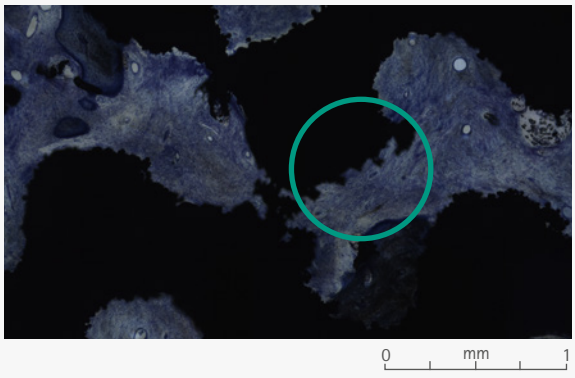


Structan® titanium structure in load-bearing implant bed of the proximal tibia of a sheep with newly mineralized bone.

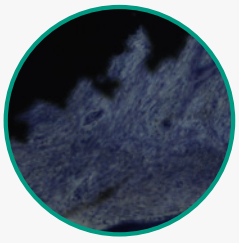
Histology after 2 months:

- Yellow in Week 3
- Green in Week 6

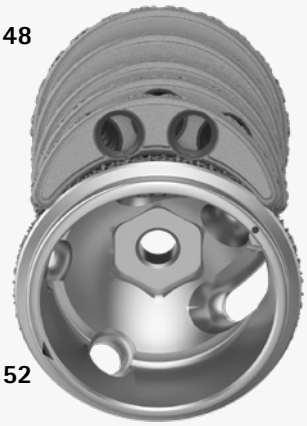




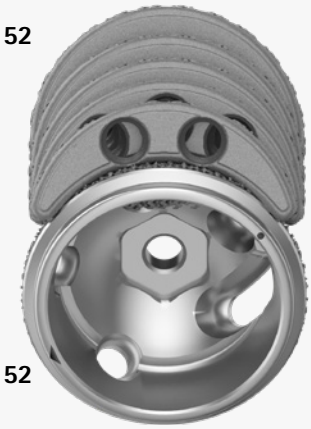
Histology after 6 months



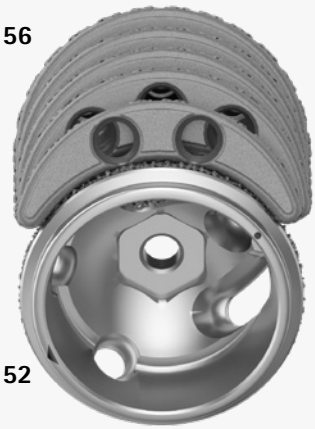
Combination of Structan® augments and cup implants



Augment size 4 mm smaller than cup size

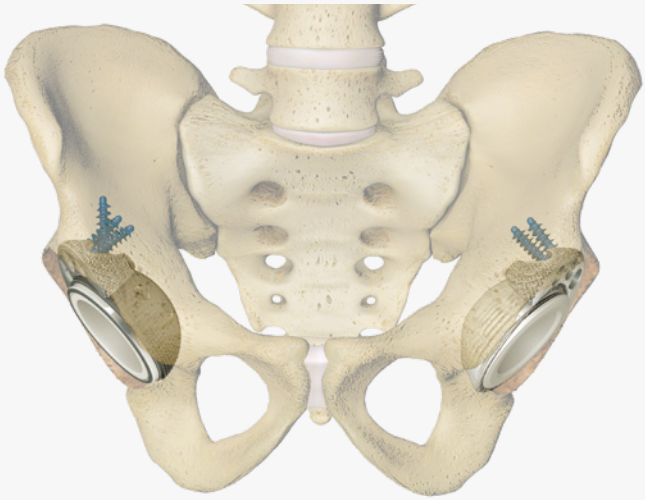


Augment size equal to cup size



Augment size 4 mm larger than cup size

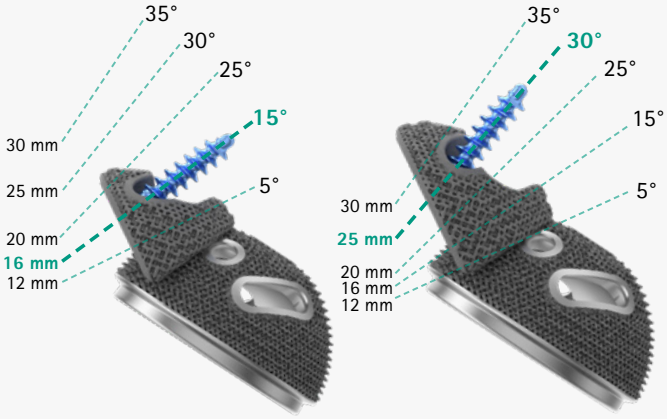
Cementless pressfit cup



Cemented PE cup

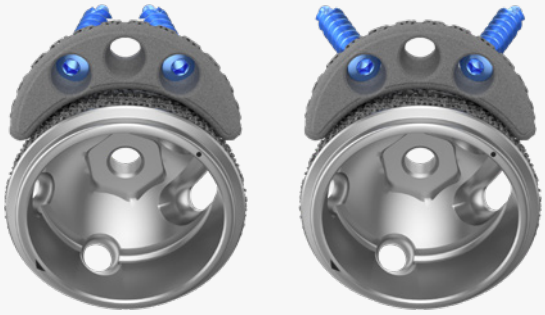
AESCULAP® Structan®

IMPLANT DESIGN



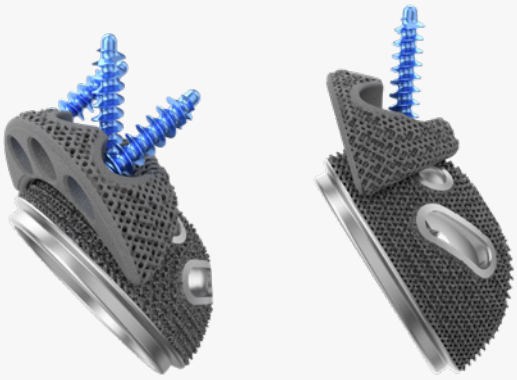
Position and Alignment of Fixation Screws

The cranial placement angle for the fixation screws increases with the height of the Structan® implant. In addition, the screws can be rotated by +/- 6.5°. The cranial clearance angle (5°, 15°, 25°, 30°, 35°) increases with the implant height (12, 16, 20, 25, 30 mm).



Parallel or divergent screw connection of Structan® implants with rotation angles of:

- +/- 6.5° on the Ø 6.5 mm screw
- +/- 9.6° on the Ø 4.5 mm screw

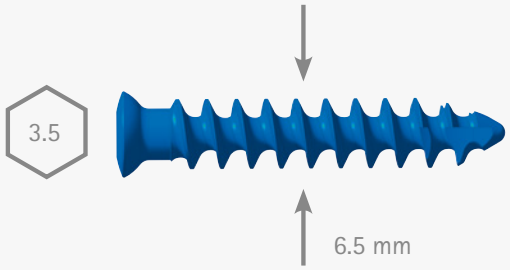


Transfixing screw connection of the cup through the central opening on the Structan® implant.

Anchoring Screws

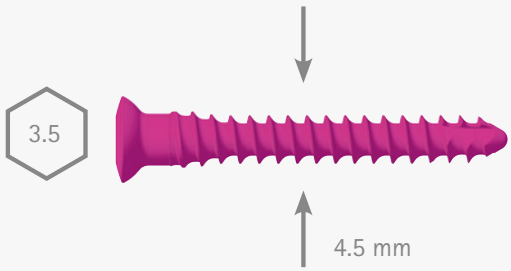
Ø 6.5 mm Anchoring Screw

- ✓ Fixation of Plasmafit® cup line and Structan® augment
- ✓ Transfixing screw between cup implant and augment
- ✓ Optimized screw tip design (1)
- ✓ 2.75 mm thread lead



Ø 4.5 mm Anchoring Screw

- ✓ Fixation of Structan® augments
- ✓ Screw design makes screwing in easier (2)
- ✓ Optimized screw tip design (2)
- ✓ 1.75 mm thread lead

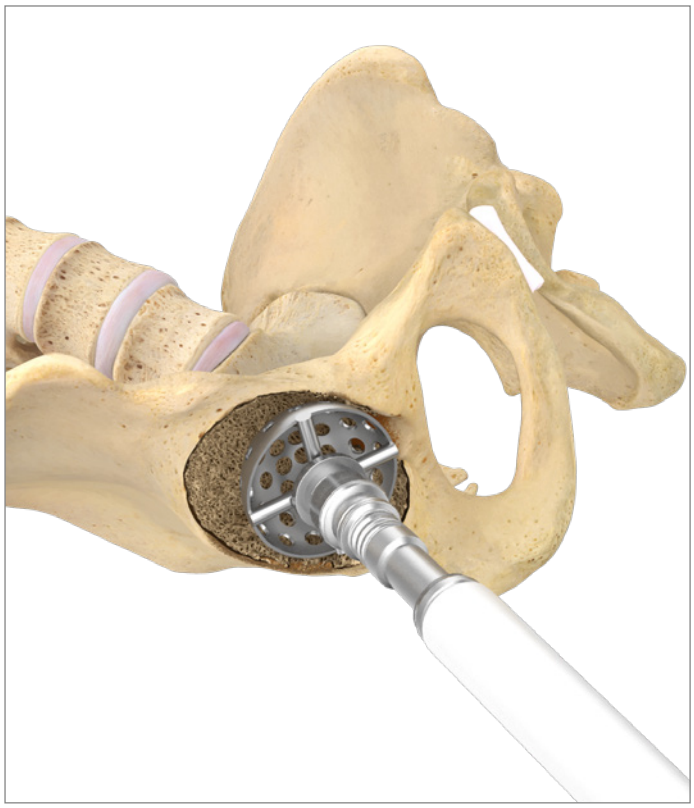


(1) Aesculap AG; Test report V2083, Self-Tapping Performance NV023T, January 2020. The screw tip has been modified to optimize the screw's self-tapping force compared to the previous tip design of the 6.5 mm screw. The new screw tip design reduces the average self-tapping force.

(2) Aesculap AG; Test report V2013, Self-Tapping Performance NV993T, June 2019. The screw tip has been modified to optimize the self-tapping force on the screw compared to the previous tip design of the 6.5 mm screw. The self-tapping force of the 4.5 mm screw is lower than that of the previous 6.5 mm screw tip design (NV023T).

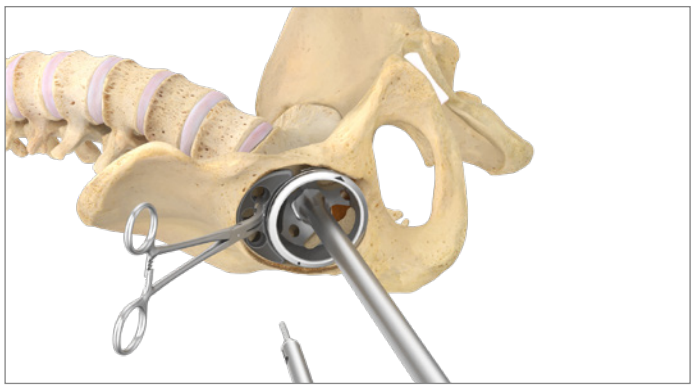
AESCULAP® Structan®

SURGICAL STEPS WITH TRIAL IMPLANTS



1 | PREPARATION OF THE ACETABULUM

- After explanting the loosened cup implant, carefully refresh the bony defect using an acetabular reamer; make sure not to remove load-bearing bone structures.
- Use the acetabular reamer or a hemispherical trial cup to evaluate the load-bearing antero-superior and postero-inferior bone structures and thereby make an initial estimate of the nominal cup diameter.



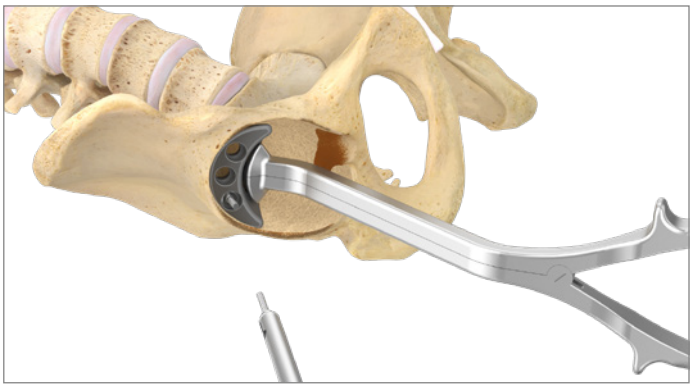
2 | INSERTION OF TRIAL IMPLANT

- Place Structan® trial implants of the estimated nominal size (e.g., 52 mm) and various heights (12 to 30 mm) into the cranio-posterior defect; upon determining the correct size, pre-position the implant using one or two fixation pins.

- Structan® trial implants that are one nominal size smaller (e.g., 48 instead of 52 – for low defects) or larger (e.g., 56 instead of 52 – for high defects) can also be used to fill the defect (see also top of Page 5).

3 | FIXATION OF TRIAL IMPLANT

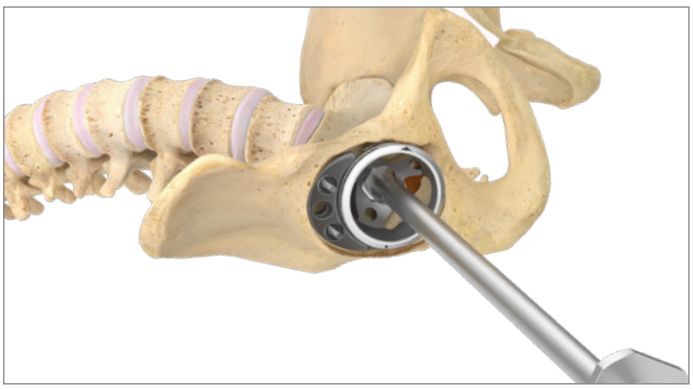
- The Structan® trial implant can also be held with insertion forceps and then fixed using fixation pins.



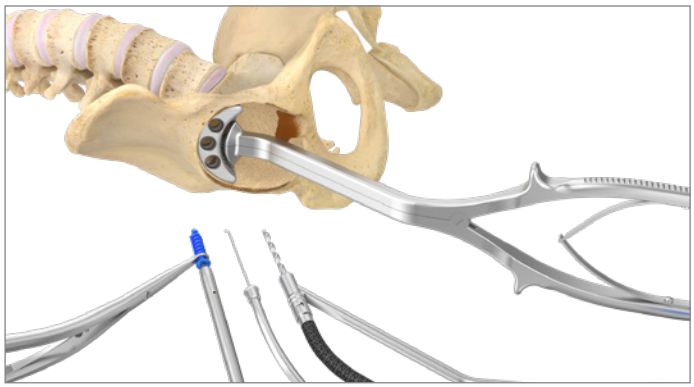
- The 2 mm fixation pins are available in lengths of short (22 mm) and long (29 mm).

4 | SELECTING IMPLANT SIZE

- Evaluating the treatment situation is crucial to selecting the correct implant; do so using a Structan® trial implant, held in position using fixation pins, and a hemispherical trial cup.

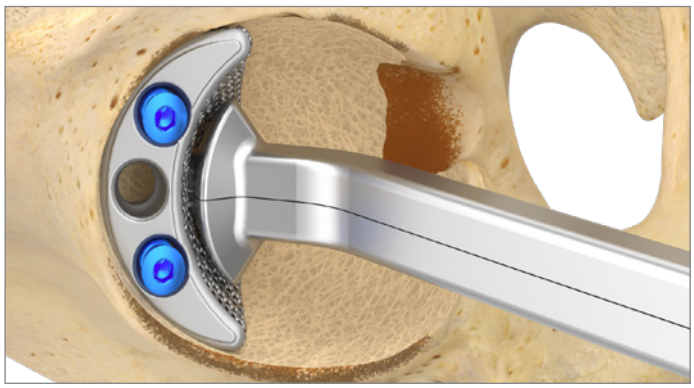


- The diameter of the revision cup should be within +/- 4 mm of the size of the selected Structan® trial implant (see also top of Page 5).

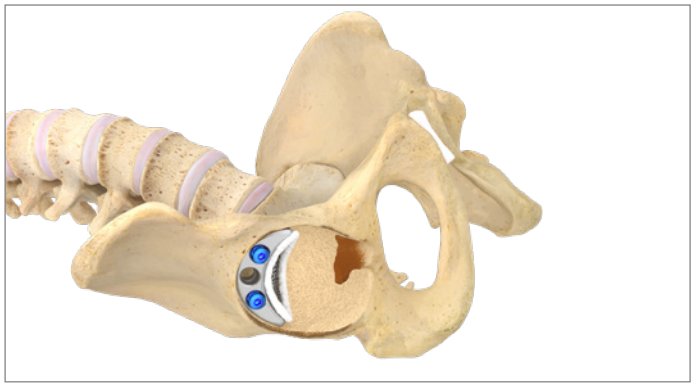


5 | INSERTION OF THE Structan® IMPLANT

- Like the trial implant, the selected Structan® implant can be pre-positioned using pins and the hemispherical trial cup or with the insertion forceps. After positioning the Structan® implant, screw in the first anchoring screw. Pre-drill the 6.5 mm screw to a diameter of 3.2 mm or 4.0 mm on sclerotic bone conditions. The 4.5 mm screw may only be pre-drilled with a Ø 3.2 mm.

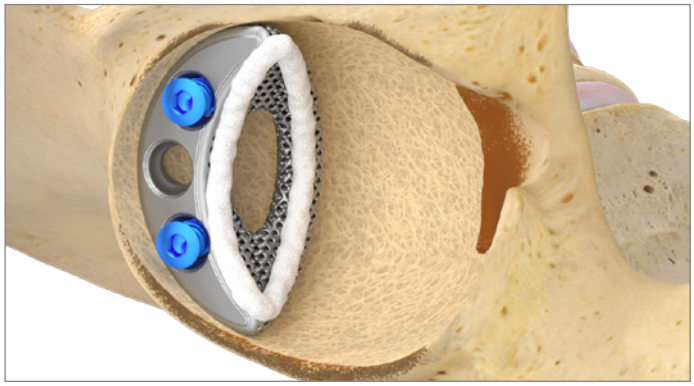


- Insert the second anchoring screw and then tighten both screws slightly. At least two anchoring screws must be set in order to ensure implant stability.



6 | CEMENT APPLICATION

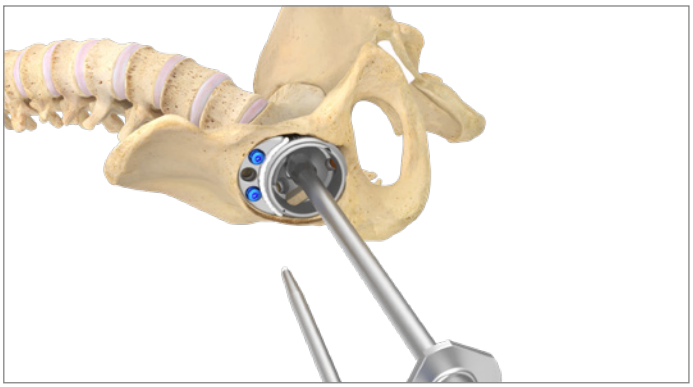
- Before inserting the revision cup, carefully apply narrow strips of bone cement to the surface of the Structan® coming into contact with the cup. Make sure to leave the opening in the implant uncemented.



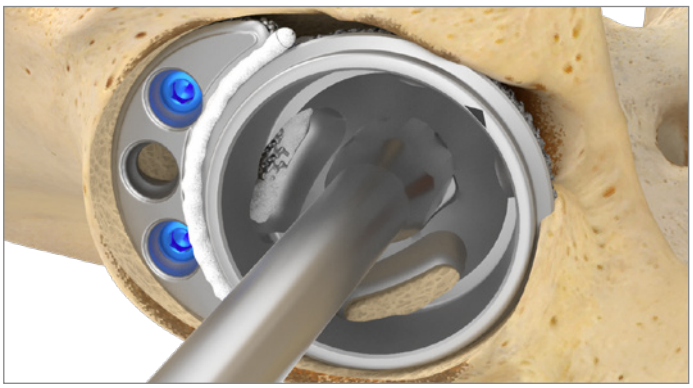
- If using a cemented PE cup, tighten the anchoring screws on the Structan® implant before applying the cement.

7 | IMPLANTING THE ACETABULAR CUP IMPLANT

- The revision cup is pre-positioned and with one screw hole aligned to the central implant opening. After the pressfit implantation of the revision cup, completely tighten the screws on the Structan® implant.

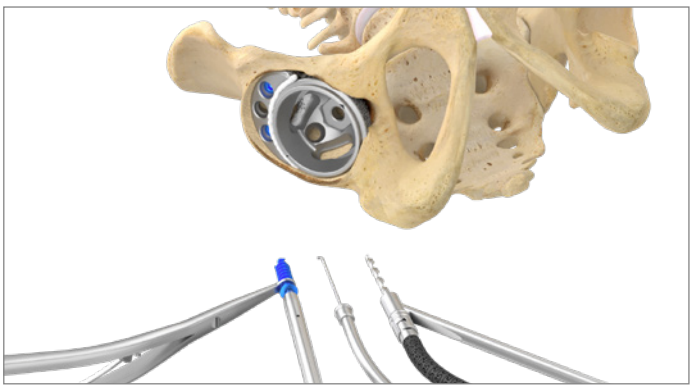


- The Structan® implant is now fixed. Next, proceed to the transfixing screw connection between augment and cup implant.



8 | FIXATION OF CUP AND AUGMENT

- Use the Ø 6.5 mm screw to set the transfixion screw connection through the Structan® implant. Be sure to remove any surplus cement before it hardens.

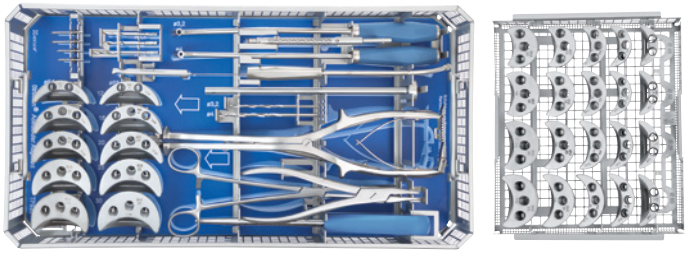


NOTE

The Ø 4.5 mm screw cannot be used for the transfixing screw connection.

AESCULAP® Structan®

INSTRUMENTS



Structan® Acetabulum Augments – Instrument Set NT830

Consisting of:	Art. no.
Tray with half module tray for trial implants	NT831R
Lid	JH217R
Graphic template	TF035
Insertion forceps	NT832R
Flat-nose pliers	LX172R
Pin insertion instrument	NT835R
Fixation pin, short, 22 mm	NT836R
Fixation pin, long, 29 mm	NT838R
Screwdriver SW 3.5, L 252 mm	LS013R
Maier forceps, curved, L 260 mm	BF059R
Drill guide, Ø 3.2 mm	NT423R
Drill guide, Ø 4.0 mm	NT425R
Depth gauge	NT427R
Screw holding forceps	NT432R
Spiral drill, Ø 3.2 mm, L 100/75 mm	GC009R
Spiral drill, Ø 4.0 mm, L 110/85 mm	GC012R
Flexible drilling shaft	NT419R
Drill bit, Ø 3.2 mm, 32 mm usable length	NT424R
Drill bit, Ø 4.0 mm, 32 mm usable length	NT426R
Drill bit, Ø 3.2 mm, 44 mm usable length	NT429R

Recommended container for NT830:
Aesculap Basic Container 592 x 285 x 205 mm

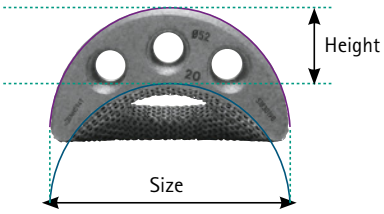
Structan® Acetabulum Trial Implants

Size	Height				
	12 mm*	16 mm	20 mm	25 mm	30 mm
48	NT773R	NT783R	NT793R	NT803R	NT813R
52	NT774R	NT784R	NT794R	NT804R	NT814R
56	NT775R	NT785R	NT795R	NT805R	NT815R
60	NT776R	NT786R	NT796R	NT806R	NT816R
64	NT777R	NT787R	NT797R	NT807R	NT817R
68	NT778R	NT788R	NT798R	NT808R	NT818R

* Trial implant with two anchoring openings rather than three.

Structan® Acetabulum Augments - x-ray template NT829

IMPLANTS



Same nominal size outside
(Red = reamer) and inside
(Blue = cup +/- 4 mm)

Structan® Acetabular Augments

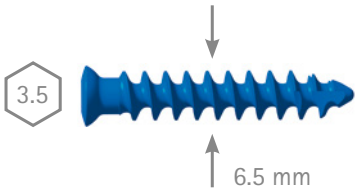
Size	Height				
	12 mm*	16 mm	20 mm	25 mm	30 mm
48	NH573T	NH583T	NH593T	NH603T	NH613T
52	NH574T	NH584T	NH594T	NH604T	NH614T
56	NH575T	NH585T	NH595T	NH605T	NH615T
60	NH576T	NH586T	NH596T	NH606T	NH616T
64	NH577T	NH587T	NH597T	NH607T	NH617T
68	NH578T	NH588T	NH598T	NH608T	NH618T

Ti6Al4V * implant with two anchoring openings rather than three.

Fixation screws, Ø 6.5 mm

16 mm	20 mm	24 mm	28 mm	32 mm	36 mm	40 mm
NV010T	NV011T	NV012T	NV013T	NV014T	NV015T	NV016T
44 mm	**48 mm**	**52 mm**	**56 mm**	**60 mm**	**64 mm**	**68 mm**
NV017T	NV018T	NV019T	NV020T	NV021T	NV022T	NV023T

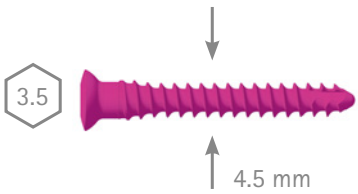
ISOTAN®$_F$



Fixation screws, Ø 4.5 mm

16 mm	20 mm	24 mm	28 mm	32 mm	36 mm	40 mm
NV980T	NV981T	NV982T	NV983T	NV984T	NV985T	NV986T
44 mm	**48 mm**	**52 mm**	**56 mm**	**60 mm**	**64 mm**	**68 mm**
NV987T	NV988T	NV989T	NV990T	NV991T	NV992T	NV993T

ISOTAN®$_F$



Implant materials:
Ti6Al4V Titanium alloy in accordance to ASTM F136
ISOTAN®$_F$ Titanium forged alloy in accordance to ISO 5832-3

Screw Cup SC® Acetabular Cup System

Cementless screw cup system with polyethylene or ceramic inserts

Screw Cup SC® Acetabular Cup System

Thin thread flanks and large pitches give more solid bone lamellae. Especially the combination of large thread distances with a good cutting-in leads to a large bone application in the thread base. The load transmission takes place evenly and without load concentrations on the thread flanks.

External shape
Due to the anatomical external shape of the Screw Cup SC® the subchondral bone structures remain intact. These are often destroyed in conically shaped screw sockets. The free intraoperative decision for optimal socket position is also up to the screwing of the screw cup possible, an important advantage especially in the ceramic-ceramic articulation.

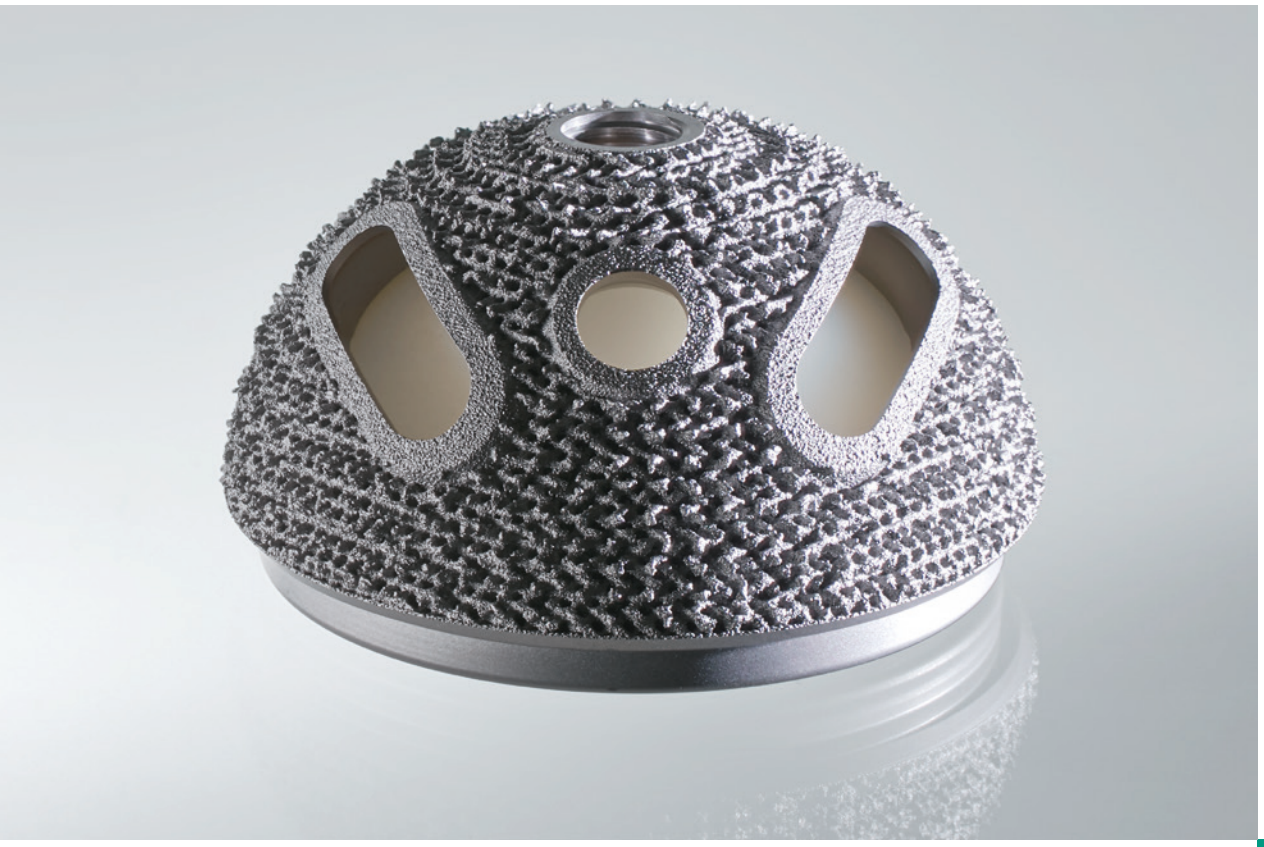
Cancellous bone structure
Due to the large bottom opening a central bone defect can easily be filled with cancellous bone. This sets the stage for the formation of bone in the socket base. The opening is then closed by a lid. This is firmly connected to the threaded SC® by a clamping mechanism.

