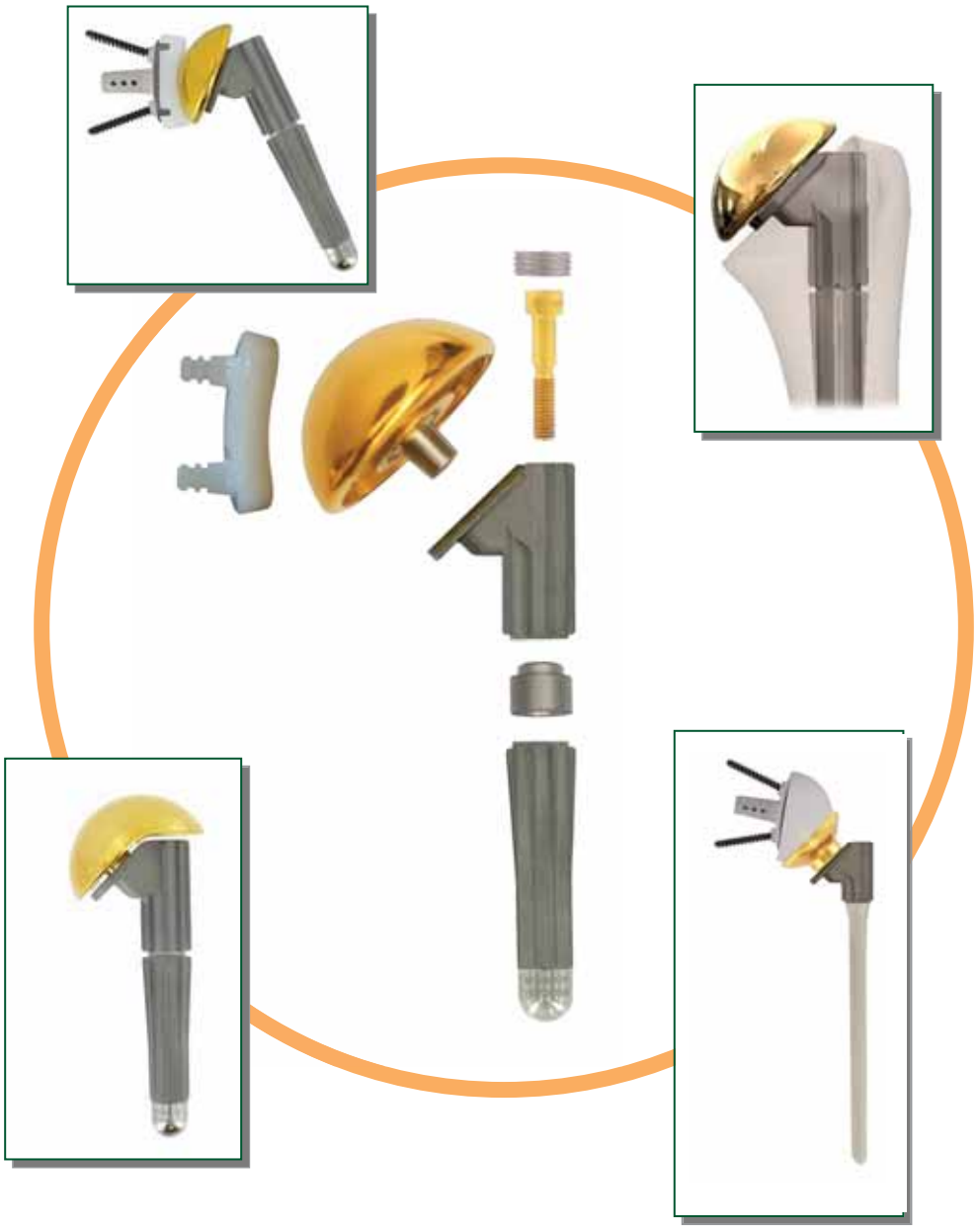
AGILON®

The modular shoulder system



implantcast

Surgical Technique

omarthrosis treatment

AGILON®

The modular shoulder system
omarthrosis treatment

The following surgical technique was developed
in co-operation with Dr. N. Hellmers and
Dr. A. Betthäuser, Hamburg.

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Nota Bene: The described surgical technique is the suggested treatment for the uncomplicated procedure. In the final analysis the preferred treatment is that which addresses the needs of the individual patient.

AGILON®

Introduction

The modular AGILON® shoulder system is designed to reconstruct a shoulder joint in case of a four fragment fracture of the humeral head and to treat arthrotic degradeted joints. With the help of extension pieces the proximal length of the implant can be extended from 5mm up to 17.5mm in steps of 2.5mm. The spur gearing enables the adaption of the rotation in 10°-steps after the implantation of the stem. The cemented stems are made of implavit® CoCrMo alloy. They are available in the lengths of 90 and 120mm with diameters of 6, 8, 10 and 12mm. The cementless stems in lengths of 60, 120, 180* and 240*mm in diameters from 10 to 16mm are made of implatan® $TiAl_6V_4$ alloy. Additional cementless 60mm stems are available in diameter 17 and 18mm and 180 and 240mm stems with a diameter of 9mm. The shoulder caps, the metaphyseal component and the extension pieces are made of implatan® $TiAl_6V_4$ alloy. To avoid material wear, all shoulder caps have a ceramic TiN-coating. The shoulder caps are available in 4 diameters, each with 3 thicknesses and can be inserted eccentrically in 12 different angles. Thereby the reconstruction of the original anatomy can be done more easily. For Cuff Tear Arthropathy 12 CTA caps are available in all diameters and heights. Beside the slim trauma metaphyseal component, two primary metaphyseal components are available in the length 30 and 40mm in an angle of 135°. Furthermore the system includes cementless anatomically shaped glenoid baseplates of size 2 and 3 in a lshort stem and a long stem version. This anatomical glenoid baseplates accept the PE-inserts and the glenospheres for the inverse option. So in case of a revision conversion from an anatomical to an inverse shoulder, the glenoid need not to be removed, only the PE-insert is replaced by a PE-glenosphere. The system includes inverse caps in 4 diameters and 3 heights each as well as the retentive inverse caps which offer a 3mm bigger overhang to minimize the risk of subluxation. For a cemented treatment, 3 PE glenoid components (size 2, 3 and 4) are available which can be combined with all cap sizes.

* stems with two interlocking holes of ø4mm.

The glenosphere is made of UHMW-polyethylene. Self-cutting, angle stable cancellous screws can be used with the glenoid to support the primary stability. The chosen design offers the advantage of high range of motion (fig. 1), because the thickness of the shoulder cap inverse is very thin. Wear tests* (fig. 2) indicated less wear of this articulation compared to a system with metal glenosphere.

The TiN coated articulating surfaces reduce the polytheylene wear. In a wear test* (fig. 2) the design has shown less wear when compared to a competitive system.
*wear test accorg to ISO 14243, IMA Institut Dresden, Test reports A134/04 and A145/06.

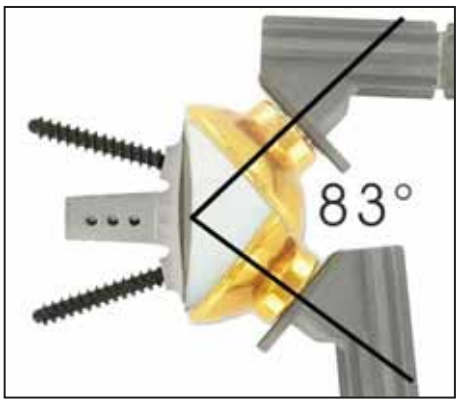

figure 1: range of motion (ROM)

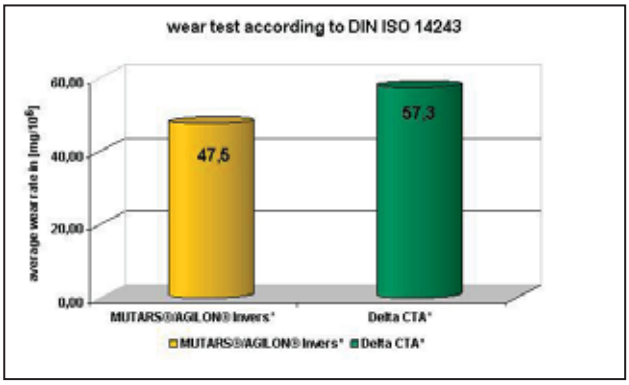

figure 2: wear test outcome

Pre-operative planning

Pre-operative planning and precise surgical techniques are mandatory for optimal results. The instructions and the procedure given in the surgical technique to the system must be adhered to. Familiarity with the recommended surgical technique and its careful application is essential to achieve the best possible outcome.
Before surgery a surgical planning with regard to the dimensions of the prosthetic model and the positioning of the implant components in the bone has to be carried out by the surgeon.

For this purpose, x-ray templates are available:
Digital templates: Digital templates are included in the data base of the common planning systems. For missing templates, please contact the provider of the planning software and request for these templates.
Radiographic templates: Alternatively radiographic templates are available in various scale factors, which can be obtained from your local representative. (fig. 3).

figure 3: M/L view A/P view

figure 4a

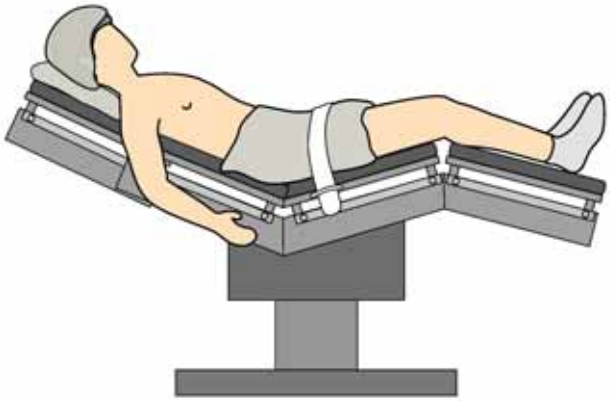

figure 4b

Surgical Technique for the implantation of the AGILON® prosthesis component

Bedding of the patient

The patient should be bedded in the „Beach-chair“-position (fig. 4a and fig. 4b) at the edge of the table to dislocate and extend the arm freely. A movable side table for the forearm enables a stable rotation control and bedg for the forearm.

Important information

Prior to surgery the following should be ensured:

- all needed components are available during surgery. An adequate number of various implant components should be available for surgery. It should be determined whether the implantation should be done with or without the use of bone cement.
- all instruments for the implantation are present and are matching the correspond implants. The insertion instruments must be adapted to the implant. The implants may only be used with the instruments of the implantcast GmbH. An exception are exclusively the standardized instruments used during surgery.

Deltoideo-pectoral access

Perform the deltoideopectoral skin incision (fig. 5) from the top of the coracoid, following the front edge of the deltoideus, straight to the humeral beginning of the M. deltoideus.

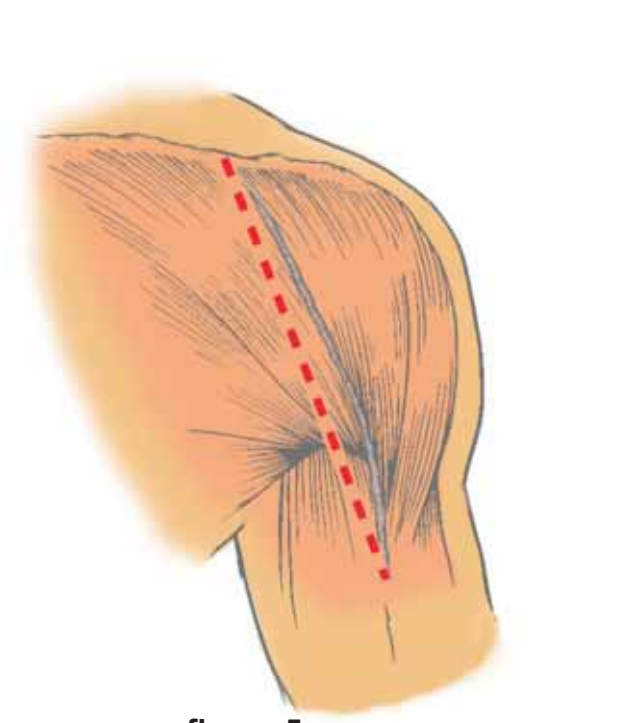

figure 5

After the skin incision and mobilization of the lateral skin flap, andertake the incision of the fascia between M. pectoralis and M. deltoideus in the Sulcus deltoideo-pectoralis by protection and preparation of the V. cephalica laterally (fig. 6).

