ARAMIS Reversed and Anatomical

Total shoulder prosthesis—Surgical technique

Table of contents

Note : Blue sentences are technical indications

The manufacturer of this prosthesis, doesn't practice medicine and can't recommend neither this surgical technique nor other techniques in specific cases.
The surgeon has to define the appropriate technique for each patient.
Read carefully the instruction of use.

ARAMIS Shoulder Prosthesis

A unique stem

With a common humeral stem, the prosthesis can be declined in an anatomical or a reversed prosthesis. This allows the surgeon to have a global approach of shoulder arthroplasty.

The stem is cemented (polished) or cementless (coated with titanium and hydroxyapatite).

The choice between an anatomical or a reversed prosthesis can be decided intra operatively and the humeral stem can evolve from one version to another.

Anatomical prosthesis

In order to respect anatomical variations, the stem is available with a CCD (cervico-diaphyseal) angle of 132° or 140°. The eccentric cone of the humeral heads allow an acute anatomical restoration. The mismatch between the humeral head and the glenoid is optimized to ensure long-term fixation.

Reversed prosthesis

The helicoidal blade allows an optimal fixation of the glenoid component in the scapula. The use of 1 to 4 screws completes the baseplate fixation. Secondary fixation is ensured by the titanium and hydroxyapatite coating (possibility of using a baseplate with standard or long peg).

The 38mm glenosphere of diameter 38mm is fixed to the baseplate with an internal screw system that avoids the risk of conflict between the screw and the insert.

The CCD-angle of the reversed version, which was fixed at 155° by Pr. Paul Grammont, was decreased to 140°. This varisation involves a benefic increase of the lever-arm of the deltoid, by a lateralization.

Associated with the optimization of the glenosphere's position, it reduces significantly notch apparition.

The use of a cup with an eccentric cone allow (with the same settings of medial and posterior deport as for the anatomical prosthesis) to reproduce the humeral anatomy and to optimize the center of rotation.

The stability and tensioning of the prosthesis is set and adjusted with 3 insert thicknesses.

An ergonomic instrument set

The instrument set is reduced. One case only to implant an anatomical or a reversed prosthesis. Use is acute and easy.

Generalities and surgical approaches

Indications

- Inflammatory severe artrhopathy or evolved arthrosis for which conservative or alternative treatments have failed or are suitable
- Arthropathy due to a degenerative disease
- Recent traumatism or traumatism sequelae
- Failure of a previous arthroplasty

Pre-operative planning

- Use templates to define component size and positioning

Fig. 1

Patient installation

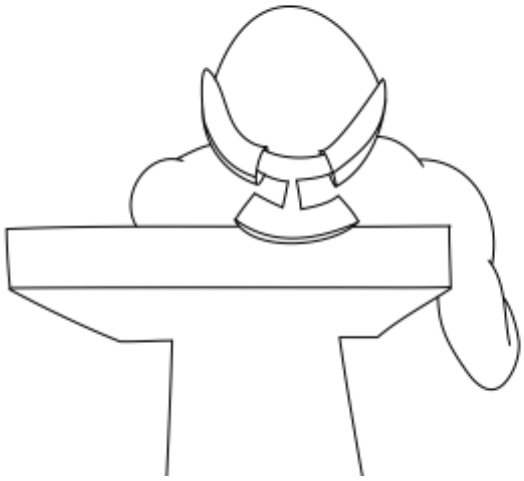


Fig. 2

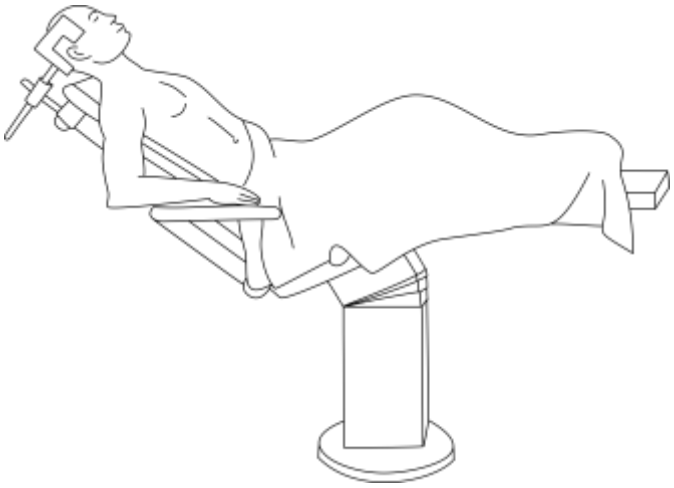


Fig. 3

The patient is sufficiently lateralized on the table :

- To release the posterior shoulder face
- And to put the arm in retropulsion

Deltopectoral approach

Deltopectoral approach

Skin incision begins to the coracoid tip, follows the deltopectoral groove and goes to the deltoidian V (Fig. 4).

Incision is outlying the groove, in its lower part to avoid the flanges of the axillary cavity.

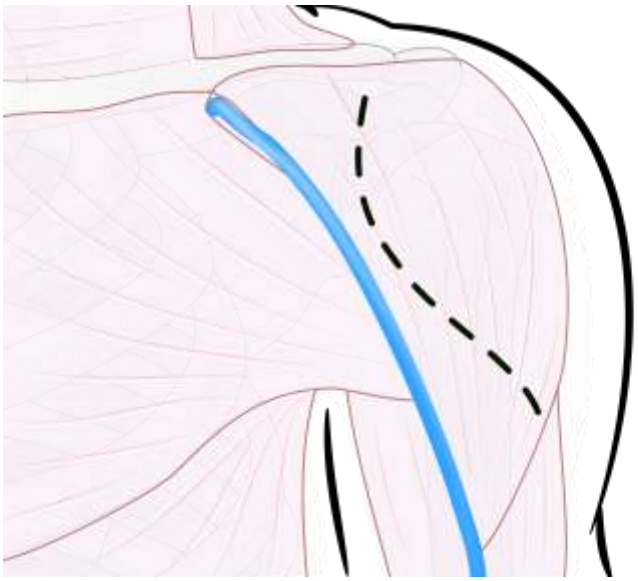


Fig. 4

Retract laterally the cephalic vein (Fig. 5) with the deltoid muscle.

Coagulate or connect the collateral veins present in the vein.

Open the path to the low part of the incision.

Separation between the deltoid and the pectoralis major is clearer in the upper part of the groove, where there is a cellular fat space (Mohrenheim fossa) that has to be exposed medially with a Faraboeuf retractor.

Incision of the clavi pectoro axillary aponeurosis at the lateral side of the conjoint tendon.

Place a self-retaining retractor.

Place a retractor behind the coracoid process.

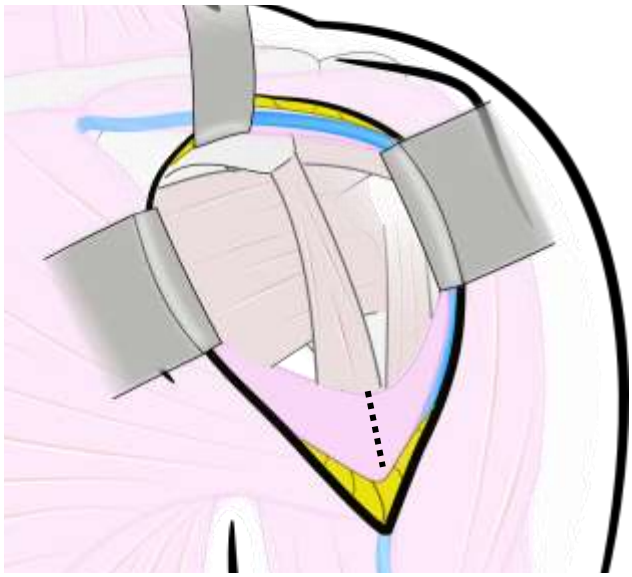


Fig. 5

Deltopectoral approach

Put the arm in abduction and external rotation.
Below, cut partially the pectoralis major tendon on the half of its length (Fig. 6).

Put the arm in abduction and internal rotation.
Locate the long biceps at the lower part of the incision.
If the subscapularis is present, identify the superior part of the tendon and at the lower part, ligature the circonflex vessels (Fig. 7).

The subscapularis tendon can be absent or very degenerative with a difficult anatomical identification; **conserve it.**

- Optional identification of the muculocutaneous nerve.
- Identification of the radial nerve when the arm is in neutral rotation elbow to body in anterior flexion.
- Identification of axillary nerve under the conjoint tendon, in front of the subscapularis up to the inferior side.

On a normal tendon, begin with an horizontal arthrotomy at the superior edge.
Perform a tag suture.
Dissect the tendon and the capsule following the anatomical neck at 15mm within the bicipital groove (Fig. 7).

Leave a tendinous part on the lesser tuberosity or lift the entire tendon with bone chips from the lesser tuberosity.

Save the inferior quarter of the tendon to boost the axillary nerve which passes near.

On a damaged tendon, access to joint is direct through the vertical incised capsule.

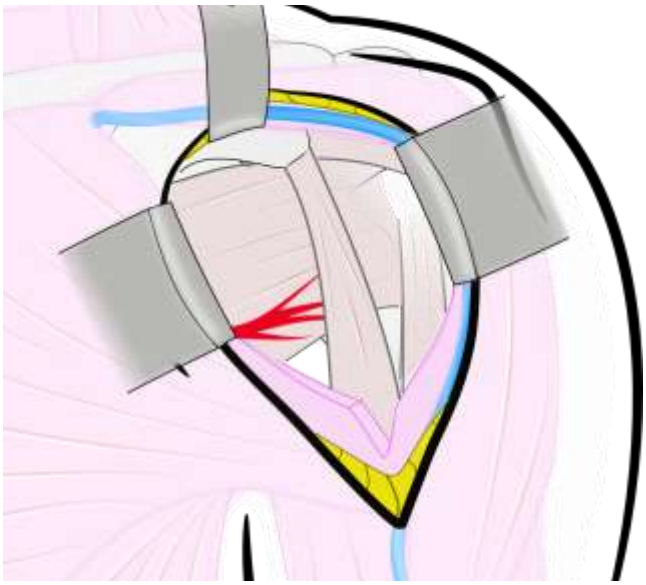


Fig. 6

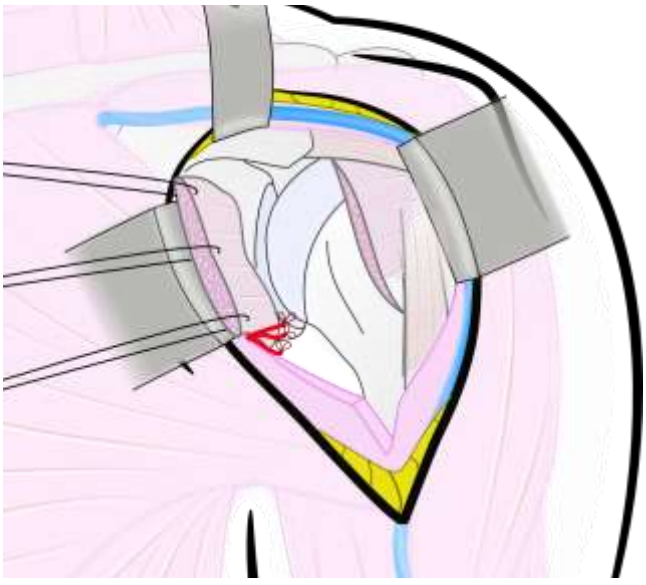


Fig. 7

Deltopectoral approach

Place a Trillat or a Fukuda retractor in the joint (Fig. 8).

Release the tendon and the subscapularis.

Do an anterior then inferior juxta glenoidal capsulotomy.

The inferior capsule release at bone contact is an important step in joint release and facilitates glenoid exposure.

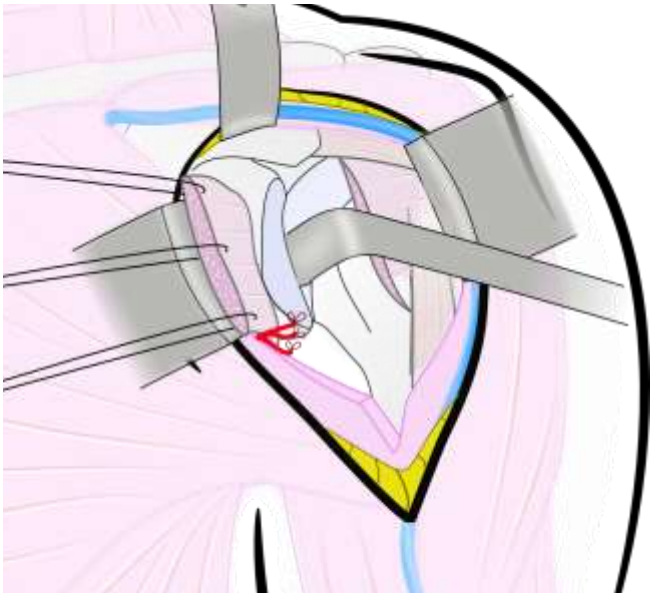


Fig. 8

Dislocation (Fig. 9) has to be done slowly and progressively in abduction, external rotation and retropulsion.