Cutting-in
Thin thread flanks and many self-tapping edges reduce the force required for cutting the thread. Thread flanks with opposite cutting angle intersect smoother and softer in the bony implant bed. Choosing this thread parameter enables a easy and safe implantation of the Screw Cup SC®.

Cutting-in depth
Once the Screw Cup SC® achieved a good implant-bone contact in the thread base, special flutes grab into the bone layer. This causes a significan increase of the insertion torque. The surgeon thereby gets a tactile feedback on the final and correct screwing depth.

Modular cup inserts
The conical anchoring principle of the Screw Cup® SC inner surface enables a safe anchoring of a ceramic Biolox® or polyethylene insert and thus prevents relative and micro-movements. The main load area is equipped with the maximum material thickness. The modular range of implants offers therefore the alternative: ceramic or polyethylene insert. The implant components can be individually adapted to the requirements of the patient.

B BRAUN
SHARING EXPERTISE



ORTHOPAEDIC SURGERY

AESCULAP® Plasmafit® REVISION

CEMENTLESS REVISION ACETABULAR CUP SYSTEM

AESCULAP® Plasmafit® REVISION

CEMENTLESS REVISION ACETABULAR CUP SYSTEM

CONTENTS

AESCULAP® Plasmafit® REVISION

Plasmafit® Family

The AESCULAP® Plasmafit® Family reflects a comprehensive solution for primary hip joint replacement.
Based on the properties of the materials and instruments, Plasmafit® Revision has joined the family and continues the system concept.

Various polyethylene bearing options are available based on the proven Vitelene®, a highly crosslinked polyethylene with vitamin E, including special revision liners. In addition, Dual Mobility liners provide additional joint stability.

ACETABULAR SOLUTIONS

Plasmafit® Revision

is an acetabular cup system for both primary treatment and revisions of differently located acetabular defect situations.

The hemispherical shape and the laser-sintered titanium structure of the acetabular cup provide high primary stability. To achieve good stability for larger acetabular defects, the design has a total of five options for anchoring screws.

In addition, Structan® Augments can be combined with the Plasmafit® Revision cup for treating larger defects.

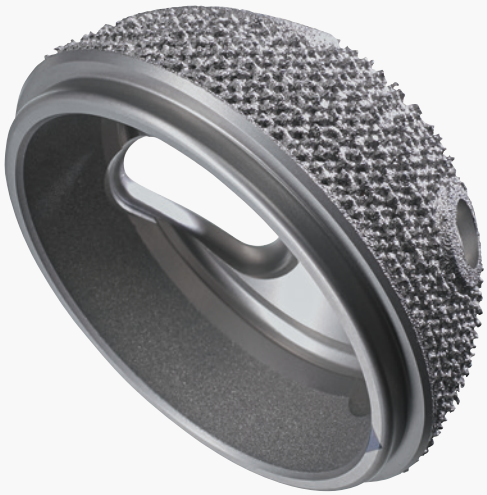
The AESCULAP® acetabular components address solutions for defect filling that permit stable anchoring in the bony situation.

AESCULAP®
REVISION TREATMENT

AESCULAP® Plasmafit® REVISION

Characteristics

- ✓ High grip thanks to very rough, laser-sintered titanium surface
- ✓ Cup design offering several options for screw anchoring
- ✓ Two cranial oblong holes for greater flexibility of screw fixation
- ✓ The hex connection offers rotational stability during cup implantation
- ✓ Roughened surface of inner cone for rotationally stable liner fixation



Combinations

- ✓ Vitelene® highly crosslinked polyethylene liners with vitamin E
- ✓ Six liner options for individual fitting solutions
- ✓ Free 360° positioning of the liners
- ✓ Fixation screws ø 6.5 mm
- ✓ Combination with Structan® Augments

REVISION SOLUTION OF THE Plasmafit® FAMILY

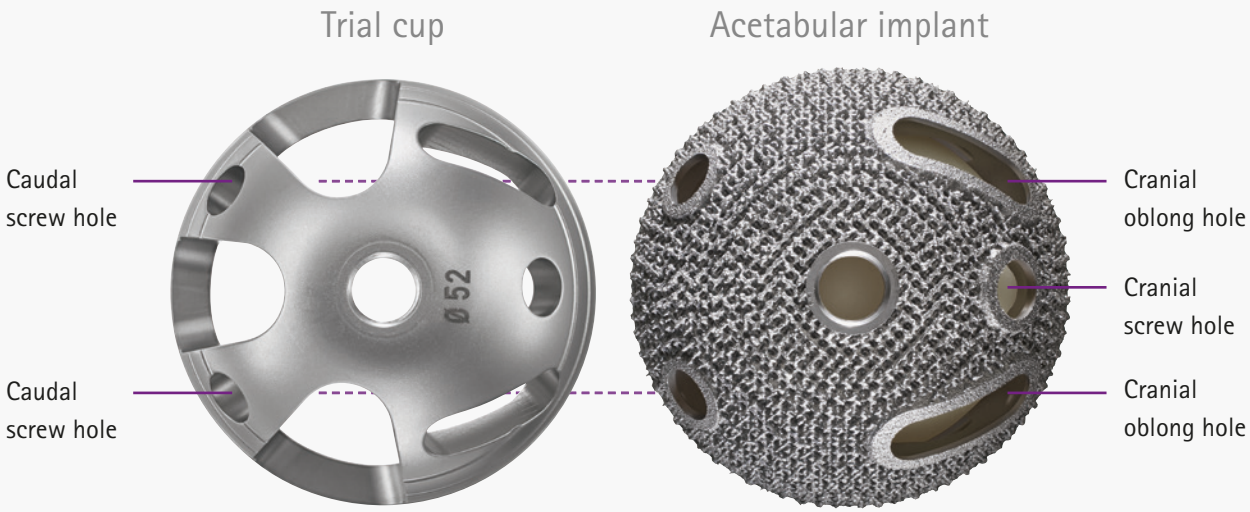
Instrument Concept

Based on the consistent instrumentation concept of the primary Plasmafit® acetabular cup, Plasmafit® Revision takes the idea of smart instrumentation further. Only a few additional specific instruments are required for implanting Plasmafit® Revision. This contributes to a simplified procedure in the upstream and downstream processes as well as during surgery.

In particular the revision trial cups have an optimized design compared to the primary trial cups.

The revision trial cup permits:

- checking the stability by a slight oversize compared to the reamer,
- checking the bony bridging bed,
- the check of the impaction depth and bone characterics by the open design,
- and the planning of the screw positioning using single and oblong holes.



AESCULAP® Plasmafit® REVISION

3 | SURFACE

Plasmafit® Revision Outer Geometry

- ✓ High primary implant stability (1)
- ✓ Spherical outer shape
- ✓ Equatorial pressfit of 1.5 mm

The external Plasmafit® Revision shape is spherical with a dome flattening of 0.5 mm.

The equatorial pressfit is 1.5 mm. This results in primary cup stability in different bone qualities.

A trial cup is used to check the intraoperative stability and determine the diameter of the final implant. The trial cup has a slight oversize of 0.5 mm compared to the reamer.

(1) Aesculap AG, Test Report V2008, Axial Disassembly Force in PU-Foam adapted from Lin et al. 2006 for Plasmafit® Revision Structan® size C 44 mm NV944T and Plasmafit® Plus size C 44 mm NV344T, 2019.
Plasmafit® Revision cup was compared to Plasmafit® Plus cup system in regards to primary stability in a custom test set up by measuring the axial disassembly force.

ADDITIVE SURFACE TECHNOLOGY

Plasmafit® Revision Structure

- ✓ Additive titanium surface
- ✓ Laser-sintering process
- ✓ Improved osteointegration

The profile structure of the Plasmafit® Revision cup surface is characterized by a special, very rough Structan® titanium structure. The Structan® grid structure has a pore size of approx. 800 µm and a porosity of up to 52 %.

The structure is produced by an additive 3D printing process. This laser-sintering process permits precise and continuous shaping of the porous and dense implant design structures. The surface structure thus offers good primary and secondary stability and in that way supports osteointegration.

AESCULAP® Plasmafit® REVISION

Plasmafit® Revision Screw Fixation

- ✓ Oblong hole for one or two screws
- ✓ Flexibility in screw positioning
- ✓ Option of single hole screw placement

Plasmafit® Revision has three single-hole screw holes and two oblong holes. The oblong holes provide greater flexibility in positioning screws, as they can optionally be used with two fixation screws each.

For the fixation of the Plasmafit® Revision cup in the acetabulum there are cancellous bone anchoring screws with a ø of 6.5 mm having a length range of 16 - 68 mm, in 4 mm increments.

ADDITIONAL FIXATION

Plasmafit® Revision with Structan® Augment

- ✓ Acetabular defect filling
- ✓ Stable grid structure
- ✓ High surface roughness

Bone defects can exceed the shape and size of the dimension of the revision cup. For stable anchoring and to bridge larger defects, an acetabular Structan® Augment can be additionally implanted.

Structan® Augments consist of a titanium alloy and permit the filling of defects, providing a stable grid structure and high surface roughness. The augments are adapted to the diameter of the Plasmafit® Revision cup. The diameter of the revision cup should be within a range of ±4 mm of the size of the selected Structan® Augment.

For further information on the Structan® Augments, please refer to the surgical technique 046302.

AESCULAP® Plasmafit® REVISION

Plasmafit® Revision Inner Geometry

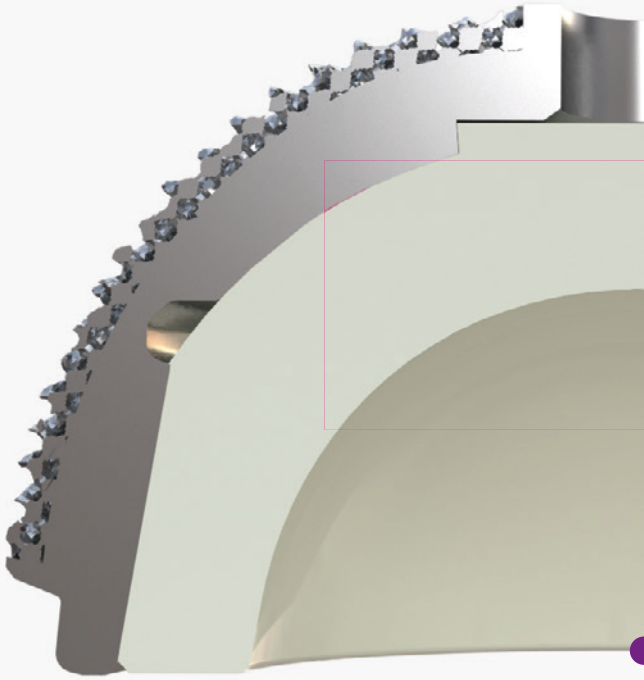
The design of the Plasmafit® Revision inner geometry permits an intraoperative selection of modular liners made of Vitelene® as well as Dual Mobility liners. In the standard liners (symmetrical and posterior wall), the center of rotation is located exactly in the area of the cup entrance. In the revision liners symmetrical +4 mm, the center of rotation is offset by 4 mm.

The liners are securely supported by the rounded rim of the titanium shell.

Plasmafit® Revision cups can only be combined with Vitelene® liners or Plasmafit® Dual Mobility components.

NOTE

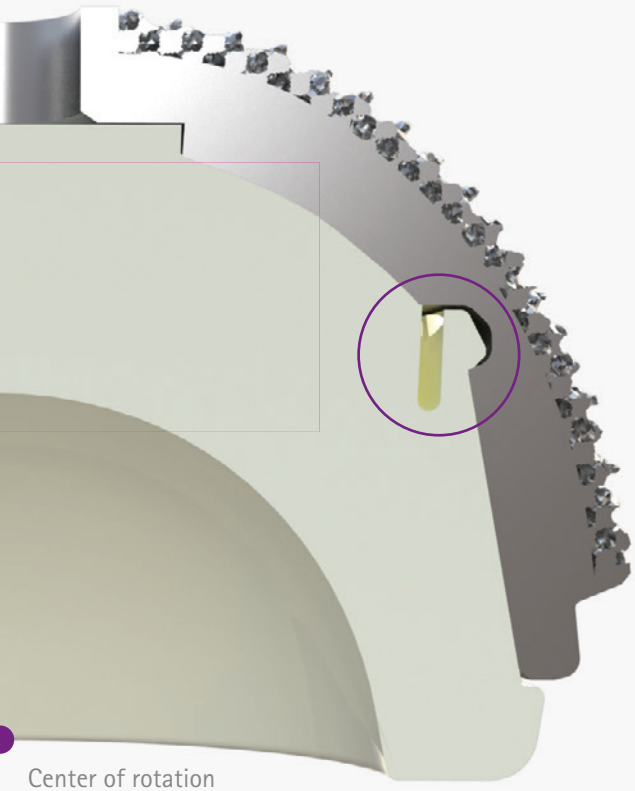
Plasmafit® Revision may not be combined with ceramic liners.



Center of rotation
Symmetrical liner

The central insertion instrument contributes to the rotational stability of the trial cup and cup implant

CONICAL ANCHORING MECHANISM



Center of rotation
Symmetrical +4 mm liner

Plasmafit® Revision Liner Anchoring

Large-area conical fixation in the cone area of the cup is used to anchor the Plasmafit® Revision liners. The rough titanium inner surface reduces relative movements of the liner to a few micrometers.

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

The Vitelene® Revision liners have a special geometrical shape with a snap connection. This enables mechanical fixation in the Plasmafit® Revision cup. The snap mechanism consists of the protruding snap lip at the upper end of the conical area of the liner and a small gap. The geometry of the inner cup reflects this protruding rim. This snap connection provides the revision liner with an additional anchoring option. The small gap / recess at the cup entrance plane is used to remove the liner in case of a revision.

AESCULAP® Plasmafit® REVISION

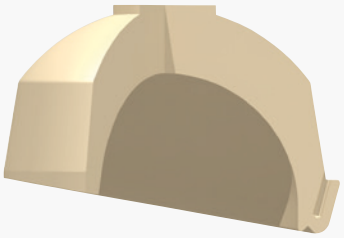
6 | BEARING OPTIONS

Liner Options

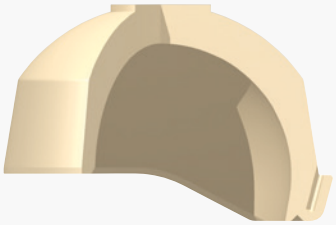
Plasmafit® can be used with Vitelene® liners or with the special modular Dual Mobility liner.
Special Vitelene® Revision liners are available for revision.

STANDARD LINERS

SYMMETRICAL
Standard reconstruction



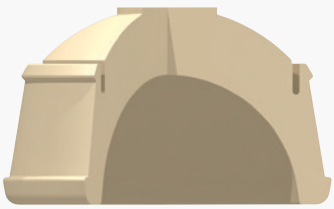
ASYMMETRICAL 10°
Correction of the cup position by 10°



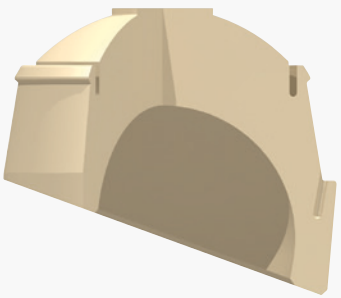
WITH SHOULDER
Higher luxation stability, e. g. direction posterior for posterior approach

REVISION LINERS

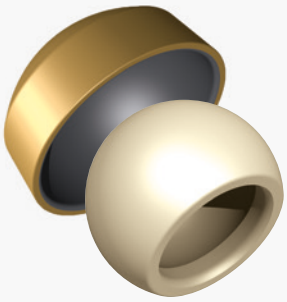
Revision liners have a snap mechanism.



SYMMETRICAL +4 MM
Correction of the center of rotation



ASYMMETRICAL 20°
Correction of the cup position by 20°



Plasmafit® DUAL MOBILITY
Modular cobalt-chromium liner and Vitelene® Dual Mobility Head

For more information, refer to Plasmafit® Dual Mobility Brochure 047702.

Vitelene®

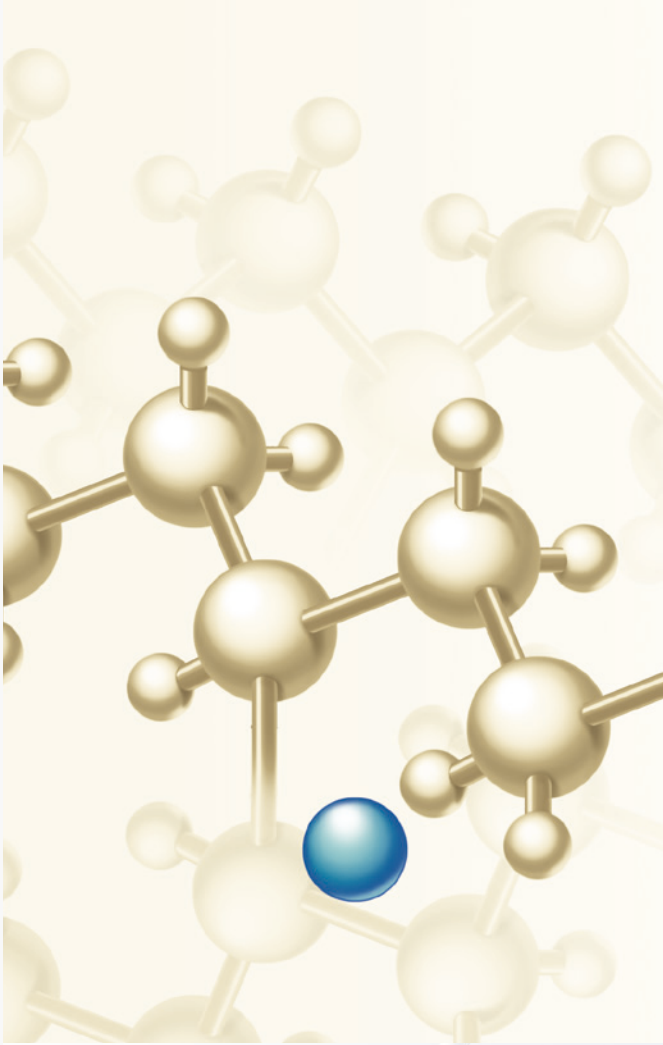
The cup design of Plasmafit® Revision is designed for the use of polyethylene inserts. It offers the use of Vitelene® liners.

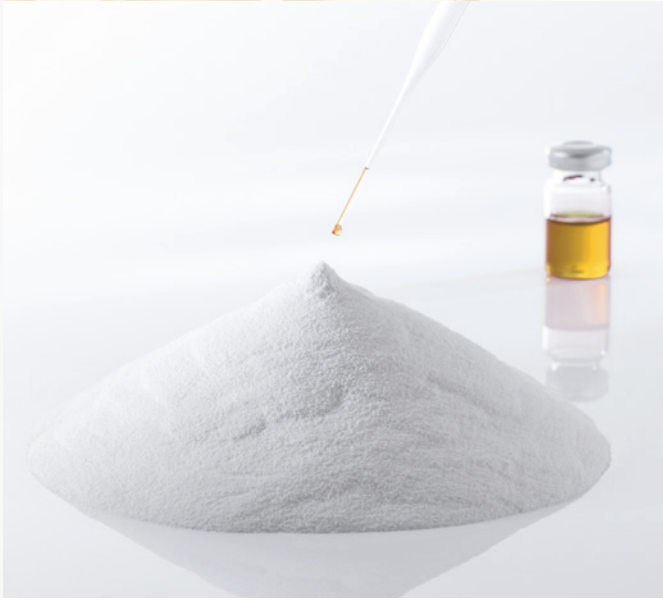
Vitelene® is a highly crosslinked polyethylene with vitamin E stabilization. In addition to its resistance to abrasion and oxidation, Vitelene® is also characterized by balanced mechanical properties, thus representing the current standard of highly crosslinked polyethylene for hip endoprosthetics.

For manufacturing purposes, GUR1020 polyethylene powder mixed with vitamin E (0.1 % alpha-tocopherol) is pressed into sheets and then crosslinked as a blank using 80 kGy electron radiation. Implants manufactured using CNC technology are sterilized using ethylene oxide and packed in a nitrogen atmosphere.

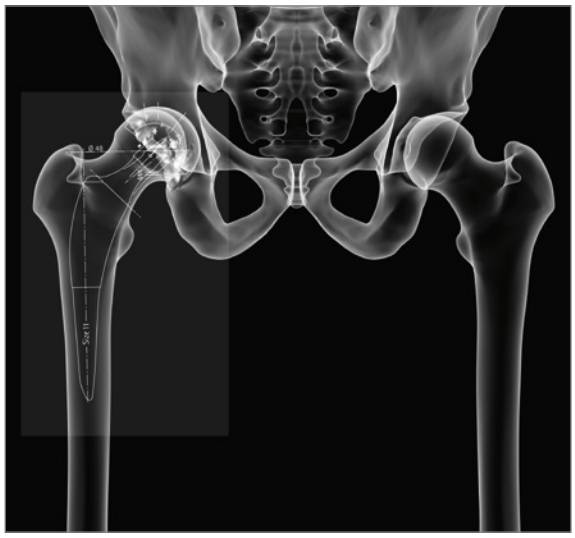
The vitamin E proportion / percentage in Vitelene® is present in sufficient quantity to prevent oxidative reactions and to greatly reduce abrasion over the service life of the endoprosthesis.

Oxidation results in the degradation of polyethylene. Vitamin E binds free radicals by releasing H atoms. In this way, it supports the resistance of polyethylene to oxidative processes and protects the cup liner over the lifetime of the endoprosthesis by providing long-term protection against oxidation.





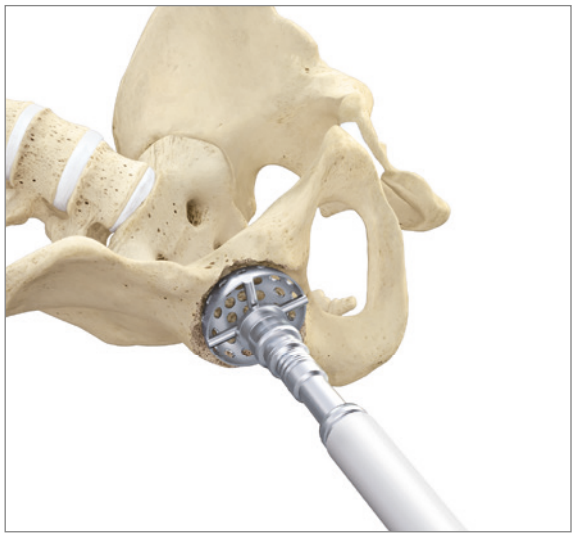
AESCULAP® Plasmafit® REVISION



Preoperative Planning

Preoperative planning in hip revision is recommended to support in assessing the patient's anatomy, and in determining the cup size and desired position for anchoring the acetabular cup.

X-ray templates for Plasmafit® Revision can be used for manual planning or for 2D or 3D planning software. The scale of the x-ray template is 1.15:1.



Preparation of the Acetabulum

The acetabulum should be exposed to provide a sufficient overview. The previous implant has to be removed. Then an overview of the bony situation has to be obtained. To prepare the bone, check the acetabulum for cavitary and/or segmental defects.

The bone has to be refreshed after the primary cup has been removed, often sclerotic bone conditions are present. A new bone bed has to be prepared for the typically larger revision implant to achieve adequate anchoring.

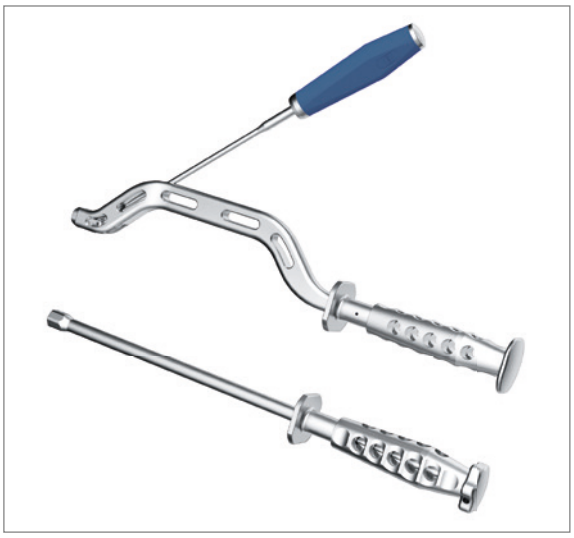
Spherical reamers driven by a low-speed motor handpiece are used for the preparation of the Plasmafit® Revision. It is recommended to start with a smaller diameter of the acetabular reamer than the size determined during preoperative planning and then gradually increase the diameter.

In case of dysplastic changes, a cup position in the area of the primary cup is recommended if a leg difference can be compensated. The caudal edge of the cup should be at the level of the tear drop. If necessary, cranial filling using bone grafting material can be performed to ensure an adequate cranial acetabular roof. This shall be completed before the preparation of the bony bed.

Trial Cup Insertion

The nominal size of the Plasmafit® Revision implant matches the size of the last acetabular reamer used, as the pressfit oversize is included in the implant. It is recommended to make the final implant selection only after using a trial cup.

A straight and a curved insertion instrument are available.

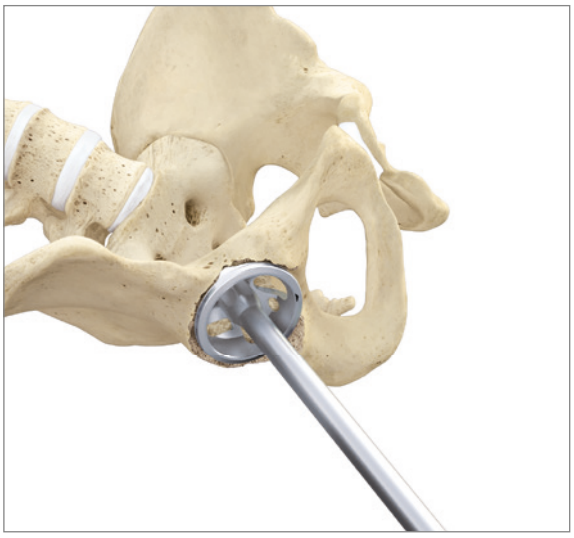


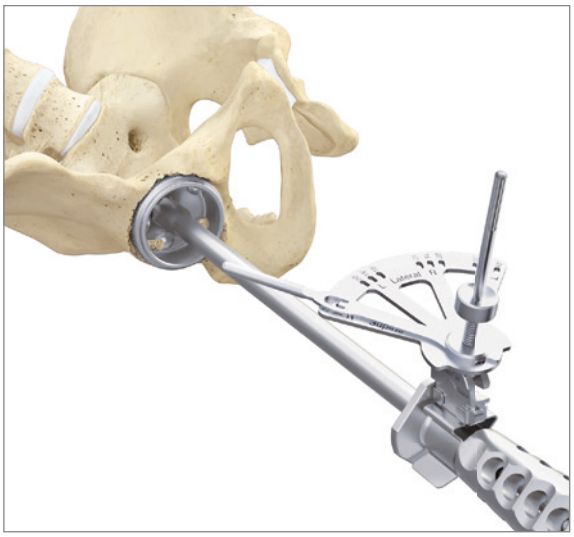
Plasmafit® Revision Implantation

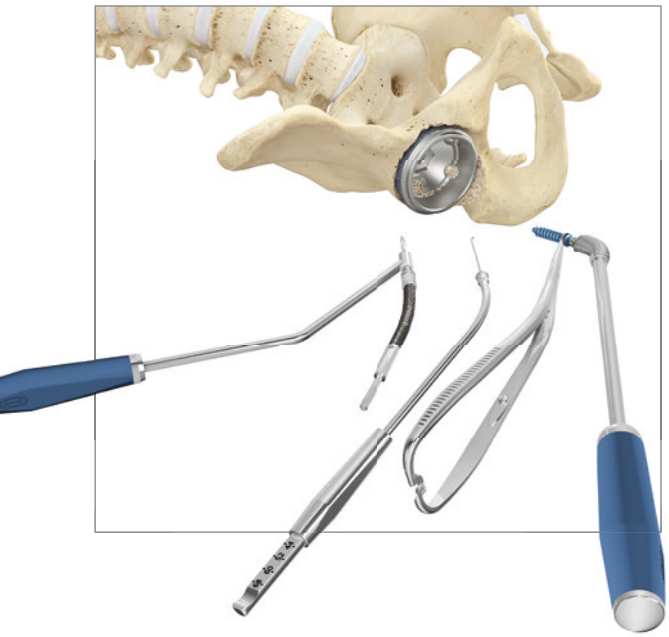
The final Plasmafit® Revision cup implant is fixed to the insertion instrument. The secure fit of cup and instrument has to be checked. The insertion instrument can also be used to reposition and correct the position of the Plasmafit® Revision implant.