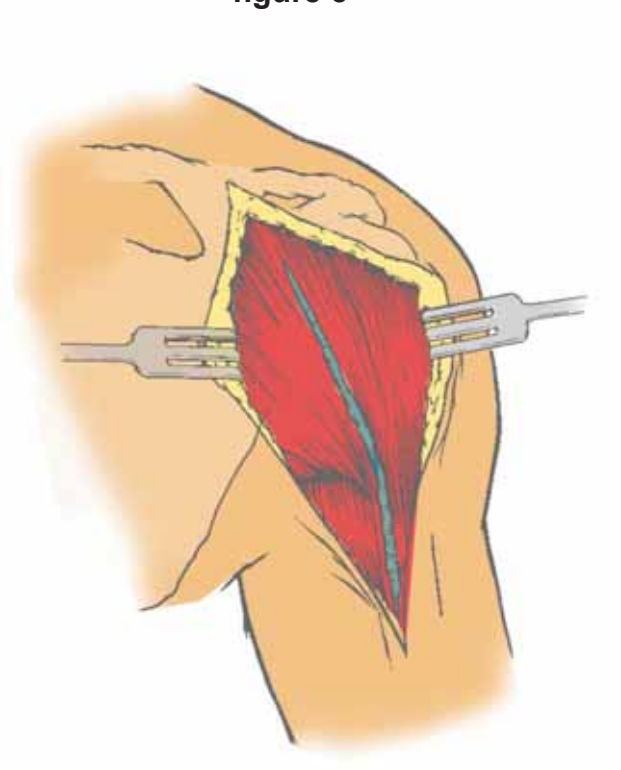

figure 6

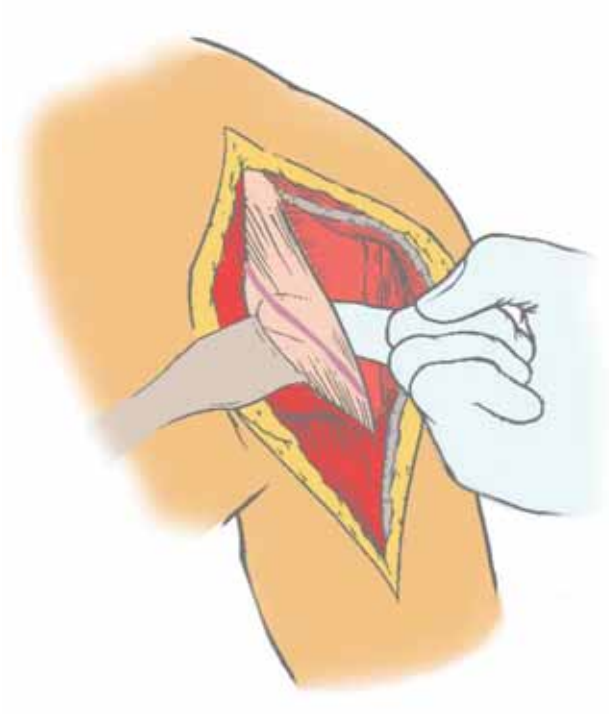

figure 7

Vertical incision of the clavi-pectoral fascia between the long and short biceps fiber up to the Lig. Coracoacromiale. Mobilization of the coracobrachial fiber leg with Caput breve of the M. biceps brachii and the M. musculobrachialis to medial by holg away with the Roux-hook (fig. 7).

Palpation of the N. musculocutaneus and keeping aside together with the fibers. Identification and illustration of the N. axillaris at the lower edge of the M. subscapularis (fig. 7) to avoid iatrogenic damages at the further preparation. It must be protected during the whole operation.

Entering through the fractured Tubercula by Incision above the biceps fiber in proximal direction up to the Lig. Coracoacromial and splitting of the rotator cuff in interval between Subscapularis and Supraspinatus (fig. 8). If possible the biceps fiber should be attached. If the biceps fiber is damaged it has to be armed and later it has to be fixed transosseus at the stem.

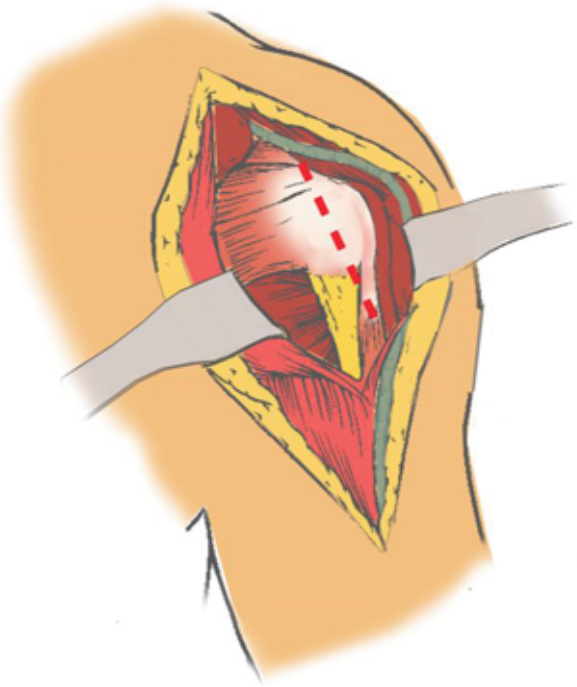

figure 8

figure 9

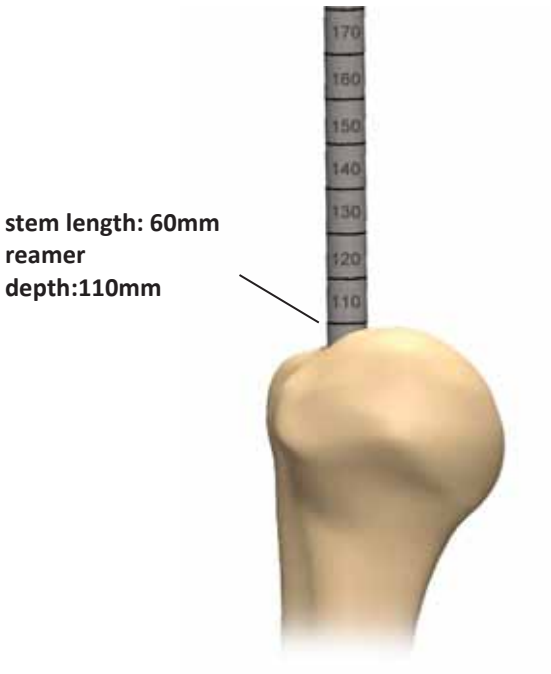

figure 10

Medullary cavity preparation

Open the mediulary humeral canal by the use of the rigid drill 8mm (fig. 9). Ream the canal stepwise up to the diameter determined preoperatively.
The table 1 show the depth and stem length when the long primary metaphyseal component 40mm is used without an extension piece (fig. 10).

Stem length	Reamer depth
60mm	110mm
90mm	140mm
120mm	170mm
180mm	230mm
240mm	290mm

table 1: reamer depth and stem length

Please perform the reaming of the medullary cavity manually by the use of the T-handle.

If cementless stems are used please ream to the same diameter as the cementless stem. For a cemented stem the reaming should be 2mm bigger than the diameter of the stem.

As the cutting block is aligned intramedullary, please leave the last reamer in place or use the trial stem together with the trial stem adapter as intramedullary rod.

Notice: Regularly the loan shipments include the cementless stem of the length of 60mm and 120mm only. If a longer stem like 180mm and 240mm required, these stems have to be ordered separately.
When 180mm or 240mm long cementless should be used, please leave the last reamer in the medullary canal, as there are no trial stems available for these stems lengths.

Humeral resection

Please connect the trial stem of the determined diameter and length to the trial stem adapter and insert this rod into the medullary canal.

If a long metaphyeal component of 40mm is used, the trial stem has to be insert so far into the canal until the second bold laser marking reach the height of the humeral head (fig. 11a).
In primary cases of an anatomical shoulder replacement the use of the long metaphyseal component of 40mm (or a short metaphyseal component 30mm together with and a 10mm extension piece) recommended. This allows to reduce the length of the prosthesis in case you convert to an inverse shoulder replacemnet without removing a well fixed or cemented stem .

The lower bold laser marking on the trial stem adapter referes to the use of a short metaphysela component 30mm. The thinner markings show the inserting depth when extension pieces 5, 7.5 and 10mm are used (fig. 11b).

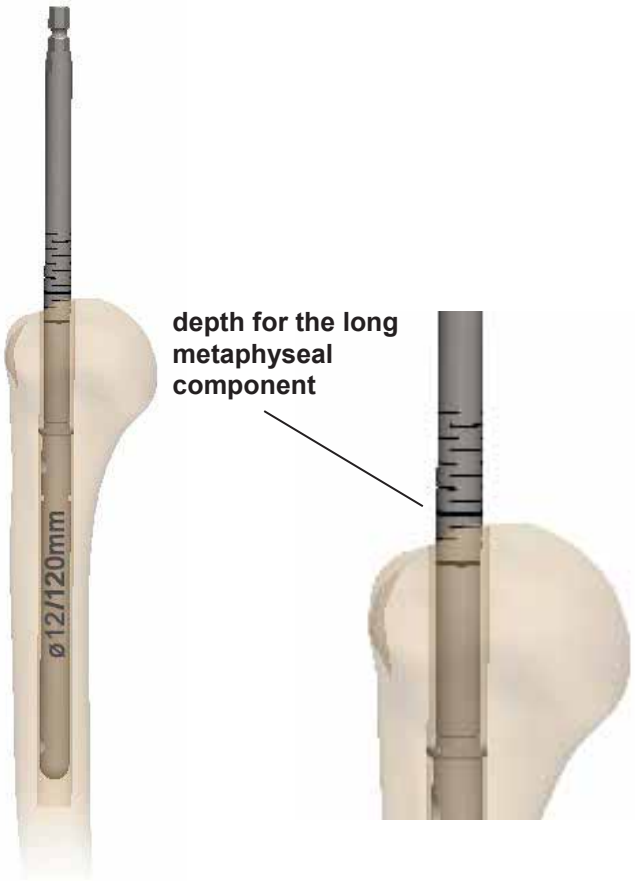

figure 11a and 11b

Mount the humeral alignment guide and the cutting block and slide it over the trial stem previously inserted into the cavity (fig. 12).