Resect the osteophytes of the anatomical neck with the bone rongeur or with a Lambotte blade.

A retractor is placed behind the head to retract the coraco-biceps.

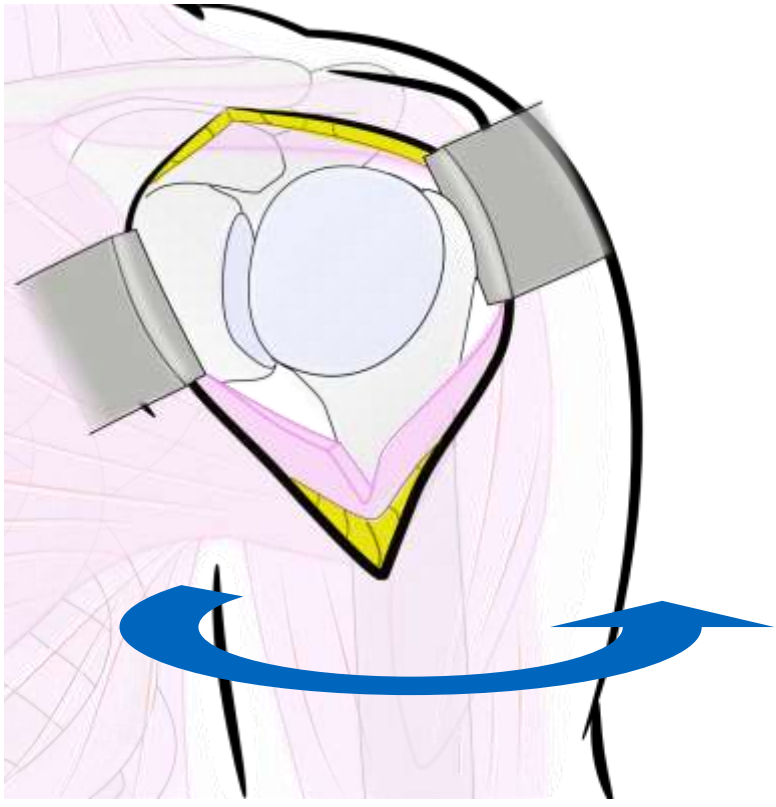
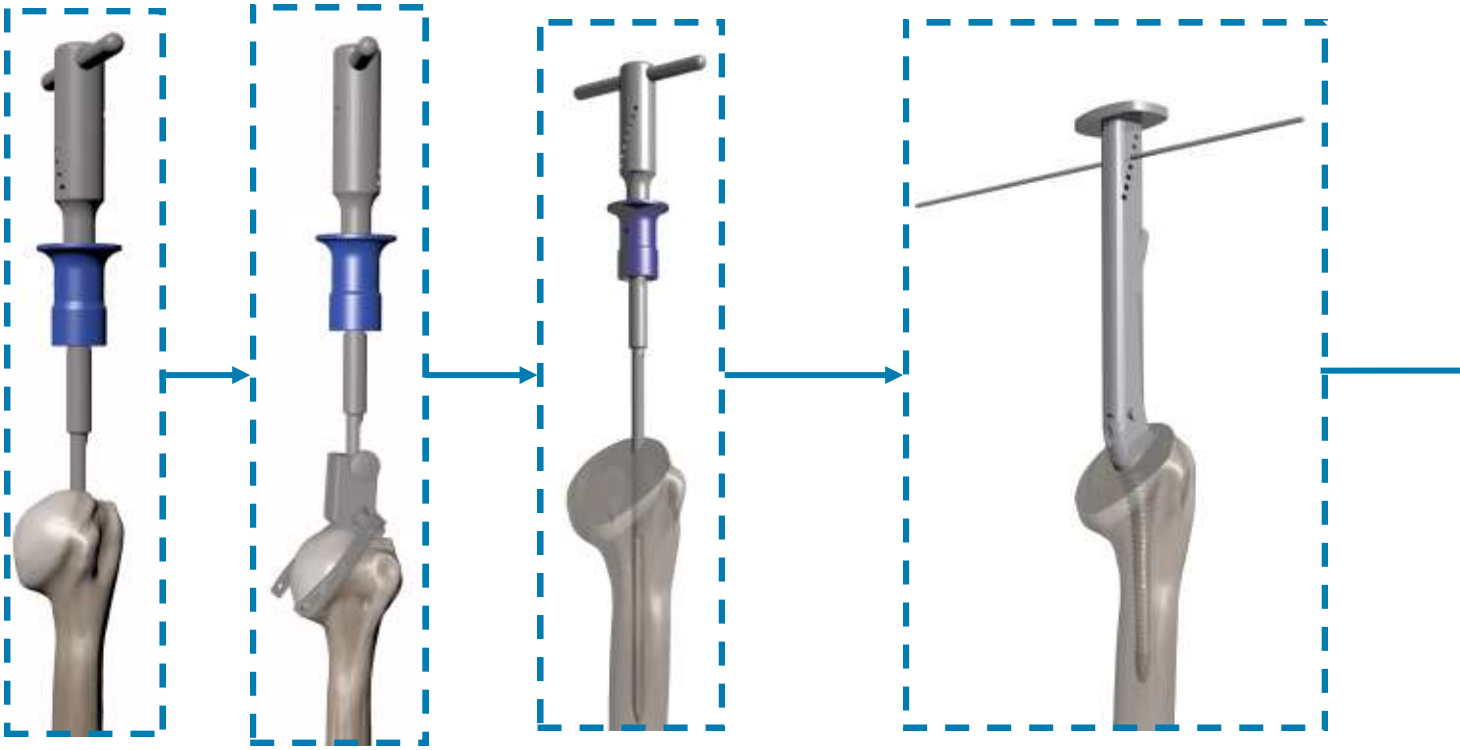


Fig. 9

Synopsis : Anatomical version

HUMERAL PREPARATION



Drill Ø7

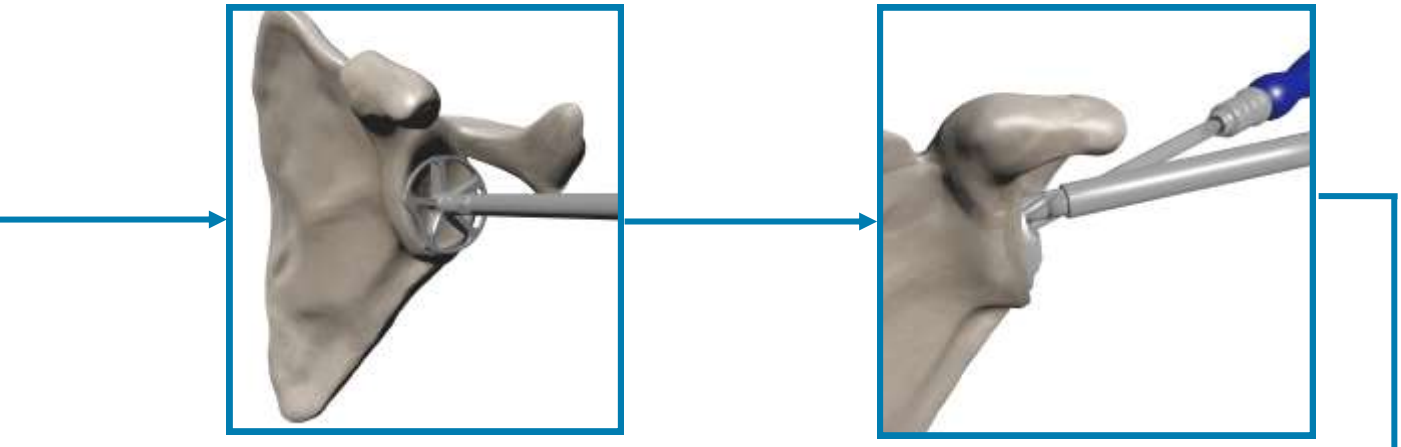
Humeral head resection

Diaphysis calibration

Preparation with retroversion setting

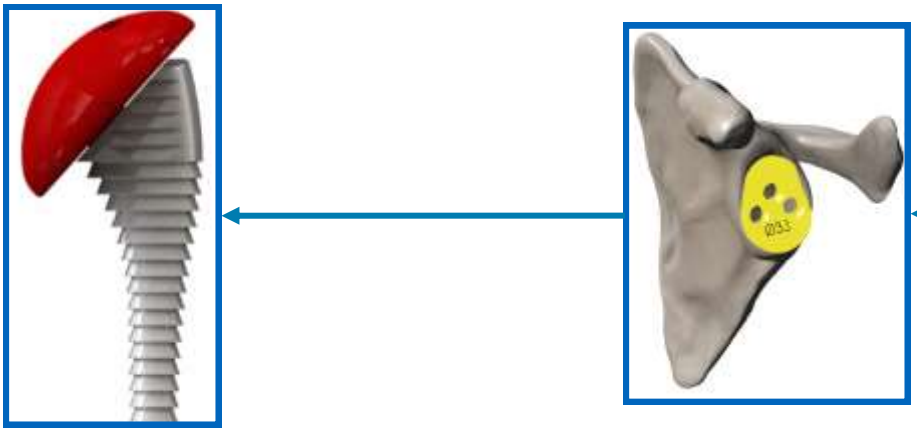
Synopsis : Anatomical version

GLENOID PREPARATION



Glenoid resurfacing

Glenoid peg drilling



Head trialing

Glenoid trialing

Humeral resection

- Introduce the first drill Ø7 on the highest point of the head and in contact with the anatomical neck (Fig. 10).

The entry point is located about 1 cm within and behind the bicipital groove (Fig. 11).

Fig. 10

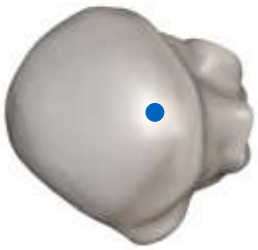


Fig. 11

- Insert the cutting guide in the starter drill Ø7 (Fig.13).
- Place the cutting guide and the drill in the medullary canal until bone contact.
- Fix the height of the cutting guide with the screw. The optimal cutting level corresponds to the anatomical neck line (Fig. 12).

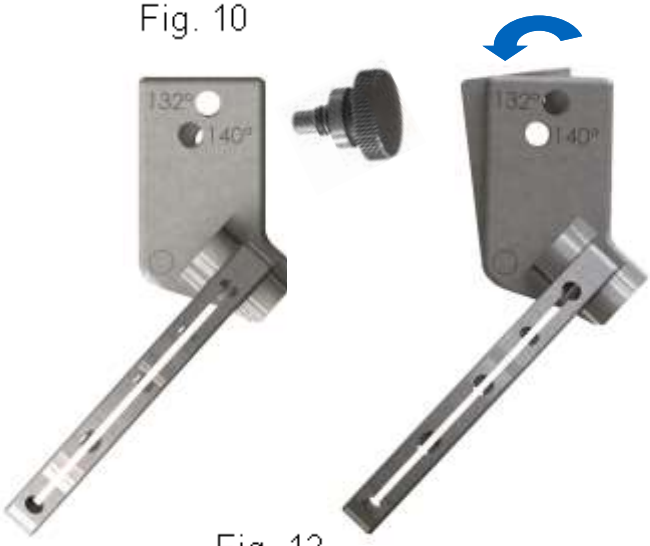


Fig. 12

The cutting guide can be set at 132° or 140°.

- Set the humeral cut height and tighten the roller on the drill flat spot level. The optimal cut level is the anatomical neck line.

Fig. 13

Humeral resection

- Set the desired retroversion in the handle with the orientation stem. It is aligned with the patient's forearm (Fig. 14).

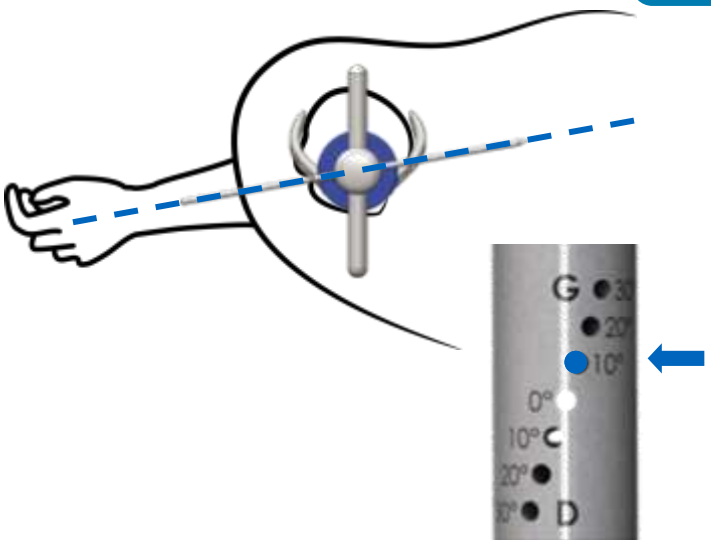


Fig. 14

Indications concerning height : the reference is the anatomical neck line. The resection may be done above (+2.5mm), below (-2.5mm) or in the cutting guide notch (Fig. 15). The resection has to be economic. An excess in resection induces a risk of instability.