Depending on the patient's position, an aiming device for surgery in the supine or lateral position can be used to position the implant.

If the bone quality permits, the laser marking in form of an arrow on the implant (▶) should be aligned in the direction of the incisura acetabuli. If this is not possible, at least in an anterior-inferior position. In this way, the single and the oblong holes can be brought into an adequate position in the acetabulum.
The position of the cup defines the implantation process and is aiming at an inclination of 40 to 45° and an anteversion of 15 to 20°. The orientation depends on the bone quality and the degree of defect.







Plasmafit® Revision with Additional Screw Fixation

Plasmafit® Revision offers various options for anchoring screws. Plasmafit® Revision has three screw holes in the cranial area, thereof two oblong holes, and two single screw holes in the caudal area. The oblong holes can be used with either one or two screws.

Before the self-tapping cancellous bone screw (ø 6.5 mm) is inserted, the screw holes are prepared using a flexible drill bit (ø 3.2 mm). The drill guide can be used to ensure that the screw hole is drilled at the correct position and the screw head can be completely countersunk. After measuring the required screw length, a screw holding forceps and a cardan screwdriver facilitate the screw implantation.

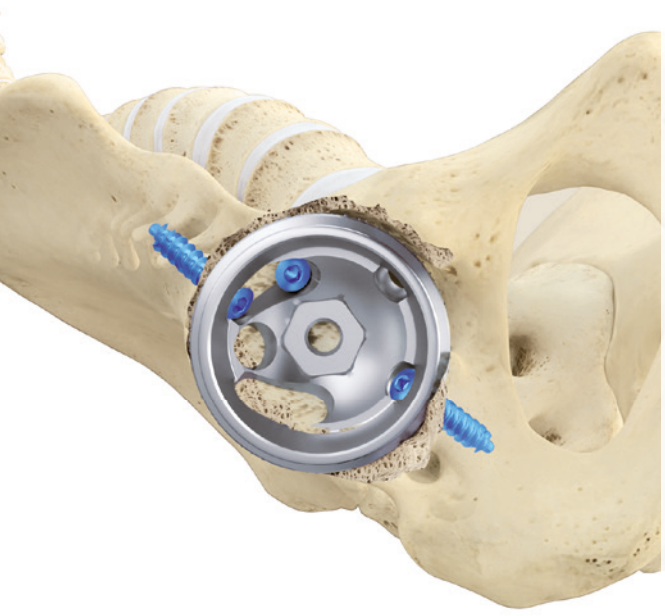
NOTE

When drilling the screw holes and inserting the screws, it has to be ensured that the drilling/screw is not inserted into the inner pelvic cortex.

Use a drill guide to ensure that the screw holes are correctly placed. The screw heads may not protrude, as that would prevent the liner from being firmly seated.

Insert anchoring screws all the way into the drill hole to avoid any contact of the liner and the screw head.

Ensure that the screw heads fit properly. If possible, screw perpendicular to the wall of the cup into the oblong hole to preclude the screw head from protruding beyond the screw hole boundary. Keep the angle between the screw axis and the axis of the oblong hole < 9°.



Then, insert a trial liner. The final selection of the modular liner is only made after a final trial reduction.

Plasmafit® Revision with Trial Liner

Various trial liners are optionally available for testing the functionality of the joint. For Plasmafit® Revision different trial liners and additional special revision trial liners are available.
Removal forceps can be used to remove the trial liners from the cup.

NOTE (for the 20° trial liners)
The slot of the trial liner should be oriented towards the laser-marking on the rim of the cup.

Plasmafit® Revision with Vitelene® Liners

After successful reduction using trial liners, the matching liner is inserted into Plasmafit® Revision. The cup insertion instrument and plastic head in the selected head diameter size are used to implant the liner. Then the final joint reduction using the implanted liner is performed and subsequently the correct fit of the liner is checked again with the fingertip.

When using a 20° revision liner, the finger tip is moved over the liner lip that is closest to the rim of the cup. If the liner is not yet seated properly, it has to be secured by an additional impulse. As with the trial liners, the 20° revision liner has an orientation guide in the form of the x-ray marker. It should point in the direction of the laser marking on the rim of the cup.

When using the symmetrical +4 mm liner, the screw length gauge can be used to check the correct fit of the liner. If there is no gap between the liner and the rim of the cup, the tip of the measuring instrument cannot slip under the rim of the liner. That means, the liner is in its proper position.

AESCULAP® Plasmafit® REVISION

Plasmafit® Revision Implants

Cup size		44	46	48	50	52	54	56
Liner size		C	D	E	F	G	H	I
Plasmafit® Revision	Structan®	NV944T	NV946T	NV948T	NV950T	NV952T	NV954T	NV956T
symmetrical 	ø 22.2 mm	NV184E	-	-	-	-	-	-
	ø 28 mm	NV189E	NV190E	NV191E	NV192E	NV193E	NV194E	NV195E
	ø 32 mm	-	-	NV201E	NV202E	NV203E	NV204E	NV205E
	ø 36 mm	-	-	-	-	NV213E	NV214E	NV215E
	ø 40 mm	-	-	-	-	-	-	NV225E
with shoulder 	ø 22.2 mm	NV284E	-	-	-	-	-	-
	ø 28 mm	NV289E	NV290E	NV291E	NV292E	NV293E	NV294E	NV295E
	ø 32 mm	-	-	NV301E	NV302E	NV303E	NV304E	NV305E
	ø 36 mm	-	-	-	-	NV313E	NV314E	NV315E
asymmetrical 10° 	ø 22.2 mm	NV384E	-	-	-	-	-	-
	ø 28 mm	NV389E	NV390E	NV391E	-	-	-	-
	ø 32 mm	-	-	NV401E	NV402E	NV403E	NV404E	NV405E
	ø 36 mm	-	-	-	-	NV413E	NV414E	NV415E

Vitelene®

58	60	62	64	66	68	70	72
J	J	J	K	K	K	K	K
NV958T	NV960T	NV962T	NV964T	NV966T	NV968T	NV970T	NV972T
-			-				
-			-				
NV206E			NV207E				
NV216E			NV217E				
NV226E			NV227E				
-			-				
-			-				
NV306E			NV307E				
NV316E			NV317E				
-			-				
-			-				
NV406E			NV407E				
NV416E			NV417E				

AESCULAP® Plasmafit® REVISION

Vitelene® Revision Liners

Cup size		44	46	48	50	52	54	56
Liner size		C	D	E	F	G	H	I
Plasmafit® Revision	Structan®	NV944T	NV946T	NV948T	NV950T	NV952T	NV954T	NV956T
symmetrical +4 mm 	ø 28 mm	NV589E	NV590E	NV591E	-	-	-	-
	ø 32 mm	-	-	NV601E	NV602E	NV603E	NV604E	NV605E
	ø 36 mm	-	-	-	-	NV613E	NV614E	NV615E
asymmetrical 20° 	ø 28 mm	NV489E	NV490E	NV491E	-	-	-	-
	ø 32 mm	-	-	NV501E	NV502E	NV503E	NV504E	NV505E
	ø 36 mm	-	-	-	-	NV513E	NV514E	NV515E

Vitelene®

Dual Mobility Liners

Dual Mobility Liner 		-	NV1010Z	NV1011Z	NV1012Z	NV1013Z	NV1014Z	NV1015Z
Dual Mobility Head 	ø 22.2 mm	-	NV1030E	NV1031E	NV1032E	-	-	-
	ø 28 mm	-	-	-	-	NV1043E	NV1044E	NV1045E

ISODUR®$_F$

Vitelene®

UHMWPE Polyethylene Liners

symmetrical	ø 32 mm	-	-	NV201	NV202	NV203	NV204	NV205
with shoulder	ø 28 mm	NV289	NV290	-	-	-	-	-
	ø 32 mm	-	-	NV301	NV302	NV303	NV304	NV305

UHMWPE

58	60	62	64	66	68	70	72
J	J	J	K	K	K	K	K
NV958T	NV960T	NV962T	NV964T	NV966T	NV968T	NV970T	NV972T
-			-				
NV606E			NV607E				
NV616E			NV617E				
-			-				
NV506E			NV507E				
NV516E			NV517E				
NV1016Z			NV1017Z				
-			-				
NV1046E			NV1047E				
NV206			NV207				
-			-				
NV306			NV307				

AESCULAP® Plasmafit® REVISION

Ceramic – prosthesis heads

12/14

Diameter	Art. no.				
	ø 22.2 mm	ø 28 mm	ø 32 mm	ø 36 mm	ø 40 mm
S	-	NK460D	NK560D	NK650D	NK750D
M	-	NK461D	NK561D	NK651D	NK751D
L	-	NK462D	NK562D	NK652D	NK752D
XL	-	-	NK563D	NK653D	NK753D

Biolox® delta

12/14

Diameter	Art. no.				
	ø 22.2 mm	ø 28 mm	ø 32 mm	ø 36 mm	ø 40 mm
S	-	NK324	NK424	NK524	-
M	-	NK325	NK425	NK525	-
L	-	NK326	NK426	NK526	-
XL	-	-	NK427	NK527	-

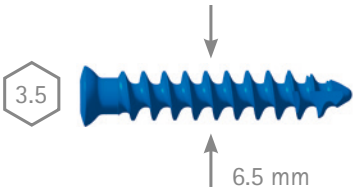
Isocer®

Metal – prosthesis heads

12 / 14

Diameter	Art. no.				
	ø 22.2 mm	ø 28 mm	ø 32 mm	ø 36 mm	ø 40 mm
S	-	NK429K	NK529K	NK669K	NK769K
M	NK330K	NK430K	NK530K	NK670K	NK770K
L	NK331K	NK431K	NK531K	NK671K	NK771K
XL	-	NK432K	NK532K	NK672K	NK772K
XXL	-	NK433K	NK533K	NK673K	NK773K

ISODUR®$_F$



Fixation screws ø 6.5 mm

16 mm	20 mm	24 mm	28 mm	32 mm	36 mm	40 mm
NV010T	NV011T	NV012T	NV013T	NV014T	NV015T	NV016T
44 mm	**48 mm**	**52 mm**	**56 mm**	**60 mm**	**64 mm**	**68 mm**
NV017T	NV018T	NV019T	NV020T	NV021T	NV022T	NV023T

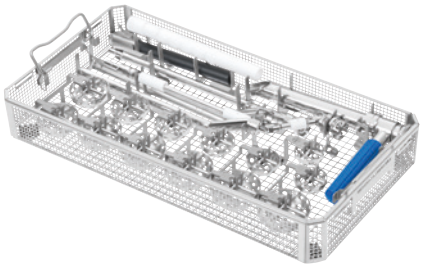
ISOTAN®$_F$

Implant materials:

Biolox® delta	Aluminum oxide matrix ceramic (Al_2O_3 / ZiO_2 / ISO 6474-2)
Isocer®	Zirconia-toughened alumina ceramic (Al_2O_3 / ZrO_2 / ISO 6474-2)
ISODUR®$_F$	Cobalt-chromium forged alloy (CoCrMo / ISO 5832-12)
ISOTAN®$_F$	Titanium forged alloy (Ti6Al4V / ISO 5832-3)
Structan®	TI6AI4V ELI in accordance with ASTM F3001 and on the basis of ASTM F136
UHMWPE	Ultra high molecular weight low pressure polyethylene (ISO 5834-2)
Vitelene®	UHMWPE-XE Vitamin E stabilized highly crosslinked polyethylene

AESCULAP® Plasmafit® REVISION

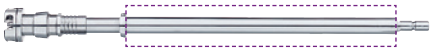
Acetabular Reamer



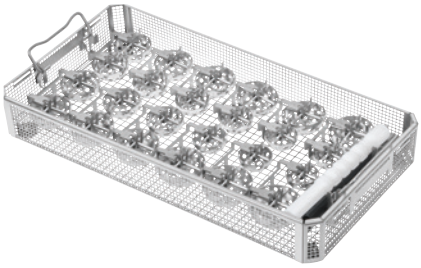
TRAY NF932R
485 x 253 x 76 mm

With supports for:	Art. no.
13 reamers, two straight and one curved reamer shank	
OrthoPilot® Navigation sleeve	FS939
Standard protection sleeve	FS974

Lid JH217R
489 x 257 mm
Packing template TE895



Straight reamer shanks	Art. no.
Reamer shank ZIMMER	NF985R
Reamer shank Harris	NF986R
Reamer shank AO	NF987R
OrthoPilot® Navigation sleeve	FS939
Standard protection sleeve	FS974



TRAY NF933R
485 x 253 x 76 mm

With supports for:	Art. no.
24 reamer attachments and two straight reamer shafts	
OrthoPilot® Navigation sleeve	FS939
Standard protection sleeve	FS974

Lid JH217R
489 x 257 mm

Recommended container JK440
592 x 274 x 90 mm
Lid JK489

Curved reamer shanks	Art. no.
Reamer shank ZIMMER	NF995
Reamer shank Harris	NF996
Reamer shank AO	NF997

Tray for one curved reamer shank NF993R

FULL PROFILE REAMERS

Outer diameter	Art. no.
ø 38 mm	NF938R
ø 40 mm	NF940R
ø 42 mm	NF942R
ø 44 mm	NF944R
ø 46 mm	NF946R
ø 48 mm	NF948R
ø 50 mm	NF950R
ø 52 mm	NF952R
ø 54 mm	NF954R
ø 56 mm	NF956R
ø 58 mm	NF958R
ø 60 mm	NF960R
ø 62 mm	NF962R
ø 64 mm	NF964R
ø 66 mm	NF966R
ø 68 mm	NF968R
ø 70 mm	NF970R
ø 72 mm	NF982R

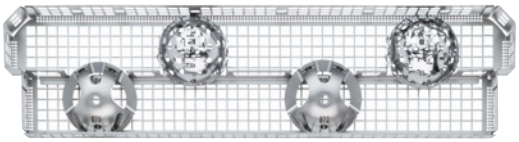
NOTE

Acetabular reamers are available on request in increments of 1 mm between the sizes 38 mm - 68 mm.

Reamer Module	Art. no.
Half module tray with supports for reamers ø 44 - 68 mm, one straight reamer shank and protection sleeve 465 x 118 x 45 mm	NT635R

NOTE

Please order all reamer components separately.



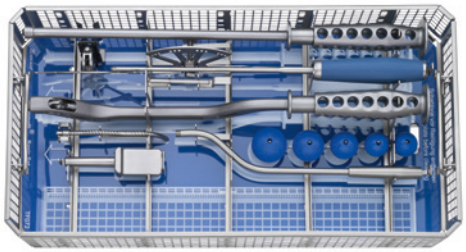
Plasmafit® REVISION MODULE 70/72 MM NT574

70/72 mm Module	Art. no.
Half module tray with supports for reamers and trial cups, sizes ø 70 and 72 mm 465 x 118 x 45 mm	NT575R
Trial cup ø 70 mm K	NT570R
Trial cup ø 72 mm K	NT572R
Acetabulum reamer ø 70 mm	NF970R
Acetabulum reamer ø 72 mm	NF982R

AESCULAP® Plasmafit® REVISION

Order Proposal

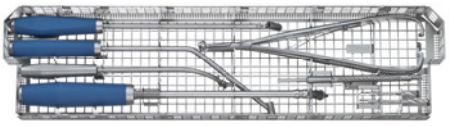
for new customers without existing Plasmafit® primary equipment



Plasmafit® Basic Set NT400

Consisting of:	Art. no.
Tray with space for one small and one half module insert 489 x 253 x 106 mm	NT401R
Lid	JH217R
Packing template for NT400	TF072
Screwdriver SW 4.5	NT412R
Polyamid head ø 28 mm	FS979
Polyamid head ø 32 mm	FS980

For Plasmafit® Revision please order separately:	Art. no.
Insertion instrument, curved 442 mm	NT579R*
Universal aiming device, adjustable	NT420R**
Aiming device supine position	NT417R**
Aiming device lateral position	NT418R**
Polyamid head ø 22.2 mm	FS977
Polyamid head ø 36 mm	FS983
Polyamid head ø 40 mm	FS988



Plasmafit® Module Screw Fixation NT402

Consisting of:	Art. no.
Half module tray with supports 465 x 118 x 45 mm	NT403R
Flexible drill shaft	NT419R
Drill bit ø 3.2 mm, length 32 mm	NT424R
Cardan screwdriver SW 3.5	NT428R
Depth gauge	NT427R

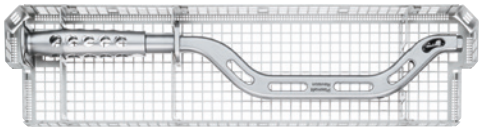
Please order separately:	Art. no.
Drill bit ø 3.2 mm, length 44 mm	NT429R
Drill guide, straight ø 3.2 mm	NT421R
Drill guide, curved ø 3.2 mm	NT423R
Screw holding forceps, straight	NT432R
Screw holding forceps, curved	NT433R
Drill bit ø 3.2 mm, length 20 mm	NT393R
Drill bit ø 4.0 mm, length 20 mm	NT394R
Drill guide, straight ø 4.0 mm	NT422R
Drill guide, curved ø 4.0 mm	NT425R
Drill bit ø 4.0 mm, length 32 mm	NT426R

* NT578R cannot be stored in the Plasmafit® Basic Set NT400. NT579R can be stored in the Plasmafit® Basic Set NT400.

** Only one aiming device can be stored in the Basic Set NT400.

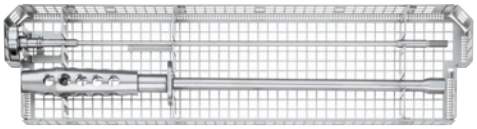
Order Proposal

for existing Plasmafit® primary equipment



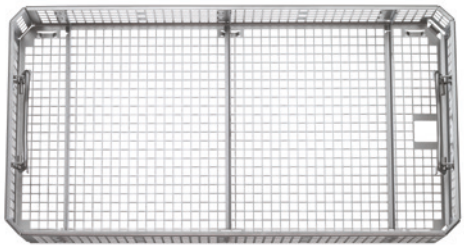
Plasmafit® Revision Module Insertion instrument, curved NT580

Consisting of:	Art. no.
Half module tray for NT580	NT581R
Insertion instrument, curved	NT579R*

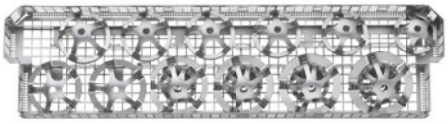


Plasmafit® Revision Module Insertion instrument, straight NT576

Consisting of:	Art. no.
Half module tray for NT576	NT577R
Insertion instrument, straight	NT578R*



Two-module support	Art. no.
Additional support for two module trays 489 x 253 x 76 mm	NT399R



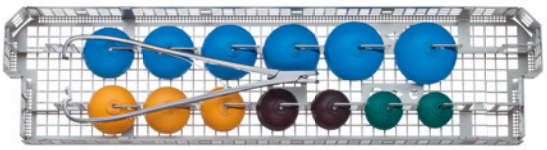
Plasmafit® Revision Module Trial Cups NT540

Consisting of:	Art. no.
Half module tray with supports 465 x 118 x 45 mm	NT541R
Trial cup ø 44 C	NT544R
Trial cup ø 46 D	NT546R
Trial cup ø 48 E	NT548R
Trial cup ø 50 F	NT550R
Trial cup ø 52 G	NT552R
Trial cup ø 54 H	NT554R
Trial cup ø 56 I	NT556R
Trial cup ø 58 J	NT558R
Trial cup ø 60 J	NT560R
Trial cup ø 62 J	NT562R
Trial cup ø 64 K	NT564R
Trial cup ø 66 K	NT566R
Trial cup ø 68 K	NT568R

Please order separately:	Art. no.
Plasmafit® Revision x-ray templates scale 1.15:1	NT406

Recommended container for:
Plasmafit® Basic Set, e.g. JK442
(592 x 274 x 135 mm)
Plasmafit® Additional Module Tray, e.g. JK441
(592 x 274 x 120 mm)

AESCULAP® Plasmafit® REVISION



NOTE

Plasmafit® Revision liner

Sizes 44 - 72 mm with liner sizes C - K

Plasmafit® Revision Module Trial Liners NT404

Consisting of:	Art. no.
Half module tray for maximum 16 trial liners 465 x 118 x 45 mm	NT405R
Forceps for trial liners	NT430R

Please order separately:

	Liner size	C	D	E	F	G	H	I	J	K
symmetrical	ø 22.2 mm	NT484	-	-	-	-	-	-	-	-
	ø 28 mm	NT489	NT490	NT491	NT532	NT533	NT534	NT535	-	-
	ø 32 mm	-	-	NT501	NT502	NT503	NT504	NT505	NT506	NT507
	ø 36 mm	-	-	-	-	NT513	NT514	NT515	NT516	NT517
	ø 40 mm	-	-	-	-	-	-	NT525	NT526	NT527
posterior wall	ø 22.2 mm	NT584	-	-	-	-	-	-	-	-
	ø 28 mm	NT589	NT590	NT591	NT592	NT593	NT594	NT595	-	-
	ø 32 mm	-	-	NT601	NT602	NT603	NT604	NT605	NT606	NT607
	ø 36 mm	-	-	-	-	NT613	NT614	NT615	NT616	NT617
asymmetrical 10°	ø 22.2 mm	NT684	-	-	-	-	-	-	-	-
	ø 28 mm	NT689	NT690	NT691	-	-	-	-	-	-
	ø 32 mm	-	-	NT701	NT702	NT703	NT704	NT705	NT706	NT707
	ø 36 mm	-	-	-	-	NT713	NT714	NT715	NT716	NT717
symmetrical +4 mm	ø 28 mm	NT1439	NT1440	NT1441	-	-	-	-	-	-
	ø 32 mm	-	-	NT1451	NT1452	NT1453	NT1454	NT1455	NT1456	NT1457
	ø 36 mm	-	-	-	-	NT1463	NT1464	NT1465	NT1466	NT1467
asymmetrical 20°	ø 28 mm	NT1409	NT1410	NT1411	-	-	-	-	-	-
	ø 32 mm	-	-	NT1421	NT1422	NT1423	NT1424	NT1425	NT1426	NT1427
	ø 36 mm	-	-	-	-	NT1433	NT1434	NT1435	NT1436	NT1437

B BRAUN
SHARING EXPERTISE

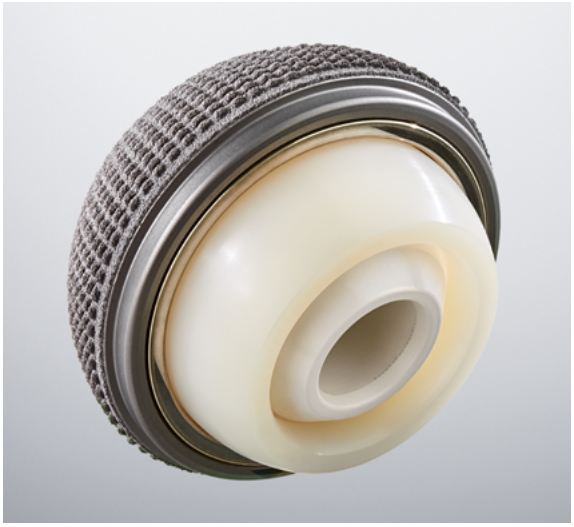
ORTHOPAEDIC
SURGERY

AESCULAP® Plasmafit®

CEMENTLESS ACETABULAR CUP SYSTEM

AESCULAP® Plasmafit®

CEMENTLESS ACETABULAR CUP SYSTEM



CONTENT

AESCULAP® Plasmafit®

1 | CONCEPT

Plasmafit® Family

The AESCULAP® Plasmafit® Family reflects a comprehensive solution for total hip joint replacements. Different requirements for patient specific solutions are combined in one system and complement each other using the same instruments, design parameters and surgical procedure.

Based on the properties of the materials and instruments, Plasmafit® Dual Mobility and Plasmafit® Revision have joined the family and continue the system concept. The Plasmafit® Family therewith covers indications from primary up to revision treatments.

The Plasmafit® Family offers a high flexibility - not only with different cup systems but also regarding articulations. Various polyethylene bearing options are available based on Vitelene®, a highly crosslinked polyethylene with vitamin E stabilization.

In addition, Dual Mobility liners provide additional joint stability preventing hip joint dislocations.

ACETABULAR SOLUTIONS

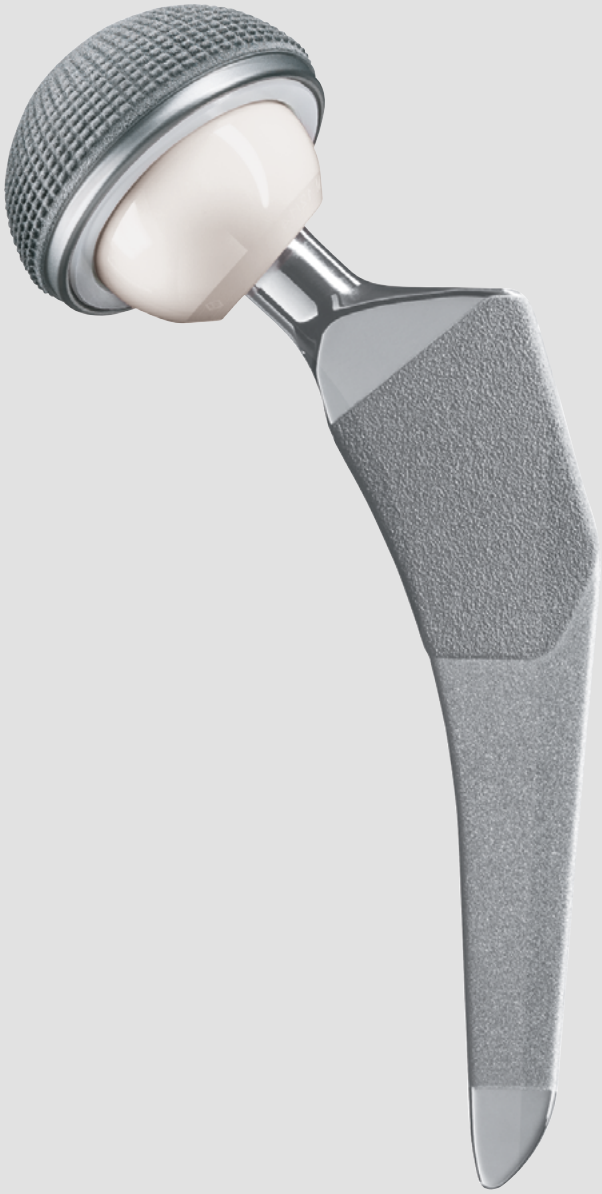
Plasmafit®

Plasmafit® is a cementless acetabular cup system for both primary treatment and slight revisions.
The hemispherical shape and teeth structured surface provide a high primary stability.

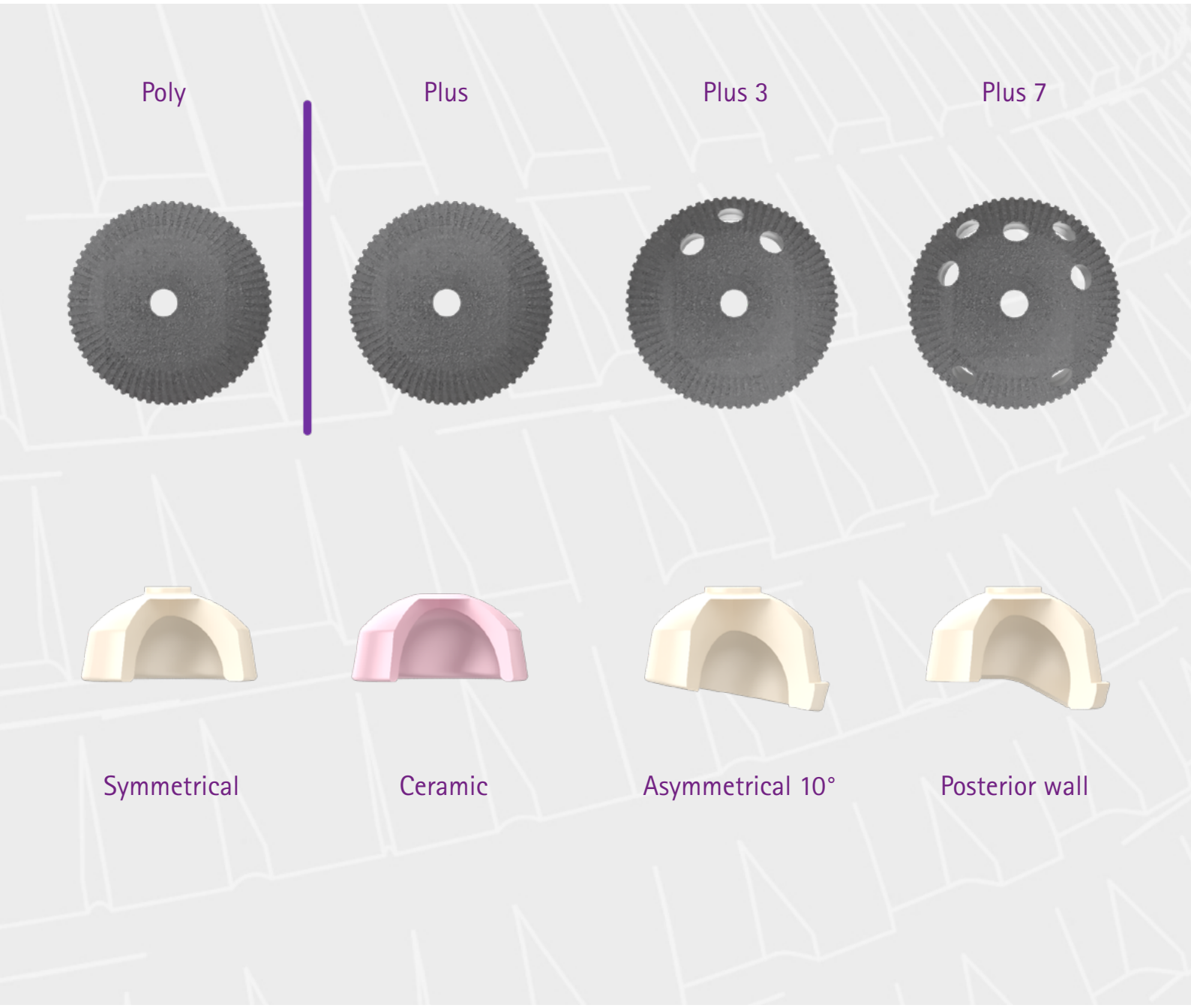
The Plasmafit® portfolio incorporates two lines: Plasmafit® Poly and Plus. In case of a dislocation risk, a modular Dual Mobility liner can be combined with the Plasmafit® Plus system to provide additional joint stability.