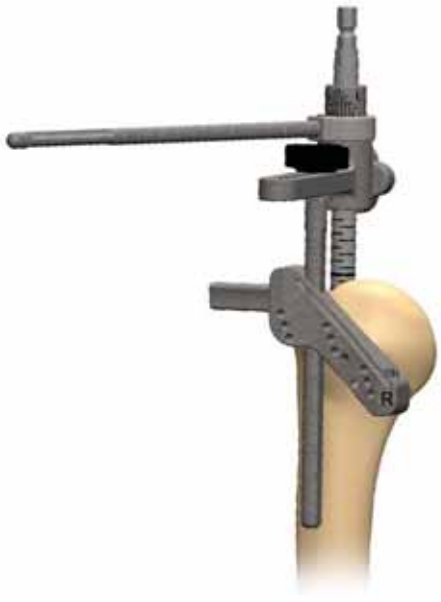

figure 12

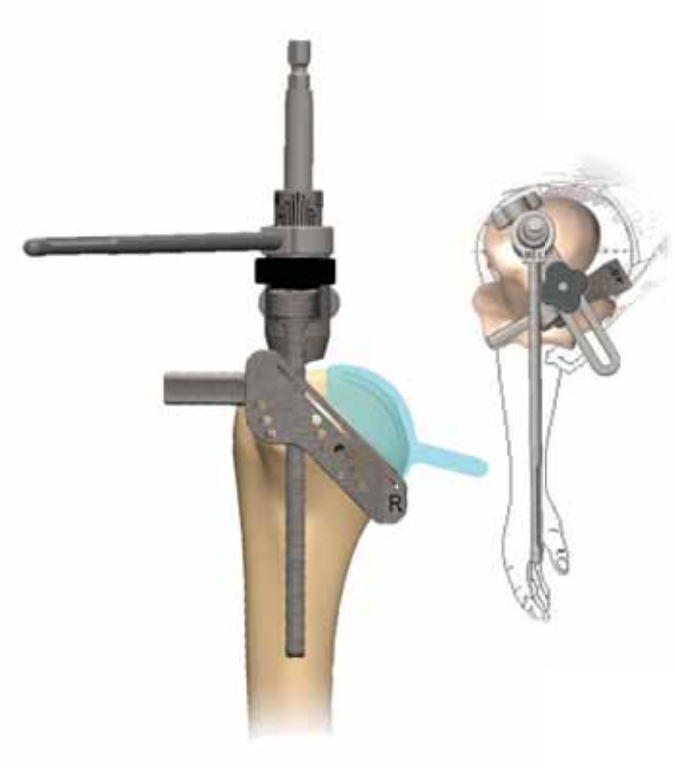

figure 13a and 13b

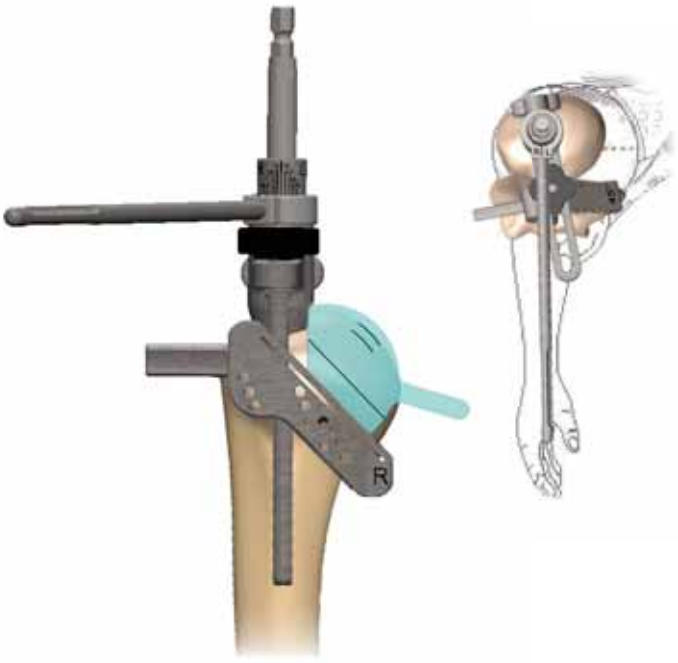

figure 14a and 14b

Humeral head resection

Anatomical shoulder replacement

To adjust the retrotorsion the guig rod should align with the formarm (fig. 13a). When an anatomical shoulder replacement is performed usually a retrotorsion of 30° is recommended (fig. 13b).

The height of the cutting block is determind be the use of the sizing templates available in every cap size. The outer shape of the templates represents the cap with a cap height of 20mm. The two additional marked lines on the templates show the cap heights of 17mm and 14mm accorgly (fig. 13a).

Inverse shoulder replacement

To adjust the retrotorsion the guig rod should align with the formarm (fig. 14a). When an inverse shoulder replacement is performed usually a retrotorsion of 10° or even 0° is recommended (fig. 14b).

The cutting height for an inverse shoulder prosthesis is usually increased by app. 10mm. The design of an inverse shoulder prosthesis requires a caudalisation of the humeral stem. The oblique line on the inverse template shows the additional bone cut required. For a minimal bone cut reference on the lower head mark of the template (it fits to the shortest neck length of the inverse caps) (fig. 14b). The second mark represents the medium neck length and the outer shape the longest neck length accordingly.

After the retorsion and the cutting heigt are determined, please fix the cutting bl
ock to the bone by the use of fixation pins.

Use two fixation pins to fix the cutting block to the humeral bone. If necessary, please predrill with the 3,2mm drill (fig. 15).

It is recommended to use the middle pin level, so the block can be shifted up or down by 2,5mm.

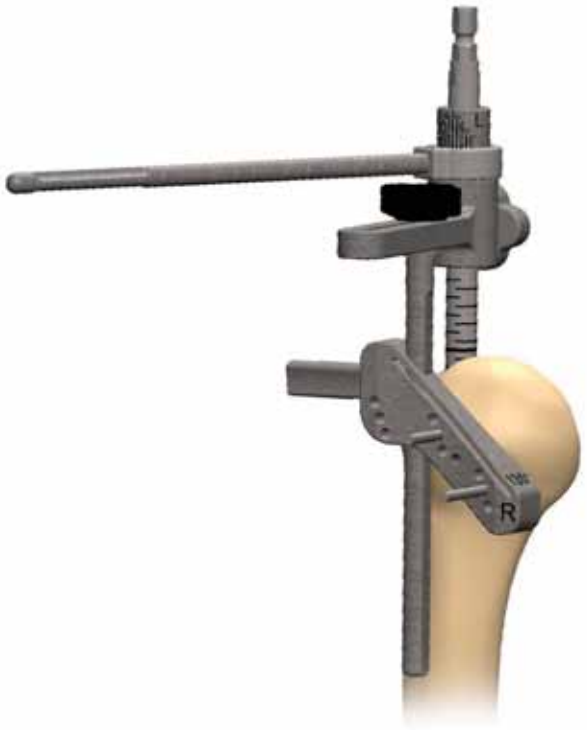

figure 15

Unlock the screw of the cutting block and remove the alignment guide together with the intramedullary instruments (trial stem or rigid drill). Leave the cutting block in place (fig. 16).

For better stability a third pin might be inserted through the oblique pin hole. Direct this pin from cranial to kaudal (fig.16).

Notice: Please remove the screw from the cutting block before you resect. Because of the vibration during resection it might fall down.

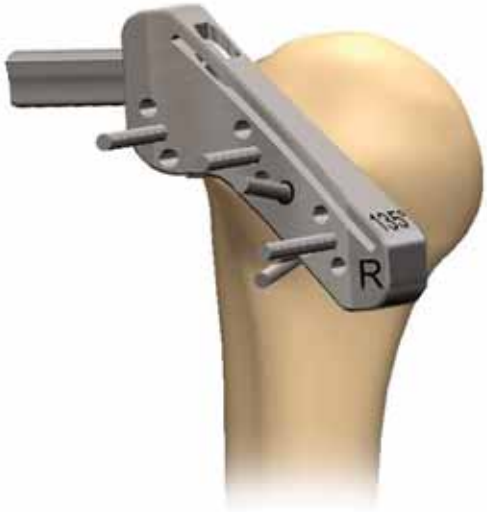

figure 16

Pease use a 1,47mm saw blade to cut through the slot of the cutting block (fig. 17a).

Measure the resected head and determine the correct cap size and height (fig. 17b).

figure 17a and 17b

Insert again the previously used trial stem to the correct depth. Now as you have resected bone proximally, the upper bold laser marking will appear higher and stays app. 10mm out of the intramedullary canal (fig. 18a and 18b).

figure 18a and 18b

The box chisel is guided by the intramedullary trial stem. Move the box chisel downwards until it reaches the bone level (fig. 19a). Push down the chisel and cut out the bone for the metaphyseal component. The box chisel only removes the rectangular shape of the metaphyseal component without the fins, as the PressFit fixation shoul be compromised.

Double check the retrotorsion of the chisel by the use of the modular retrotorsion instrument set to 30°. This instrument is used over the handle of the box chisel at the flat portion marked with R and L. If you operating on a right shoulder the handle of the alignment instrument should be on the side facing R. On a left shoolder the handle should direct to the L (fig. 19b). The check of the retrotorsion is referenced on the forearm (fig. 19c).

The box chisel it stopped by the collar (fig. 19d).

Remove all instruments.

If the replacment is a hemi arthroplasty without replacement of the glenoid, you can directly continue with the trial reduction, described on page 17.

If a replacement of the glenoid is considered, the protection plate can be placed onto the resected bone surface of the humerus (fig. 20a and 20b).

If an inverse prosthesis is performed, please continue with the descriptions on page 24.