Fig. 15

Restore a natural retroversion. Excessive retroversion may affect stability. An usual retroversion is about 20°.

- Start the cut in the cutting guide notch or on pins with an oscillating saw (Fig. 16 and 17). Then remove the cutting guide and complete the resection.

Fig. 16

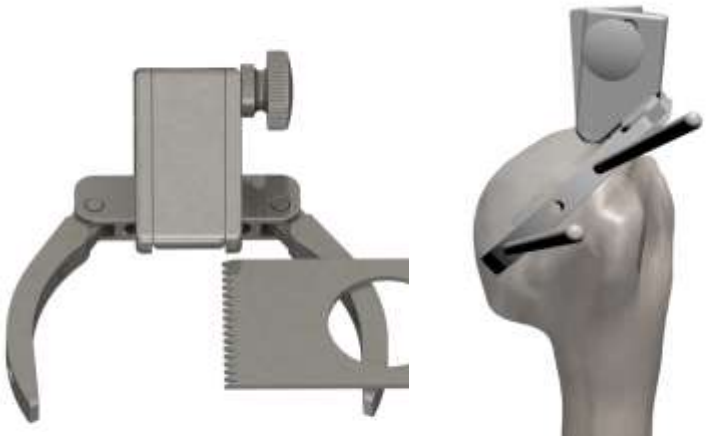


Fig. 17

Humeral preparation

- Identify the cut retroversion with the retroversion plate (EAAPRV0) and with a Lambotte blade (Fig.18).

In the case the humeral bone is very compact, make a bone cylinder equivalent to superior volume of the Ø7mm rasp with the retroversion plate.

- Calibration by increasing diameter of the drill until the optimal filling of the medullary canal (Fig. 19).
- The size of the last drill defines the maximal size of humeral stem.
- Push the spring in order to fix the rasp on the rasp holder (Fig. 22).
- Once the rasp is set, lock the rasp with the trigger (Fig. 23).
- Reproduce retroversion with the orientation stem on the handle (Fig. 20), en by following the mark previously made with the retroversion plate.
- Begin with the smallest rasp (Ø7) then increase sizes until obtaining a good primary stability.
  If the cut was made at 140°, push the rasp deeper until it reaches the 140° indicator (Fig. 22).
- Leave the last rasp in place and remove the rasp holder by pushing the spring.

Fig. 18

Fig. 19

Fig. 23

Fig. 20

Fig. 21

Fig. 22

Glenoid exposure

If necessary, adjust the cut freehand by guiding the saw blade in contact with the superior face of the rasp or the angle corrector (Fig. 24).

If the cut was made at 140° : place the angle corrector on the rasp (Fig. 24).

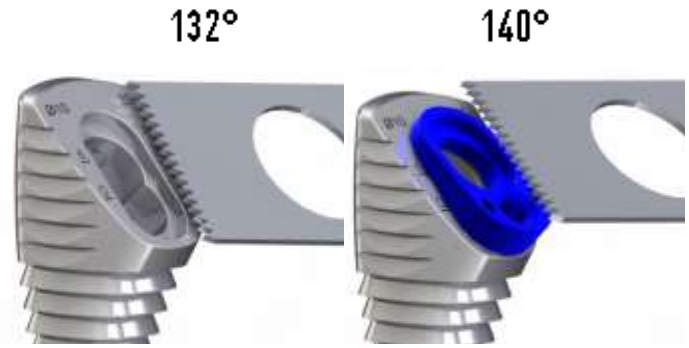


Fig. 24

- Place the humeral protector (Fig. 25) directly on the rasps (cut at 132°) or by using a wedge (cut at 140°).

Fig. 25

Place 3 retractors (Fig. 26):

- One behind the posterior neck of the glenoid in order to push the humerus back
- One at the bottom of the glenoid pillar
- One in front of the subscapular groove.

- Perform a capsulotomy with circumferiential labrum resection, and remove capsular and synovial excess.

The capsulotomy (in particular inferior) allows to push the humeral head in back position from the glenoid, for easier glenoid exposure.

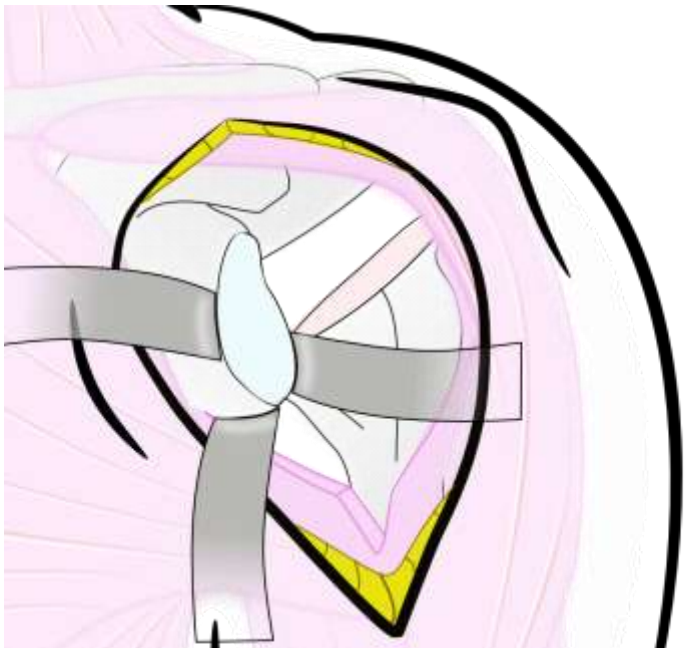


Fig. 26

Glenoid preparation

Screw the ream on its handle and tighten with a flat key (Fig. 27). The assembly can be fixed on a motor by using the « REAM » position. It can also be fixed on the T-handle to ream manually.

Fig. 27

After, an eventual resection of the osteophytes, put the pin in the glenoid center and introduce the reamer (Fig. 28). 3 sizes are available : Ø30, Ø33 and Ø36mm.

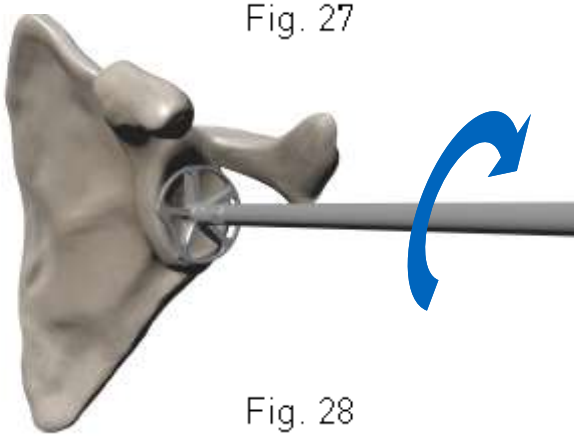


Fig. 28

Reaming : start the motor at few millimeters of the glenoid surface and apply the ream in movement, to avoid that the cutting edges of the ream engage too brutally.

Two drill guides are available (Fig. 29) :

- One for the glenoid Ø30mm
- One for the glenoid Ø33 and 36mm

Use the guide adapted to the glenoid size.

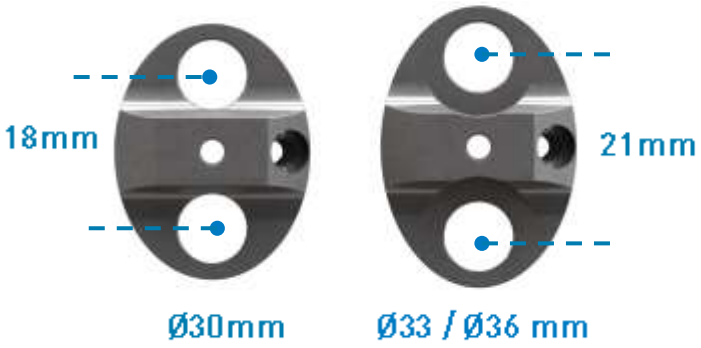


Fig. 29

<u>WARNING</u> : if you use the drill guide with a 18mm-gap you have to use the smallest glenoid component.

Once, the first drilling realized (Fig. 30), place the stabilization peg (Fig. 31).
Drill the second peg.

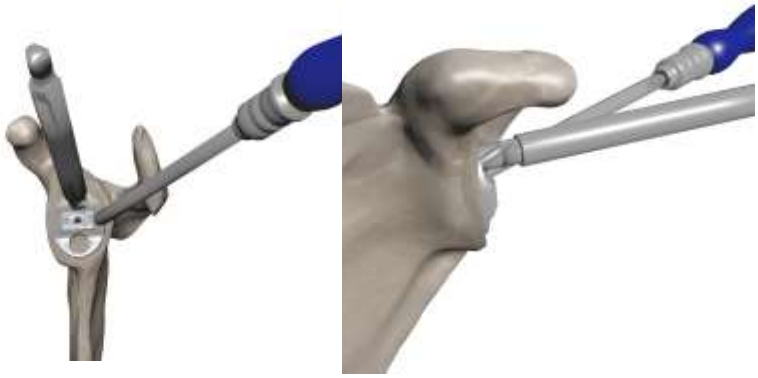


Fig. 30

Fig. 31

Trials

Place the glenoid trial (Fig. 35).

- Choose the humeral head size adapted to the resected head. 4 diameters are available : Ø40, 43, 46 and 49mm (Fig. 36).

Fig. 32

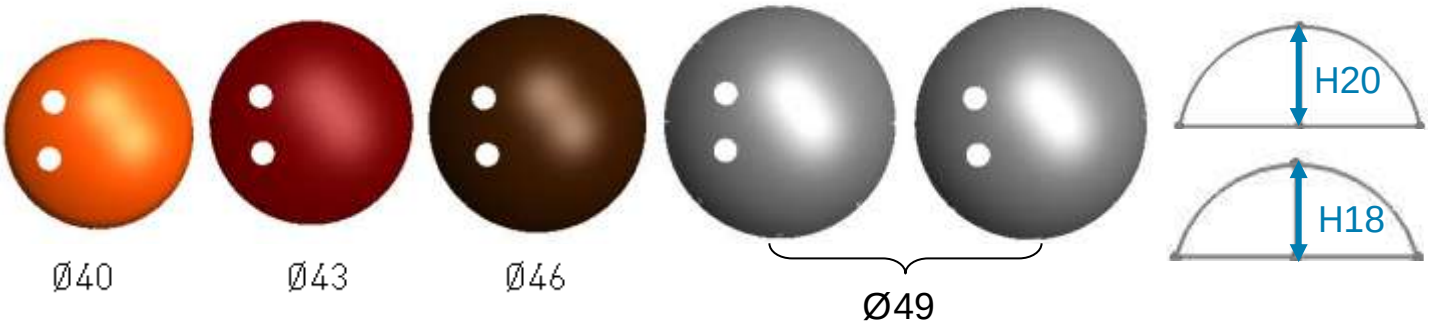


Fig. 33

Cut at 132° = do the trial directly on the rasp

Medial offset setting


Fig. 34

Fig. 35

Cut at 140° = use angle corrector

Medial offset setting


Be careful always direct the arrows downwards


Fig. 36

Fig. 37

Trials

Posterior offset setting :

The posterior offset setting is possible due to the dial system of the eccentric humeral head.

There are 8 different ways to position the humeral head (Fig. 38).

These settings allows to reproduce patient's anatomy and to cover the cut (Fig. 39).

Check that the superior part of the stem (rasp or rasp + angle corrector) is free. Cut again or clean with a bone rongeur if necessary.

Identify the position at the back of the stem (Fig. 40).