In addition, Structan® acetabular augments can be combined with the Plasmafit® Plus 3 or 7 for treating larger defects.

The AESCULAP® acetabular components address solutions for defect filling that permit stable anchoring in the bony situation.

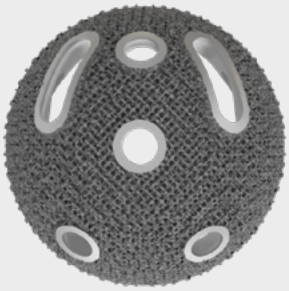


AESCULAP® Plasmafit®



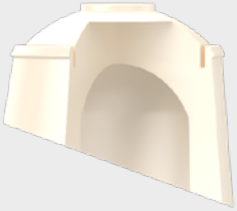
ACETABULAR CUP SYSTEM

Plasmafit® Revision & Structan®



Dual Mobility

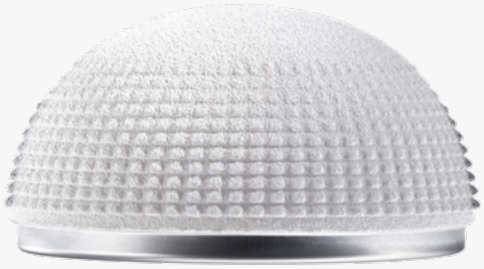
Symmetrical +4 mm*



Asymmetrical 20°*

*Only compatible with Plasmafit Revision

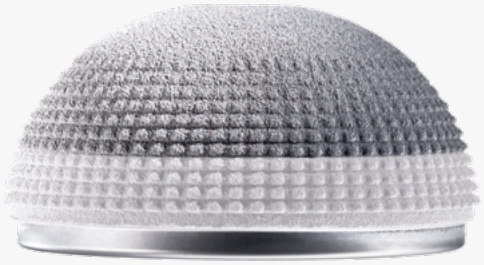
AESCULAP® Plasmafit®



Ream the Fit

✓ NO TRIAL CUPS

The precise profile structure of the Plasmafit® surface enables the surgeon to skip the step of trial cup implantation in most cases.



Feel the Fit

✓ NO SCREWS

The intraoperative primary stabilty of Plasmafit® reduces the need for additional screw fixation to only a few cases and allows implantations with screws under challenging conditions and easy revision treatments.

Fit the Insert

✓ NO COMPROMISES

The wall thickness of both Plasmafit® implant lines offers an improved articulation choice for highly crosslinked polyethyelene liners. Additionally, ceramic liners as well as modular dual mobility articulation is available for the Plus line.

FEEL THE GRIP.
GET THE FIT.

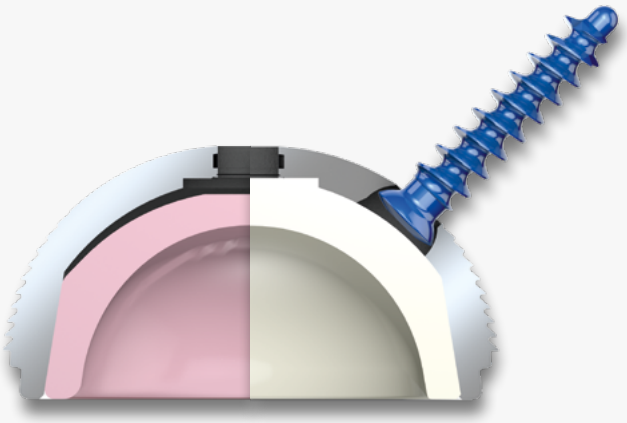
Plasmafit® Poly

IMPROVED CUP IMPLANT LINE FOR Vitelene® XLPE

- ✓ Thin metal shell without screw option
- ✓ Only for polyethylene liners
- ✓ Large articulation diameter for small cup sizes
- ✓ 36 mm articulation for cup size 50 and higher
- ✓ PE wall thickness of min. 5.5 mm in main load area
- ✓ Closing plug for central insertion hole

Plasmafit® Plus

UNIVERSAL CUP IMPLANT LINE FOR CERAMIC AND Vitelene® WITH SCREW OPTION



- ✓ Thick cup design with screw option
- ✓ For the use of ceramic and polyethylene cup liners
- ✓ Biolox® delta, Vitelene® and conventional PE
- ✓ 36 mm articulation for cup size 52
- ✓ Modular Plasmafit® Dual Mobility Option
- ✓ Cup alternatives with no, 3 or 7 screw holes
- ✓ Closing plug for no hole cup line

Plasmafit® PLUS

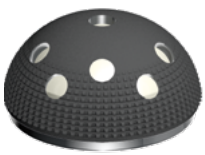
without screw hole

Plasmafit® PLUS 3

with 3 screw holes

Plasmafit® PLUS 7

5 screw holes cranially, 2 screw holes caudally



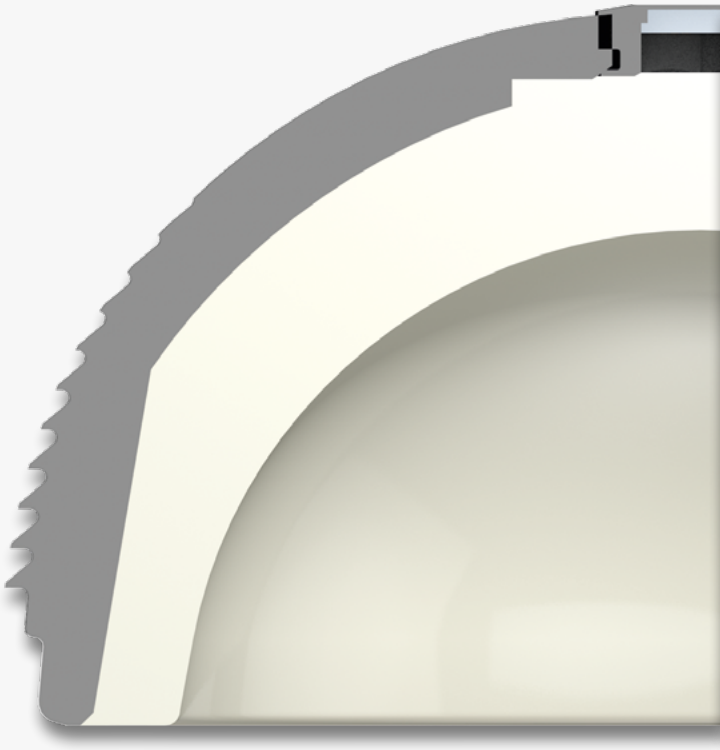
AESCULAP® Plasmafit®

Plasmafit® Poly with Vitelene®

- ✓ Thin shell without screw holes
- ✓ Increased polyethylene wall thickness
- ✓ Large articulation diametre

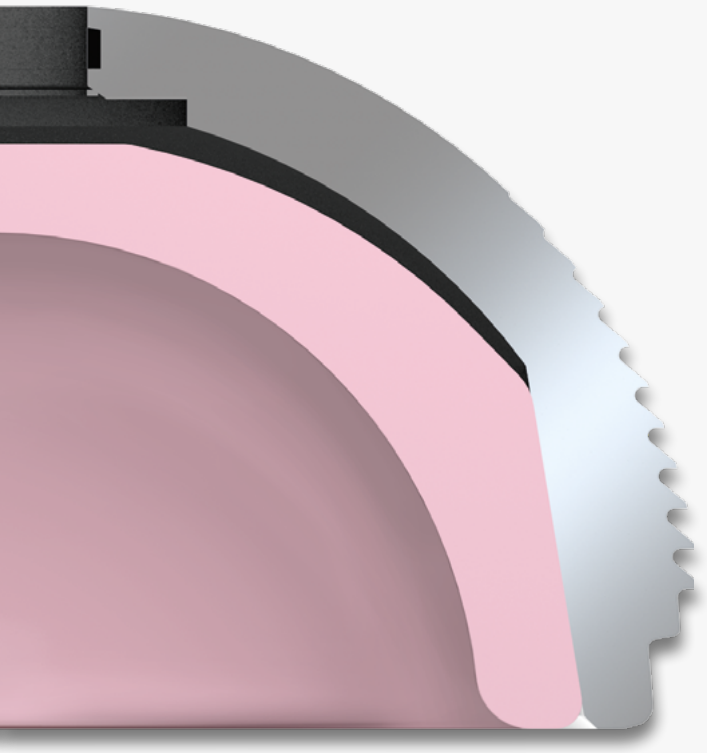
Plasmafit® Poly is a dedicated cup implant line exclusively for the use with polyethylene liners. The profile of the wall thickness enlarges the material thickness of polyethylene liners and allows the optional use of correction liners.

Plasmafit® Poly implants enable a 36 mm highly crosslinked Vitelene® liner for cup size 50, up to a 40 mm articulation for cup size 54.



Plasmafit® Poly from size 50 with 36 mm Vitelene®

Plasmafit® POLY AND Plasmafit® PLUS



Plasmafit® Plus from size 52 with 36 mm Biolox® delta

Plasmafit® Plus with Biolox® delta

- ✓ Universal cup implant line
- ✓ Vitelene® as additional bearing option
- ✓ Implants with and without cancellous screws

Plasmafit® Plus designed for combined treatments with ceramic, modular Plasmafit® Dual Mobility or polyethylene articulation materials.
The increased wall thickness compared to Plasmafit® Poly allows additional screw holes for an optional use of cancellous fixation screws.

A 36 mm Biolox® delta ceramic on ceramic articualtion can be realized for cup size 52, 40 mm articualtion for cup size 56.

All Plasmafit® Plus cup implants can be combined with modular Vitelene® polyethylene liners made of vitamin E stabilized highly crosslinked polyethylene.

AESCULAP® Plasmafit®

3 | SURFACE

- ✓ High implant stability
- ✓ Wide range of indication
- ✓ Easy surgical technique

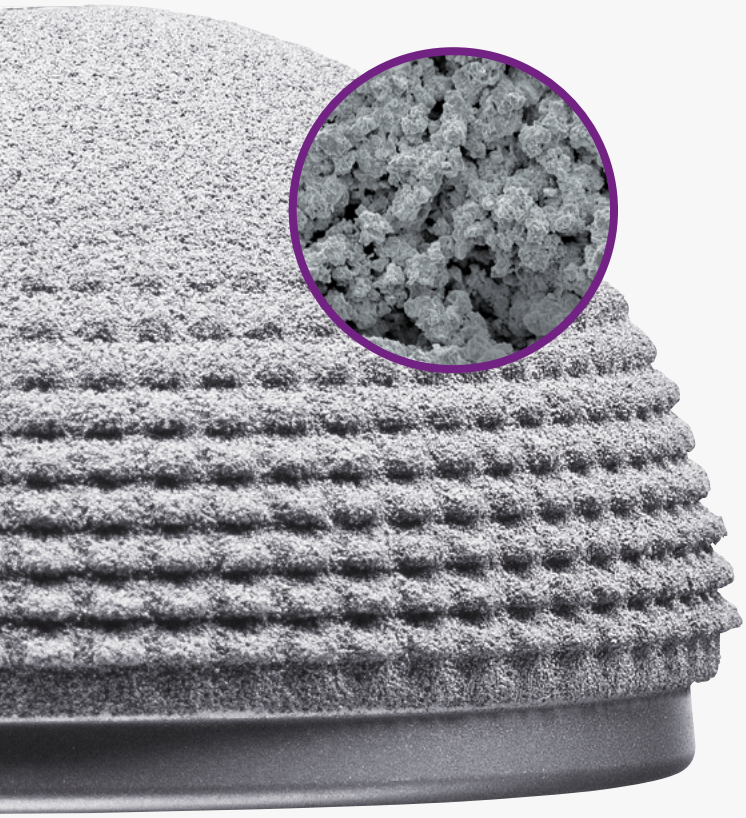
Plasmafit® Structure

The profile structure of the Plasmafit® cup surface features a precise and fine tooth geometry which gradually diminishes towards the dome.

The primary implant stability should be supported particularly on the rim of the cup.

The pressfit locking allows a primary cup stability under different bone qualities and cup preparations.

HIGH IMPLANT STABILITY



- ✓ Microporous pure titanium coating
- ✓ Increased implant surface
- ✓ Pressfit locking in implant bed

Plasmapore® Coating

The combination of the Plasmafit® surface structure with the Plasmapore® coating leads to a very rough implant surface. Pure titanium powder is applied in a plasma vacuum coating process to the surface of cementless implants to form a 0.35 mm thick layer with up to 50 % porosity.

The Plasmapore® surface supports the direct bone apposition on the increased implant surface.

AESCULAP® Plasmafit®

Plasmafit® Periphery

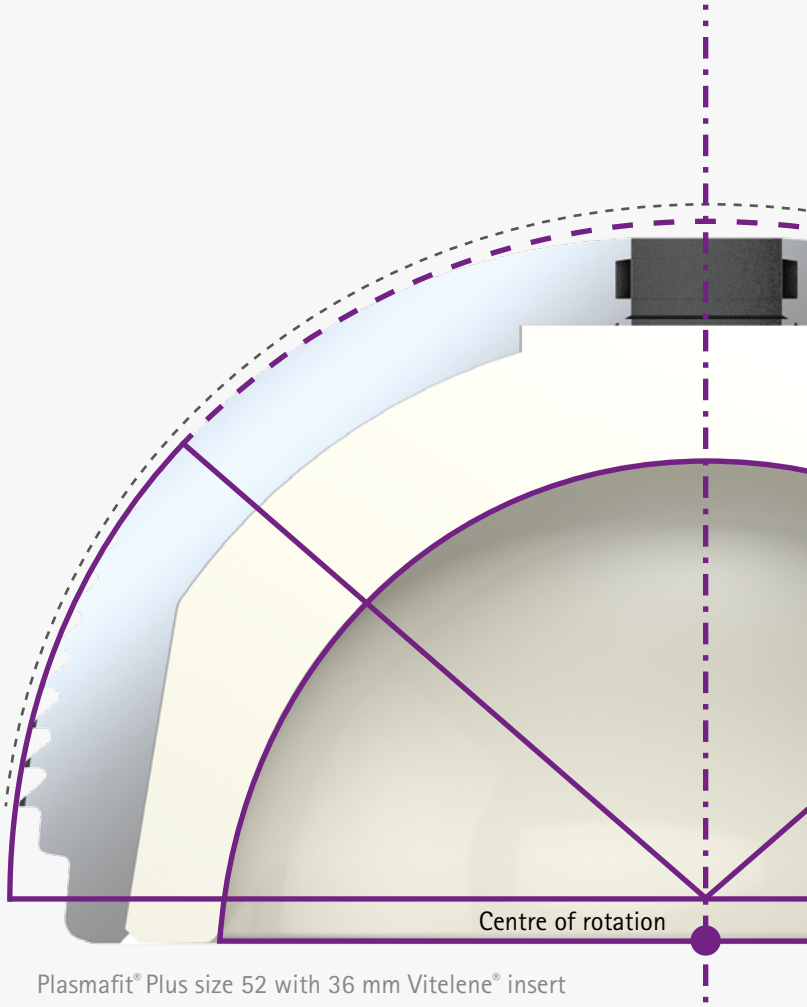
The external Plasmafit® shape is spherical with a slightly flattened dome. The centre of rotation with standard liners is located on the exact cup entrance plane. The liners are supported by the rounded rim of the cup. The equatorial pressfit is 1.5 mm.

Plasmafit® Structure

The design of the Plasmafit® inside allows an intraoperative choice of modular liners, alternatively polyethylene or ceramic.

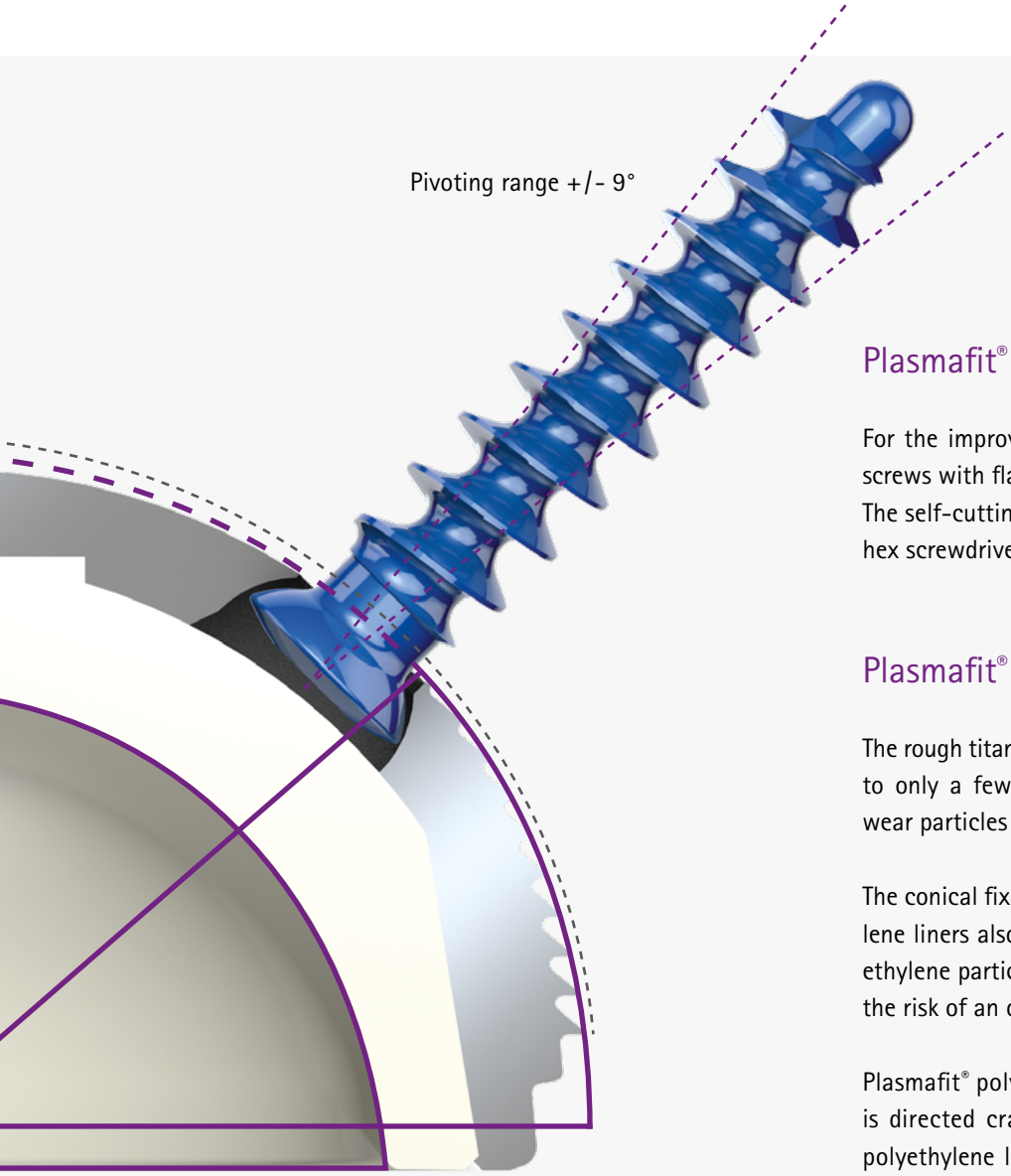
Plasmafit® Plus cups can be combined with liners of polyethylene, ceramic and fixation screws. A further option is the combination with Plasmafit® Dual Mobility liners. The thin-walled implant line Plasmafit® Poly is especially designed for polyethylene liners.

The fixation of the Plasmafit® liners is realized by a large area conical locking mechanism. Polyethylene liners have an additional locking-free contact with the base of the cup.



Plasmafit® Plus size 52 with 36 mm Vitelene® insert

CONICAL LOCKING MECHANISM



Plasmafit® Cancellous Screws

For the improved Plasmafit® wall thickness special fixation screws with flatter screw heads have been designed.
The self-cutting, blue 6.5 mm screws are inserted with a 3.5 hex screwdriver and allow a pivoting angle of +/- 9°.

Plasmafit® Liner Anchoring

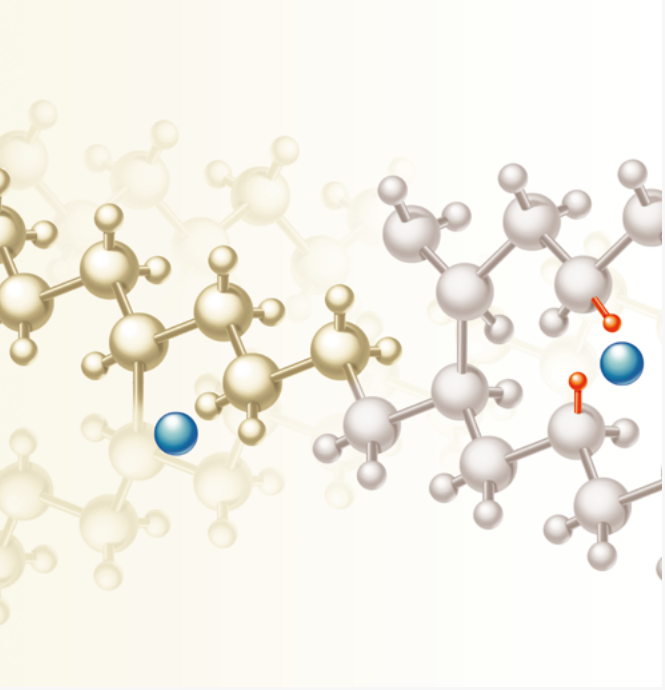
The rough titanium inner surface reduces relative movements to only a few microns, thus preventing the formation of wear particles on the rear side of the liner (1).

The conical fixation surface area of the Plasmafit® polyethylene liners also forms a seal against the migration of polyethylene particles from the articulating joint, thus reducing the risk of an osteolysis adjacent to the screw holes (1).

Plasmafit® polyethylene liners are strongest when the load is directed cranially. In the primary load area Plasmafit® polyethylene liners have a minimum thickness of 5.5 mm. The fixation has a high stability against tilting and rotation forces (1).

(1) Braun S, Sonntag R, Schroeder S, Mueller U, Jaeger S, Gotterbarm T et al. Backside wear in acetabular hip joint replacement. Acta Biomater 2019; 83:467–76.

AESCULAP® Plasmafit®

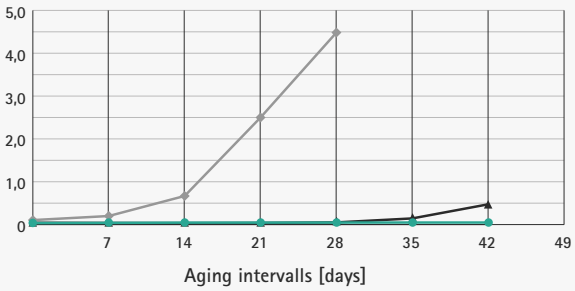


Vitelene® for Plasmafit® Poly

Vitelene® is a highly crosslinked polyethylene stabilized with vitamin E. Vitamin E provides long-term oxidation protection by binding free radicals through the release of H atoms. Polyethylene powder GUR 1020 is mixed with vitamin E (0.1 % α-Tocopherol) and pressed into sheets. Afterwards a total dose of 80 kGy electron beam radiation is applied to cross link the blank product. The Vitelene® inserts are manufactured using state of the art CNC technology and sterilized with ethylene oxide. There is no post-irradiation thermal treatment necessary, hence no negative impact on mechanical properties is induced.

It is characterized by wear and oxidation resistance. The in vitro wear of Plasmafit® Vitelene® liners in combination with a 36 mm ceramic head is three times below the threshold that is known to cause osteolysis. Higher wear rates can occur with metal heads, by third-body wear, through cup malpositioning or as a result of implant loosening.

Oxidation index (2)



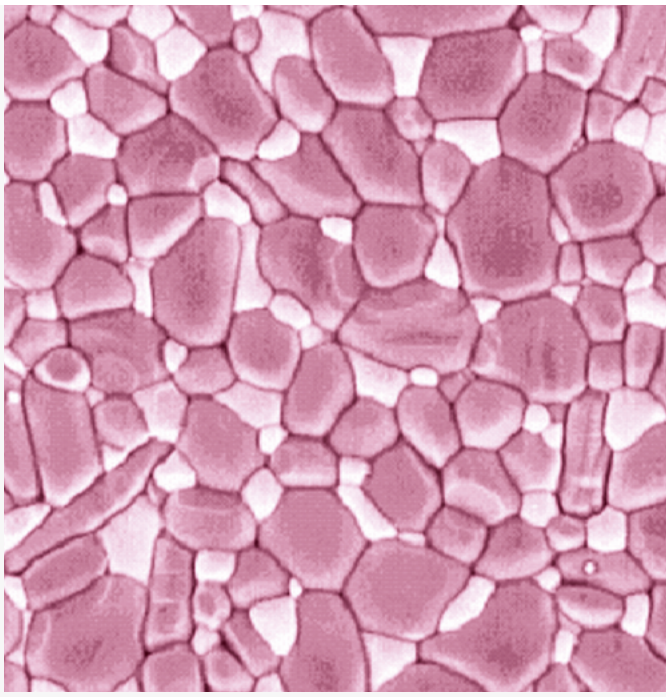
PE conventional
XLPE standard
Vitelene®

Oxidation index measurements of conventional, standard highly crosslinked polyethylene and vitamin E stabilized highly crosslinked Vitelene®.

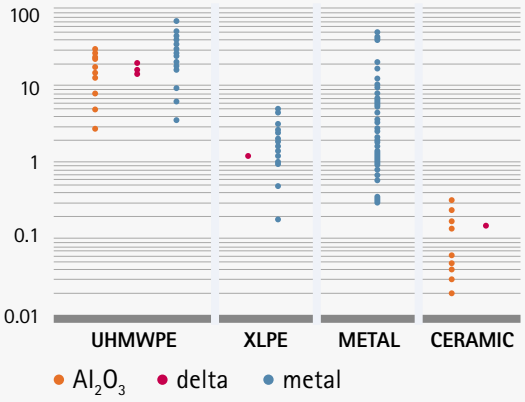
Biolox® delta for Plasmafit® Plus

When using ceramic Biolox delta cup liners, wear in the joint is reduced to only a few µm per year. With a correct implant positioning and a good joint stability a ceramic on ceramic total hip arthroplasty is approved. Biolox® delta is a high strength aluminium oxide matrix ceramic. Besides high fracture strength Biolox® delta implant components are characterized additionally by high fracture toughness. Finest ZiO_2 particles strengthen the ceramic material and prevent the propagation of cracks. This leads to an excellent material strength. (3)

For the Plasmafit® Plus implant line newly developed Biolox® delta ceramic liners are available. During the development process, special attention was paid to rounded liner edges, maximum liner wall thickness and conical fixation area.



Gravimetric wear [mg / million] (4)



ISO 14242 hip simulator wear measurements and data referring to other studies.

(2) Grupp T et al. Biotribology of a vitamin E-stabilized polyethylene for hip arthroplasty – Influence of artificial ageing and third-body particles on wear. Acta Biomaterialia. 2014 Jul;10(7):3068-78. Epub 2014 Mar 12.

(3) CeramTec GmbH, Plochingen.

(4) Dr. Ing. Christian Kaddick, Endolab Mechanical Engineering GmbH, Thansau / Rosenheim.

AESCULAP® Plasmafit®

5 | ARTICULATION

Liner Options

Plasmafit® can be used with Vitelene® liners or with the special modular Dual Mobility liner.
Ceramic liners are also available.

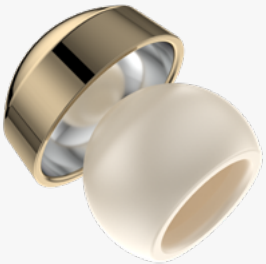
STANDARD LINERS

SYMMETRICAL
Standard reconstruction

ASYMMETRICAL 10°
Correction of the cup position by 10°

WITH SHOULDER
Higher luxation stability, e.g. direction posterior for posterior approach

DUAL MOBILITY



Plasmafit® DUAL MOBILITY
Modular cobalt-chromium liner and Vitelene® Dual Mobility Head

CERAMIC

Biolox® Delta
Standard reconstruction for ceramic-on-ceramic articulation

Plasmafit® DUAL MOBILITY

- ✓ Modular Dual Mobility articulation
- ✓ Dual Mobility treatment as of cup size 46 mm
- ✓ Ceramic multilayer coating for an increased corrosion resistance (5)
- ✓ Vitelene® highly crosslinked PE with vitamin E stabilization
- ✓ Reduced wear and oxidation with Vitelene® Dual Mobility head (6, 7)

Plasmafit® REVISION

- ✓ Implant line for primary and revision treament
- ✓ Cup design with oblong screw hole options
- ✓ 3 screw holes cranially, 2 caudally
- ✓ Additive titanium surface
- ✓ Polyethylene or Dual Mobility liner

(5) Aesculap AG; Test report V2035, Fretting Corrosion Behaviour of the Dual Mobility Inserts, August 2019. The Dual Mobility Liners have been tested on fretting corrosion behaviour compared to a competitor product and showed a significantly lower corrosion behaviour.