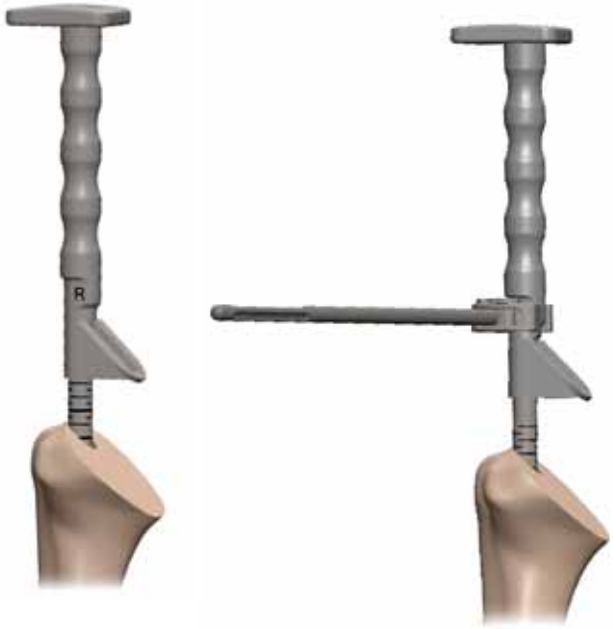

figure 19a and 19b

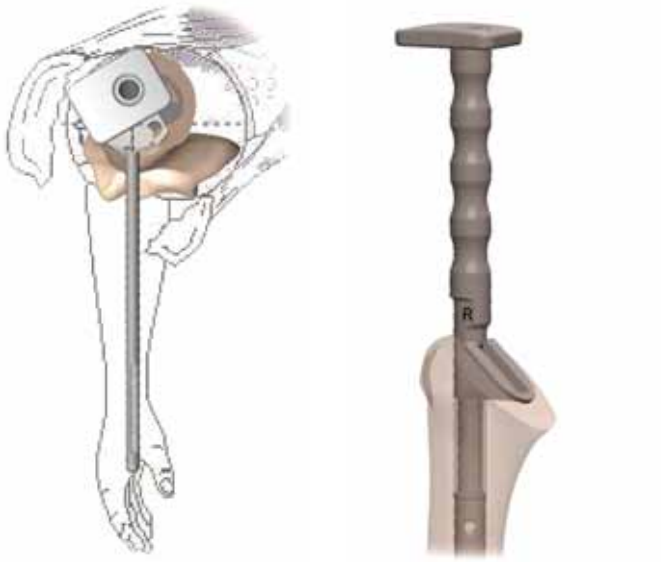

figure 19c and 19d

figure 20a and 20b

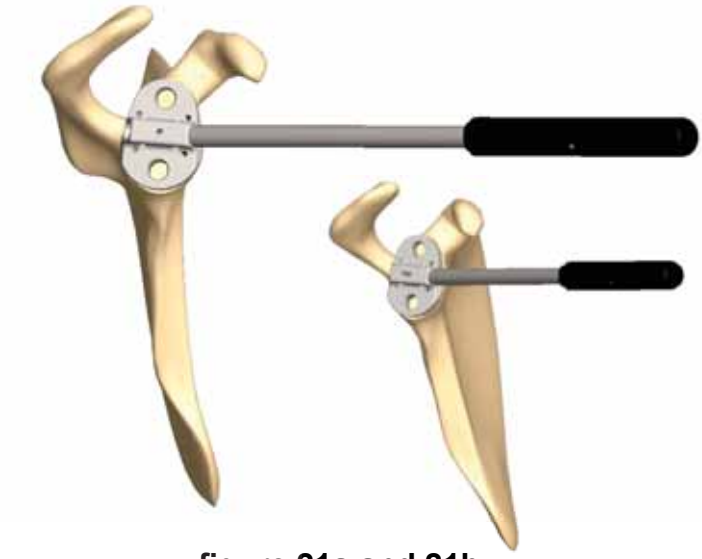

figure 21a and 21b

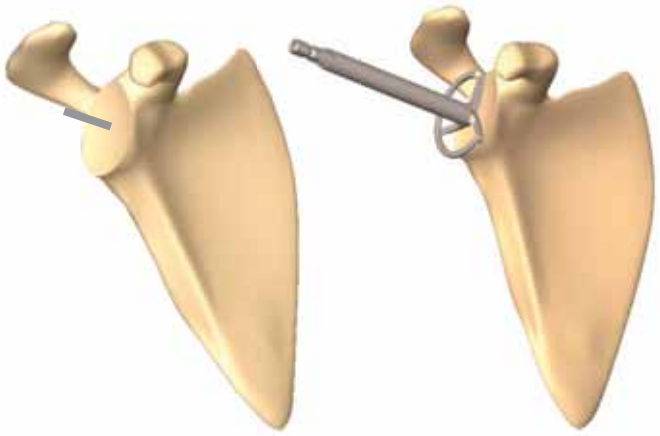

figure 22a and 22b

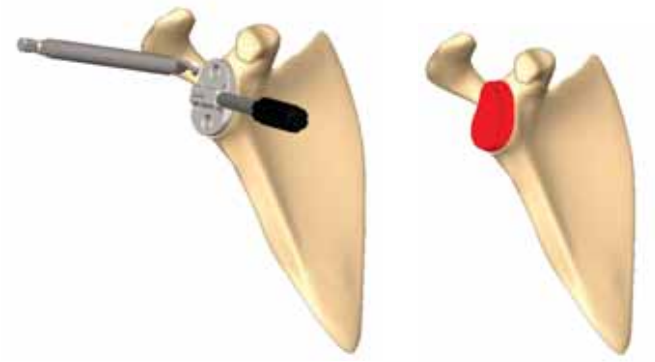

figure 23a and 23b

Preparation for PE glenoid

Determine the size by the use of the glenoid drill guide.

Connect the modular handle to the glenoid drill guide and place it onto the articulating bone surface of the glenoid (fig. 21a). If necessary repeat this step with the glenoid drill guide of the other size. After the size is determined, please insert a guide pin through the central hole of the glenoid drill guide (fig. 21b).

Please remove the drill guide afterwards (fig. 22a). Choose the glenoid reamer of the correct size and remove the remaining cartilage and bone from the glenoid surface. Make sure that the reamer is turning already before it hits the bone surface. Ream until the reamer has reached the subchondral bleading bone (fig. 22b).

Remove the reamer, but leave in the guide pin.

Place again the previously used glenoid drill guide on the surface of the bone and drill the cranial and the caudal peg hole using the special drill with stop (fig. 23a).

Remove all instruments and continue with the trial reduction.

Impact the glenoid trial of the correct size (fig. 23b) and perform a trial reduction.

Notice: All glenoid components can be combined with all cap size.

Glenoid preparation cementless

Mark the centre of the glenoid (fig. 24). Put the glenoid drill guide (fig. 25a) on the marked centre of the bearing area and insert the 3.2mm pin.

Notice: implantcast offers CT based patient specific drill guides on special request.

figure 24

Connect the drill guide with the handle and place it onto the surface of the glenoid bone (fig. 25a). Insert the 3.2mm bone Pin through the central hole of the drill guide (fig. 25b). Remove the drill guide afterwards.

Use the glenoid reamer 30mm to expose the subchondral bone. The reamer is guided by the guide wire (fig. 26a). Please use the cannulated drill to prepare the bone for the central peg (fig. 26b). Remove the guide pin.

Notice: The central hole for the hollowed peg is slightly smaller than the peg. So the peg is stabilised by press-fit. The subchondral bone offers the ideal mounting of the implant.

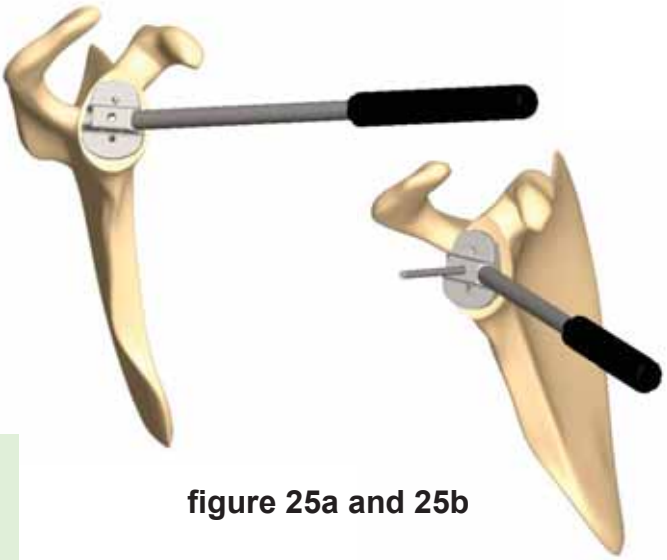

figure 25a and 25b

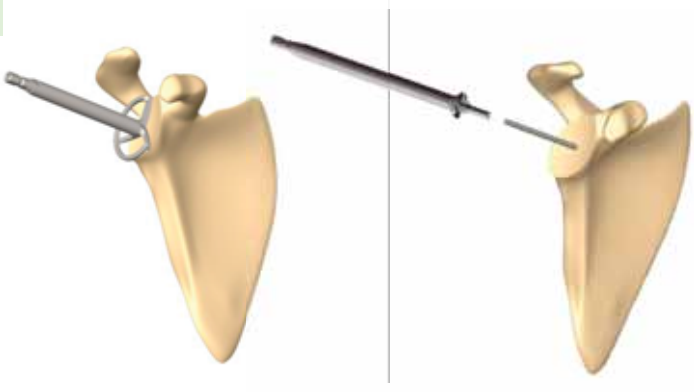

figure 26a and 26b

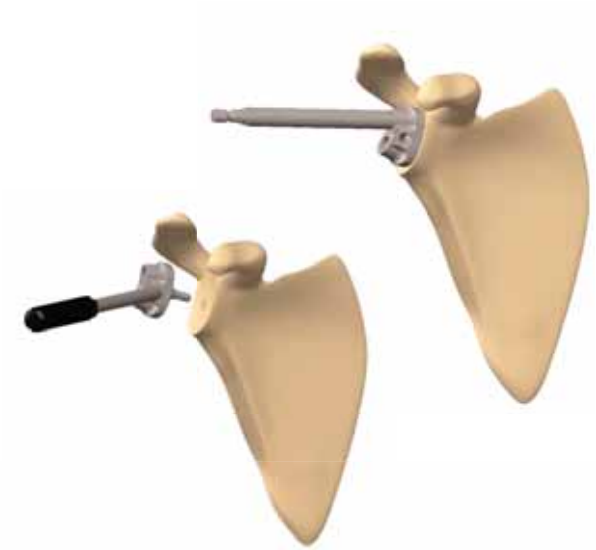

figure 27a and 27b

Insert the special drill guide for the cranial and caudal groove of the implant (fig. 27a).

Use the drill with stop through the drill guide to prepare the holes for the grooves (fig. 27b).

Remove the drill guide Connect the glenoid with the cannulated glenoid impactor. Align the upper screw hole to the coracoid-base. If necessary insert again the guide pin into the central hole.

figure 28

Impact the implant carefully until the glenoid rests completely flush on the reamed bone surface (fig. 28). Please release the impactor after seating of the implant and remove the guide pin.

Notice: The central hole will be slightly smaller than the peg. The Peg will be locked in the bone by pressfit.

figure 29

Drill die holes for the locking screws by the use of the 2.0 mm drill. You can freely angle the screw up to 15 degrees, as the screw head is self-threading into the glenoid material (fig. 29).

Determine the screw length and insert the screws of the correct lengths.

Determine the screw length and insert the screws of the correct lengths (fig. 6a and 6b). Lock the screws with the hex screw driver 2.5mm.

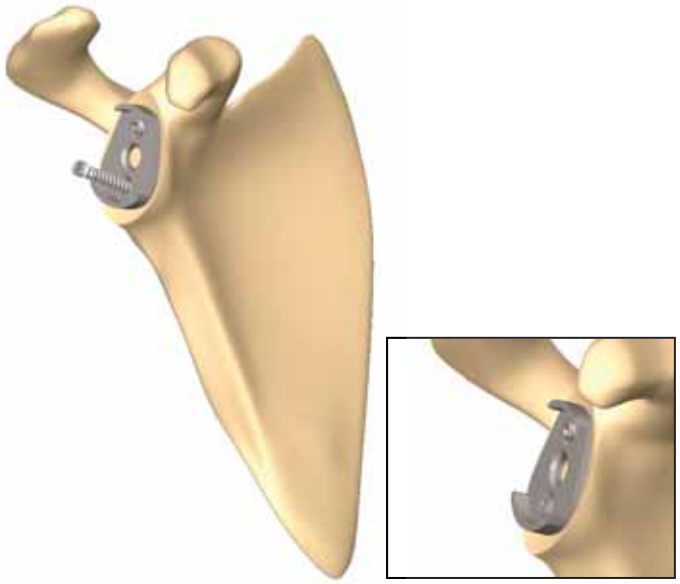

figure 30a and 30b

Add the trial insert of the appropriate size (fig. 31a and 31b) and perform a trial reduction.

Remove the trial insert after the trial reduction.

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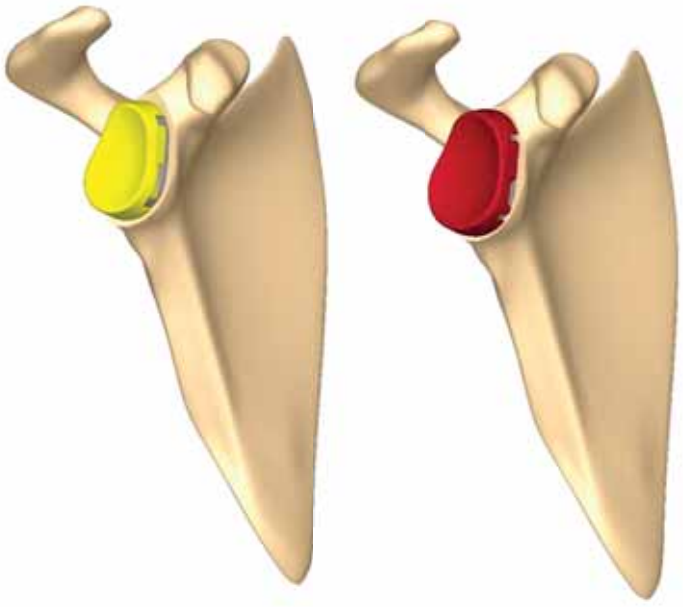


figure 31a and 31b

figure 32a and 32b

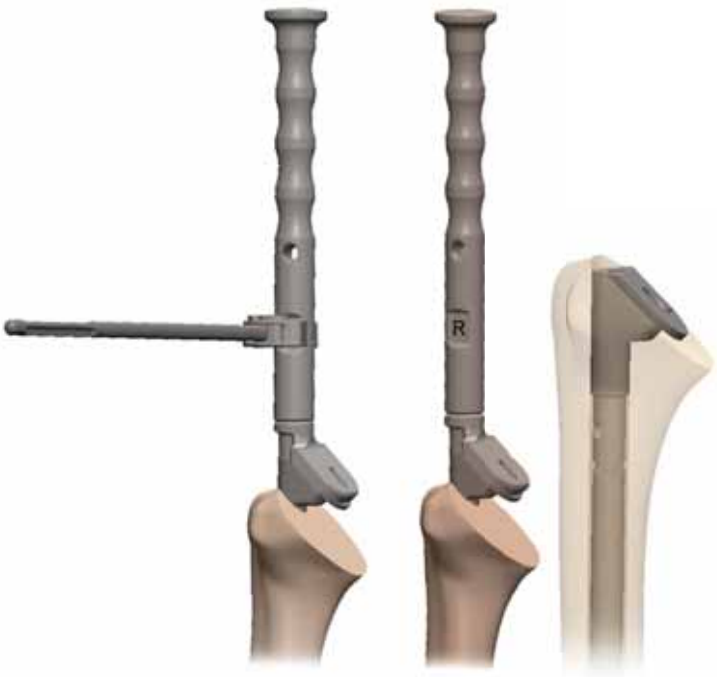


figure 33a, 33b and 33c

trial reduction

Remove the protection plate. Mount the correct trial stem and the trial metaphyseal component and the possibly used trial extension piece and lock the components with a trial screw of the correct length (table 2 for the long metaphyseal component, table 3 for the short metapysela component) (fig. 32a and 32b).