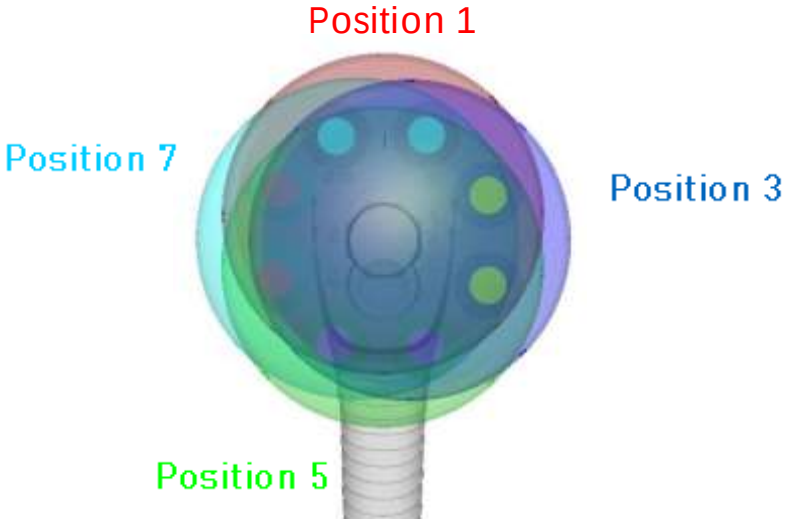


Fig. 38

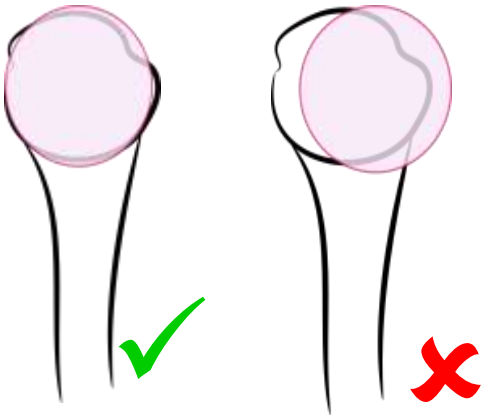


Fig. 39

Fig. 40

Warning : verifiy the compatibility between glenoid component and humeral head

Glène / Tête hum	Ø30	Ø33	Ø36	Ø36 R34
Ø40H13	✓	✓	✓	✗
Ø43H15	✓	✓	✓	✗
Ø46H17	✓	✓	✓	✗
Ø49H18	✗	✗	✗	✓
Ø49H20	✗	✗	✗	✓

According to recent studies, a mismatch of 5 to 7mm seems to be a good option.

Final implant positioning

- Remove the trials.

- Inject the cement in the two holes, place the final glenoid component with the hand and impact it (Fig. 41).

Previously, place transosseous wires in order to reinsert the subscapularis.

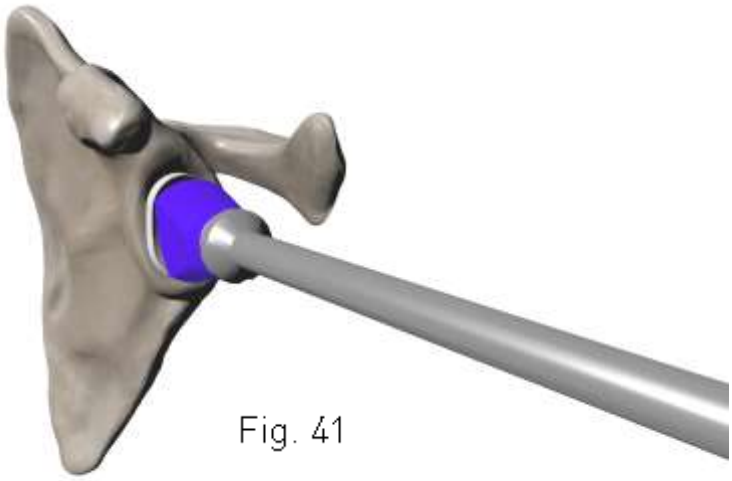


Fig. 41

- Choose the type of stem adapted : cemented or cementless

- Assemble the final stem on the rasp-holder and impact it in the humerus while respecting the retroversion previously determined (Fig. 42).

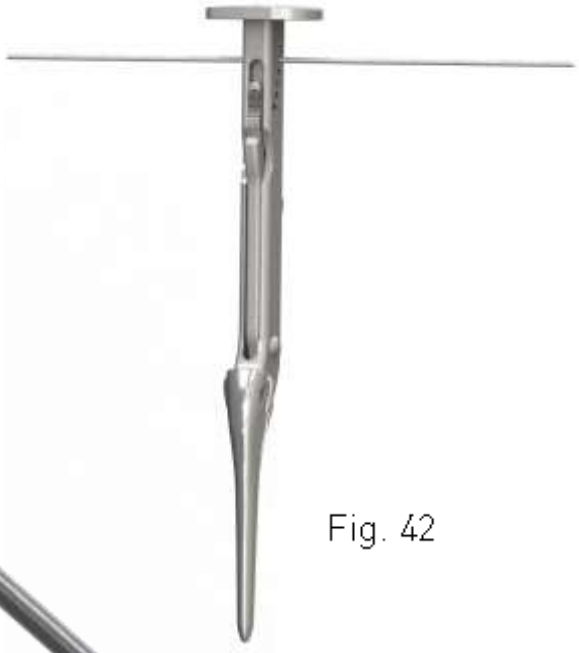


Fig. 42

- Position the humeral head by reproducing the settings of the trial then impact it.

- Impaction is done with the convex impactor (Fig. 43).

- Reduce and reinsert the subscapularis with a transosseous suture.

Warning : The modular neck must be inserted in a perfectly cleaned and dried place.

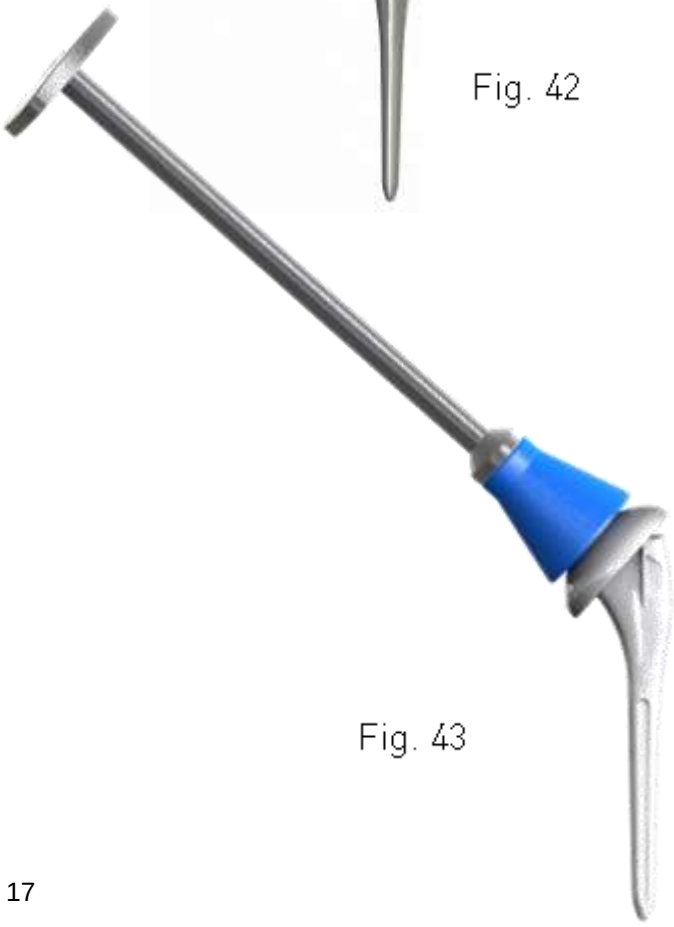
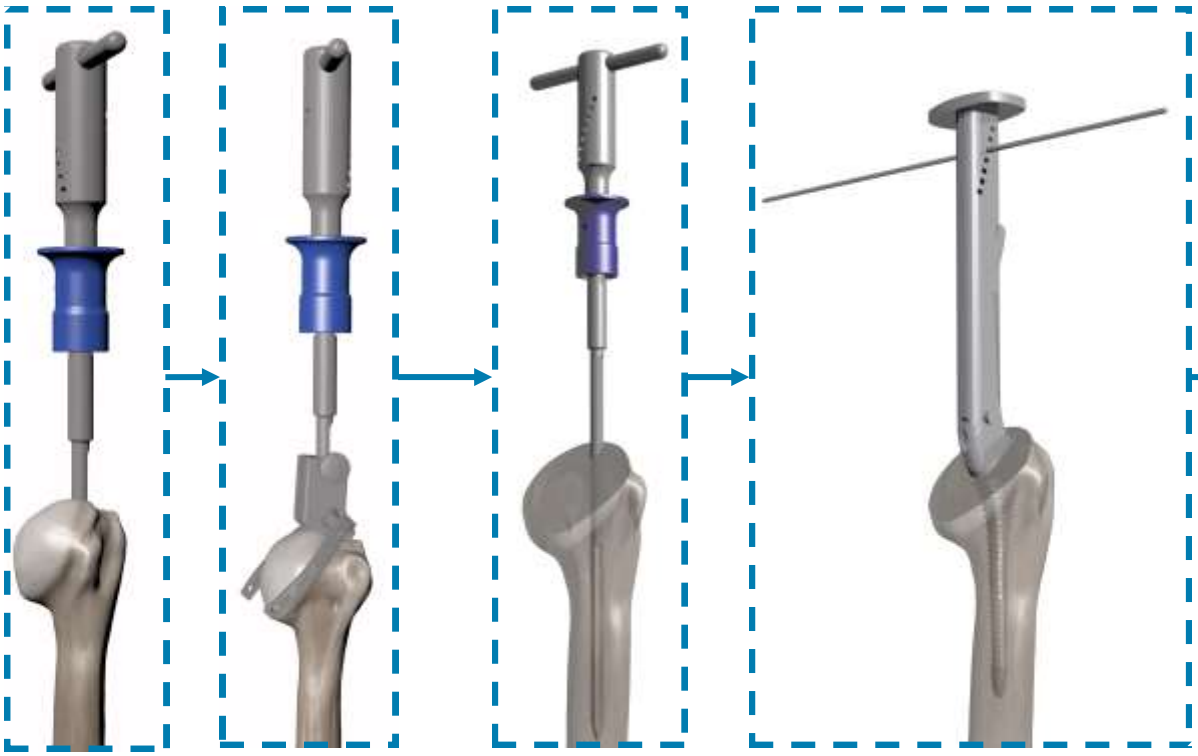


Fig. 43

Synopsis

HUMERAL PREPARATION



Dr

Humeral head resection

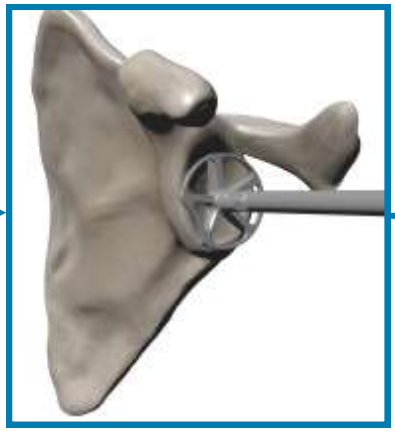
Diaphysis calibration

Rasp with retroversion setting

GLENOID PREPARATION

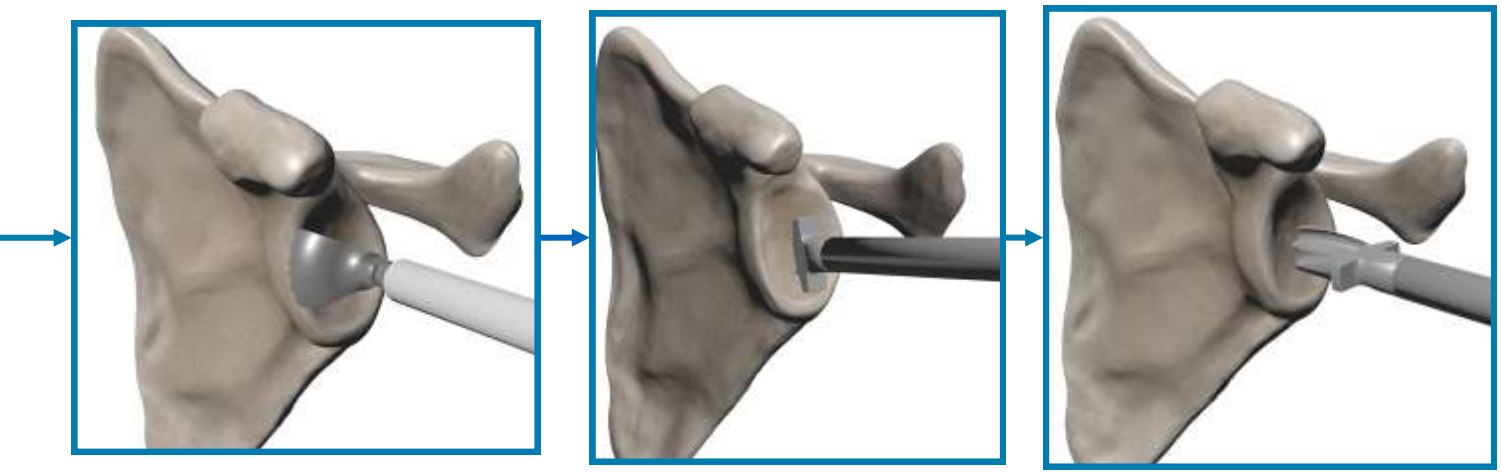
Automatic positioning of the pin
Control of the vertical centering of the glenosphere