(6) Aesculap AG; Test report T455, Determination of the Wear Behaviour of the Dual Mobility System; July 2019. The average wear rates of Vitelene® Dual Mobility Liners have been tested and the results are well below the threshold value that reported to literature may lead to osteolysis.

(7) Grupp T et al. Biotribology of a vitamin E-stabilized polyethylene for hip arthroplasty – Influence of artificial ageing and thirdbody particles on wear. Acta Biomaterialia. 2014 Jul;10(7):3068-78. Epub 2014 Mar 12.

Aetabular preparation

Acetabular exposure and removal of cartilage and osteophytes are required for the proper preparation of the acetabulum. This is done by using spherical reamers, which are driven by a low-speed motor handpiece. During the reaming procedure all cartilage down to the subchondral bone must be ablated until bleeding occurs. For non-dysplastic cases care must be taken not to medialize the center of rotation of the joint unnecessarily. The rim of the acetabulum should be prepared for a sufficient large bony fixation surface.

In cases of dysplastic changes a cup position in the region of the primary socket is recommended, as far as a shortening of the leg can be compensated. The caudal edge of the shell should be at the level of the tear drop figure. If necessary, a cranial bone craft, to provide sufficient cranial roofing, is positioned before the socket base is prepared.

Trial cup insertion

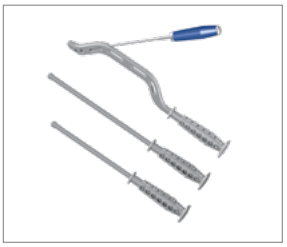
The size of the Plasmafit® implant corresponds to the size of the last acetabular reamer and includes the proper pressfit conditions.

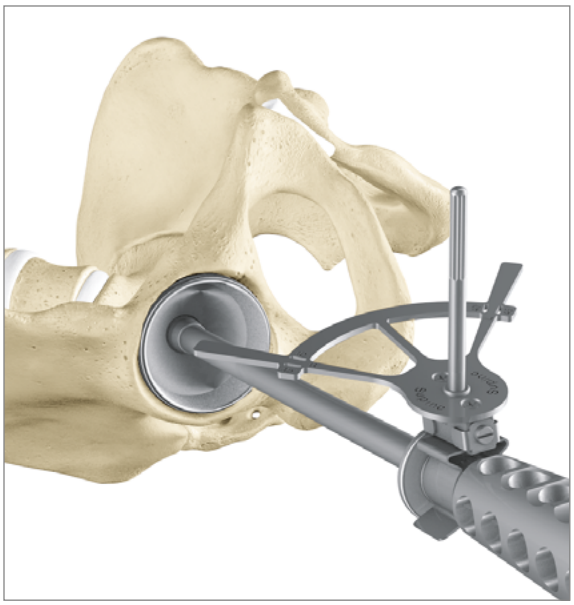
In difficult bone conditions, the use of a trial cup is recommended prior to the final cup implant selection. A stable fit of this trial cup is achieved when the pelvis of the patient can be moved slightly by gently moving the cup impactor. The trial implant can be easily levered out from the in-vivo trial position by moving beyond this angle.

For the implantation of the Plasmafit® cup implants two straight insertion instruments with two different lengths and one curved instrument for less invasive surgical approaches are provided.

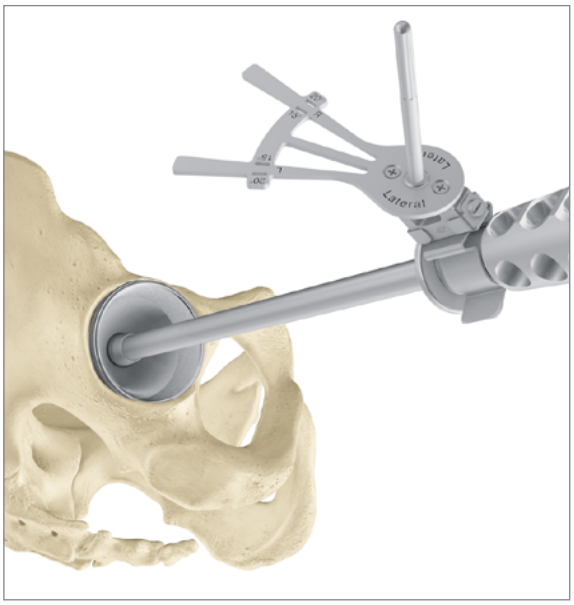
CEMENTLESS ACETABULAR CUP SYSTEM

The accurate and stable assembly of the Plasmafit® implant on the insertion instrument must be checked by a surgical assistant and the surgeon prior to the implantation. The impactor is also suitable for shifting and correcting the position of the cup implant. For the positioning of the cup implant aiming devices are available either for supine or lateral patient position. Additionally a universal aiming device for both patient positions can be offered, where inclination and anteversion can also be adjusted in 5° steps.





Plasmafit® cup implants can be navigated with all OrthoPilot® Hip Suite software applications. The Plasmafit® instruments are designed for use with navigation technology and can be combined with all specific navigation instruments.



Plasmafit® cup implant with central closing plug

After completing the surgical steps of acetabular exposure, reaming and implantation of the Plasmafit® cup, the central impaction hole can be closed with a plug which is automatically provided with the no hole cup implants.

Afterwards the insertion of the trial liner follows. The final selection of the modular liner is determined after the stem is implanted and a final trial reduction has been performed.

Plasmafit® with trial liner

Liners with posterior wall (hooded) increase luxation stability e.g. towards posterior for implantations using the posterior surgical approach. The asymmetrical liners correct the cup position by 10 degrees. In good bone Plasmafit® can be implanted without additional screws. As a stability check the cup impactor is moved slightly until the patient's pelvis moves. Under these conditions, Plasmafit® Plus 3 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.

NOTE

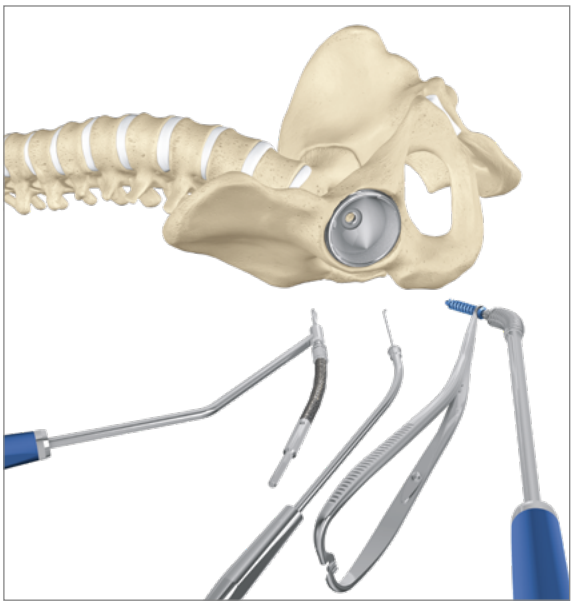
For the implantation of Plasmafit® cups with Plasmafit® Dual Mobility liners, please refer to the corresponding surgical technique for Dual Mobility implantation.

CEMENTLESS ACETABULAR CUP SYSTEM

Plasmafit® Plus with additional screw fixation

If there is any doubt concerning the intraoperative primary stability the Plasmafit® Plus implant line can optionally be used with screws. Plasmafit® Plus 3 cup implants offer three screw 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. Plasmafit® 5 and 7 offer further screw holes in the cranial and caudal region.

Prior to inserting the self-tapping 6.5 mm screws the drill holes are prepared with a flexible 3.2 mm drill. The required screw length is measured and the screws are implanted using a screw holding forceps and a cardan screwdriver.

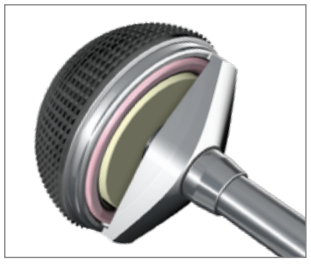


Plasmafit® Plus with Biolox® delta ceramic liner

The ceramic Plasmafit® liners can be removed with special attachments for the cup impactor. It is important to place the instruments precisely on the rim of the metal shell. The separation of the liner from the cup is done with several sharp blows or impulses. Please see the instructions for use enclosed with every Plasmafit® implant.

When using ceramic liners the final check for seating is assessed with a fingertip check. After inserting, the liner is fixed using an impactor with a plastic head. After the joint reduction the correct liner position should be checked again.

Removal of ceramic cup liners



AESCULAP® Plasmafit®

Plasmafit® Poly Implants

Cup size		40	42	44	46	48	50
Liner size		B	C	D	E	F	G
Plasmafit® Poly	Ti6Al4V	NV040T	NV042T	NV044T	NV046T	NV048T	NV050T
symmetrical Vitelene® 	ø 22.2 mm	NV183E	NV184E	-	-	-	-
	ø 28 mm	-	NV189E	NV190E	NV191E	NV192E	NV193E
	ø 32 mm	-	-	-	NV201E	NV202E	NV203E
	ø 36 mm	-	-	-	-	-	NV213E
	ø 40 mm	-	-	-	-	-	-
posterior wall Vitelene® 	ø 22.2 mm	NV283E	NV284E	-	-	-	-
	ø 28 mm	-	NV289E	NV290E	NV291E	NV292E	NV293E
	ø 32 mm	-	-	-	NV301E	NV302E	NV303E
	ø 36 mm	-	-	-	-	-	NV313E
asymmetrical 10° Vitelene® 	ø 22.2 mm	NV383E	NV384E	-	-	-	-
	ø 28 mm	-	NV389E	NV390E	NV391E	-	-
	ø 32 mm	-	-	-	NV401E	NV402E	NV403E
	ø 36 mm	-	-	-	-	-	NV413E
symmetrical UHMWPE	ø 32 mm	-	-	-	NV201	NV202	NV203
posterior wall UHMWPE	ø 28 mm	-	NV289	NV290	-	-	-
	ø 32 mm	-	-	-	NV301	NV302	NV303

52	54	56	58	60	62
H	I	J	K	L	M
NV052T	NV054T	NV056T	NV058T	NV060T	NV062T
-	-	-	-	-	-
NV194E	NV195E	-	-	-	-
NV204E	NV205E	NV206E	NV207E	NV208E	NV209E
NV214E	NV215E	NV216E	NV217E	NV218E	NV219E
-	NV225E	NV226E	NV227E	NV228E	NV229E
-	-	-	-	-	-
NV294E	NV295E	-	-	-	-
NV304E	NV305E	NV306E	NV307E	NV308E	NV309E
NV314E	NV315E	NV316E	NV317E	NV318E	NV319E
-	-	-	-	-	-
-	-	-	-	-	-
NV404E	NV405E	NV406E	NV407E	NV408E	NV409E
NV414E	NV415E	NV416E	NV417E	-	-
NV204	NV205	NV206	NV207	NV208	NV209
-	-	-	-	-	-
NV304	NV305	NV306	NV307	NV308	NV309

Plasmafit® Poly
no screw holes, with closing plug

The central closing plug is automatically delivered with cup implants without screw holes.

The closing plug NV001T can also be ordered separately.

AESCULAP® Plasmafit®

Plasmafit® Plus Implants

Cup size		40	42	44	46	48	50	52	54
Liner size		A	B	C	D	E	F	G	H
Plasmafit® Plus	Ti6Al4V	NV140T	NV142T	NV144T	NV146T	NV148T	NV150T	NV152T	NV154T
Plasmafit® Plus 3	Ti6Al4V	NV240T	NV242T	NV244T	NV246T	NV248T	NV250T	NV252T	NV254T
Plasmafit® Plus 7	Ti6Al4V	NV340T*	NV342T*	NV344T*	NV346T	NV348T	NV350T	NV352T	NV354T
		* with 5 screw holes							
symmetrical Biolox® delta 	ø 28 mm	-	-	NV089D	NV090D	NV091D	NV092D	NV093D	NV094D
	ø 32 mm	-	-	-	-	NV101D	NV102D	NV103D	NV104D
	ø 36 mm	-	-	-	-	-	-	NV113D	NV114D
	ø 40 mm	-	-	-	-	-	-	-	-
symmetrical Vitelene® 	ø 22.2 mm	NV182E	NV183E	NV184E	-	-	-	-	-
	ø 28 mm	-	-	NV189E	NV190E	NV191E	NV192E	NV193E	NV194E
	ø 32 mm	-	-	-	-	NV201E	NV202E	NV203E	NV204E
	ø 36 mm	-	-	-	-	-	-	NV213E	NV214E
	ø 40 mm	-	-	-	-	-	-	-	-
posterior wall Vitelene® 	ø 22.2 mm	NV282E	NV283E	NV284E	-	-	-	-	-
	ø 28 mm	-	-	NV289E	NV290E	NV291E	NV292E	NV293E	NV294E
	ø 32 mm	-	-	-	-	NV301E	NV302E	NV303E	NV304E
	ø 36 mm	-	-	-	-	-	-	NV313E	NV314E
asymmetrical 10° Vitelene® 	ø 22.2 mm	NV382E	NV383E	NV384E	-	-	-	-	-
	ø 28 mm	-	-	NV389E	NV390E	NV391E	-	-	-
	ø 32 mm	-	-	-	-	NV401E	NV402E	NV403E	NV404E
	ø 36 mm	-	-	-	-	-	-	NV413E	NV414E
sym. UHMWPE	ø 32 mm	-	-	-	-	NV201	NV202	NV203	NV204
posterior wall UHMWPE	ø 28 mm	-	-	NV289	NV290	-	-	-	-
	ø 32 mm	-	-	-	-	NV301	NV302	NV303	NV304
Dual Mobility Liner 		-	-	-	NV1010Z	NV1011Z	NV1012Z	NV1013Z	NV1014Z
Dual Mobility Head Vitelene® 	ø 22.2 mm	-	-	-	NV1030E	NV1031E	NV1032E	-	-
	ø 28 mm	-	-	-	-	-	-	NV1043E	NV1044E

56	58	60	62	64	66	68	70
I	J	J	J	K	K	K	K
NV156T	NV158T	NV160T	NV162T	NV164T	NV166T	NV168T	NV170T
NV256T	NV258T	NV260T	NV262T	NV264T	NV266T	NV268T	NV270T
NV356T	NV358T	NV360T	NV362T	NV364T	NV366T	NV368T	NV370T
-	-			-			
NV105D	NV106D			NV107D			
NV115D	NV116D			NV117D			
NV125D	NV126D			NV127D			
-	-			-			
NV195E	-			-			
NV205E	NV206E			NV207E			
NV215E	NV216E			NV217E			
NV225E	NV226E			NV227E			
-	-			-			
NV295E	-			-			
NV305E	NV306E			NV307E			
NV315E	NV316E			NV317E			
-	-			-			
-	-			-			
NV405E	NV406E			NV407E			
NV415E	NV416E			NV417E			
NV205	NV206			NV207			
-	-			-			
NV305	NV306			NV307			
NV1015Z	NV1016Z			NV1017Z			
-	-			-			
NV1045E	NV1046E			NV1047E			

Plasmafit® Plus
no screw holes, with closing plug

Plasmafit® Plus 3
with 3 screw holes

Plasmafit® Plus 7
5 screw holes cranially, 2 screw holes caudally

The central closing plug is automatically delivered with cup implants without screw holes.

The closing plug NV001T can also be ordered separately.

AESCULAP® Plasmafit®

Ceramic – Prosthesis Heads

12/14

Diameter	Art. no.				
	ø 22.2 mm	ø 28 mm	ø 32 mm	ø 36 mm	ø 40 mm
S	-	NK460D	NK560D	NK650D	NK750D
M	-	NK461D	NK561D	NK651D	NK751D
L	-	NK462D	NK562D	NK652D	NK752D
XL	-	-	NK563D	NK653D	NK753D

Biolox® delta

12/14

Diameter	Art. no.				
	ø 22.2 mm	ø 28 mm	ø 32 mm	ø 36 mm	ø 40 mm
S	-	NK324	NK424	NK524	-
M	-	NK325	NK425	NK525	-
L	-	NK326	NK426	NK526	-
XL	-	-	NK427	NK527	-

Isocer®

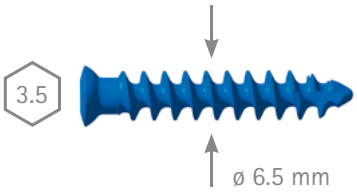
Metal – Prosthesis Heads

12 / 14

Diameter	Art. no.				
	ø 22.2 mm	ø 28 mm	ø 32 mm	ø 36 mm	ø 40 mm
S	-	NK429K	NK529K	NK669K	NK769K
M	NK330K	NK430K	NK530K	NK670K	NK770K
L	NK331K	NK431K	NK531K	NK671K	NK771K
XL	-	NK432K	NK532K	NK672K	NK772K
XXL	-	NK433K	NK533K	NK673K	NK773K

CoCr

Plasmafit® - Cancellous Screws ø 6.5 mm



16 mm	20 mm	24 mm	28 mm	32 mm	36 mm	40 mm
NV010T	NV011T	NV012T	NV013T	NV014T	NV015T	NV016T
44 mm	**48 mm**	**52 mm**	**56 mm**	**60 mm**	**64 mm**	**68 mm**
NV017T	NV018T	NV019T	NV020T	NV021T	NV022T	NV023T

Ti6Al4V

Implant Materials:

Biolox® delta	Aluminium oxide matrix ceramic (Al_2O_3/ZiO_2/ISO 6474-2)
Isocer®	Zirconia-toughened alumina ceramic (Al_2O_3/ZrO_2/ISO 6474-2)
Ti6Al4V	Titanium forged alloy (Ti6Al4V/ISO 5832-3)
CoCr	Cobalt-chromium forged alloy (CoCrMo/ISO 5832-12)
Plasmapore®	Pure titanium (Ti/ISO 5832-2)
UHMWPE	Ultra high molecular weight polyethylene (ISO 5834-2)
Vitelene®	UHMWPE-XE vitamin E stabilized highly crosslinked polyethylene

AESCULAP® Plasmafit®

FULL PROFILE REAMERS

Outer diameter	Art. no.
ø 38 mm	NF938R
ø 40 mm	NF940R
ø 42 mm	NF942R
ø 44 mm	NF944R
ø 46 mm	NF946R
ø 48 mm	NF948R
ø 50 mm	NF950R
ø 52 mm	NF952R
ø 54 mm	NF954R
ø 56 mm	NF956R
ø 58 mm	NF958R
ø 60 mm	NF960R
ø 62 mm	NF962R
ø 64 mm	NF964R
ø 66 mm	NF966R
ø 68 mm	NF968R
ø 70 mm	NF970R
ø 72 mm	NF982R

NOTE

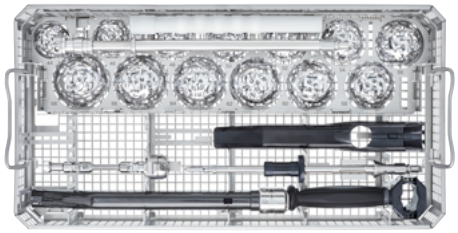
Acetabular reamers are available on request in increments of 1 mm between the sizes 38 mm - 68 mm.

Tray for 1 mm reamers: NF933R

Straight reamer shanks	Art. no.
Reamer shank ZIMMER	NF985R
Reamer shank Harris	NF986R
Reamer shank AO	NF987R
OrthoPilot® Navigation sleeve	FS939
Standard protection sleeve	FS974

Curved reamer shanks	Art. no.
Reamer shank ZIMMER	NF995
Reamer shank Harris	NF996
Reamer shank AO	NF997

Tray for one curved reamer shank NF993R



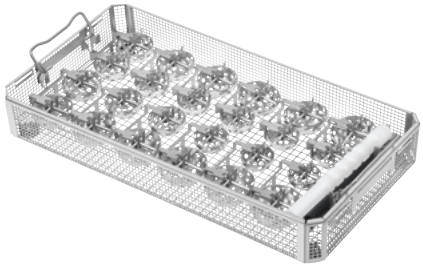
TRAY NF993R
485 x 253 x 76 mm

With supports for:	Art. no.
One curved reamer shank	
Half module tray with supports for reamers ø 44 – 68 mm 465 x 118 x 45 mm	NT635R
OrthoPilot® Navigation sleeve	FS939
Standard protection sleeve	FS974

Lid JH217R
489 x 257 mm

Recommended container JK440
592 x 274 x 90 mm
Lid JK489

Reamer Module	Art. no.
Half module tray with supports for reamers ø 44 - 68 mm, one straight reamer shank and protection sleeve 465 x 118 x 45 mm	NT635R



TRAY NF933R
485 x 253 x 76 mm

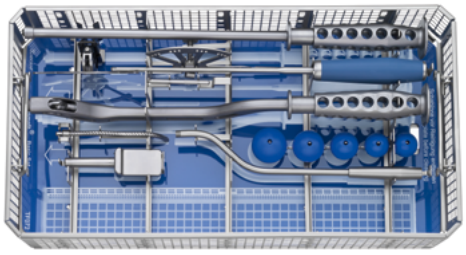
with supports for:	Art. no.
24 reamer heads and 2 straight reamer shanks	
OrthoPilot® sleeve	FS939
Standard sleeve	FS974

Lid JH217R
489 x 257 mm

Recommended container JK440
592 x 274 x 90 mm
Lid JK489

NOTE
Please order all reamer components separately.

AESCULAP® Plasmafit®



Plasmafit® BASIC SET NT400

Consisting of:	Art. no.
Tray with storage and space for one small and one half module tray 489 x 253 x 106 mm	NT401R
Lid	JH217R
Graphic template for NT400	TF072
Screwdriver SW 4.5	NT412R
Polyamid head ø 28 mm	FS979
Polyamid head ø 32 mm	FS980

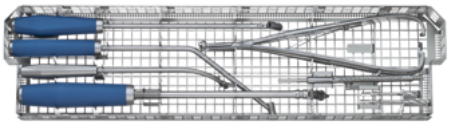
Please order separately:	Art. no.
Insertion instrument length 442 mm	NT410R*
Insertion instrument short length 377 mm	NT414R*
Insertion instrument curved length 442 mm	NT411R
Plug insertion instrument curved	NT413R
Rotation and extraction plate	NT416R
Universal aiming device, adjustable	NT420R**
Aiming device supine position	NT417R**
Aiming device lateral position	NT418R**
Polyamid head ø 22.2 mm	FS977
Polyamid head ø 36 mm	FS983
Polyamid head ø 40 mm	FS988

* In the basic set NT400 one insertion instrument can be stored.
** In the basic set NT400 one aiming device can be stored.

Plasmafit® CERAMIC REMOVAL NT480

Consisting of:	Art. no.
Small tray can be clicked into the basic set 428 x 59 x 30 mm	NT481R
Universal articulation attachment	NT431R
Bar for size 44 mm C	NT471R
Bar for size 46 mm D	NT472R
Bar for size 48 mm E	NT473R
Bar for size 50 mm F	NT474R
Bar for size 52 mm G	NT475R
Bar for size 54 mm H	NT476R
Bar for size 56 mm I	NT477R
Bar for size 58-62 mm J	NT478R
Bar for size 64-70 mm K	NT479R
Articulation attachment ø 28 mm	NT495
Articulation attachment ø 32 mm	NT496
Articulation attachment ø 36 mm	NT497
Articulation attachment ø 40 mm	NT498

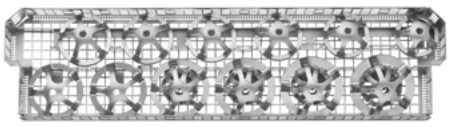
Please order separately:	Art. no.
Plasmafit® X-ray templates scale 1.15:1	NT409



Plasmafit® MODULE SCREW FIXATION NT402

Consisting of:	Art. no.
Half module tray with supports 465 x 118 x 45 mm	NT403R
Flexible drilling shaft	NT419R
Drill bit ø 3.2 mm, length 32 mm	NT424R
Cardan screwdriver SW 3.5	NT428R
Depth gauge	NT427R

Please order separately:	Art. no.
Drill bit ø 3.2 mm, length 44 mm	NT429R
Drill guide straight ø 3.2 mm	NT421R
Drill guide curved ø 3.2 mm	NT423R
Screw holding forceps straight	NT432R
Screw holding forceps curved	NT433R
Drill bit ø 3.2 mm, length 20 mm	NT393R
Drill bit ø 4.0 mm, length 20 mm	NT394R
Drill guide straight ø 4.0 mm	NT422R
Drill guide curved ø 4.0 mm	NT425R
Drill bit ø 4.0 mm, length 32 mm	NT426R

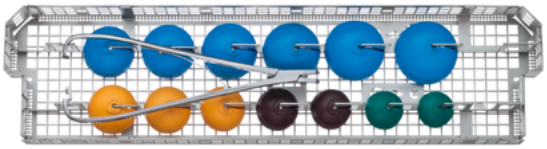


Plasmafit® MODULE TRIAL CUPS NT436

Consisting of:	Art. no.
Half module tray with supports 465 x 118 x 45 mm	NT437R
Trial cup ø 44 C	NT444R
Trial cup ø 46 D	NT446R
Trial cup ø 48 E	NT448R
Trial cup ø 50 F	NT450R
Trial cup ø 52 G	NT452R
Trial cup ø 54 H	NT454R
Trial cup ø 56 I	NT456R
Trial cup ø 58 J	NT458R
Trial cup ø 60 J	NT460R
Trial cup ø 62 J	NT462R
Trial cup ø 64 K	NT464R
Trial cup ø 66 K	NT466R
Trial cup ø 68 K	NT468R

Please order separately:	Art. no.
Trial cup ø 40 A	NT440R
Trial cup ø 42 B	NT442R
Trial cup ø 70 K	NT470R

AESCULAP® Plasmafit®



Plasmafit® MODULE TRIAL LINERS NT404

Consisting of:	Art. no.
Half module tray for maximum 16 trial liners 465 x 118 x 45 mm	NT405R
Forceps for trial liners	NT430R

Please order separately:

Liner size		A	B	C	D	E	F	G	H
symmetrical	ø 22.2 mm	NT482	NT483	NT484	-	-	-	-	-
	ø 28 mm	-	-	NT489	NT490	NT491	NT532	NT533	NT534
	ø 32 mm	-	-	-	-	NT501	NT502	NT503	NT504
	ø 36 mm	-	-	-	-	-	-	NT513	NT514
	ø 40 mm	-	-	-	-	-	-	-	-
posterior wall	ø 22.2 mm	NT582	NT583	NT584	-	-	-	-	-
	ø 28 mm	-	-	NT589	NT590	NT591	NT592	NT593	NT594
	ø 32 mm	-	-	-	-	NT601	NT602	NT603	NT604
	ø 36 mm	-	-	-	-	-	-	NT613	NT614
asymmetrical 10°	ø 22.2 mm	NT682	NT683	NT684	-	-	-	-	-
	ø 28 mm	-	-	NT689	NT690	NT691	-	-	-
	ø 32 mm	-	-	-	-	NT701	NT702	NT703	NT704
	ø 36 mm	-	-	-	-	-	-	NT713	NT714

I	J	K	L	M
-	-	-	-	-
NT535	-	-	-	-
NT505	NT506	NT507	NT508	NT509
NT515	NT516	NT517	NT518	NT519
NT525	NT526	NT527	NT528	NT529
-	-	-	-	-
NT595	-	-	-	-
NT605	NT606	NT607	NT608	NT609
NT615	NT616	NT617	NT618	NT619
-	-	-	-	-
-	-	-	-	-
NT705	NT706	NT707	NT708	NT709
NT715	NT716	NT717	-	-

NOTE

Plasmafit® Plus

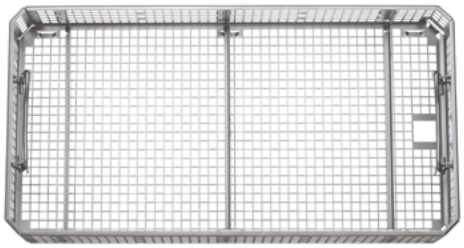
Cup sizes 40-70 mm with liner sizes A-K

Plasmafit® Poly

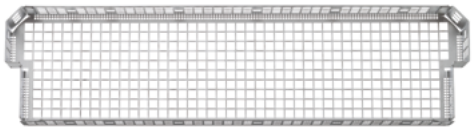
Cup sizes 40-62 mm with liner sizes B-M

AESCULAP® Plasmafit®

Additional Trays



Two modules tray	Art. no.
Empty tray to store two modules 489 x 253 x 76 mm	NT399R



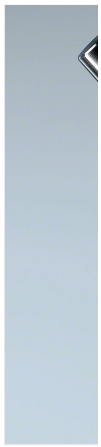
Half module tray	Art. no.
Half empty module tray 465 x 118 x 45 mm	NT398R

Small tray	Art. no.
Small empty tray to click into basic set 428 x 59 x 30 mm	NT397R
Lid to use with NT397R for separate storage	NT396R

Recommended containers for:
Plasmafit® basic set e.g. JK442
(592 x 274 x 135 mm)
Plasmafit® additional module tray e.g. JK441
(592 x 274 x 120 mm)

Prevision® Modular Hip Revision Stem

Bridging bone defects for secure implant fixation



Prevision® Modular Hip Revision Stem

Prevision®

Prevision®

The Prevision® Concept can be realized with straight or curved stems. Following the reverse principle, it aims to revert from temporary stable distal fixation to proximal force transfer.

Previson® at one glance

- Modular revision endoprosthesis with straight and curved stems.
- 500 total possible combinations of proximal and distal components.
- Proximal component is coated with Plasmapore® µ-CaP surface.
- Rotational stability through star shape and distal interlocking option.
- Catch-free stability by applied frictional connection.
- Multiple opportunities for trial reduction.
- Intra- and extraosseous assembly of the implant component.

Contact

TRJ® Hip Stem

Trochanter retaining joint replacement

TRJ® Hip Stem

TRJ® Cementless Hip Stem

TRJ® Hip

The TRJ® hip prosthesis stem is implanted without cement. The stem design is based on many years of experience with a conical diaphyseal anchorage in the femur.