Extension	Extension piece	Screw
0mm	no	35mm
5mm	5mm	40mm
7,5mm	7.5mm	40mm

Table 2: screw length for the long metaphyseal component

Extension	Extension piece	Screw
0mm	no	25mm
5mm	5mm	30mm
7.5mm	7.5mm	30mm
10mm	10mm	35mm
12.5m	7.5mm & 5mm	35mm
15mm	10mm & 5mm	40mm
17.5mm	10mm & 7.5mm	40mm

Table 3: screw length for the short metaphyseal component

Insert the assembled trial implant into the medullary canal. Please use the special impactor to guide the trial in the correct position. The collar should rest on the resected bone surface (fig. 33c).

Please double check the correct retrotorsion by the use of the modular retrotorsion guide if needed (fig. 33b).

The body of the trial metaphyseal only has the core dimensions of the final implant component without fins. Thus the pressfit fixation is not compromised (fig. 33c).

Add the trial cap (fig. 34a) or the CTA trial (fig. 34b) cap of the previously determined size and height to the trial implant.

Notice: A CTA cap is intended for the use as a hemi-arthroplasty, to treat a patient after an inverse shoulder has failed. Although the curvation of the caps allows the combination with all glenoid components it is normally not combined with glenoid implant.

figure 34a and 34b

Perform a trial reduction and check the range of motion and the stability as well as the offset of the joint (fig. 35).

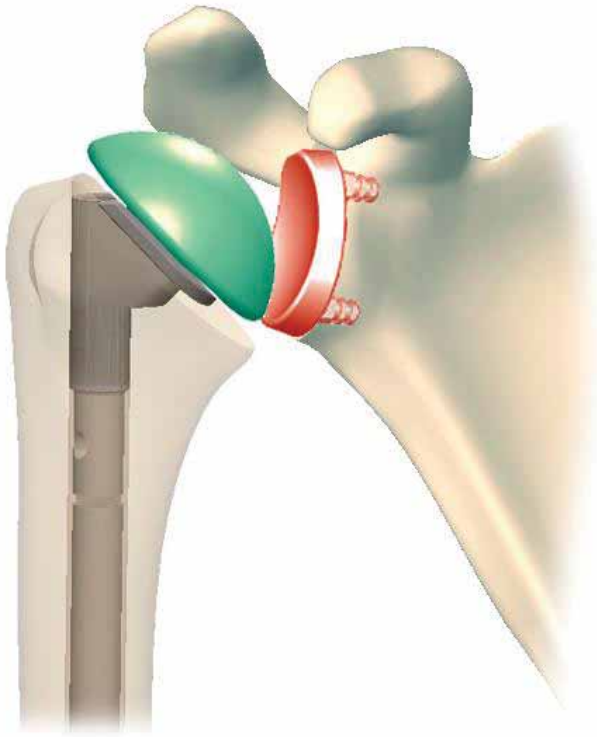


figure 35

figure 36a and 36b

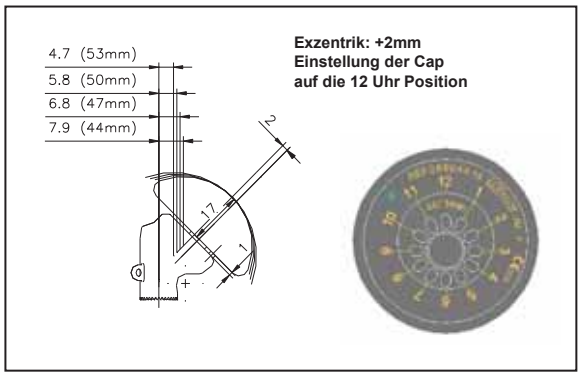


figure 37a

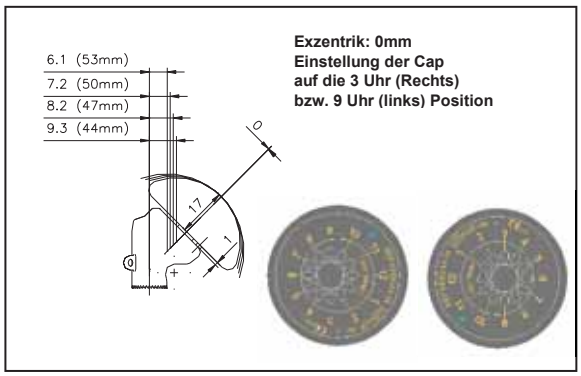


figure 37b

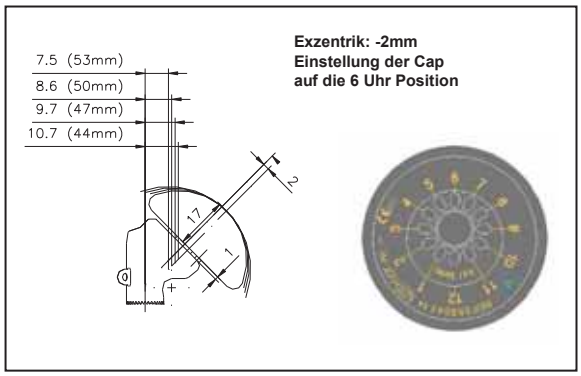


figure 37c

Adjustment of the Offset

If necessary, please change the eccentricity of the cap and adjust the rotation of the cap (fig. 36a) and the size and height of the cap. You will find the laser markings (1-12) also on the back of the final implant components (fig. 36b).

Alternatively the position and alignment of the prosthesis can be optimized by changing the modular parts (cap, extension piece).

To have the closest reconstruction of the anatomical circumstances and to optimize the alignment of the prosthesis the surgeon has the choice between 4 different cap diameters (44 mm, 47 mm, 50mm and 53 mm) with respectively 3 different heights (14 mm, 17 mm, 20 mm).

The eccentricity of the caps enables the variation of the mediolateral offset between 1 and 12 o'clock positions (turn of respectively 30 degrees) between -2 mm and +2 mm. (fig. 36a and 36b).

Because of this choice, the surgeon can position any medial offset from 2.6mm and 12.8mm (4.7 to 10.7mm shown on the fig. 37a to 37c). Changing the height of the cap + – 3 mm effects a change of the medial offset + – 2.1 mm compared to the data stated below (fig. 37a to 37c).

The exact height of the prosthesis can be changed by the use of the extension pieces of 5 mm, 7.5 mm and 10 mm.

Use the cap remover to release the cap from the trial implant (fig. 33).

figure 38

Screw the adapter M10x1 into the thread of the trial metaphyseal component. Fix the slap hammer to th adapter remove the trial implant (fig. 34a and 34b).

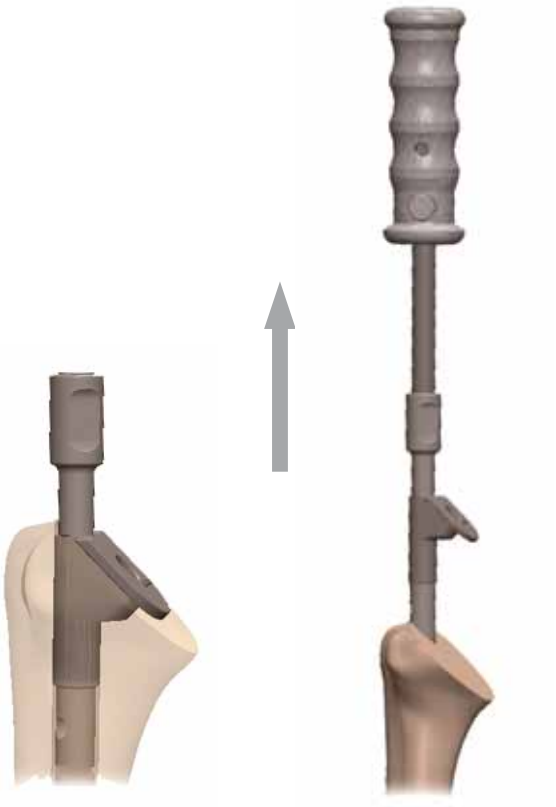


figure 39a and 39b

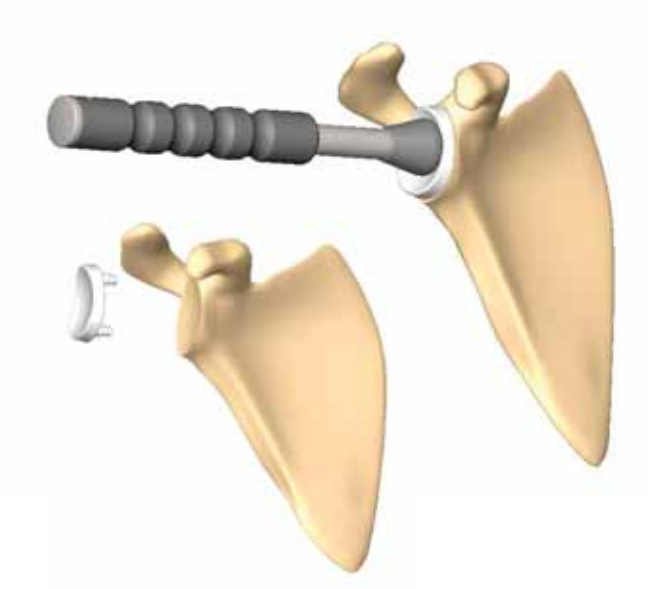


figure 40a and 40b

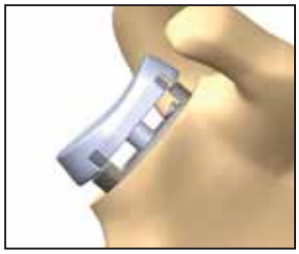


figure 41

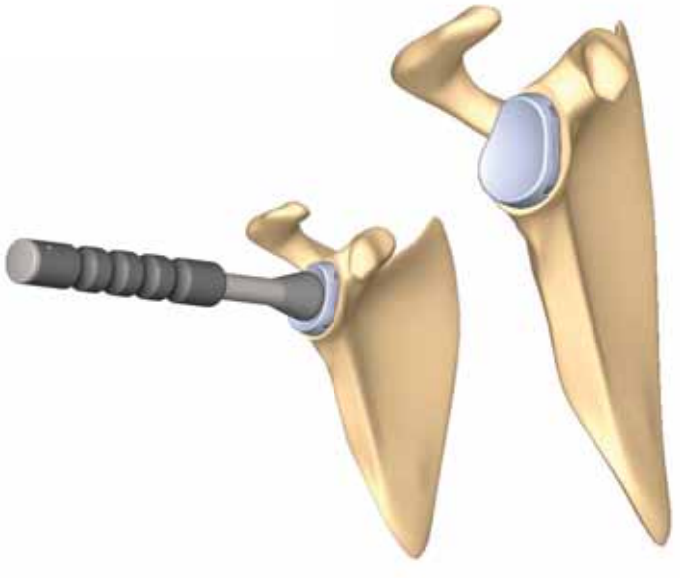


figure 42a and 42b

Implantation of the component

cemented PE-glenoid

Please put bone cement on the glenoid surface. Impact the glenoid component by the use of the glenoid impactor (fig. 35a and 35b).

cementless glenoid

Combine the PE-insert of the previously determined size with the glenoid (fig. 41).