Glenoid reaming



Synopsis

HELICAL GLENOID BASEPLATE

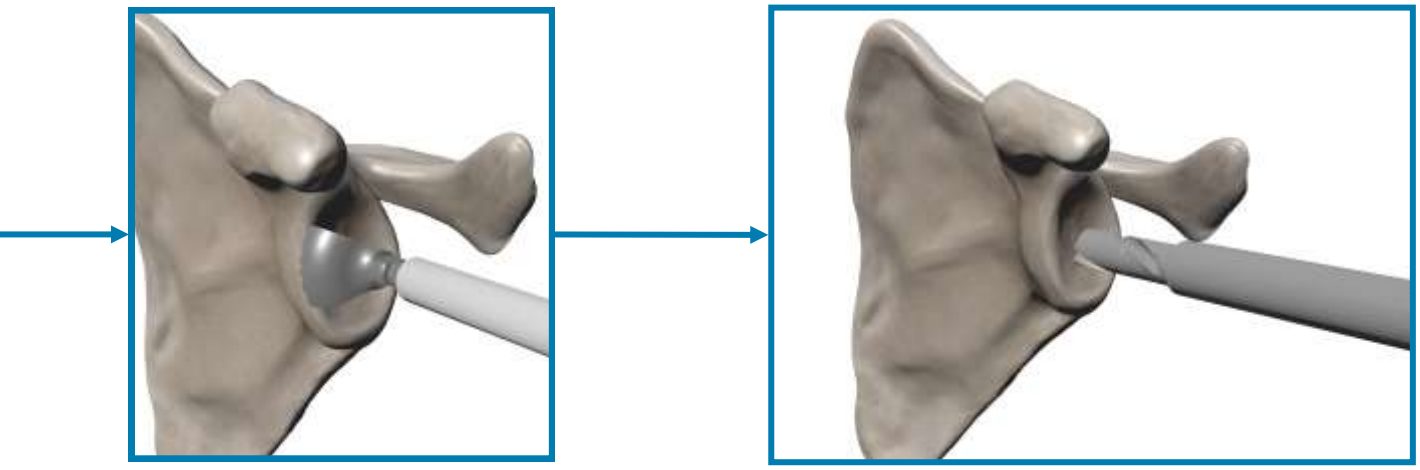


Peripheric glenoid reaming

Preparation of helix entry

Preparation of helical blade

PEGGED GLENOID BASEPLATE



Peripheric glenoid reaming

Peg preparation with drill

Superolateral approach

Incision begins on the clavicle then follows the direction of the anterior border of the acromion and downward 4 to 5 cm.

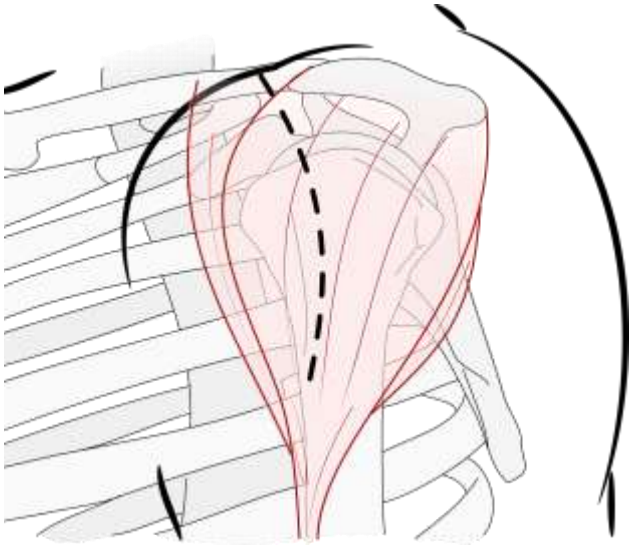


Fig. 44

Release the deltoid at the anterior edge of the acromion.

Extend muscle incision down, following the muscle fibers.

Open the superficial part of the subacromial bursa and if necessary release it entirely.

Retract the deltoid forward with a retractor, placed at the superior corner of the coracoid process.

To improve exposure, the anterior edge of the acromion can be resected

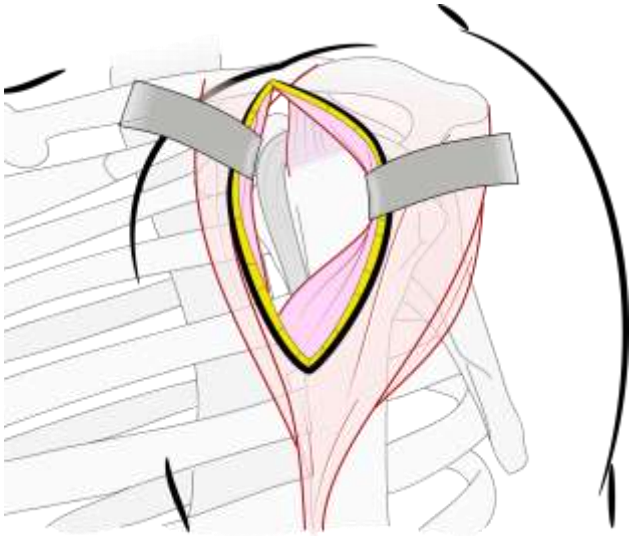


Fig. 45

Superolateral approach

Humeral head exposure.
Place the arm in retropulsion and external rotation then dislocate humeral head.

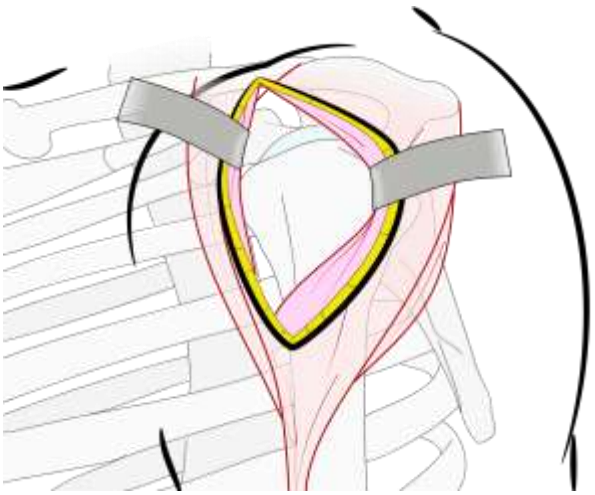


Fig. 46

Deltopectoral approach

See description page 7 (anatomical version)

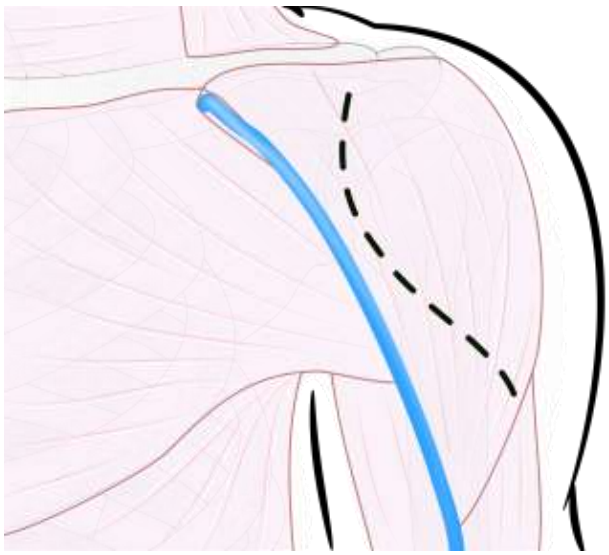


Fig. 47

Humeral resection

- Introduce the first drill Ø7 on the highest point of the head and in contact with the anatomical neck (Fig. 49).

The entry point is located at about 1 cm within and behind the bicipital groove (Fig. 48).

On an developed osteoarthritis with bald head and new acromio-humeral joint (acetabularisation) the entry point will be placed preferentially at the humeral head peak.

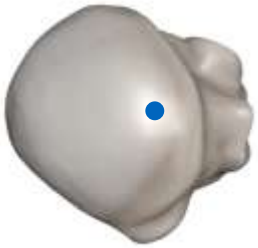


Fig. 48

Fig. 49

- Fix the cutting guide on 140° (Fig.50)

The cutting guide can be set at 132° or 140°.
For a reversed prosthesis of first intention : choose inclination at 140°.

Fig. 50

- Insert the cutting guide in the starter drill Ø7 (Fig. 51).

- Place the cutting guide and the drill in the medullary canal until bone contact.

- Fix the height of the cutting guide with the screw. The optimal cutting level corresponds to the anatomical neck line .

Fig. 51

Humeral resection

- Set the desired retroversion in the handle with the orientation stem. It is aligned with the patient's forearm (Fig. 52).

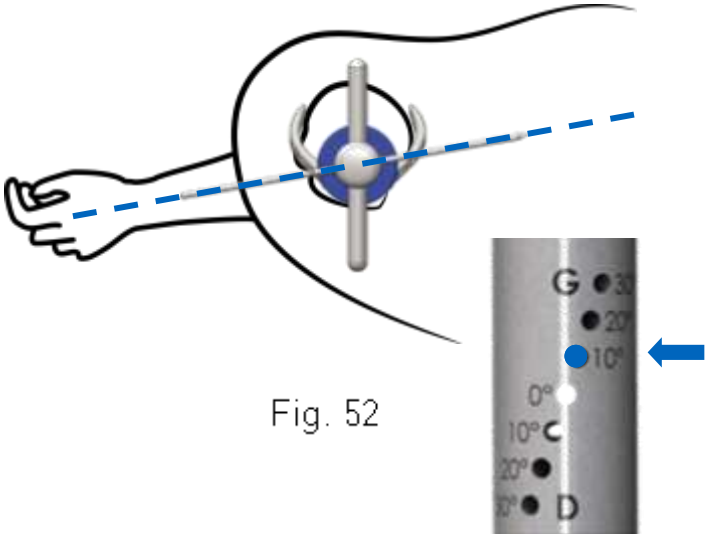


Fig. 52

Indications concerning height : the reference is the anatomical neck line. The resection may be done above (+2.5mm), below (-2.5mm) or in the cutting guide notch (Fig.53). The resection has to be "economic". An excess in resection induces a risk of instability.

Fig. 53

<u>In a deltopectoral approach :</u>

- Start the cut in the cutting guide notch or on pins with an oscillating saw (Fig. 54 and 55). Then remove the cutting guide and complete the resection.

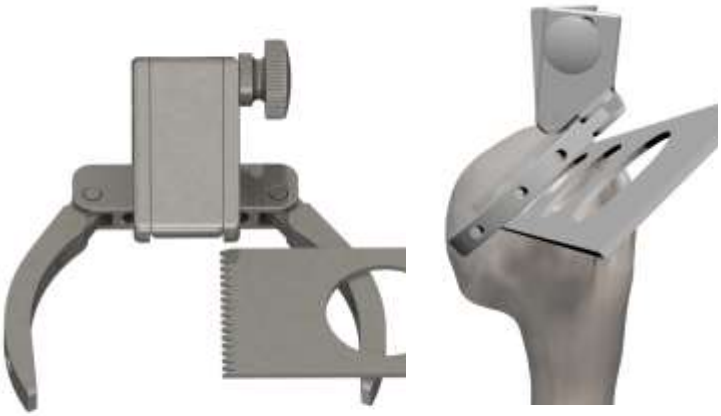


Fig. 54

Restore a natural retroversion. Excessive retroversion may affect stability. An usual retroversion is about 20°.

Fig. 55

Humeral resection

Superolateral approach :

- Fix the pins in the 2 holes behind the cutting guide. The pins are divergent.
- Start the cut on the flat part below the pins (Fig. 56).

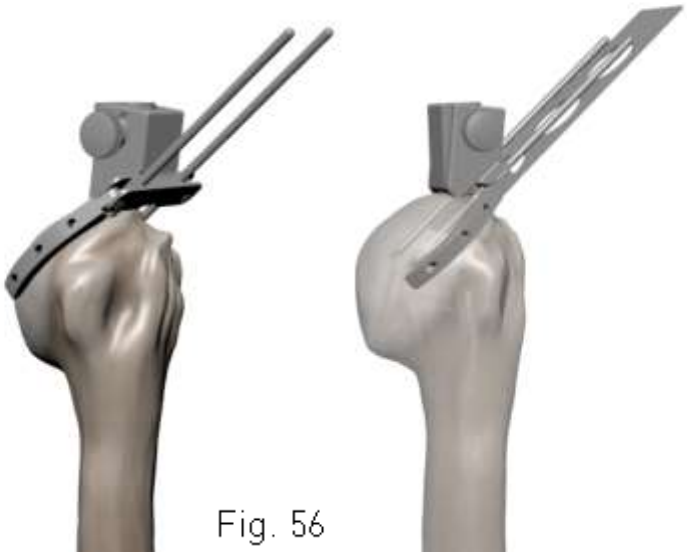


Fig. 56

Retroversion marker

- Identify the retroversion of the cut with the retroversion plate (EAAPRV0) and a Lambotte blade (Fig.57).
- Reproduce the retroversion by aligning the rasp holder (Fig.58).