The double tapered shape of the uncoated and surface radiated TRJ® hip stem straightens at the proximal lateral end so that the greater trochanter is preserved to the greatest possible extent during implantation.

B BRAUN
SHARING EXPERTISE

ORTHOPAEDIC
SURGERY

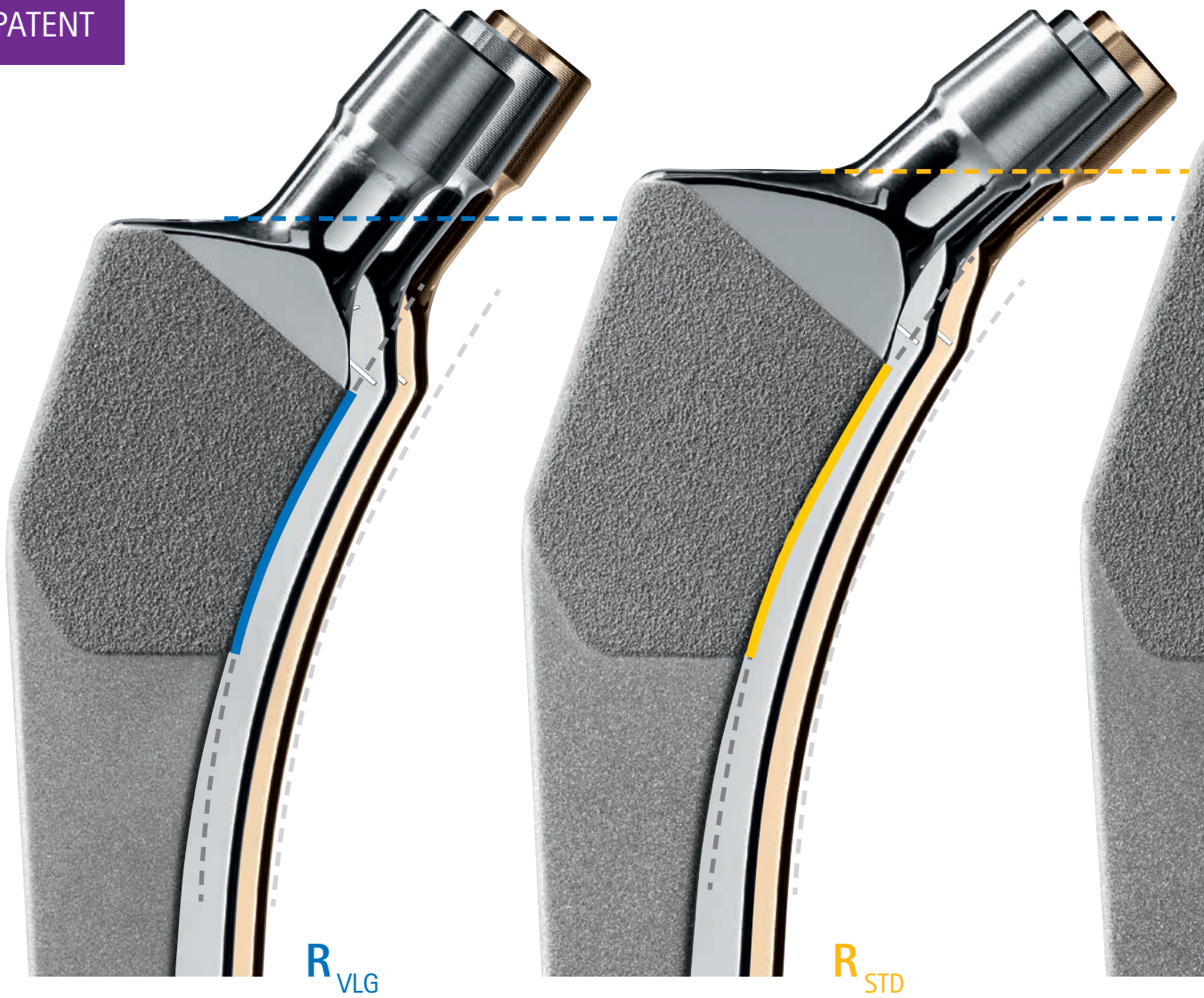
AESCULAP® CoreHip® SYSTEM

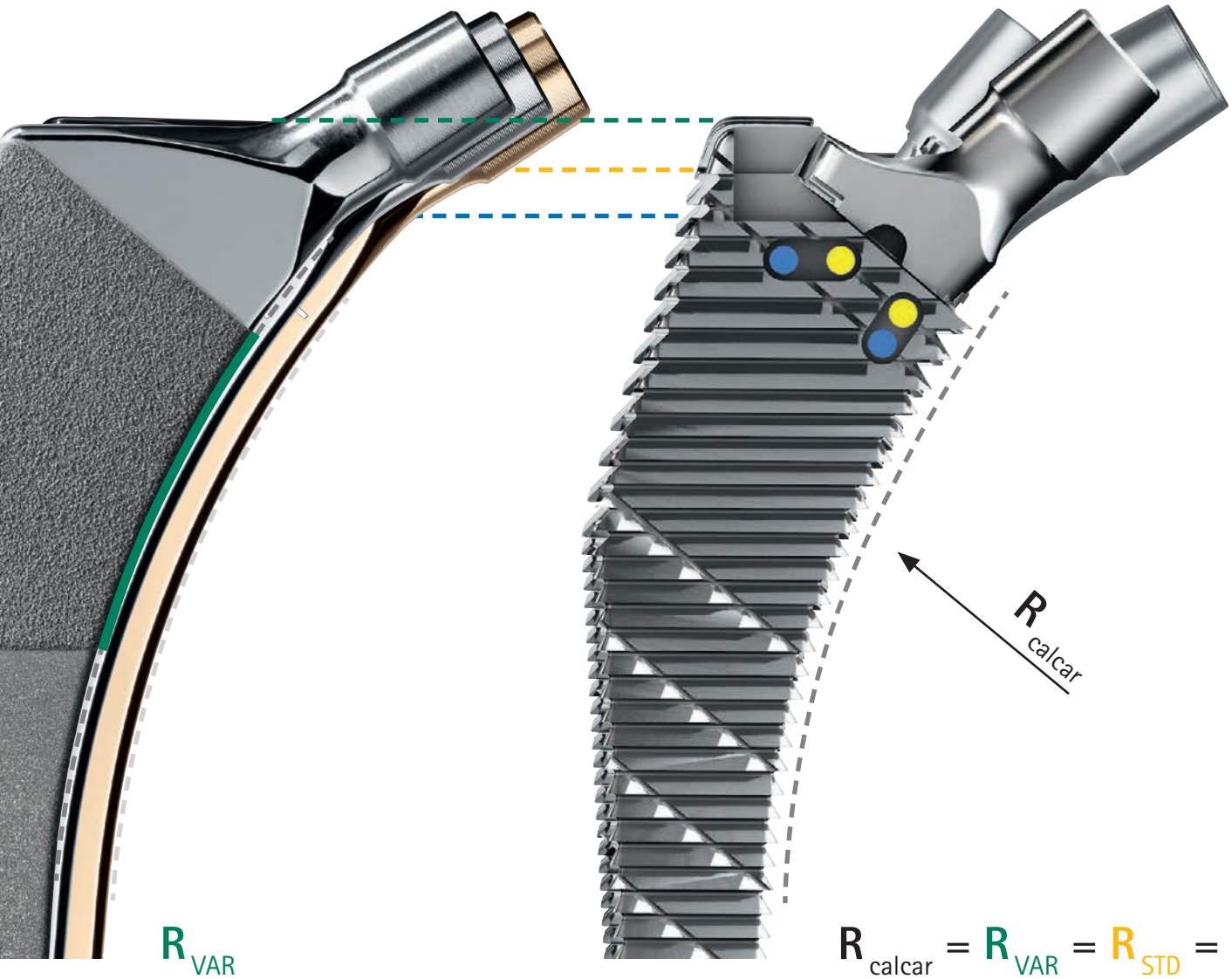
TEN LINES OF INDICATION. ONE INSTRUMENTATION. MORE INDIVIDUALITY.

AESCULAP® CoreHip® PRIMARY

TEN LINES OF INDICATION. ONE INSTRUMENTATION. MORE INDIVIDUALITY.

GLOBAL PATENT





ONE RADIUS
ONE RASP DESIGN
TEN INDICATION LINES

AESCULAP® CoreHip® PRIMARY CEMENTLESS

VARIOUS FEMUR SHAPES. FOUR LINES OF INDICATION.

THE STEMS

PRIMARY – CEMENTLESS

- **The cementless CoreHip® Primary System** consists of the indication lines Standard, Valgus, Varus and Dysplasia.
- **The four CoreHip® indication lines** take into consideration different anatomical curvatures of the calcar femoris.
- **The CoreHip® stem selection** separates stem anchorage and reconstruction of the joint center.
- **Each CoreHip® indication line** has a fixed offset range in relation to the position of the head center in varus, valgus, standard or dysplastic situations and grows laterally.
- **The patented CoreHip® system rasps** allow implantation of all three indication lines with one rasp line.
- **The CoreHip® color code** labels instruments and implants to assist in intraoperative orientation and stem selection.
- **The CoreHip® stem series** enables independent and separate realization of the individual offset and leg length, as well as reconstruction of the individual CCD angle as close to the patient's anatomy as possible.
- **The cementless CoreHip® stems** consist of a forged titanium alloy with a proximal PLASMAPORE® coating.

AESCULAP® CoreHip® PRIMARY CEMENTED

VARIOUS FEMUR SHAPES. THREE LINES OF INDICATION.

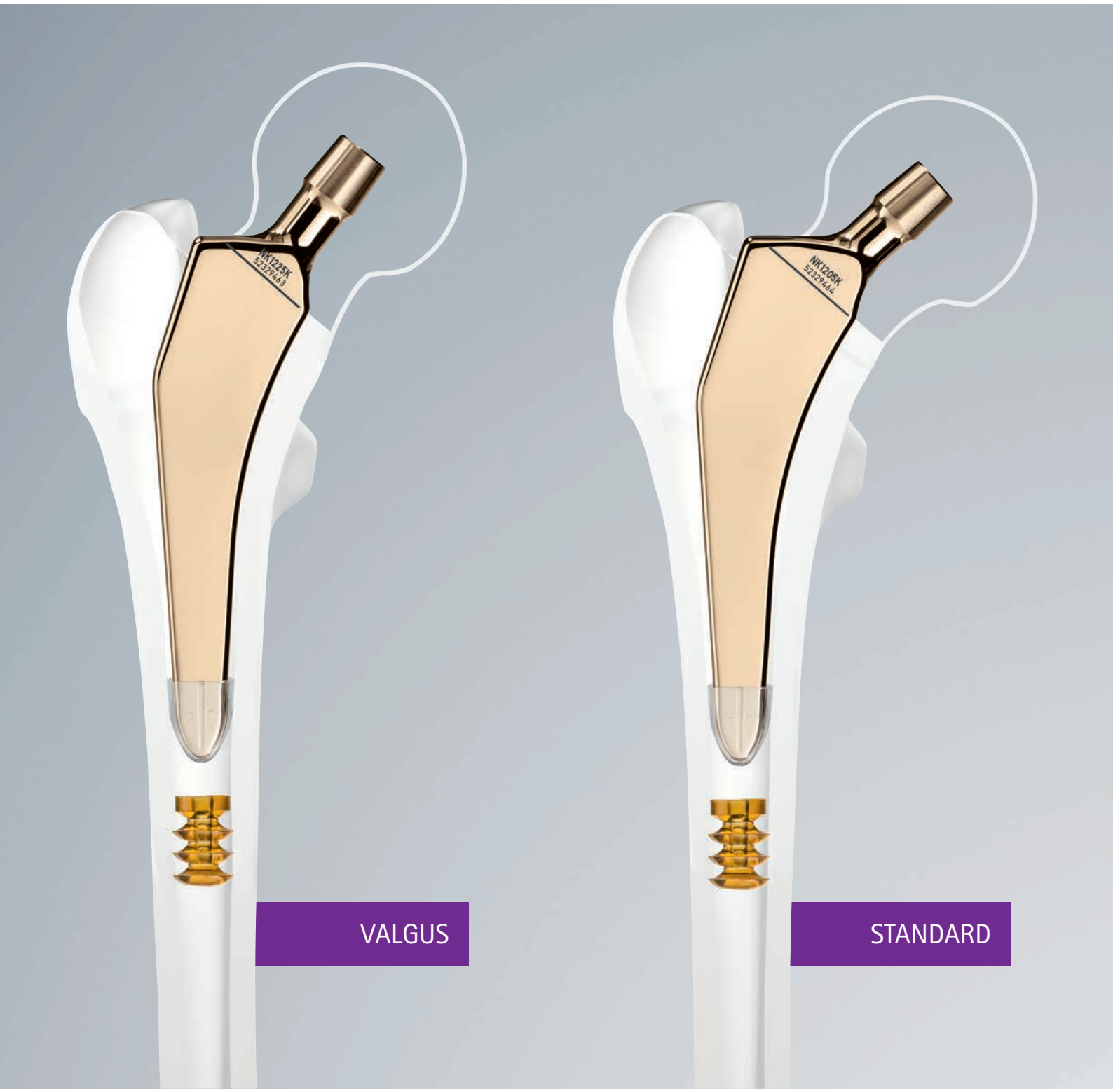
THE STEMS

PRIMARY – CEMENTED

- **The CoreHip® Primary stems** can also be used with cement.
- **The cemented CoreHip® system** combines the same properties and advantages as the cementless stems, even with the cemented CoreHip® AS version.
- **The CoreHip® surgical technique** allows for intra-operative decision for cementless or cemented implantation.
- **The CoreHip® stem selection** therefore takes different anatomical curvatures of the calcar femoris into consideration even with the cemented technique.
- **The cemented anchoring** of the polished surface is based on a triple conical stem design.
- **The CoreHip® Centralizer** supports the central distal stem position.
- **The cemented CoreHip® stems** are made of a cobalt-chrome forged alloy.

AESCULAP® AS CoreHip® PRIMARY CEMENTED

VARIOUS FEMUR SHAPES. THREE LINES OF INDICATION.



THE AS CoreHip® STEMS

PRIMARY – CEMENTED

- **The AS CoreHip® stems**
  show a high degree of reliability due to a reliable connection of the AS coating to the base material material (1, 2).

- **The AS CoreHip® Primary stems**
  combine the same properties and advantages as cemented stems.

- **The AS CoreHip® stems**
  show high resistance to metal ion release (1, 2).

- **The AS CoreHip® stem selection**
  takes into account different anatomical curves of the femoral calcar even with the cemented technique.

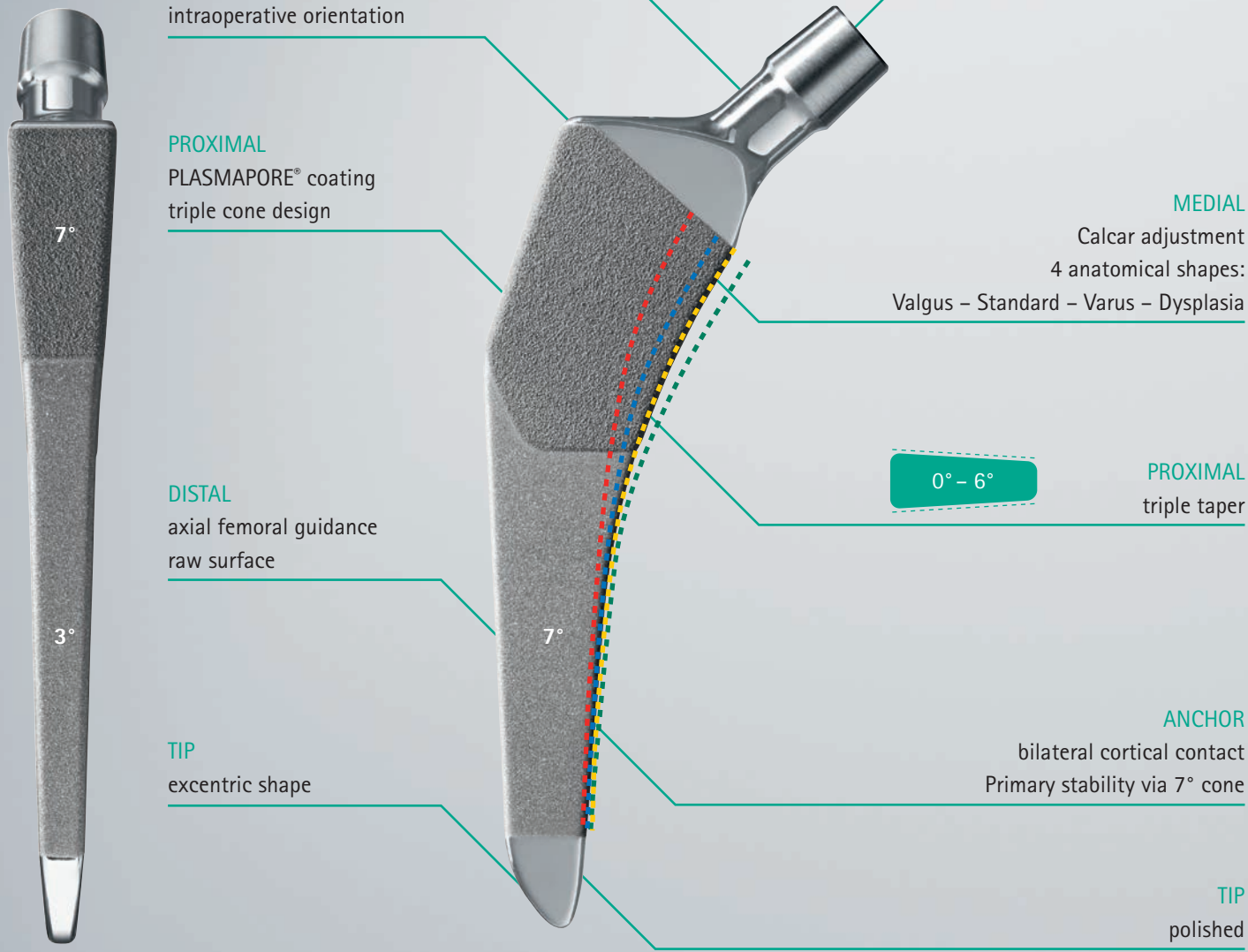
- **The surface of the AS CoreHip® stems**
  has similar properties to the polished surface of the CoreHip® stems.

- **The Centralizers**
  are used for both CoreHip® and AS CoreHip® stems.

- **The cemented AS CoreHip® stems**
  are made of a cobalt-chromium forging alloy and coated with a multilayer layer system of chromium-nitride-chromium carbo-nitride-zirconium-nitride.

AESCULAP® CoreHip® PRIMARY

STEM DESIGN. CHARACTERISTICS AND ANCHORING.



NECK
polished surface

SHOULDER
Protection of greater trochanter
intraoperative orientation

PROXIMAL
PLASMAPORE® coating
triple cone design

DISTAL
axial femoral guidance
raw surface

TIP
excentric shape

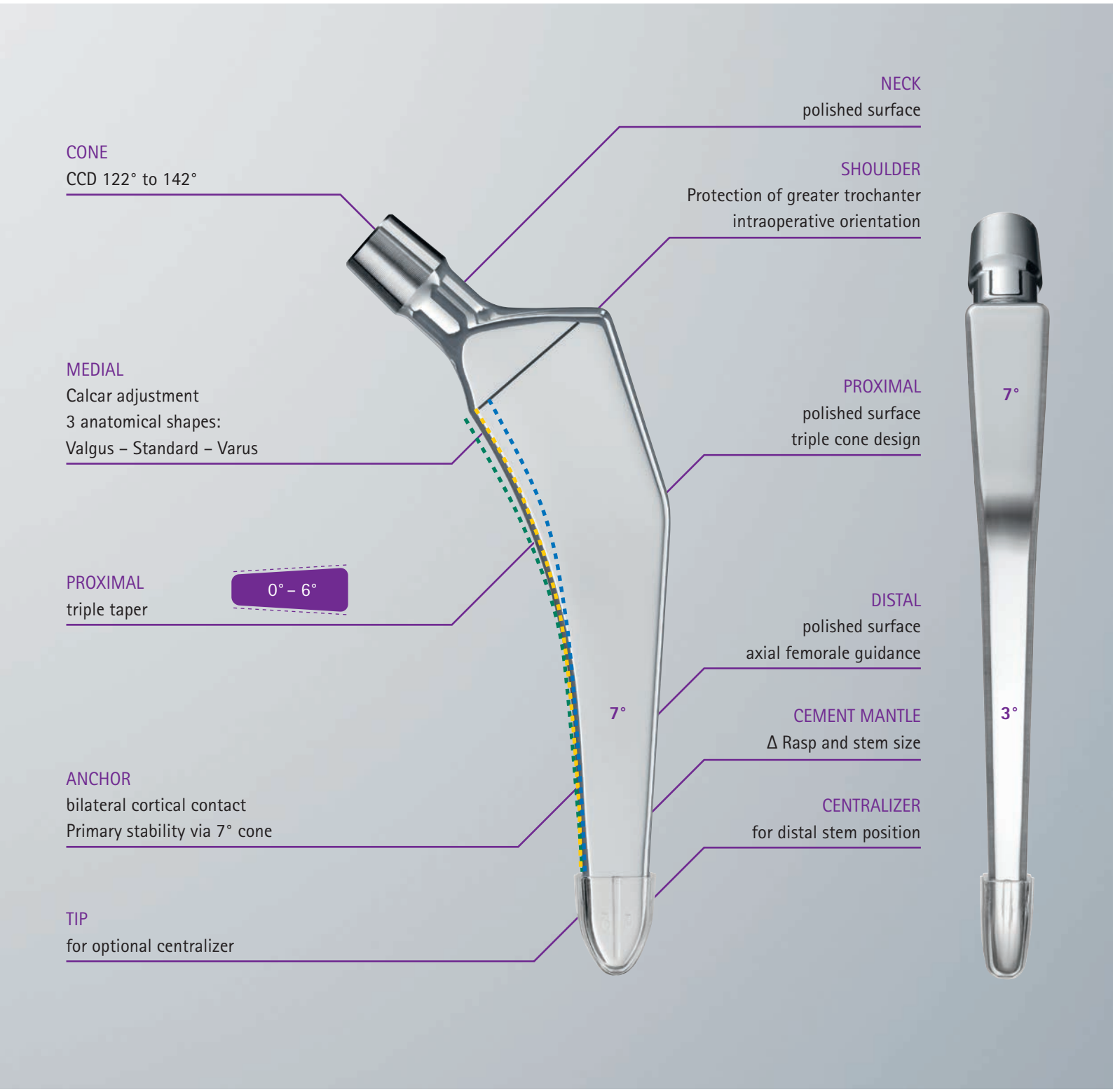
CONE
CCD 122° to 142°

MEDIAL
Calcar adjustment
4 anatomical shapes:
Valgus – Standard – Varus – Dysplasia

PROXIMAL
triple taper

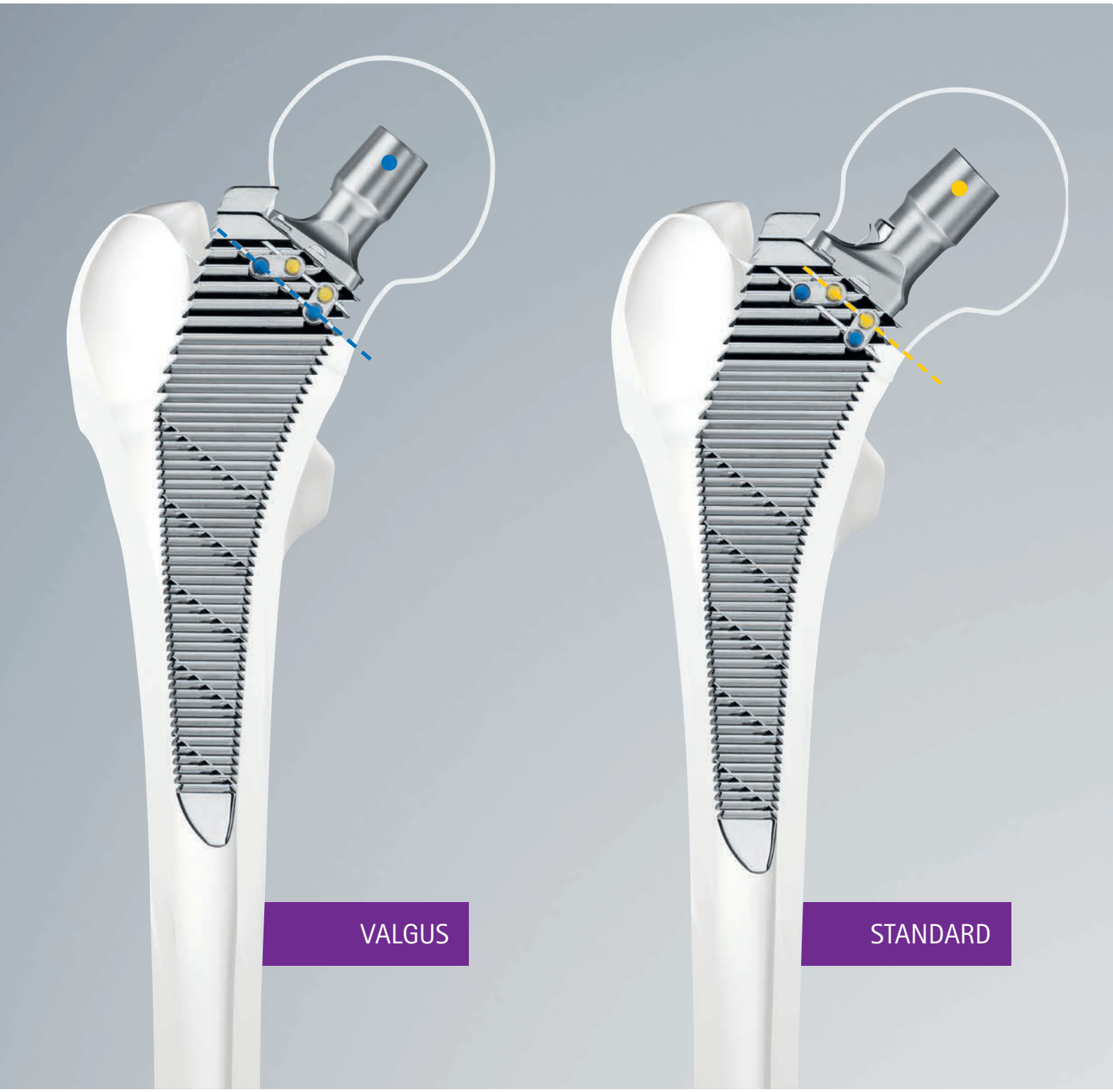
ANCHOR
bilateral cortical contact
Primary stability via 7° cone

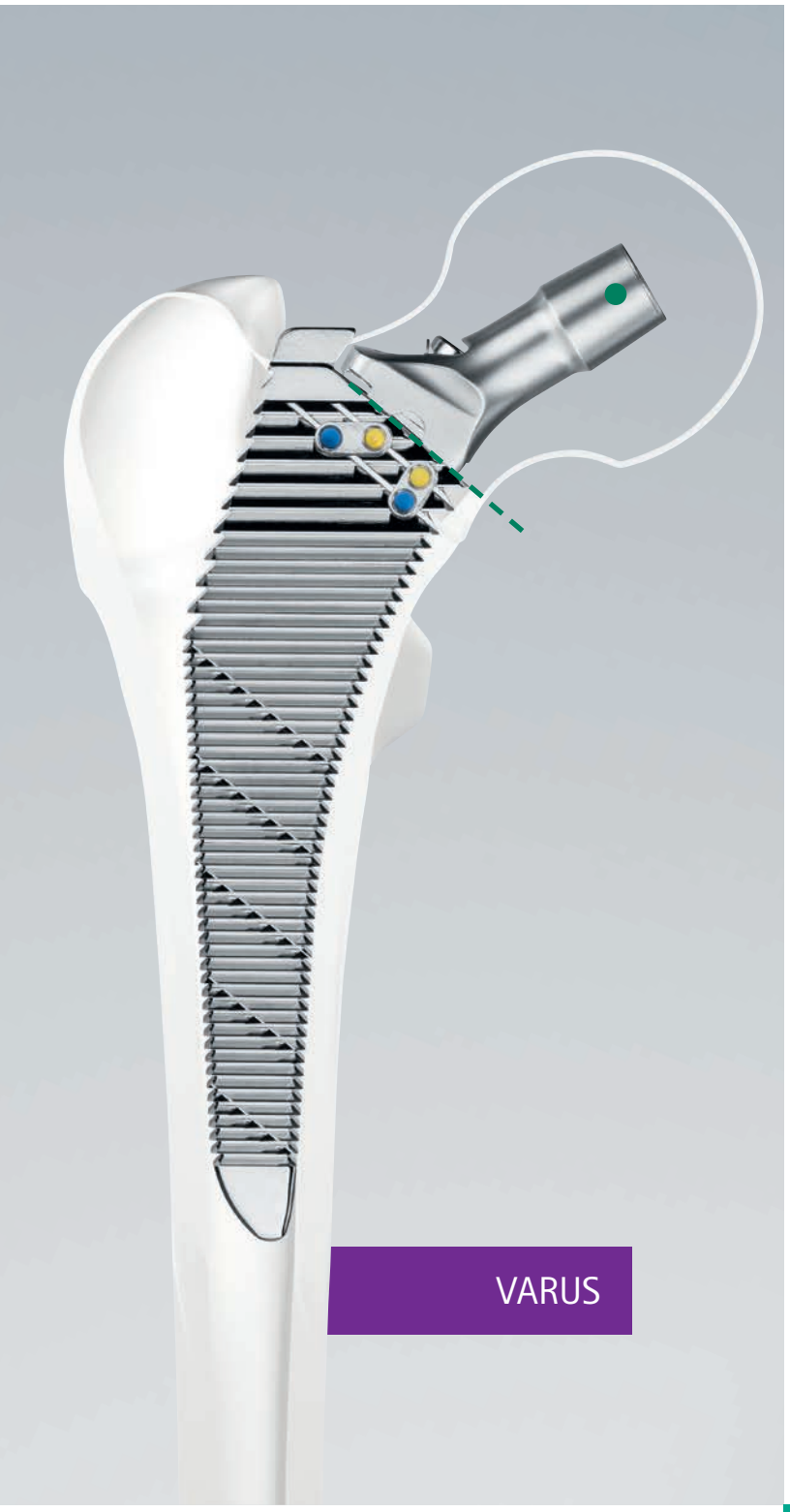
TIP
polished


NECK
polished surface
CONE
CCD 122° to 142°
SHOULDER
Protection of greater trochanter
intraoperative orientation
MEDIAL
Calcar adjustment
3 anatomical shapes:
Valgus – Standard – Varus
PROXIMAL
polished surface
triple cone design
PROXIMAL
triple taper
0° – 6°
DISTAL
polished surface
axial femorale guidance
7°
CEMENT MANTLE
Δ Rasp and stem size
ANCHOR
bilateral cortical contact
Primary stability via 7° cone
CENTRALIZER
for distal stem position
TIP
for optional centralizer
7°
3°

AESCULAP® CoreHip® PRIMARY

TEN LINES OF INDICATION. ONE IMPLANTATION RASP.