Impact the PE-insert by the use of the special impactor. Make sure that the insert is completely seated and has reached the inner surface of the glenoid (fig. 42a and 42b).

Assemble the implant components of the correct sizes and lengths, determined during the trial reduction (fig. 36a). Add the screw of the correct length (table 2 and table 3, page 19)

Notice: If a cemented stem is used, the stem implanted should be 2mm smaller than trial stem. When a cementless stem is used, the diameter of the stem is the same as the trial stem.

Place the asembled implant in the correct hole of the assembling block. Put the countering instrument on the top of the metaphyseal component (fig. 36a and 36b).

figure 43a and 43b

figure 44a and 44b

Slide the torque screw driver through the sleeve of the countering instrument and lock the implant components (fig. 44a and 44b).

figure 45

When the arrow on the handle of the torque screw driver has reached the 15Nm mark, the recommeded torque is applied (fig. 45).

Fix the safety screw in the same way.

For cemented treatment please insert the intramedullary plug and the bone cement into the intramedullary canal.

Notice: Only the stem component should be cemented, the metaphyseal component should not be cemented.

Thus a conversion to an inverse shoulder is possible without removing the stem.

Insert the implant and impact it until the collar will rest on the resected bone surface (fig. 46a and 46b).
If necessary please double check the correct retrotorsion (fig. 46a).
Carefully impact the implant, because the fins of the metaphyseal component will prepare the proximal bone.

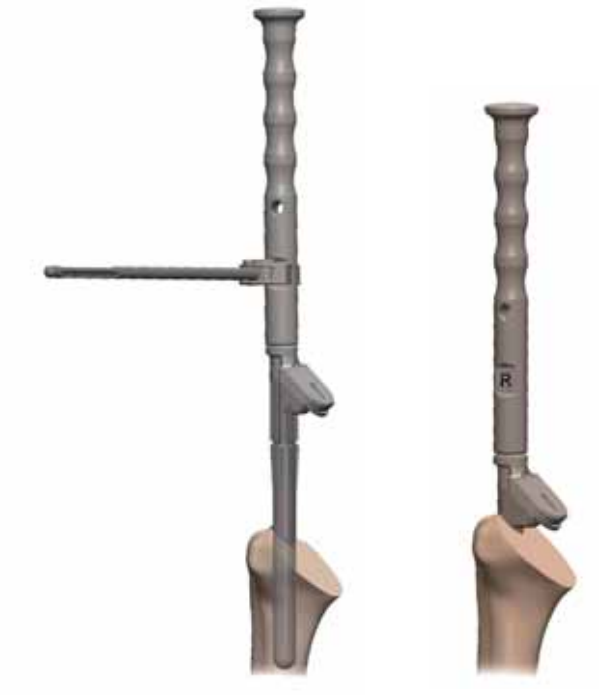


figure 46a and 46b

If preferred perform another trial reductio by the use of the trial cap.

Please clean the taper of the metaphyseal component and impact the cap (fig. 47a) or the CTA cap (fig. 47b) of the correct size an height by the use of the cap impactor (fig. 47a).

Reduce the joint and check the stability of the joint.

Reconstruction of the soft tissue

Existing lesions of the rotator cuff should be closed. It is also indicated to close the rotator cuff intermittent because it contributes to secure the antero-posterior cuff. Pay attention that the long biceps filament is andisturbed. If this is not possible a tenodose or resection has to be considered. The wound closure has to be done with redon drains.

figure 47a and 47b

figure 48

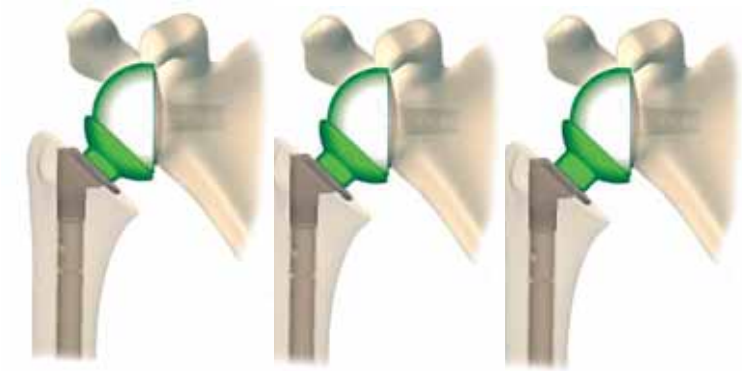


figure 49

figure 50a and 50b

Trial reduction of an inverse prosthesis

Notice: In case of a revision and a conversion from an anatomical to an inverse prosthesis it is mandatory to reduce the height of the prosthesis and correct the retrotorsion from 30° to at least 10° (see page 11, fig. 14a and 14b).

In a revision case the reduction of the height can be easily achieved by replacing the long metaphyseal component 40mm by the short metaphyseal component 30mm and leave the stem in place.

Thus the following description show the implantation of a short metaphyseal component 30mm.

Insert the inverse trial cap of a medium neck length M. The neck length of the inverse caps S, M and L differes by 3mm (fig. 50).

To prevent inferior impingement of the articulating surfaces and the scapula bone, the glenospheres 40 and 44mm can be placed in different eccentrical positions (9-3 o'clock) (fig. 50 a and 50b).

Screw the trial glenosphere to the previously implanted glenoid (fig. 50a) (see bone preparation page 16ff).

Perform a trial reduction and stability test as well as a range of motion check. If necessary adjust the eccentricity of the inverse cap and change the neck length (fig. 49).

Remove the trial cap first.
Screw the adapter M10x1 into the thread of the trial metaphyseal component. Fix the slap hammer to th adapter remove the trial implant (fig. 51a and 51b).

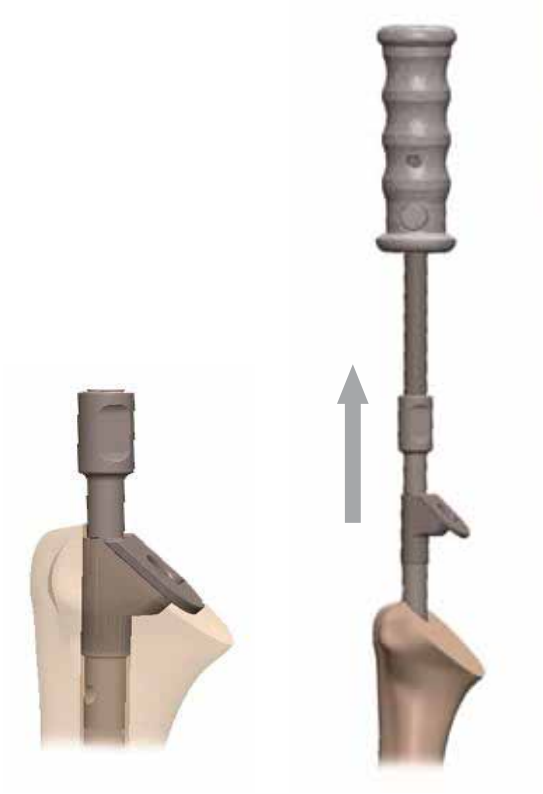


figure 51a and 51b

Assemble the implant componenets of the correct sizes and lengths, determined during the trial reduction (fig. 52a). Add the screw of the correct length (table 2 and table 3, page 19)

Notice: If a cemented stem is used, the stem implanted should be 2mm smaller than trial stem. When a cementless stem is used, the diameter of the stem is the same as the trial stem.

Place the asembled implant in the correct hole of the assembling block. Put the countering instrument on the top of the metaphyseal component (fig. 52a and 52b).

figure 52a and 52b

Slide the torque screw driver through the sleeve of the countering instrument and lock the implant components (fig. 53a and 53b).

figure 53a and 53b

When the arrow on the handle of the torque screw driver has reached the 15Nm mark, the recommeded torque is applied (fig. 53c).

Fix the safety screw in the same way.

figure 53c

For cemented treatment please insert the intramedullary plug and the bone cement into the intramedullary canal.

Notice: Only the stem component should be cemented, the metaphyseal component should not be cemented.

Insert the implant and impact it until the collar will rest on the resected bone surface (fig. 54a and 54b) chisel by the use of the modular retrotorsion instrument set to 10°. This instrument is used over the handle of the box chisel at the flat portion marked with R and L (fig. 54a).

If necessary please double check the correct retrotorsion. Carefully impact the implant, because the fins of the metaphyseal component will prepare the proximal bone.

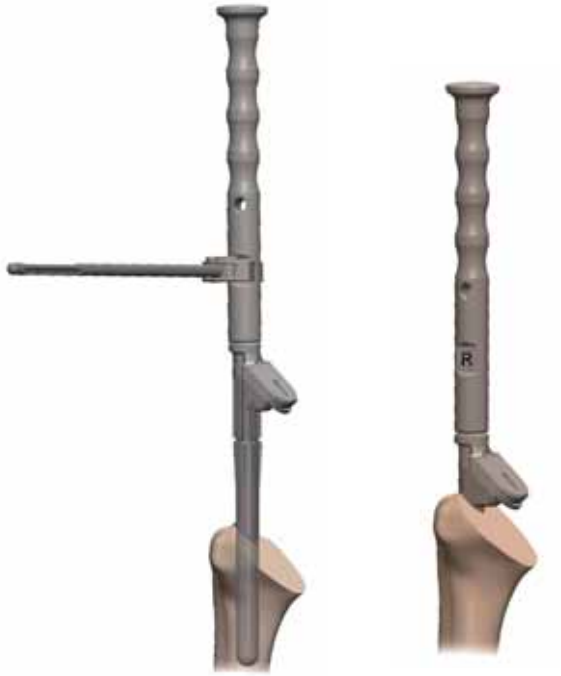


figure 54a and 54b

Use of the captured glenosphere positioner

Choose the glenosphere of the previously determined size and place it into the captured glenospher positioner. Lock the screw **A** until the two gripper arms hold the glenosphere in place (fig. 55). Then lock screw **B** until the impactor part is tensioning glenosphere securely (fig. 55).

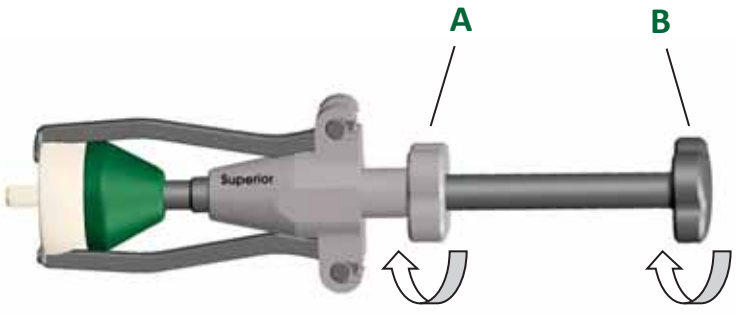


figure 55

figure 56a and 56b

Adjust the glenosphere to the correct rotation, determined during the use of the trial glenosphere (fig. 56a and 56b). Make sure that the rotational marking (9 to 3 o'clock) is orientated towards the superior gripper arm and tighten the glenosphere by the locking of the screw **B** (fig. 55).

figure 57a and 57b

Impaction of the glenosphere

Position the glenosphere onto the glenoid Please hit the platform of the captured impactor lightly to lock the glenosphere to the glenoid. Unlock the captured impactor by unlocking the screws **A** und **B** (fig. 55).The lip of the glenosphere is locked to the rim of the glenoid (fig. 57a). Make sure that glenosphere is positioned with the correct eccentricity (fig. 57b).