In the case the humeral bone is very compact, make a bone cylinder equivalent to superior volume of the Ø7mm rasp with the retroversion plate.

Fig. 57

Fig. 58

Humeral preparation

- Calibration by increasing diameter of the drill until the optimal filling of the medullary canal (Fig. 59).
- The size of the last drill defines the maximal size of humeral stem.
- Push the spring in order to fix the rasp on the rasp holder (Fig. 60).
- Lock the rasp with the trigger (Fig. 60).
- Reproduce retroversion with the orientation stem on the handle (Fig. 62) (stem aligned on patient's forearm).
- Begin with the smallest rasp (Ø 7) then increase from size until obtain good primary stability.
  Press the rasp until the 140° indicator (Fig. 61).

Be careful, in case of dense cancellous bone, remove a bone cylinder before impacting the rasp.

- Leave the last rasp in place and remove the rasp holder by pushing the spring.
- Set the angle corrector 140°.

If necessary, adjust the cut freehand by guiding the saw blade in contact with the superior face of the angle corrector 140° (Fig. 62).

- Put the humeral protector in place (Fig. 64).

Fig. 59

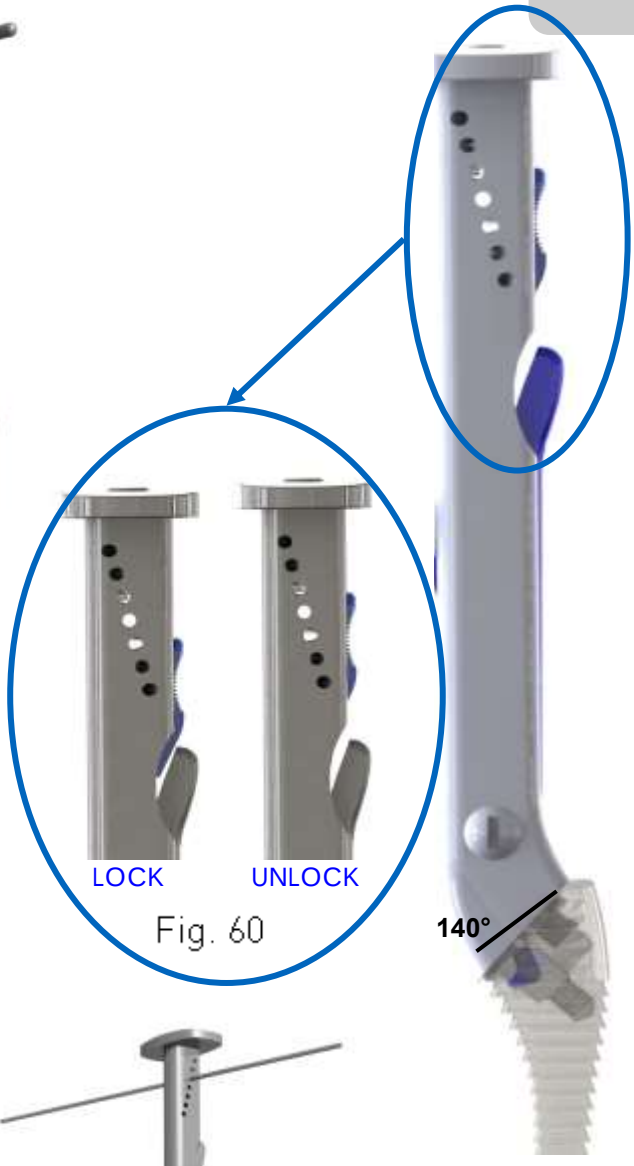


Fig. 60

Fig. 61

Fig. 62

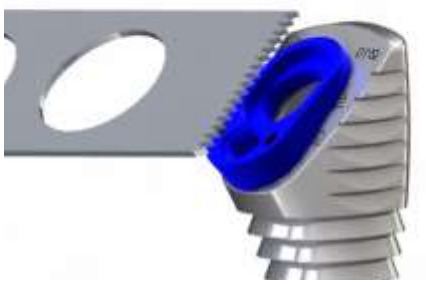


Fig. 63

Fig. 64

Glenoid exposure

Deltopectoral approach :

Place 3 retractors (Fig. 65):

- One behind the posterior neck of the glenoid in order to push the humerus back
- One at the bottom of the glenoid pillar
- One in front of the subscapular groove.

Be sure to have a good release of the inferior part of the glenoid.

- Perform a capsulotomy with circumferiential labrum resection, and remove capsular and synovial excess.

The inferior capsulotomy allows to push humerus back, for easier glenoid exposure.

Superolateral approach :

- Labrum removal and particularly inferior capsulotomy allow good glenoid exposure.
- Remove eventual osteophytes in order to correctly identity glenoid borders.
- Lower humerus with the humeral retractor by leaning against the inferior glenoid part (Fig. 66 et Fig. 67).

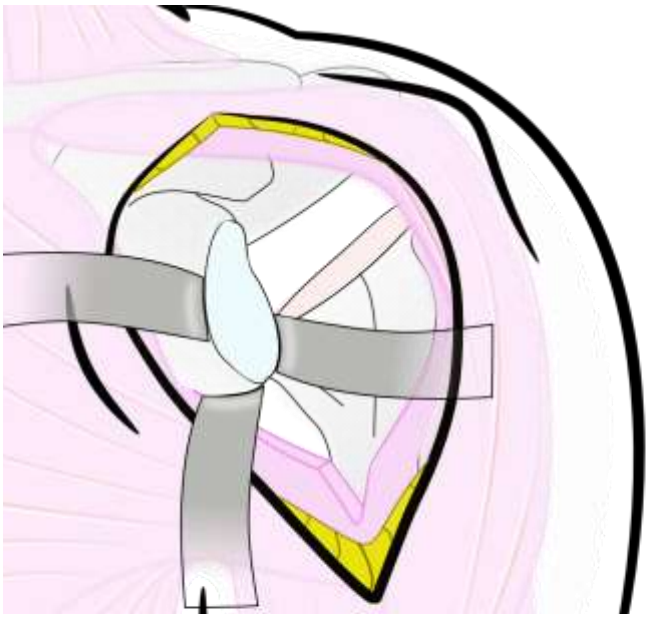


Fig. 65

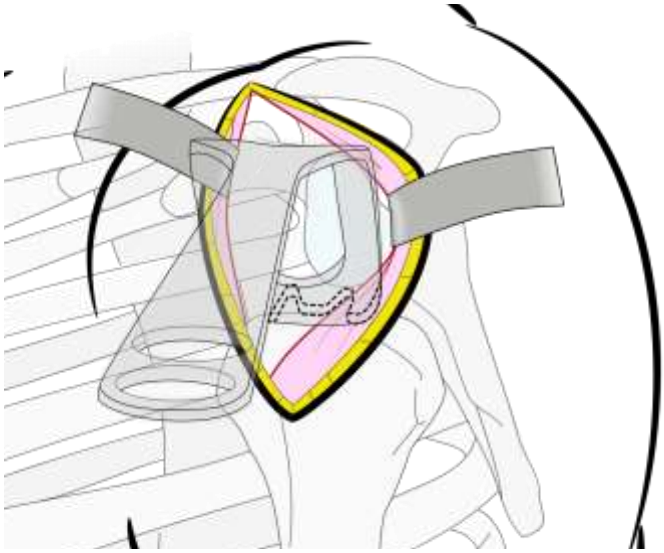


Fig. 66

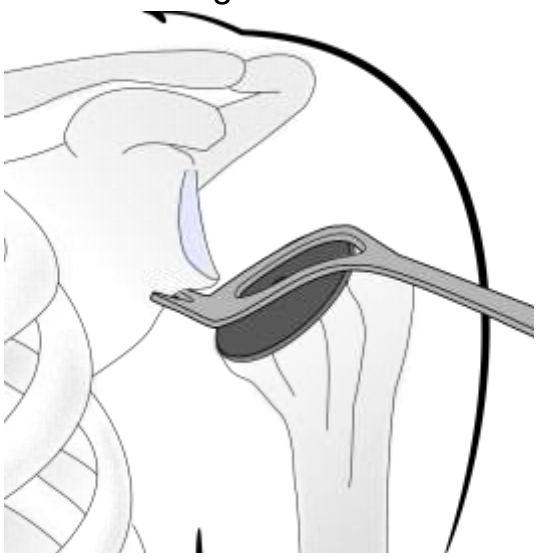


Fig. 67

Glenoid preparation

- Place the 2.5mm drill guide (Fig. 68 or Fig. 69).

- Inferior holes allow to palp the inferior glenoid part (Fig. 70). The distance between the central hole and the inferior holes is exactly the radius of the glenosphere.

The instrument gives an option to lower the center of 2.5mm (Fig. 72).
The central hole allows an orientation of the pin with an inferior tilt of 10° (Fig. 72).
The tilt of 10° and the lowering of 2.5mm avoid inferior conflict, inducing notch (Fig. 73).

- Drill with a threaded pin diameter 2.5mm and leave it in situ.

The centering can also be realized freehand by positioning the drill few millimeters below the glenoid center.

Superolateral approach :

Fig. 68

Deltopectoral approach :

Fig. 69

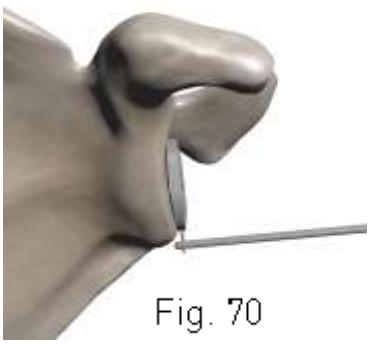
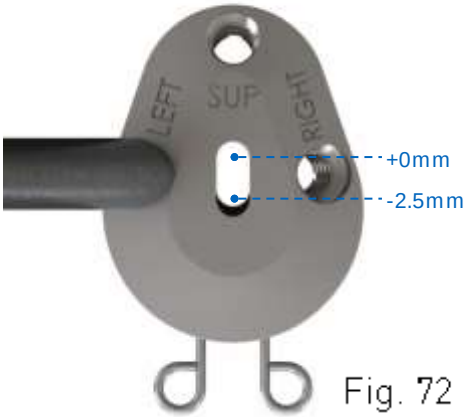


Fig. 70

Fig. 71



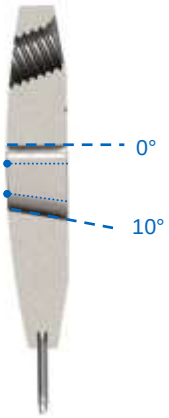


Fig. 72

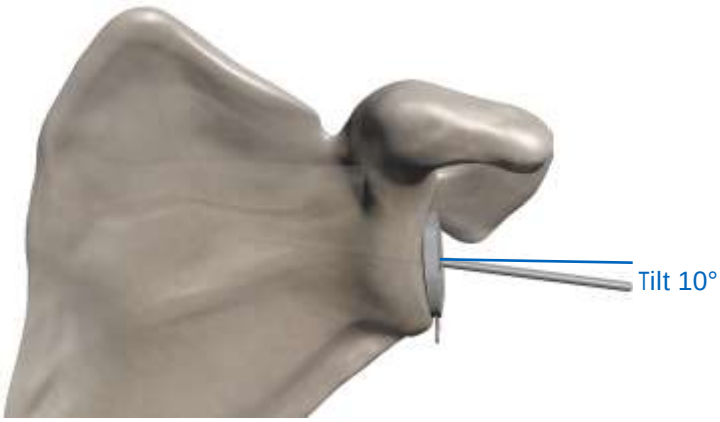


Fig. 73

Glenoid preparation

Screw the ream on its handle and tighten with a flat key (Fig. 74). The Hudson junction enables to fix the ream on a motor using the "REAM" function . It has to be fixed on the T-handle to ream manually.

Fig. 74

After setting up the threaded pin in glenoid, introduce successively :

1. Ream Ø30mm (Fig. 75) to resurface the glenoid

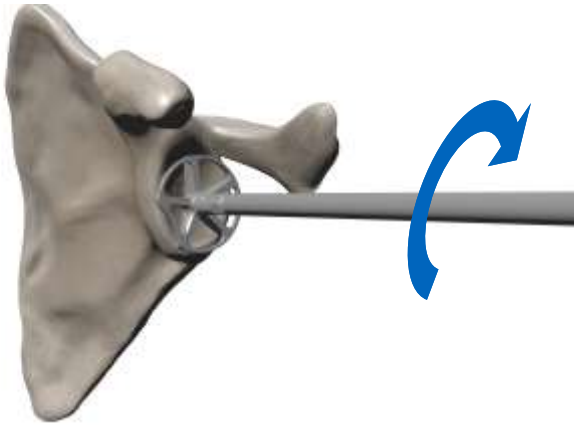


Fig. 75

Reaming : start the motor at few millimeters of the glenoid surface and apply the ream in movement, to avoid that the cutting edges of the ream engage too brutally.