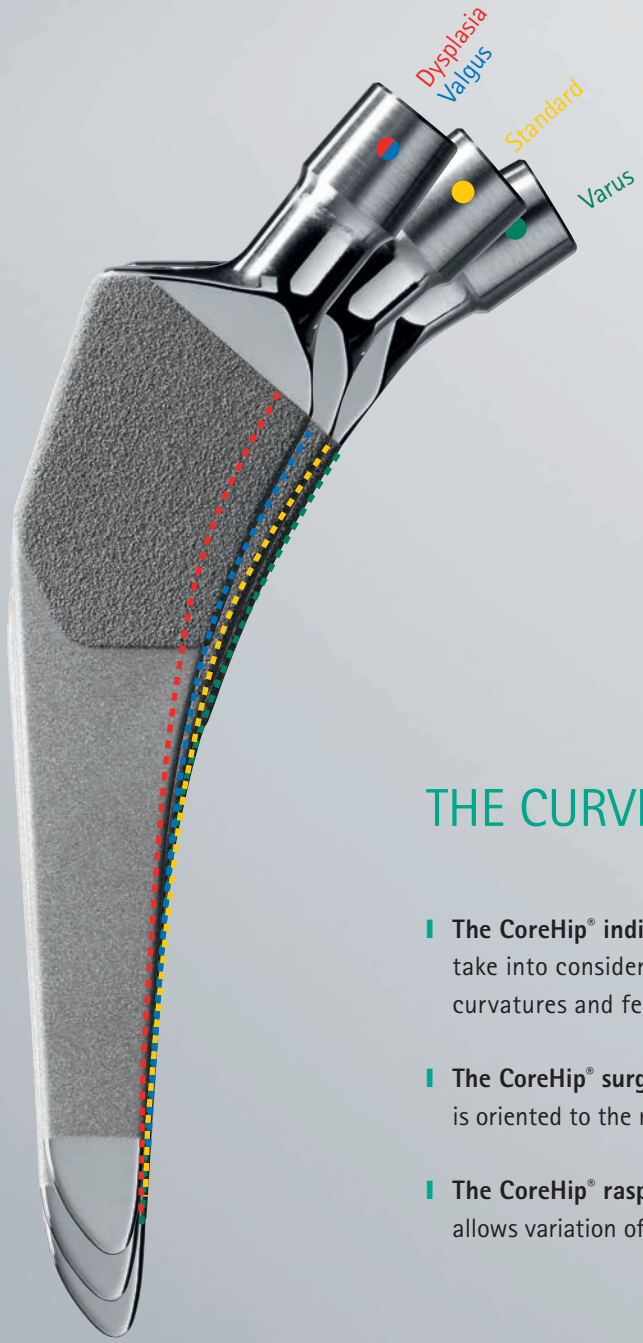


THE RASPS

- **The CoreHip® Implantation Rasps**
  can be used universally for the three stem series in cementless or cemented techniques.
- **Three CoreHip® neck adapters**
  allow intraoperative selection of the stem best suited to the anatomical situation.
- **The CoreHip® Rasp Curvature**
  can be adapted to valgus, standard, varus or dysplasia conditions by a higher or lower position.
- **The CoreHip® system rasps**
  have different markers for the height of the prosthesis shoulder and femoral osteotomy.
- **The CoreHip® rasp shoulder**
  indicates the height of the head center.
- **The CoreHip® osteotomy guide**
  influences the possible stem selection.
- **The CoreHip® color code**
  is yellow for standard stems and blue, green and red for valgus, varus and dysplastic deformities.

AESCULAP® CoreHip® PRIMARY

ONE SURGICAL TECHNIQUE. FOUR MEDIAL CURVES.



THE CURVES

- **The CoreHip® indication lines**
  take into consideration the relationship between different medial curvatures and femoral rotation centers.
- **The CoreHip® surgical technique**
  is oriented to the medial curvatures by a higher or lower rasp position.
- **The CoreHip® rasp position**
  allows variation of the head center (valgus, standard, varus, dysplasia)

ONE MEDIAL CURVE. THREE OFFSET VARIANTS.

THE OFFSET

- **The CoreHip® stems**
  can cover three different offset ranges for a given medial contour, stem size and leg length.
- **The CoreHip® surgical technique**
  supports this procedure with different osteotomy levels and three neck adapters.
- **The CoreHip® Offset characteristic**
  is independent of the stem size per indication line.

AESCULAP® CoreHip® DYSPLASIA

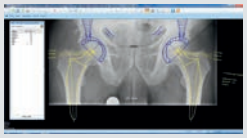
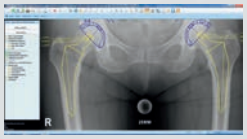
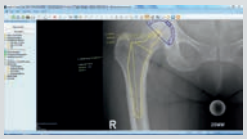
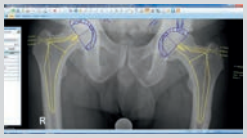
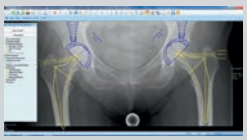
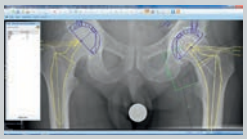
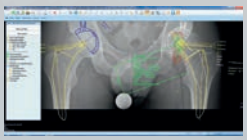
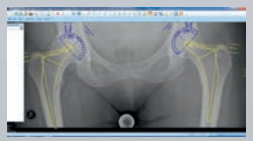
ONE SURGICAL TECHNIQUE. FOUR MEDIAL CURVES.

- **In preoperative planning, the CoreHip® indication lines** show a high degree of correlation between leg length and offset reconstruction due to the variability of the four stem systems.

- **The CoreHip® head centers** are positioned with a femoral offset dependent on the medial resection point and a size growth dependent on the head center.

- **The CoreHip® dysplasia indication line** can achieve a leg length adjustment of 10 mm with the same valgus offset reconstruction and adaptation to the dysplastic femoral morphology.

- **The CoreHip® Dysplasia stem** can only be prepared with the corresponding ASIA rasp set (NT1154).

DIE EVIDENZ

For the design of the CoreHip® system, both two-dimensional (ap- and lateral X-rays) and three-dimensional data (> 500) from most ethnic sources in the world were used. This allowed the diversity of the femur to be established as the basis for the systemic compilation of all possible indications. In an iterative planning process, the initial CoreHip® design was optimized on the basis of two or three-dimensional X-ray material (> 250 femoral examples). With this approach, the CoreHip® system was able to achieve a high reconstruction potential for both offset and leg length.

Patient n = 250

♂ 36 % | ♀ 64 %

59 years (min. 43, max. 69)

67 %	primary coxarthrosis
23 %	dysplasia coxarthrosis
8 %	femoral head necrosis
2 %	rheumatoid arthritis

28 %	Valgus
65 %	Standard
17 %	Varus

Femur morphology

Typ A	23 %
Typ B	66 %
Typ C	11 %
Valgus	28 %
Standard	65 %
Varus	17 %

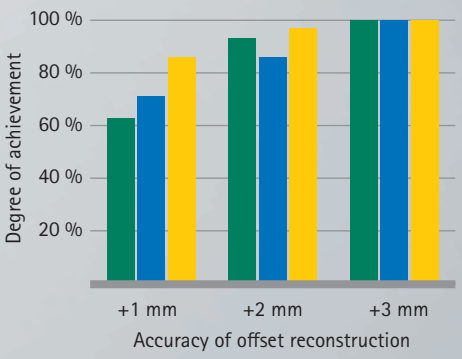
CoreHip® stem type

Valgus
Standard
Varus

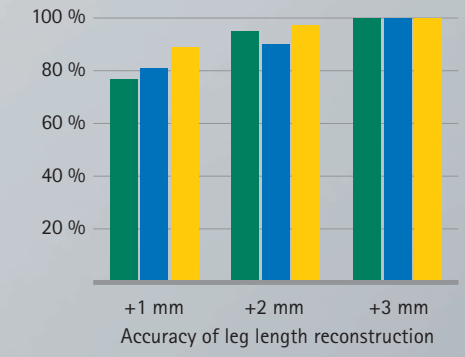
CoreHip® PRIMARY PREOPERATIVE PLANNING

Reconstruction of leg length and femoral offset*

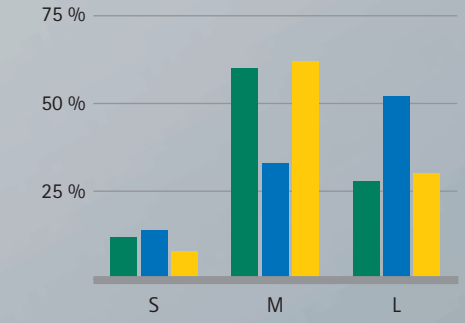
OFFSET



LEG LENGTH



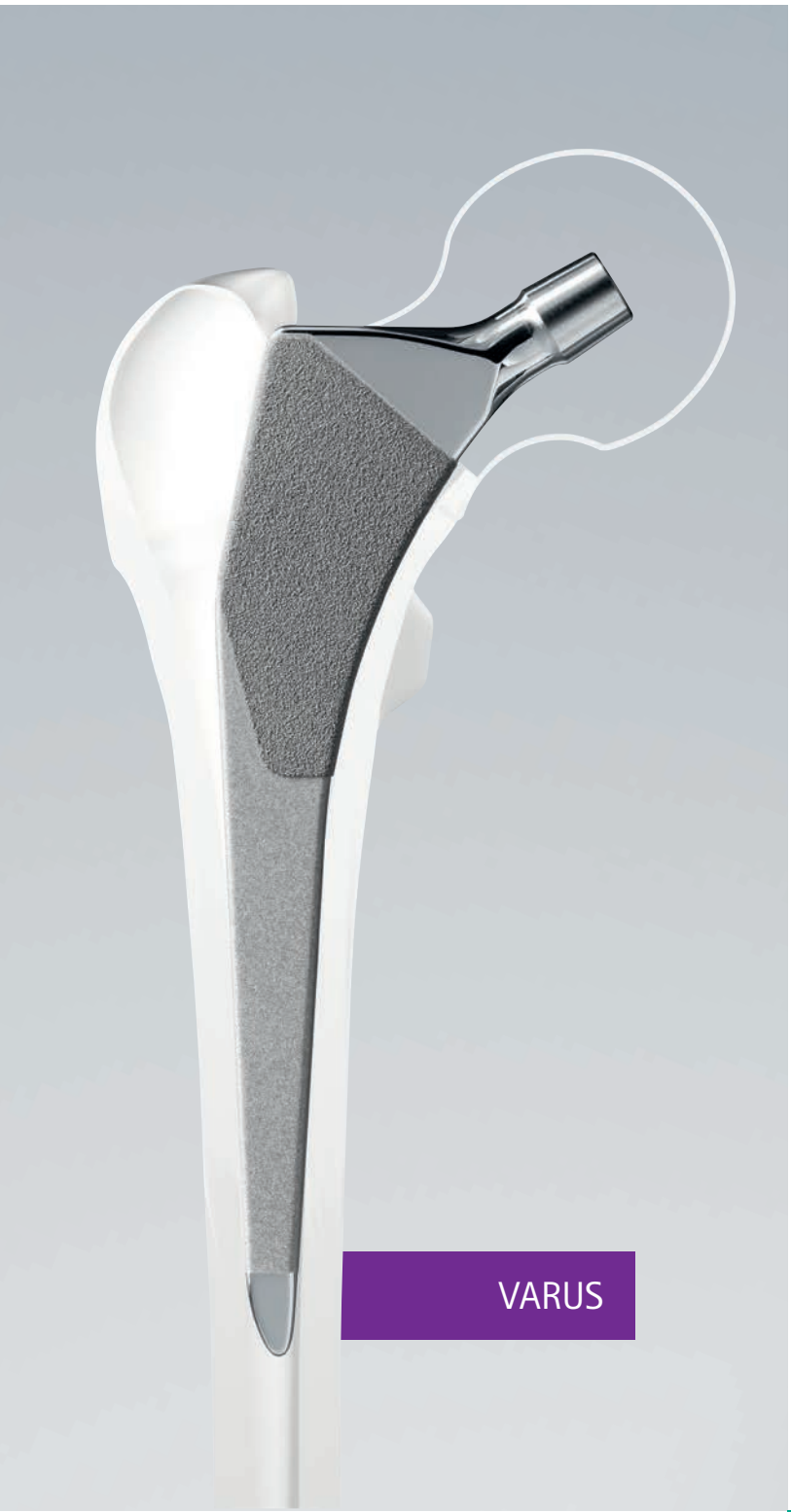
PROSTHESIS HEADS USED



* Radiological evaluation of the CoreHip® stem system (AESCULAP® 2016)

AESCULAP® CoreHip® EXTENDED

VARIOUS FEMUR SHAPES. THREE LINES OF INDICATION. INDIVIDUALITY.



THE STEMS

EXTENDED – CEMENTLESS

- **The CoreHip® System Extended** is used cementless.
- **The CoreHip® Extended Stems** are based on the design concept of cementless Primary Stems with increased stem length.
- **The CoreHip® Extended** system rasps are correspondingly longer and are only used when necessary.
- **The CoreHip® surgical technique** supports an intraoperative change from Primary to Extended Stems.
- **The CoreHip® Extended Stems** extend the range of indications including cementless revision procedures with low-grade bone loss.

AESCULAP® CoreHip® SYSTEM

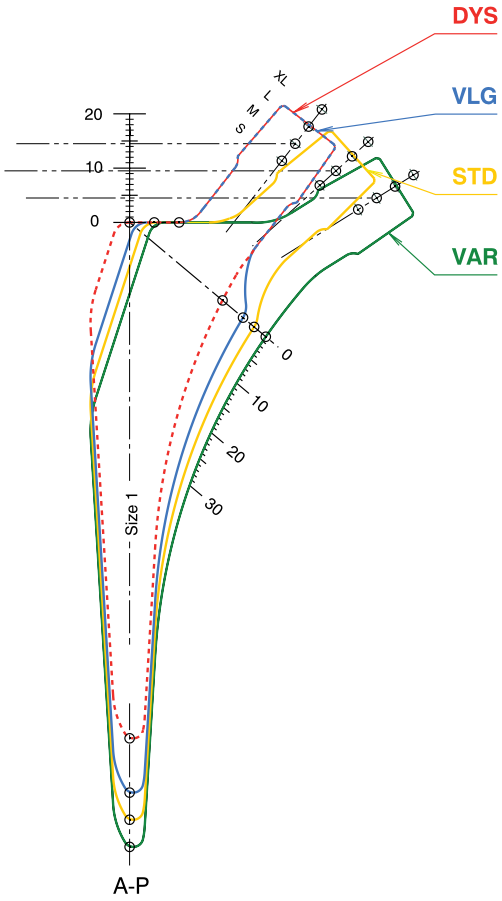
PREOPERATIVE PLANNING. PRIMARY AND EXTENDED.

GENERAL

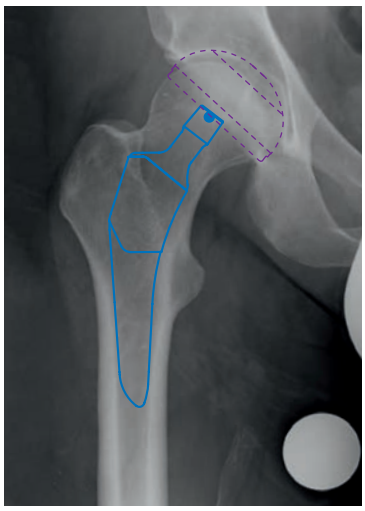
Preoperative planning leads to the position, sizes and stem series selection of the CoreHip® implants based on the indication.

The assessment of the anatomical conditions is made in a pelvic overview and the opposite side of the hip joint to be endoprosthetically treated. Bone quality, bone shape and joint center determine the offset and leg length ratios and the position of the femoral osteotomy.

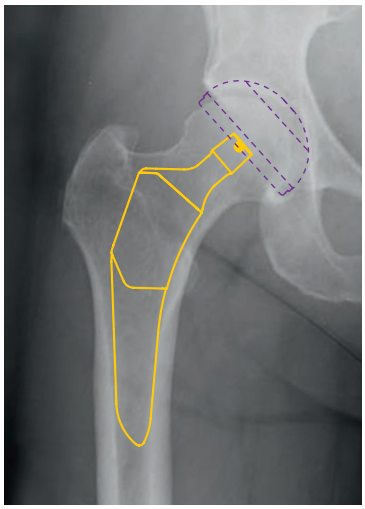
The CoreHip® Planning Templates contain colored outlines of the Primary or Extended stem series green (Varus), yellow (Standard), blue (Valgus) and red (Dysplasia).



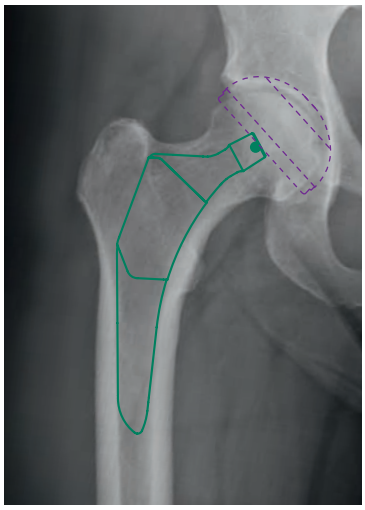
PRIMARY



Valgus

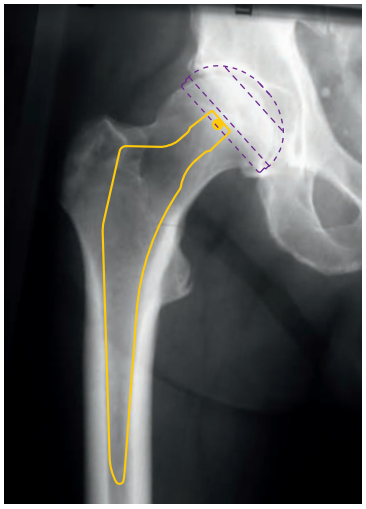


Standard

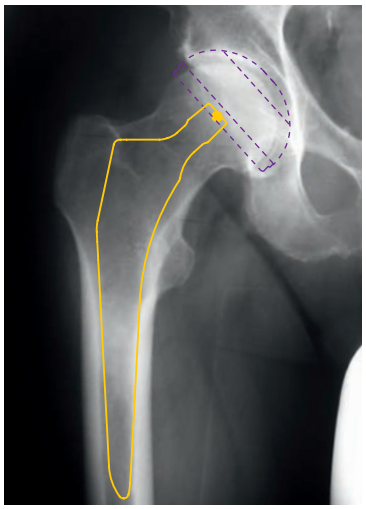


Varus

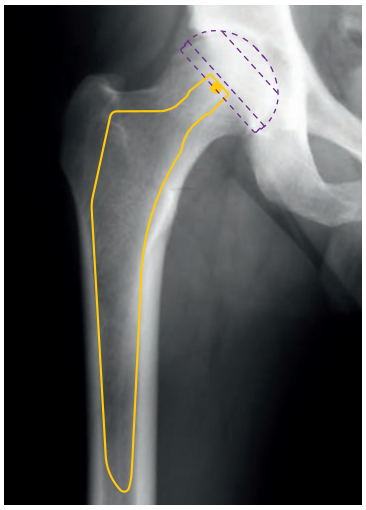
EXTENDED



Type Dorr A



Type Dorr B



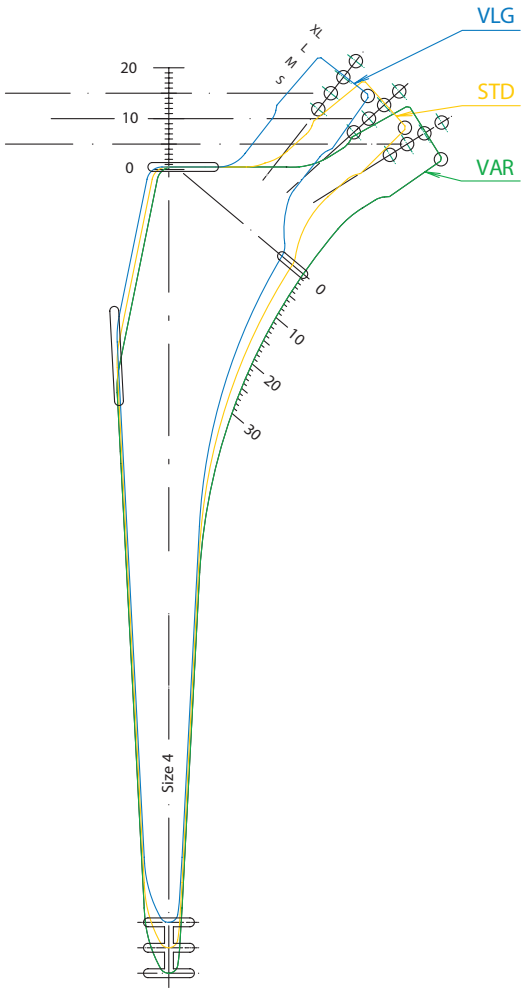
Type Dorr C

SIZE INDEPENDENT OFFSET

The CoreHip® System allows reconstruction of the femoral offset independent of stem size, because each stem series covers a specific and non-overlapping offset range.

Therefore, femoral medullary canals of different sizes with similar offset ratios can be treated with one CoreHip® stem series.

Three typical femoral morphologies of the Dorr classifications (Dorr LD et al. 1993) Types A, B and C are shown using the example of a CoreHip® Extended planning, which have the same femoral offset values (43 +/- 2 mm) (3).



AESCULAP® CoreHip® PRIMARY

SURGICAL TECHNIQUE

OSTEOTOMY

The starting point of the femoral resection plane results from the preoperative planning and can be positioned on the Trochanteric Fossa. The osteotomy is performed at 50° to the femoral axis and can be performed using the resection guide (NT1106R).

IMPORTANT NOTICE

The higher the osteotomy is positioned, the greater the risk of varus malpositioning of the implant.

OPENING OF THE MEDULLARY CAVITY

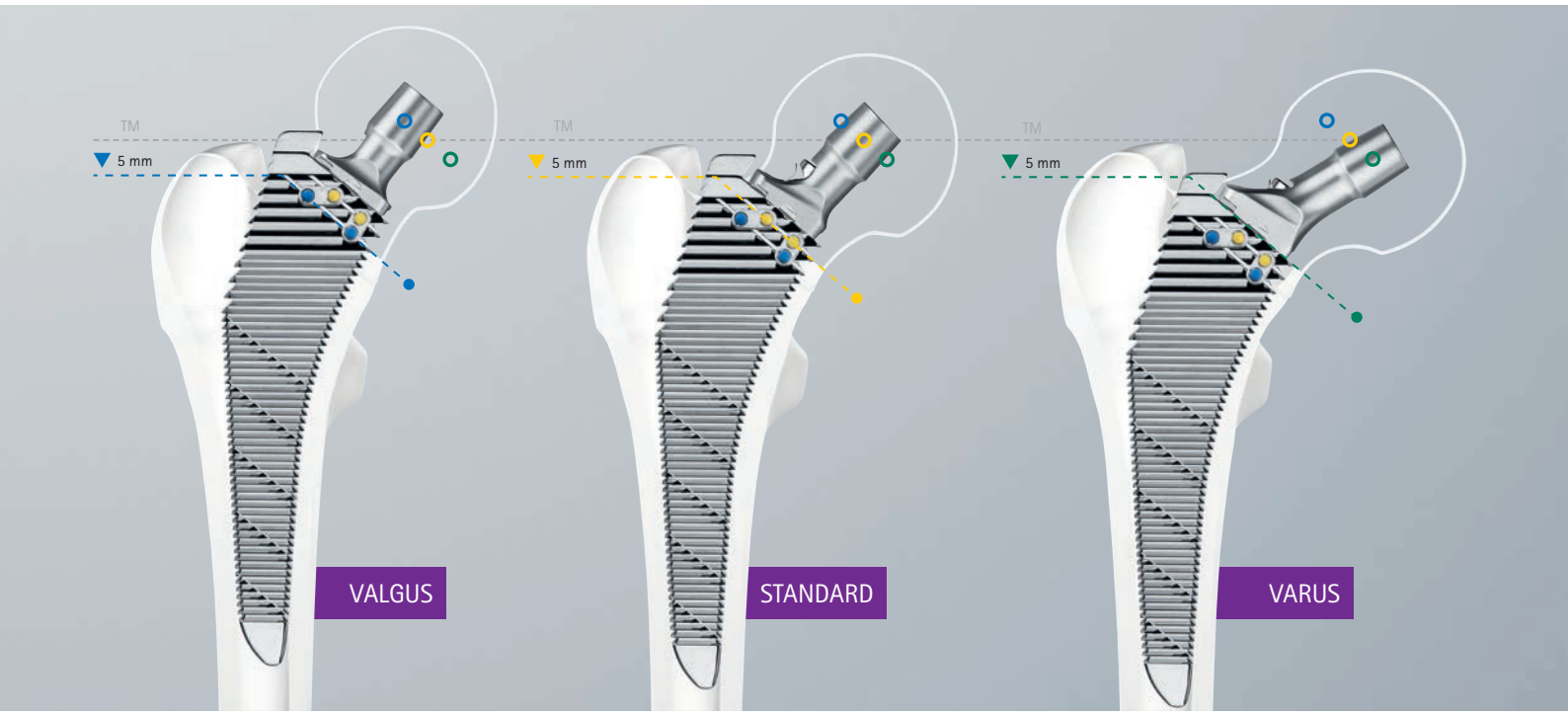
The medullary canal is opened with a box chisel (NT118R), which is attached to the rasp handle.

The box chisel is placed centrally and laterally with positive antetorsion and driven in until a sufficiently large opening is achieved for subsequent processing with the CoreHip® system rasp. It must be ensured that a varus rasp position can be avoided.

The cortical ring can be broken open laterally to prevent misalignment of the system rasp and implant.

The starter rasp (ND472R) can also be used.

POSITION OF THE RASP SHOULDER



PREPARATION OF THE MEDULLARY CAVITY

The medullary canal is prepared with the CoreHip® system rasp in increasing order. The insertion depth is indicated by three 50° markers (● ● ●) and the positions of the stem shoulder height (▼ ▼ ▼), which differ by 5 mm between the indication lines. The middle head centers are 15 mm (stem type Valgus ○), 10 mm (Standard ○) or 5 mm (Varus ○) above the highest shoulder point of the system rasp.

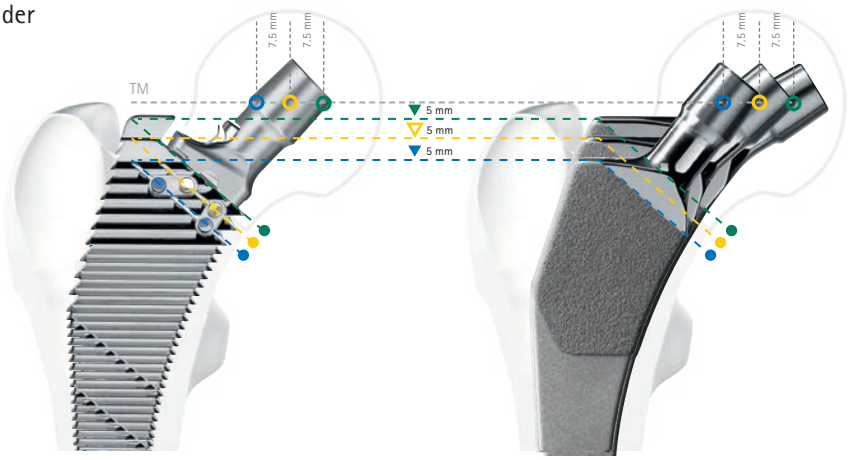
IMPORTANT NOTICE

The highest shoulder of the rasp always simulates the shoulder of the Varus stems.

In addition to the rasp shoulder, the medial tip of the teeth can also be used for orientation.
These always represent the medial edge of the indication lines, as well as the rasp shoulder of these planes.