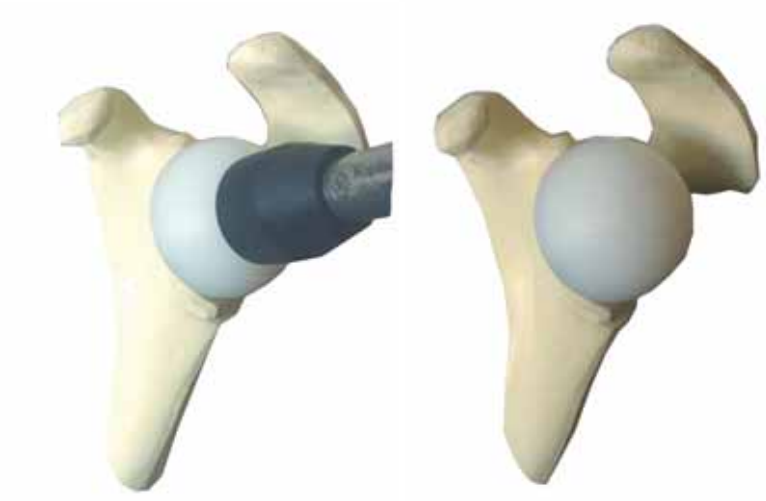


figure 58a and 58b

Use the head impactor to ensure the connection between the components (fig. 58a).

Make sure the coupling of the two implant components is complete (fig. 58 b).

If preferred perform another trial reduction by the use of the trial cap inverse.

Please clean the taper of the metaphyseal component and impact the inverse cap of the correct size an height previously determined during the trial redcution, by the use of the cap impactor (fig. 59).

figure 59

Reduce the joint and check the joint stability Reduce the joint and perform a final stability check of the joint (fig. 60a).

If necessary, please use the retentive invers cap to achieve joint stability (fig. 60b).

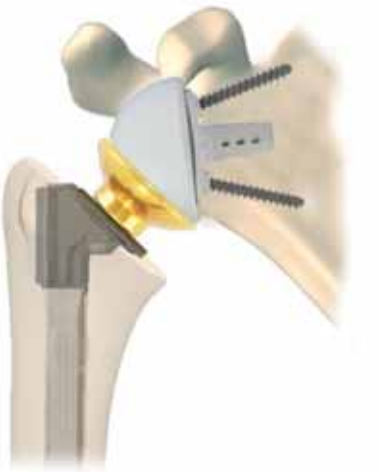


figure 60a

With the preservable structures the rotator cuff should be reconstructed.

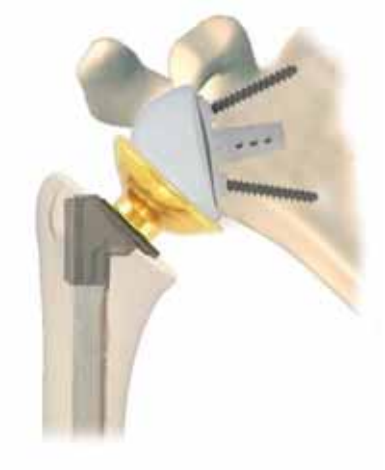


figure 60b

Postoperative treatment and X-Ray controls after AGILON®

1. day:	o **Gilchrist's bandage** o **isometric exercises** o **decongestant (ice) and tonus-lowering actions on the neck, shoulder girdle and arm**
2. day:	o **removal of the redon drains** o **bearing of the arm on an abduction pad for 3 weeks at 30° secured inner rotation of the forearm** o **1. x-ray control in a.p.-layer**
3. – 10. day:	o **isometric exercises** o **decongestant (ice, lymphatic drainage) and tonus-lowering actions on the neck, shoulder girdle and arm** o **mobilization of the adjacent joints and scapula pattern**
10. day:	o **beginning of passive physiotherapy:** **30° abd., 30° flex., 60° iro, 0° aro** o **2. x-ray control in 2 layers for the control of the position of the prosthesis and the tubercular. If a dislocation of the tubercular is detected, the revisional operation has to be made immediately**
21. day:	o **passive physiotherapy:** **60° abd., 60° flex., 60° iro, 0° aro** o **3. x-ray control in 2 layers for the control of the postion of the prosthesis and the tubercular.**
35. day:	o **active assistive physiotherapy:** **90° abd., 90° flex., 60° iro, 30° aro** o **water aerobics without water resistance**
42. day:	o **liberalization of full range of motion** o **active physiotherapy without resistance** o **occupational therapy** o **4. x-ray control in 2 layers for the control of the position of the prosthesis and the tubercular**
42. – 84. day:	o **the intention is to reach a humane and fully function of the shoulder**

IMPLANTS

AGILON® metaphyseal component incl. safety screw
mat.: implatan®; $TiAl_6V_4$ acc. to ISO 5832-3

REF	length
3820-0001 trauma	30mm
3820-0002 primary	40mm
3820-0003 primary short	30mm

AGILON® extension piece M6
mat.: implatan®; $TiAl_6V_4$ acc. to ISO 5832-3

REF	length
3820-0050	5mm
3820-0075	7.5mm
3820-0100	10mm

AGILON® screw M6
mat.: implavit®; CoCrMo acc. to ISO 5832-12 with TiN-coating

REF	length
3820-0025	25mm
3820-0030	30mm
3820-0035	35mm
3820-0040	40mm

AGILON® stem, cementless M6
mat.: implatan®; $TiAl_6V_4$ acc. to ISO 5832-3

REF	size
3830-6010	10/ 60mm
3830-6011	11/ 60mm
3830-6012	12/ 60mm
3830-6013	13/ 60mm
3830-6014	14/ 60mm
3830-6015	15/ 60mm
3830-6016	16/ 60mm
3830-6017	17/ 60mm
3830-6018	18/ 60mm
3831-2010	10/120mm
3831-2011	11/120mm
3831-2012	12/120mm
3831-2013	13/120mm
3831-2014	14/120mm
3831-2015	15/120mm
3831-2016	16/120mm
3831-8009	9/180mm*
3831-8010	10/180mm*
3831-8011	11/180mm*
3831-8012	12/180mm*
3831-8013	13/180mm*
3831-8014	14/180mm*
3831-8015	15/180mm*
3831-8016	16/180mm*
3832-4009	9/240mm*
3832-4010	10/240mm*
3832-4011	11/240mm*
3832-4012	12/240mm*
3832-4013	13/240mm*
3832-4014	14/240mm*
3832-4015	15/240mm*
3832-4016	16/240mm*

* stems with 2 interlocking holes ø4mm. These stems are not shipped with loan shipments on the regular base and might be ordered additionally!

IMPLANTS

***N**: For anti-allergic treatment TiN coated implants are available!

AGILON® stem, cemented M6 *N

mat.: implavit®, CoCrMo acc. to ISO 5832-4

REF	size
3820-9006	6/90mm
3820-9008	8/90mm
3820-9010	10/90mm
3820-9012	12/90mm
3821-2006	6/120mm
3821-2008	8/120mm
3821-2010	10/120mm
3821-2012	12/120mm

AGILON® cap

mat.: implatan®; $TiAl_6V_4$ acc. to ISO 5832-3 with TiN coating

REF	size
3800-4414	44/14mm
3800-4417	44/17mm
3800-4420	44/20mm
3800-4714	47/14mm
3800-4717	47/17mm
3800-4720	47/20mm
3800-5014	50/14mm
3800-5017	50/17mm
3800-5020	50/20mm
3800-5314	53/14mm
3800-5317	53/17mm
3800-5320	53/20mm

IMPLANTS

AGILON® CTA cap
mat.: implatan®; $TiAl_6V_4$ acc. to ISO 5832-3 with TiN coating

REF	size
3822-4414	44/14mm
3822-4417	44/17mm
3822-4420	44/20mm
3822-4714	47/14mm
3822-4717	47/17mm
3822-4720	47/20mm
3822-5014	50/14mm
3822-5017	50/17mm
3822-5020	50/20mm
3822-5314	53/14mm
3822-5317	53/17mm
3822-5320	53/20mm

AGILON® cap inverse
mat.: implatan®; $TiAl_6V_4$ acc. to ISO 5832-3 with TiN coating

REF	size
3801-3600	36mm S
3801-3605	36mm M
3801-3610	36mm L
3801-4000	40mm S
3801-4005	40mm M
3801-4010	40mm L
3801-4400	44mm S
3801-4405	44mm M
3801-4410	44mm L

AGILON® retentive cap inverse
mat.: implatan®; $TiAl_6V_4$ acc. to ISO 5832-3 with TiN coating

REF	size
3801-5600	36mmS
3801-5605	36mm M
3801-5610	36mm L
3801-6000	40mm S
3801-6005	40mm M
3801-6010	40mm L
3801-6400	44mm S
3801-6405	44mm M
3801-6410	44mm L

cancellous screw ∅ 4 mm
mat.: implatan®; $TiAl_6V_4$ acc. to ISO 5832-3

REF	length
5793-4026	26 mm
5793-4028	28 mm
5793-4030	30 mm
5793-4032	32 mm
5793-4034	34 mm

IMPLANTS

glenoid cementless anatomical
mat.: pure titanium (cpTi) acc.to ISO 5832-2 with implaFix® HA, HA-coating acc. to ISO 13779-2

REF	Size
3800-4028	2 short
3800-4029	2 long
3800-4009	3 short
3800-4010	3 long

glenoid PE-insert
mat.: UHMW-PE acc. to ISO 5834-2

REF	size
3803-1028	2
3803-1032	3
3803-1036	4

AGILON® PE-glenosphere
mat.: UHMW-PE acc. to ISO 5834-2

REF	size
3803-2836	2 36mm eccentrical
3803-2840	2 40mm eccentrical
3803-2844	2 44mm eccentrical
3803-3236	3 36mm neutral
3803-3240	3 40mm eccentrical
3803-3244	3 44mm eccentrical

cancellous screw angle stable lock Ø 4.2mm
mat.: implatan®; $TiAl_6V_4$ acc. to ISO 5832-3

REF	length
5794-4220	20 mm
5794-4222	22 mm
5794-4224	24 mm
5794-4226	26 mm
5794-4228	28 mm
5794-4230	30 mm
5794-4232	32 mm
5794-4234	34 mm
5794-4236	36 mm
5794-4238	38 mm
5794-4240	40 mm

PE glenoid cemented
mat.: UHMW-PE acc. to ISO 5834-2

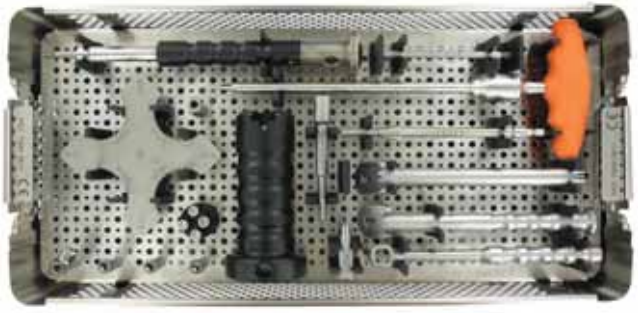
REF	size
3803-0032	2
3803-0036	3
3803-0040	4

glenoid cementless (optional for the inverse option)
mat.: pure titanium (cpTi) acc.to ISO 5832-2 with implaFix® HA, HA-coating acc. to ISO 13779-2