Resurfacing doesn't have to be excessive. It has to be subchondral and has to avoid cancellous bone.

Glenoid steps

2. Peripheric ream Ø39mm (Fig. 76) allows to ream the peripheric glenoid to prepare glenosphere impaction.

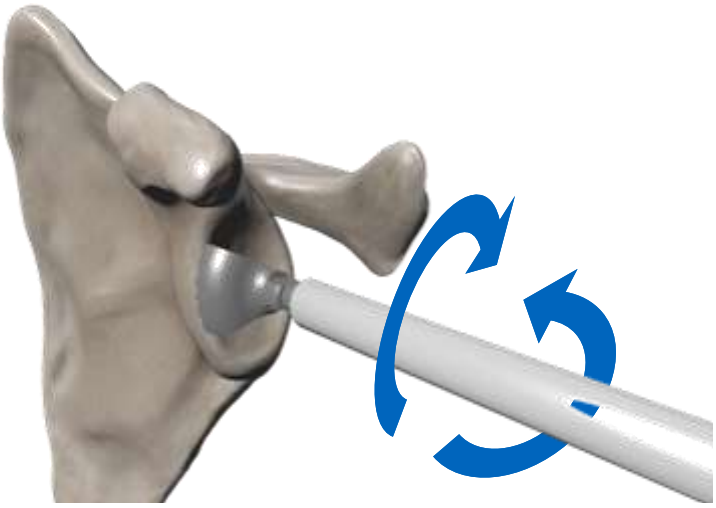


Fig. 76

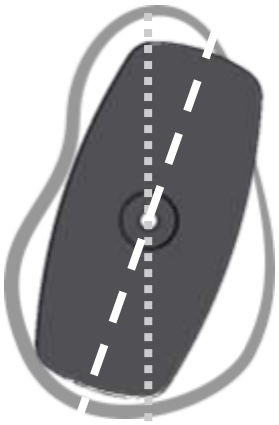
It can be used in the 2 rotation directions. It has to be used <u>manually with the T-handle.</u>

3. The marker is introduced on the pin and is used to mark the helical blade entry (Fig. 77). Place the handle at 1 o'clock referring to the glenoid long axis.

In some cases when bone is sclerous with enameled aspect, the preparation for the helix must be done carefully: Lambotte blade, micro-perforations...

Fig. 77

Rotation 70°/80°



<u>1 o' clock compared to glenoid long axis</u>

Glenoid steps

Glenoid helical baseplate:

4. Helical chisel (Fig. 78).

The instrument handle is still oriented at 1 o'clock referring to the glenoid long axis (Fig. 79).

Hit with a hammer for the helix to progress in the glenoid with a 70°/80° rotation.
At the end of impaction, the instrument bit must reach the glenoid bone.

Fig. 78

In some cases where bone is compact, it can be advised to remove the chisel and start again to push the chisel until bone contact.

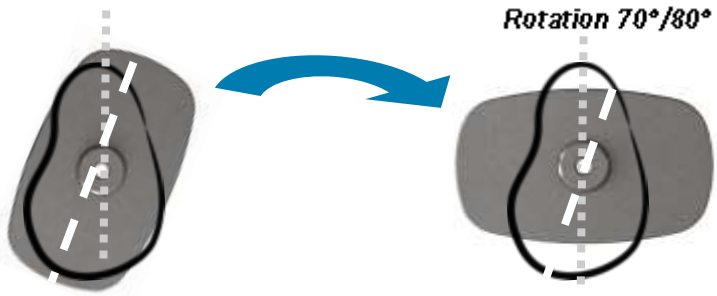


Fig. 79

Glenoid steps

5. Adapt the final baseplate on the impactor (Fig. 80).

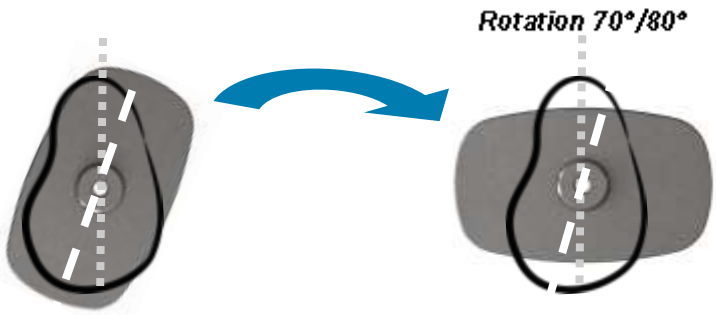
Fig. 80

The two pegs of the impactor are inserted in the two screw holes B and D (anterior and posterior) (Fig. 81).

This instrument does not enable a stable base prehension

Introduce the assembly on the pin and impact the baseplate in the glenoid. Be careful to orient the handle in the same axis that during preparation (1 o'clock referring to the glenoid long axis).

Guided by the helix, the baseplate rotates clockwise during its progression (about 70°/80°).



Reginning of impaction

End of impactation

The superior screw is 10° pre-oriented to the coracoid process edge (Fig. 81). Inferior screw is 10° pre-oriented to the scapula pillar.
All the screw holes allow a 10° orientation.
The baseplate can be impacted with the threaded handle but without pin.

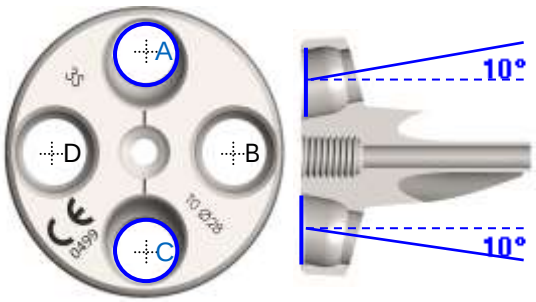


Fig. 81

Glenoid steps

Pegged glenoid baseplate :

- Two other baseplates are available. They have one standard peg (15mm) or a long peg (27mm) (Fig. 82).

Fig. 82

Pegged glenoid baseplate implantation :
(start after Fig.74 page 28)

- Drill glenoid until the marker and abutment visible on the cannulated drill (EAA MP80) (Fig. 83).

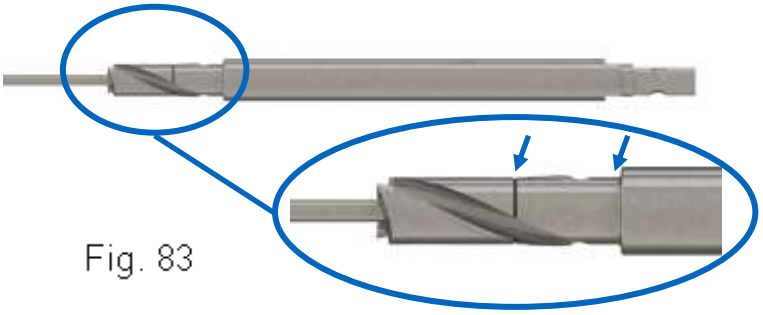
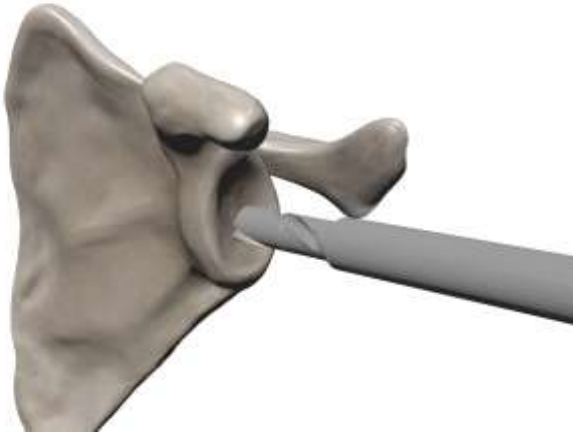


Fig. 83

- Impact the baseplate in the same way used by the helical blade (Fig. 84).



Be careful with the base orientation when impacting. The « UP » must be on the superior part of the glenoid. The screws holes pre-oriented will be positionned superiorly and inferiorly. (Fig. 84).

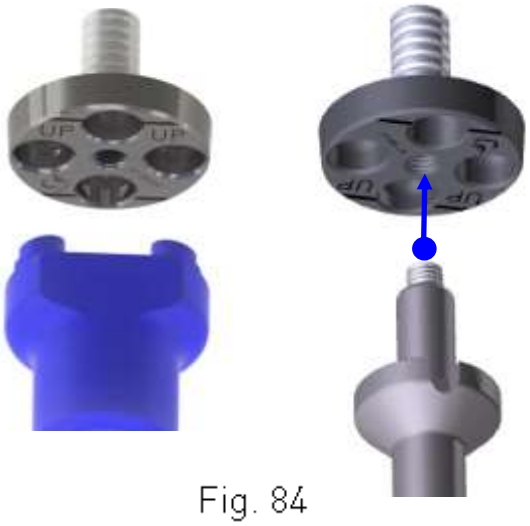


Fig. 84

Glenoid steps

Pegged or helical glenoid baseplate:

To place the glenoid base, it is also possible to use the impactor/extractor with threaded end (non-perforated Ref EAA MF05 or EAA MIU0 depending on versions).

Fig. 85

Check the good base application by the screws holes.

- The plate fixation is completed by 2 to 4 cancellous thread screws of Ø5mm.

Fig. 86

- Use the Ø3.2mm drill and the drill guide (Fig. 86). The drill is graduated to enable a direct reading of the screw length (Fig. 86).
- If necessary, check with the measurer.
- Place the screws by tightening them alternatively to insure a progressive compression.

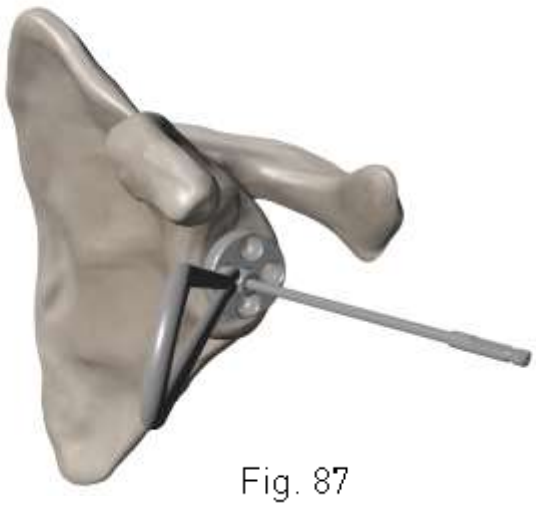


Fig. 87

Trials

Remove humeral protector and use trial cups.

Two cups are used for 140° stem :

- A centered cup 0° (Fig. 88)
- An off-centered cup 0°(Fig. 89)

Fig. 88

Fig. 89

For 132° stem, only one cup has to be used : the centered cup 8° (there is no off-centered cup).

Fig. 90

-

	132° stem	140° stem
Centered cup 8°	✓	✗
Centered cup 0°	✗	✓
Off-centered cup 0°	✗	✓

Trials

3 insert thicknesses (Fig. 91) :

- +6mm—STANDARD
- +9mm—LONG
- +12mm—EXTRA-LONG

Fig. 91

Trials on rasps

Warning : always use the 140° angle corrector to do trials with D0° and C0° cups

Rasp are at 132°. In order to adjust the 140°, use angle corrector.