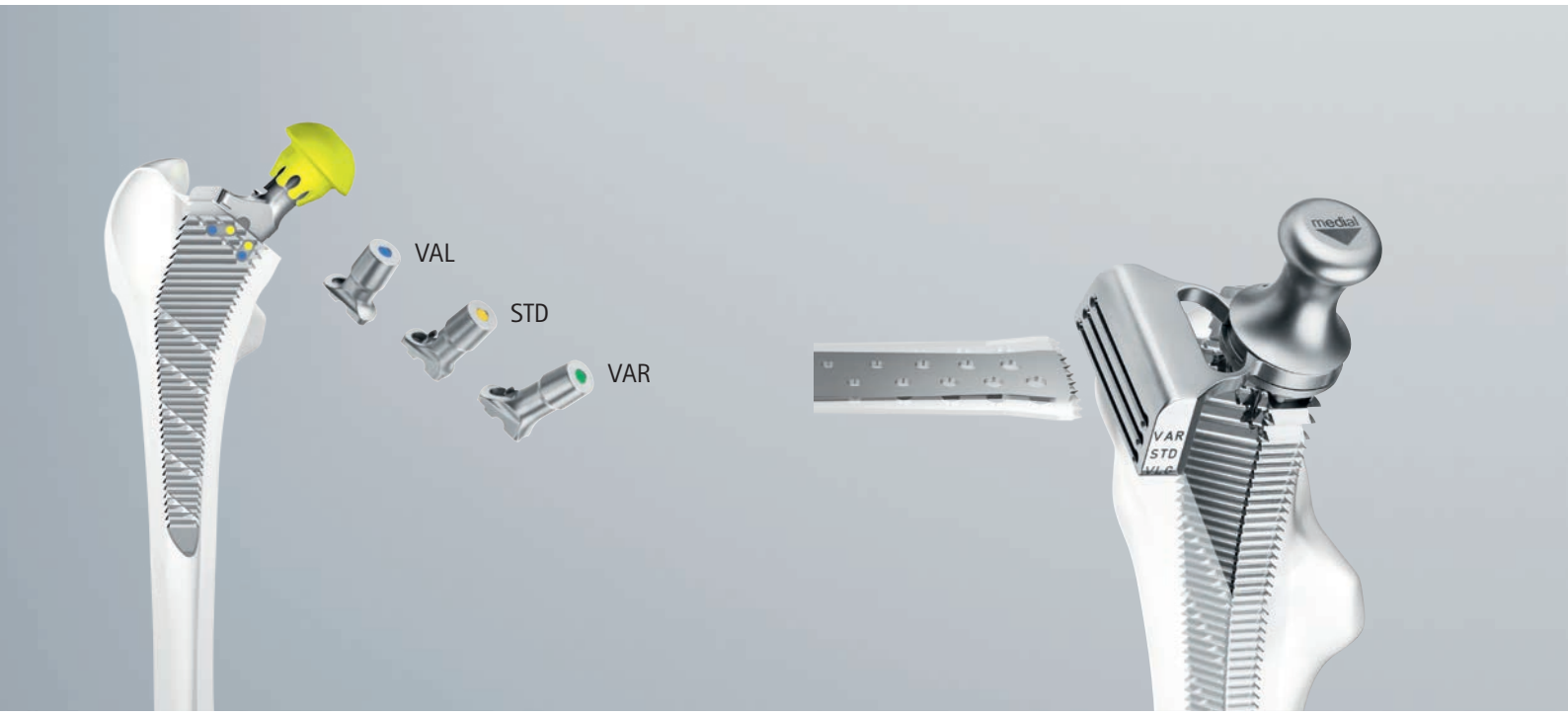
IMPORTANT NOTICE

The intraoperative x-ray image comparison between the rasp and the implant should be made with the center of the head not the rasp shoulder.



AESCULAP® CoreHip® PRIMARY

SURGICAL TECHNIQUE



TRIAL REDUCTION

The trial reduction is performed with the CoreHip® trial neck adapters, which are color-coded: Valgus blue, Standard yellow, Varus green and Dysplasia red as well as trial heads of neck lengths S to XXL.

Each trial neck adapter covers its own offset range and determines the selection of the corresponding CoreHip® Stem series.

For trial reconstruction for dysplastic treatment, the ASIA rasps must be used. The Dysplasia version allows a reduction of the leg length by 10 mm compared to the valgus treatment.

Dysplasia (DYS)
CCD 142°
Offset
30.5 – 38.0 mm

Valgus (VLG)
CCD 142°
Offset
30.5 – 38.0 mm

Standard (STD)
CCD 132°
Offset
38.0 – 45.5 mm

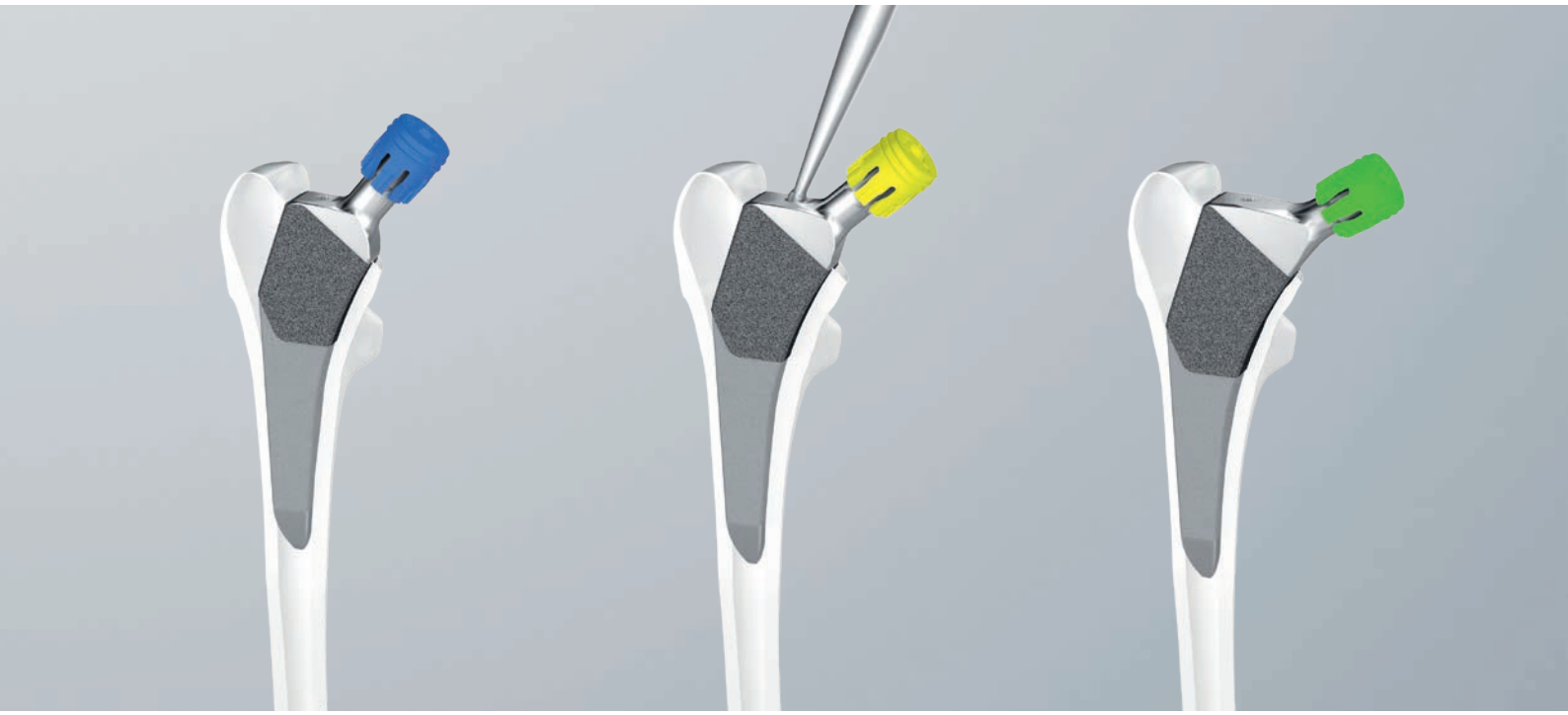
Varus (VAR)
CCD 122°
Offset
45.5 – 53.0 mm

OPTIONAL OSTEOTOMY PREPARATION

Optionally, the osteotomy can be completed with the Calcar Saw Block when the system rasp is inserted. The VAR, STD, VLG and DYS levels are defined for marking the corresponding osteotomy. After removal of the system rasp, the osteotomy can be performed.

IMPORTANT NOTICE

With the CoreHip® Primary System rasps, the VAR, STD and VLG indication lines can be prepared, while the ASIA System rasps cover the STD, VLG and DYS indications.



CEMENTLESS IMPLANTATION

The CoreHip® Stem size to be selected corresponds to the last system rasp used and the stem type defined by the trial neck adapter. The taper protection corresponds to the CoreHip® color coding, which is also found on the implant packaging.

The selected CoreHip® Stem is inserted with a straight (ND844R) or angled impactor (ND845R). The implant is then inserted at the same height as the final rasp.

The definitive prosthesis head is determined by a final trial position. Before implantation, the tapered head connection must be carefully cleaned and dried.

INTRAOPERATIVE EXPLANTATION

For direct intraoperative revisions, the inserted stem can be removed from the femur using the extraction adapter NT1114R with the plastic insert NT1115SU.

The plastic insert is declared as single use and must be replaced after use by a new one.

The revision adapter can be used with all rasp handles.

AESCULAP® CoreHip® PRIMARY

SURGICAL TECHNIQUE

CEMENTED IMPLANTATION

For cemented technique, the CoreHip® stem size to be selected depends on the last system rasp used, taking into account the cement mantle pursuant to the table below The distal centralizer corresponds to the prosthesis stem size.
The cement is applied after insertion of a distal medullary block and jet lavage irrigation. The cemented CoreHip® Primary stems are inserted with the impactor (ND844R or ND845R) without using a hammer.

The final prosthesis head is determined by a final trial reduction. Careful cleaning and drying of the tapered head connection must be ensured before implantation.

The supplementary CoreHip® AS version, consisting of the cemented version combined with the 7-layer coating of zirconium nitride, with a high abrasion resistance, shows a high barrier effect due to the multi-layer coating, especially against chromium, nickel and cobalt ions (1, 2).

CoreHip® STEM LENGTH										
Size system rasps	2	3	4	5	6	7	8	9	10	11
CoreHip® Stem		1		3		5		7		9
Cement mantle mm		1.0		1.0		1.0		1.0		1.0
Distal Centralizer	NK1281		NK1283		NK1285		NK1287		NK1289	

AESCULAP® CoreHip® EXTENDED

SURGICAL TECHNIQUE

MEDULLARY CAVITY PREPARATION

CoreHip® Extended stems are implanted cementless according to preoperative planning.

The osteotomy is performed analogous to the CoreHip® System. Thus, an intraoperative change from Primary to Extended Stems is also possible. The medullary canal is opened with a box chisel (NT118R), which is attached to the rasp handle. In contrast to the Primary System, the box chisel is placed posterolaterally and driven in until a sufficiently large opening is achieved for subsequent processing with the CoreHip® Extended system rasp.

The colored rasp markings for insertion depths, shoulder heights as well as head centers and offset areas with Valgus, Varus and Standard trial neck adapters are also identical to the CoreHip® System Primary.

IMPLANTATION CEMENTLESS

The CoreHip® Extended stem size to be selected is based on the last system rasp used and the stem type defined by the trial neck adapter with the corresponding CoreHip® color coding.

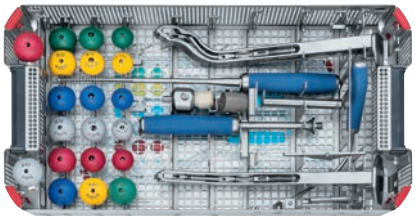
The CoreHip® Extended stems are also used with a straight ND844R or angled ND845R impactor. The implant is positioned at the same height as the last rasp.

The final prosthesis head is determined by a final trial reduction.

Before implantation, make sure that the tapered head connection is carefully cleaned and dried.

AESCULAP® CoreHip® SYSTEM

INSTRUMENTS AND AESCULAP® OrthoTray® STORAGE



NT1101 CoreHip® COMPACT SET PRIMARY

CoreHip® Basic Storage without tray insert for system rasps	ND1001R
Graphic template	TF100
Lid for AESCULAP® OrthoTray®	JA455R
Tray insert with CoreHip® Primary System Rasps	NT1134
Impact instrument for heads	ND060
Crossbar for handles	ND017R
Starter Rasp	ND472R
Extraction adapter 12/14 without insert	NT1114R
Insert for NT1114R – 12.7 mm (single use)	NT1115SU

NT1102 CoreHip® COMPACT SET ASIA

Equipped as NT1101 but with tray insert with system rasps NT1154.

NT1103 CoreHip® COMPACT SET EXTENDED

Equipped as NT1101 but with tray insert with system rasps NT1174.

PLEASE ORDER SEPARATELY X-RAY TEMPLATES 1.15: 1

CoreHip® Primary x-ray templates cementless	NT1116
CoreHip® Primary x-ray templates cemented	NT1117
CoreHip® Extended x-ray templates cementless	NT1118

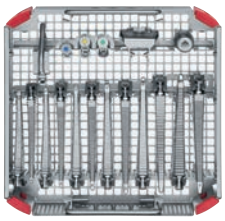
Note:
For the CoreHip® Sets NT1101, NT1102 and NT1103 an AESCULAP® sterile container 592 x 285 x 157 mm with an internal height of 120 mm can be used.

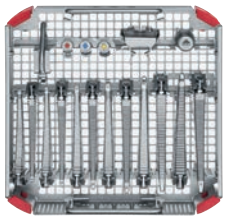
CoreHip® TRIAL PROSTHESIS HEADS

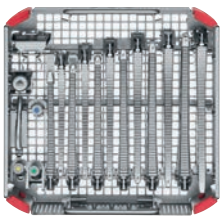
Trial prosthesis head 28 mm S	NT956
Trial prosthesis head 28 mm M	NT957
Trial prosthesis head 28 mm L	NT958
Trial prosthesis head 28 mm XL	NT959
Trial prosthesis head 28 mm XXL	NT960
Trial prosthesis head 32 mm S	NT966
Trial prosthesis head 32 mm M	NT967
Trial prosthesis head 32 mm L	NT968
Trial prosthesis head 32 mm XL	NT969
Trial prosthesis head 32 mm XXL	NT970

PLEASE ORDER SEPARATELY

Trial prosthesis head 22.2 mm M	NT947
Trial prosthesis head 22.2 mm L	NT948
Trial prosthesis head 36 mm S	NT976
Trial prosthesis head 36 mm M	NT977
Trial prosthesis head 36 mm L	NT978
Trial prosthesis head 36 mm XL	NT979
Trial prosthesis head 36 mm XXL	NT980
Trial prosthesis head 40 mm S	NT1186
Trial prosthesis head 40 mm M	NT1187
Trial prosthesis head 40 mm L	NT1188
Trial prosthesis head 40 mm XL	NT1189
Trial prosthesis head 40 mm XXL	NT1190
Femur head saw guide 50°	NT1106R
Stem impactor straight	ND844R
Stem impactor angled	ND845R







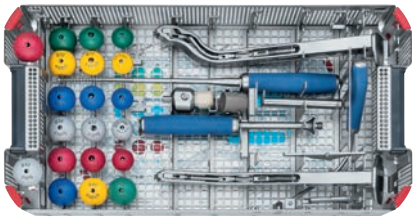
CoreHip® SYSTEM RASPS	NT1134 PRIMARY	NT1154 ASIA	NT1174 EXTENDED
Tray insert unloaded	NT1135R	NT1155R	NT1175R
System Rasp Size 1	NT1121R	NT1141R	NT1161R
System Rasp Size 2	NT1122R	NT1142R	NT1162R
System Rasp Size 3	NT1123R	NT1143R	NT1163R
System Rasp Size 4	NT1124R	NT1144R	NT1164R
System Rasp Size 5	NT1125R	NT1145R	NT1165R
System Rasp Size 6	NT1126R	NT1146R	NT1166R
System Rasp Size 7	NT1127R	NT1147R	NT1167R
System Rasp Size 8	NT1128R	NT1148R	NT1168R
System Rasp Size 9	NT1129R	NT1149R	NT1169R
System Rasp Size 10	NT1130R	NT1150R	NT1170R
Trial neck adapter STD	NT1136R	NT1156R	NT1136R
Trial neck adapter VLG	NT1137R	NT1157R	NT1137R
Trial neck adapter VAR	NT1138R	-	NT1138R
Trial neck adapter DYS	-	NT1159R	-
Box chisel	NT118R	NT118R	NT118R

PLEASE ORDER SEPARATELY			
System Rasp Size 0	NT1120R	NT1140R	NT1160R
System Rasp Size 11	NT1131R	NT1151R	NT1171R
CoreHip® Calcar Saw Block	NT1107R	NT1108R	NT1107R
Lid for Tray insert	JA395R	JA395R	JA395R

Note:
For the CoreHip® tray inserts NT1134, NT1154 or NT1174 an AESCULAP® sterile container 300 x 285 x 112 mm with an internal height of 75 mm can also be used.

AESCULAP® CoreHip® SYSTEM

HANDLES FOR SYSTEM RASPS



The CoreHip® tray contains storage spaces for any two handles or for two woodpecker adapters.

RASP HANDLES – PLEASE ORDER SEPARATELY		
HANDLES FOR DIFFERENT SURGICAL APPROACHES	STANDARD	LONG (+40 mm)
posteriorer Approach, straight	NT002M	NT992R
antero-lateral / lateral approach, straight	NT008M	NT988R
antero-lateral / lateral approach, Offset left	NT009M	NT989R
antero-lateral / lateral approach, Offset right	NT010M	NT990R
direct anterior approach, straight	NT008M	NT988R
direct anterior approach, Offset left	NT009M	NT989R
direct anterior approach, Offset right	NT010M	NT990R
WOODPECKER ADAPTOR	STANDARD	LONG (+40 mm)
Woodpecker connection, straight	NT115R	NT985R
Woodpecker connection, Offset left	NT116R	-
Woodpecker connection, Offset right	NT117R	-

RASP HANDLE WITH QUICK RELEASE FASTENER

Rasp handle with improved mechanics and locking mechanism

The CoreHip® rasp handles allow the preparation of the implant bed over all hip approaches in supine and lateral position.

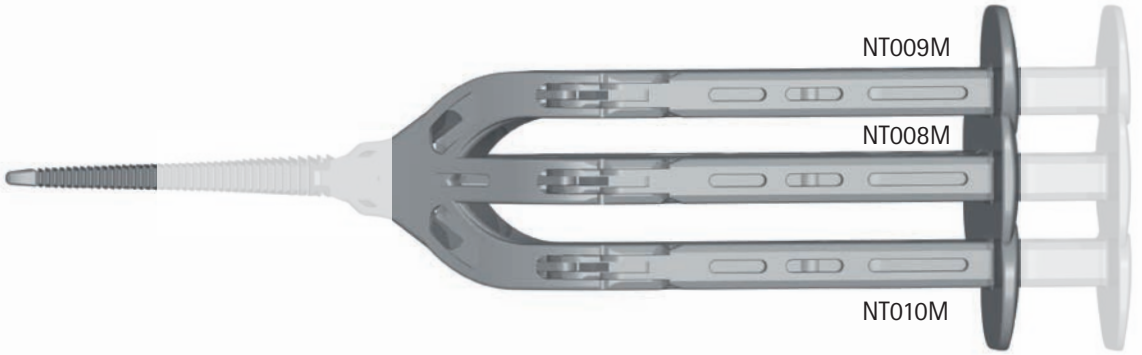
AP VIEW OF THE RASP HANDLES

NT988R straight

NT989R Offset – Left

NT990R Offset – Right

LATERAL VIEW OF THE RASP HANDLES

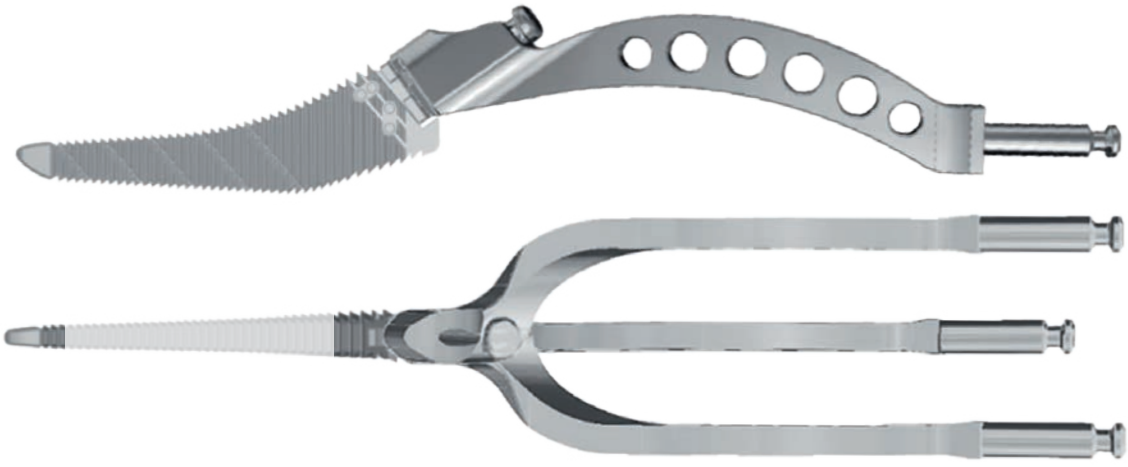


NT989R Offset – Left

NT988R straight

NT990R Offset – Right

WOODPECKER ADAPTER IN AP- AND LATERAL VIEW



NT115R straight

NT117R Left

NT115R straight

NT116R Right

AESCULAP® CoreHip® PRIMARY CEMENTLESS

IMPLANT OVERVIEW

SIZE	DYSPLASIA	VALGUS	STANDARD	VARUS	STEM LENGTH* (mm)
0	NK1060T**	NK1020T**	NK1000T**	NK1040T**	119.5
1	NK1061T**	NK1021T	NK1001T	NK1041T	121.5
2	NK1062T	NK1022T	NK1002T	NK1042T	123.5
3	NK1063T	NK1023T	NK1003T	NK1043T	125.5
4	NK1064T	NK1024T	NK1004T	NK1044T	127.5
5	NK1065T	NK1025T	NK1005T	NK1045T	129.5
6	NK1066T	NK1026T	NK1006T	NK1046T	131.5
7	NK1067T	NK1027T	NK1007T	NK1047T	133.5
8	NK1068T	NK1028T	NK1008T	NK1048T	135.5
9	NK1069T	NK1029T	NK1009T	NK1049T	137.5
10	NK1070T	NK1030T	NK1010T	NK1050T	139.5
11	NK1071T	NK1031T	NK1011T	NK1051T	141.5

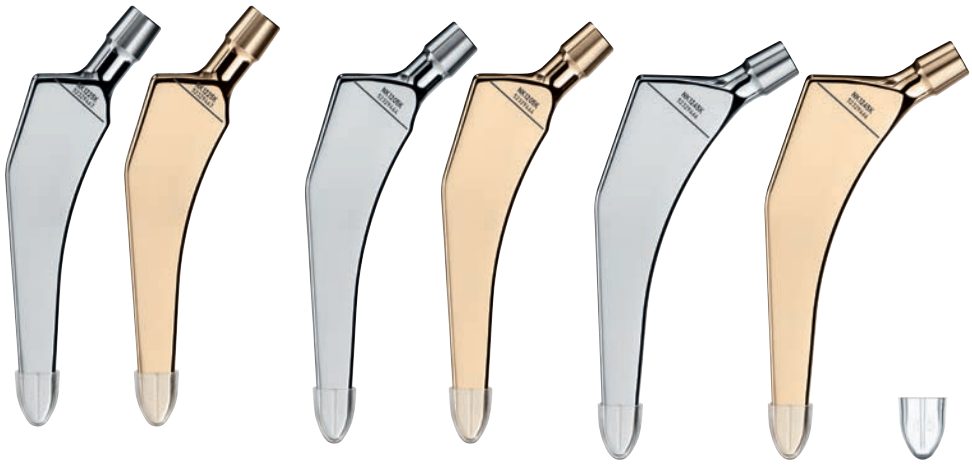
* The stem length is the distance from the head midpoint to the tip of the stem.
The CoreHip® dysplasia implants are 10 mm shorter and also allow 10 mm less leg length compared to VLG line.

**The CoreHip® Dysplasia Size 1 and Primary Size 0 are for all indication lines weight limited with 60 kg.

Implant materials:
Cementless stems of ISOTAN®$_F$ titanium forging alloy (Ti6Al4V / ISO 5832-3) with surface coating PLASMAPORE® pure titanium (Ti / ISO 5832-2)

AESCULAP® CoreHip® PRIMARY CEMENTED

IMPLANT OVERVIEW



SIZE	VALGUS	AS	STANDARD	AS	VARUS	AS	CENTRALIZER	STEM LENGTH* (mm)
1	NK1221K	NK1221Z	NK1201K	NK1201Z	NK1241K	NK1241Z	NK1281	121.5
3	NK1223K	NK1223Z	NK1203K	NK1203Z	NK1243K	NK1243Z	NK1283	125.5
5	NK1225K	NK1225Z	NK1205K	NK1205Z	NK1245K	NK1245Z	NK1285	129.5
7	NK1227K	NK1227Z	NK1207K	NK1207Z	NK1247K	NK1247Z	NK1287	133.5
9	NK1229K	NK1229Z	NK1209K	NK1209Z	NK1249K	NK1249Z	NK1289	137.5

*The stem length is the distance from the center of the head to the tip of the stem.

IMSET® RESORBABLE MARKER	
8 mm	NK908
10 mm	NK910
12 mm	NK912
14 mm	NK914
16 mm	NK916
18 mm	NK918

Implant materials:

Cemented stems of ISODUR®$_F$ cobalt-chrome forged alloy (CoCrMo/ISO 5832-12) Centralizer of polymethyl methacrylate PMMA

IMSET® medullary blocks of gelatin (porcine), glycerin, water and methylparahydroxy benzonate

AS (Advanced Surface) variant with multilayer coating system of chrome-nitride-chrome-carbo-nitride-zirconium-nitride

AESCULAP® CoreHip® EXTENDED CEMENTLESS

IMPLANT OVERVIEW

SIZE	VALGUS	STANDARD	VARUS	STEM LENGTH* (mm)
0	NK1120T	NK1100T	NK1140T	150.5
1	NK1121T	NK1101T	NK1141T	154.5
2	NK1122T	NK1102T	NK1142T	158.5
3	NK1123T	NK1103T	NK1143T	162.5
4	NK1124T	NK1104T	NK1144T	166.5
5	NK1125T	NK1105T	NK1145T	170.5
6	NK1126T	NK1106T	NK1146T	174.5
7	NK1127T	NK1107T	NK1147T	178.5
8	NK1128T	NK1108T	NK1148T	182.5
9	NK1129T	NK1109T	NK1149T	186.5
10	NK1130T	NK1110T	NK1150T	190.5
11	NK1131T	NK1111T	NK1151T	194.5

*The stem length is the distance from the center of the head to the tip of the stem.

Implant materials:
Cementless stems of ISOTAN®$_F$ titanium forged alloy (Ti6Al4V / ISO 5832-3)
with PLASMAPORE® pure titanium (Ti / ISO 5832-2) surface

Biolox® CERAMIC HEAD

SIZE	28 mm	32 mm	36 mm
S	NK460D	NK560D	NK650D
M	NK461D	NK561D	NK651D
L	NK462D	NK562D	NK652D
XL	-	NK563D	NK653D

Biolox® Delta Aluminum Oxide–Matrix-Ceramic (Al_2O_3/ZiO_2/ISO 6474-2)

METAL HEAD

SIZE	28 mm	32 mm	36 mm
S	NK429K	NK529K	NK669K
M	NK430K	NK530K	NK670K
L	NK431K	NK531K	NK671K
XL	NK432K	NK532K	NK672K
XXL	NK433K	NK533K	NK673K

ISODUR®$_F$ Cobalt-Chrome forged alloy (CoCrMo/ISO 5832-12)

Isocer® CERAMIC HEAD

SIZE	28 mm	32 mm	36 mm
S	NK324	NK424	NK524
M	NK325	NK425	NK525
L	NK326	NK426	NK526
XL	-	NK427	NK527

Isocer® Aluminum Oxide-Matrix-Ceramic (Al_2O_3/$Zr0_2$/ISO 6474-2) only for PE/XLPE articulations, no ceramic

Literature

1. Reich J, Hovy L, Lindenmaier HL, Zeller R, Schwiesau J, Thomas P, Grupp TM. Preclinical evaluation of coated knee implants for allergic patients. Orthopade (2010) (18).
2. Puente Reyna AL, Fritz B, Schwiesau J, Schilling C, Summer B, Thomas P, Grupp TM. Metal ion release barrier function and biotribological evaluation of a zirconium nitride multilayer coated knee implant under highly demanding activities wear simulation. Journal of Biomechanics (2018) 79 (8896).
3. Structural and cellular assessment of bone quality of proximal femur. Dorr LD, Faugere MC, Mackel AM, Gruen TA, Bognar B, Malluche HH. (1993). Bone, 14(3), 231242.

Trilliance® Hip Stem System

Triple tapered. Polished.

Trilliance® Hip Stem

Trilliance® Hip Stem System

The philosophy of the Trilliance® triple tapered polished hip stem is a design evolution of this type of cemented hip stem prosthesis. The design philosophy of polished hip stems aims towards a minimization of cement damage. Tapered surfaces and the absence of a collar allow the hip stem t subside within the cement mantle, maintaining a compressive load transfer between prosthesis and cement and also between the cement and bone interface.

Since the beginning of cemented hip replacement considerations to use polished implant surfaces were taken to reduce the mechanical load and stress transfer to the bone cement.

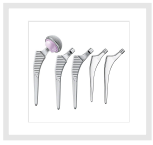
TrendHip® Hip Stem System

Traditional hip replacement

TrendHip®

TrendHip® Hip Stem System

TrendHip®



The TrendHip® design concept combines the traditional features of a straight tapered and fully surface coated cementless hip stem. The implant range is available for standard and lateralized offset stems (+6 mm). The TrendHip® triple tapered shape additionally supports the implant positioning inside the femoral cavity.

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