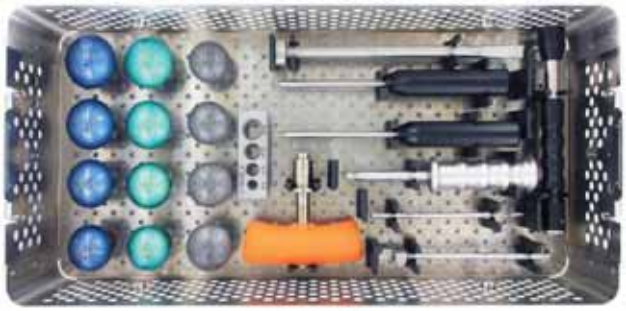
REF	size
3800-4001	3 round

INSTRUMENTS

AGILON® container 1
Upper tray
7999-3811

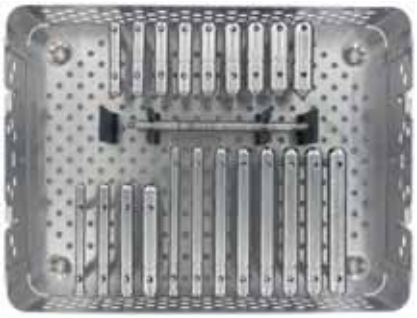


AGILON® container 1
Lower tray
7999-3811

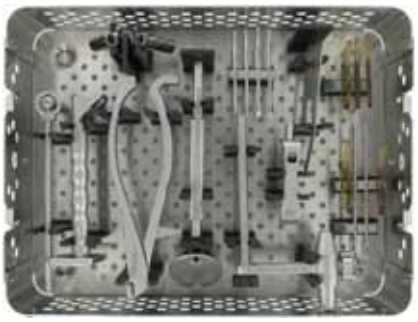


AGILON® container 2
7999-3812

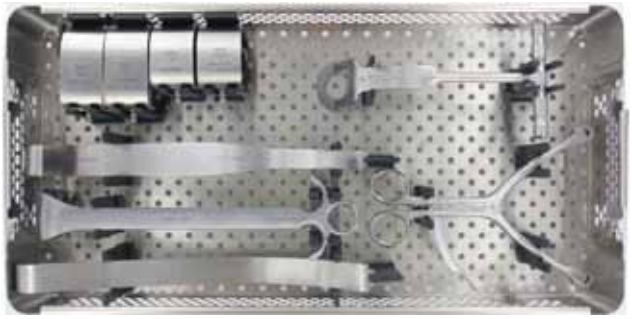
AGILON® container 3
7999-3813



AGILON® container 4
7999-3814



INSTRUMENTS



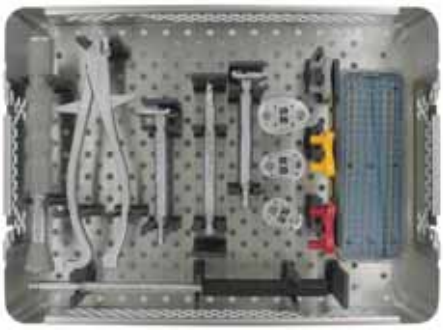
AGILON® shoulder retractor container
7999-3816 (OPTIONAL)

AGILON® container 9 (CTA trial cap)
7999-3819

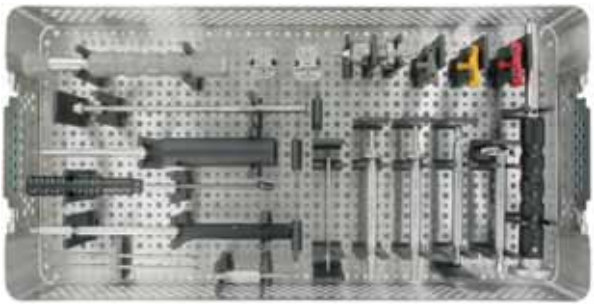
AGILON® container 12 (Retentive inverse trial cap)
7999-3822

INSTRUMENTS

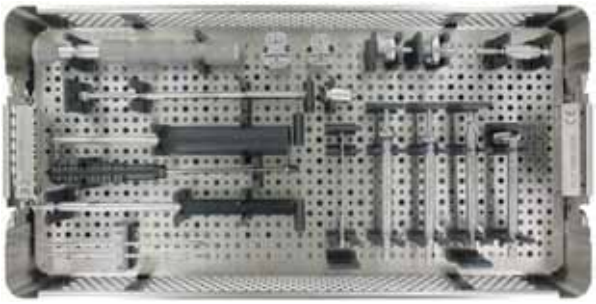
AGILON® PE-Glenoid sz. 2-4 container
7999-3836



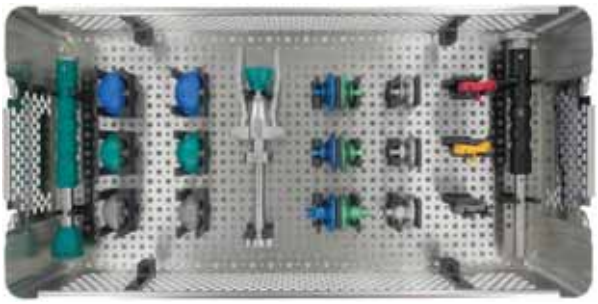
AGILON® Glenoid cementless sz. 2-4 container
7999-3837



AGILON® Glenoid cementless inverse sz. 2-4 container
7999-3838
Upper tray



AGILON® Glenoid cementless inverse sz. 2-4 container
7999-3838
Lower tray



AGILON® trial cap

REF	size
7800-4414	44/14mm
7800-4417	44/17mm
7800-4420	44/20mm
7800-4714	47/14mm
7800-4717	47/17mm
7800-4720	47/20mm
7800-5014	50/14mm
7800-5017	50/17mm
7800-5020	50/20mm
7800-5314	53/14mm
7800-5317	53/17mm
7800-5320	53/20mm

CTA trial cap

REF	size
7820-4414	44/14mm
7820-4417	44/17mm
7820-4420	44/20mm
7820-4714	47/14mm
7820-4717	47/17mm
7820-4720	47/20mm
7820-5014	50/14mm
7820-5017	50/17mm
7820-5020	50/20mm
7820-5314	53/14mm
7820-5317	53/17mm
7820-5320	53/20mm

AGILON® trial metaphyseal component

7800-0102 primary	40mm
7800-0103 primary short	30mm
7800-0101 trauma	30mm

AGILON® trial extension piece

REF	length
7820-0150	5mm
7820-0175	7.5mm
7820-1000	10mm

AGILON® trial screw M6

REF	length
7820-0125	25mm
7820-0130	30mm
7820-0135	35mm
7820-0140	40mm

AGILON® trial glenoid

7802-0032	size 2
7802-0036	size 3
7802-0040	size 4

AGILON® glenoid trial insert

7803-1028	size 2
7803-1032	size 3
7803-1036	size 4

INSTRUMENTS

AGILON® guide rod
7801-0015

AGILON® reamer tapered
7801-0019

ic T-handle Zimmer-Jakobs
4223-0023

humerus head remover
8003-6101

Drill 3,2mm with stop
8100-2010

AGILON® stem impactor
7801-0012

AGILON® impacting sleeve
7801-0017

adapter for slap hammer M6
7801-0024

adapter for slap hammer M10x1
7801-0023

AGILON® impactor
7801-0014

head impactor
7512-4444

hexagon screw driver

REF	size
7608-1001	2.5mm
0280-1007	3.5mm
7608-1050	5.0mm

adapter for slap hammer M8x1
7801-0026

slide hammer short
4223-0031

AGILON® assembling block
7801-0021

INSTRUMENTS

ic adapter out AO in ic
7512-3602

rigid drill 240mm

REF	Diameter
7820-2408	8mm
7820-2409	9mm
7820-2410	10mm
7820-2411	11mm
7820-2412	12mm
7820-2413	13mm
7820-2414	14mm
7820-2415	15mm
7820-2416	16mm
7820-2417	17mm
7820-2418	18mm

rod for AGILON® trial stem
7800-2430

trial stem

REF	length	Diameter
7800-6010	60mm	10mm
7800-6011	60mm	11mm
7800-6012	60mm	12mm
7800-6013	60mm	13mm
7800-6014	60mm	14mm
7800-6015	60mm	15mm
7800-6016	60mm	16mm
7800-6017	60mm	17mm
7800-6018	60mm	18mm
7800-1208	120mm	8mm*
7800-1210	120mm	10mm*
7800-1211	120mm	11mm
7800-1212	120mm	12mm*
7800-1213	120mm	13mm
7800-1214	120mm	14mm*
7800-1215	120mm	15mm
7800-1216	120mm	16mm
7800-9008	90mm	8mm*
7800-9010	90mm	10mm*
7800-9012	90mm	12mm*
7800-9014	90mm	14mm*

* trial stems also used for the cemented stems!

humerus alignment guide
7820-0560

humerus resection protection cap
7801-0022

INSTRUMENTS

humerus alignment rod
7820-0561

humerus cutting block
7820-0550 135°

Humerus sizing template

REF	size
7820-0562	44mm
7820-0563	47mm
7820-0564	50mm
7820-0565	53mm
7820-0566	inverse

AGILON® box chisel
7801-0013 135°

glenoid positioner
7800-4064

glenoid drill guide
7800-4049 size 2
7800-4051 size 3
7800-4050 size 4

glenoid drill guide cementless anatomical
7800-4072 size 2
7800-4071 size 3

Modular handle for drill guide
7800-4063

glenoid drill
7800-4061

AGILON® retrotorsion guide modular
7820-0201

pin extractor
7512-0800

Peg drill guide for glenoid anatomic cementless
7800-4081 size 2
7800-4080 size 3

INSTRUMENTS

Resection check
4223-0009

AGILON® trial glenosphere

7802-2836	36mm	Size 2
7802-2840	40mm	Size 2
7802-2844	44mm	Size 2
7802-3236	36mm	Size 3
7802-3240	40mm	Size 3
7802-3244	44mm	Size 3

AGILON® trial cap inverse

REF	Size
7801-3600	36mm S
7801-3605	36mm M
7801-3610	36mm L
7801-4000	40mm S
7801-4005	40mm M
7801-4010	40mm L
7801-4400	44mm S
7801-4405	44mm M
7801-4410	44mm L

AGILON® retentive trial cap inverse

REF	Size
7801-5600	36mm S
7801-5605	36mm M
7801-5610	36mm L
7801-6000	40mm S
7801-6005	40mm M
7801-6010	40mm L
7801-6400	44mm S
7801-6405	44mm M
7801-6410	44mm L

quick release chuck small
4224-0021

drill A/O chuck 2.0mm
7700-0020

depth gauge
0282-1007

INSTRUMENTS

glenoid reamer 30mm universal
7801-4070

glenoid reamer
7800-4062 size 4

cannulated drill for glenoid cementless
7801-4075 short
7801-4076 long

fixation pin 3,2mm x 97mm (2 pcs)
4223-0008

glenoid inserter
7800-4001

glenosphere inserter
7801-0001

drill guide 2.0mm angled
0282-1020

guide wire 1.8mm
0051-0918 x 35mm (4 pcs.)
7800-4052 x 75mm (2 pcs.)

AGILON® captured glenosphere positioner
7801-0030

torque screw driver 15Nm 5mm
7512-0025

AGILON® countering instrument
7801-0020

AGILON® shoulder humeral head gauge
7800-4015

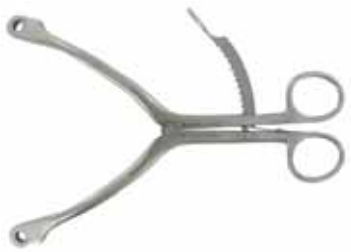
AGILON® assembling block
7820-0210

INSTRUMENTS

3,2mm drill length: 126mm (2x)
4221-0019

pin 3,2mm length: 77mm (4x)
4223-0029

pin inserter 3.2mm
4223-0006



Kölbel retractor frame
24-6102

Kölbel retractor valve 36x53mm (2x)
24-6104

Kölbel retractor valve 36x68mm (2x)
24-6105

Kölbel glenoid retractor 15mm
24-6012

Kölbel glenoid retractor 23mm
24-6013

Browne delta retractor
24-6123

humerus head retractor
7820-0211

guide wire 3.2mm x 150mm (2x)
3911-0000

Notes:

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