According to anatomy :
Use the angle corrector by leaving the high position free

According to anatomy : use the angle corrector by leaving the low position free to lateralize the humerus

Fig. 92

Be careful always orient the arrows down

Fig. 93

Warning: *Clean superior extremity of the rasp to correctly place the angle corrector. It can be placed and removed with the threaded handle (EAA MF05).*

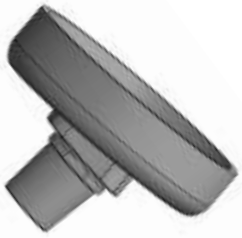
Trials

1 - Centered cup 0° - 140° stem

With ANGLE CORRECTOR or CUP WITH ANGLE CORRECTOR

Angle corrector + cup

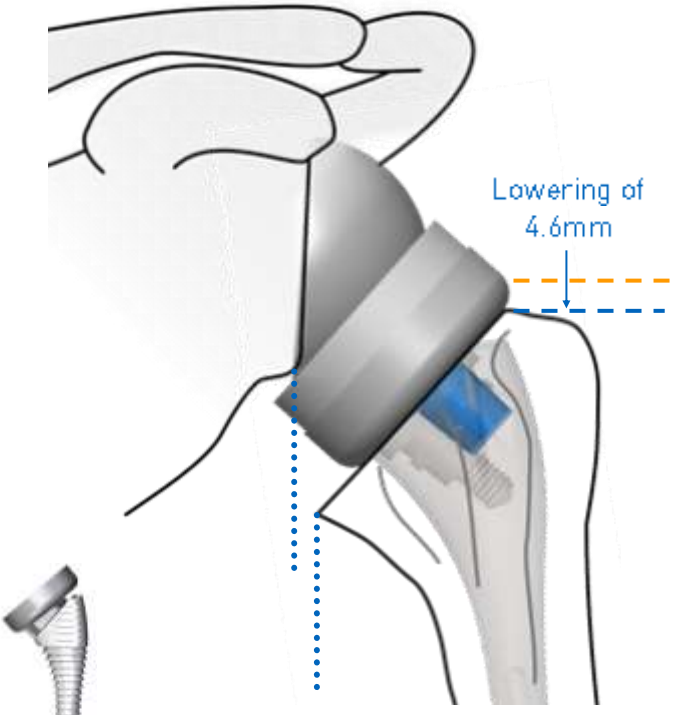
Fig. 94



Cup with integrated angle corrector

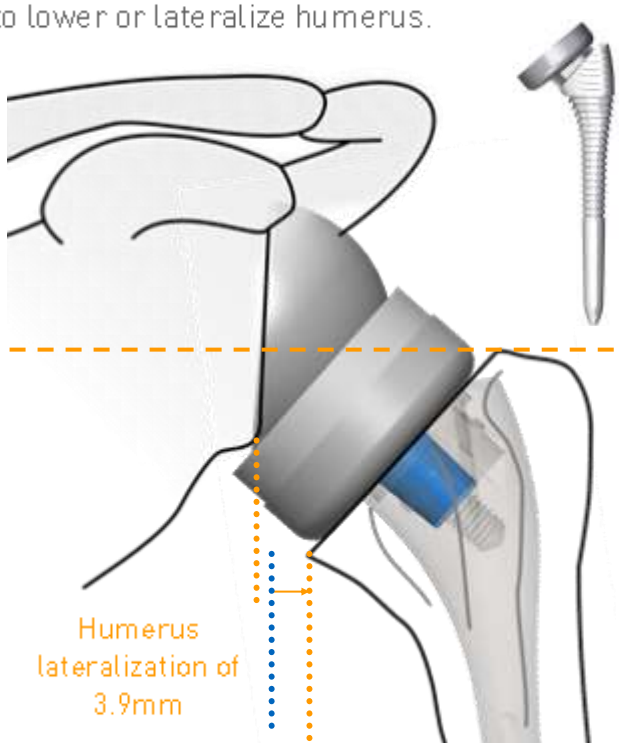
Fig. 95

The choice between the high or low taper allows to lower or lateralize humerus.



Lowering of 4.6mm referring to low position.

Fig. 96



Humerus lateralization of 3.9mm referring to high position.

Fig. 97

Trials

2 - Off-centered cup 0° - 140° stem

With angle corrector

It allows the choice between 8 positions to cover humeral resection if it is off-centered.

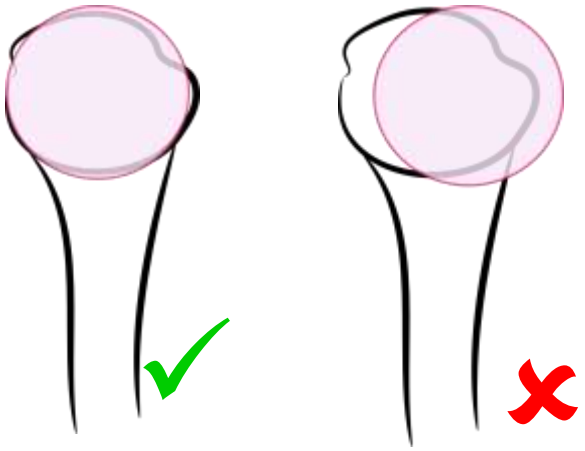


Fig. 98

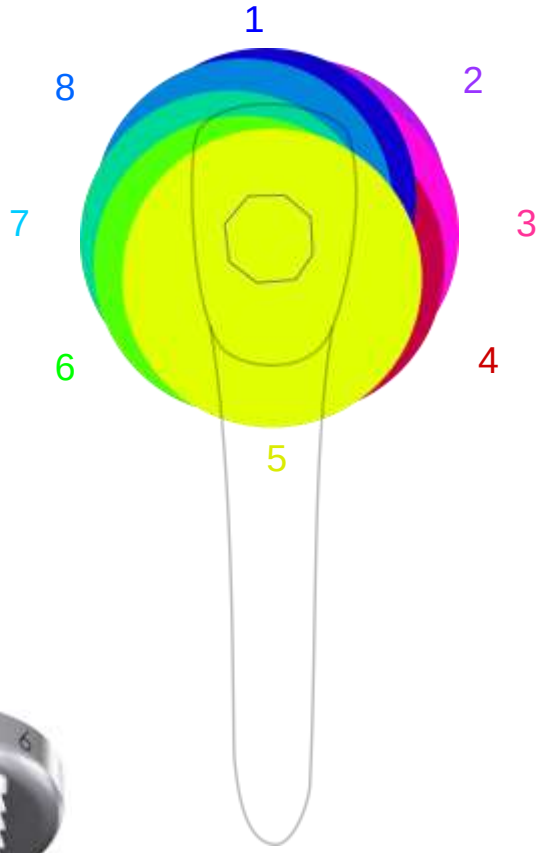


Fig. 99

Position is read at the back of the rasp (Fig. 100).

Fig. 100

3 - Centered cup 8° - 132° stem

Without angle corrector

The centered cup 8° can be placed in the high or low taper (Fig. 101) to lower or lateralize humerus.

Check that the superior part of the stem (rasp + angle corrector) is cleaned. If necessary adjust humeral resection or clean with a bone rongeur.

Once, trial implants in place, test the prosthesis stability in every mobility sector.

Fig. 101

Final implants

- Remove trials

Once the baseplate correctly exposed with adequate retractors, insert glenosphere Ø38mm in the baseplate.

- Use 3.5mm screwdriver to hold it (Fig. 102)

Warning :
DO NOT IMPACT THE GLENOSPHERE WITH HAMMER

Fig. 102

- The distal part of the screw is introduced in the central hole of the helix (Fig. 103)

- The glenosphere is screwed without forcing.

Fig. 103

- Choose the stem ; cemented or cementless.

- Fix the final stem to the rasp holder and impact by respecting the defined retroversion (Fig. 104).

With cementless implant, impaction doesn't have to be complete in order to facilitate the positioning of the cup and the insert.
For a deltopectoral approach : Before impacting the stem, place transosseous wires in the lesser tuberosity to fix the subscapularis.

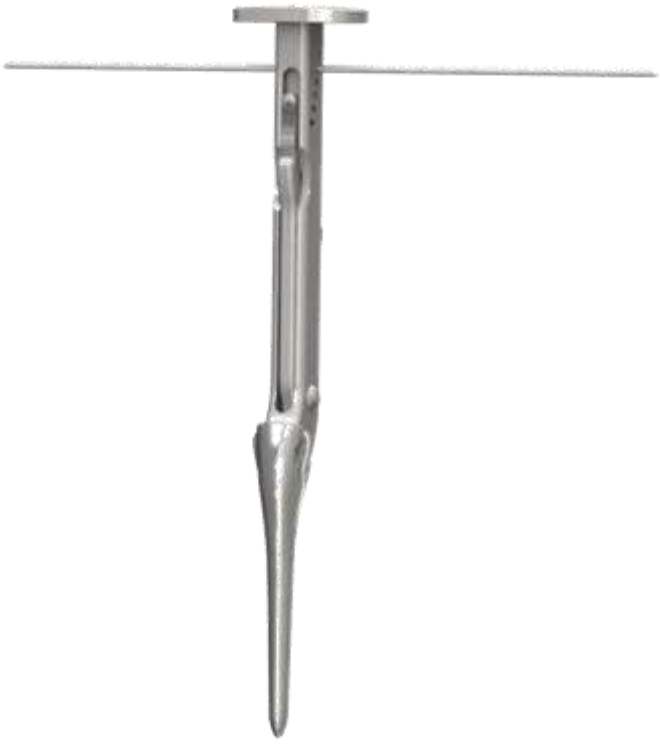


Fig. 104

Final implants

- Polyethylene insert impaction in the final cup is carried out on table with the anvil and the impactor by pushing on the insert periphery (Fig. 105).

Check that humeral resection surface is flat and perfectly cleaned.

- Impact the insert and the cup by respecting the position that has been defined during trials. This impaction also ensures also final humeral stem impaction.

- Reduce the prosthesis.

Fig. 105

Test shoulder mobility by being sure that there is no piston or cam effect (interest of off-centered cup) then close the wound.

Deltopectoral approach:

Fix completely or partially the subscapularis with 3 transosseous points.
At best, fix the lower subscapularis part, often present. Interest on prosthesis stability and rotations.

Superolateral approach:

Fix the deltoid to the acromion with a transosseous suture.

Close on different planes and put an aspirative drain.

Operative suite: Superior limb immobilized. Early passive and slow reeducation in a rest splint during 1 month.

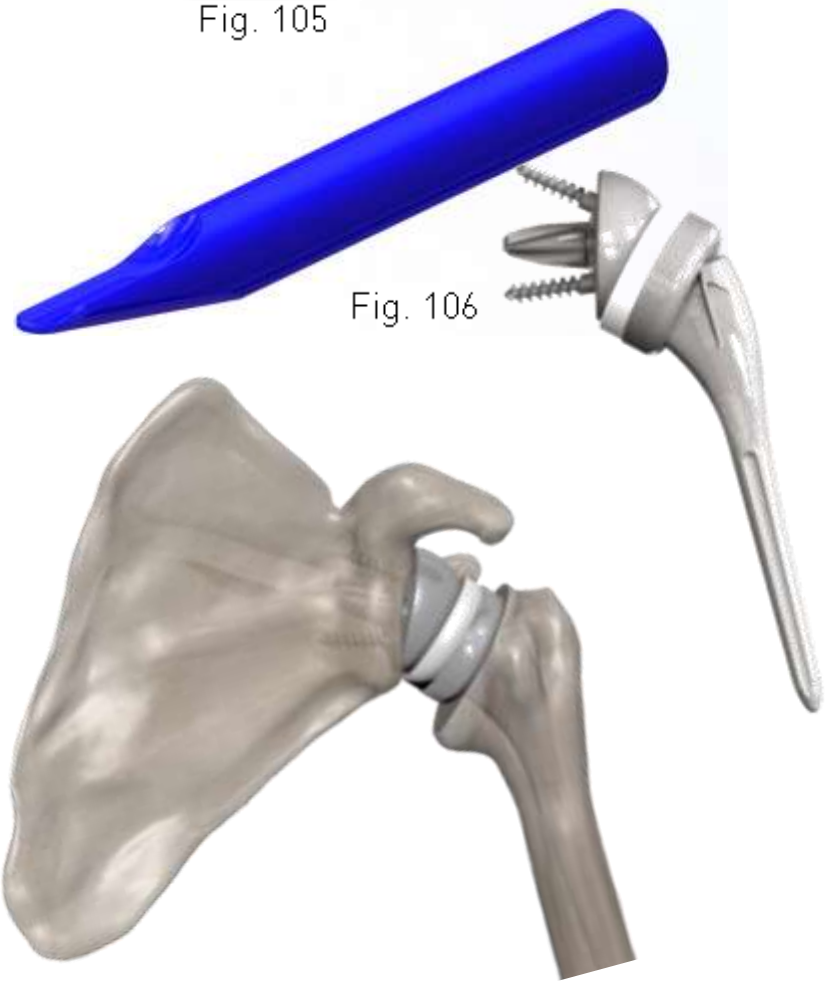


Fig. 106

Cup with high-offset

A cup with high-offset (Fig. 107) can be used to compensate an offset of height.

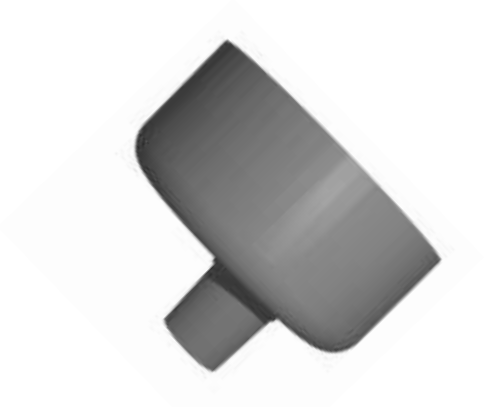
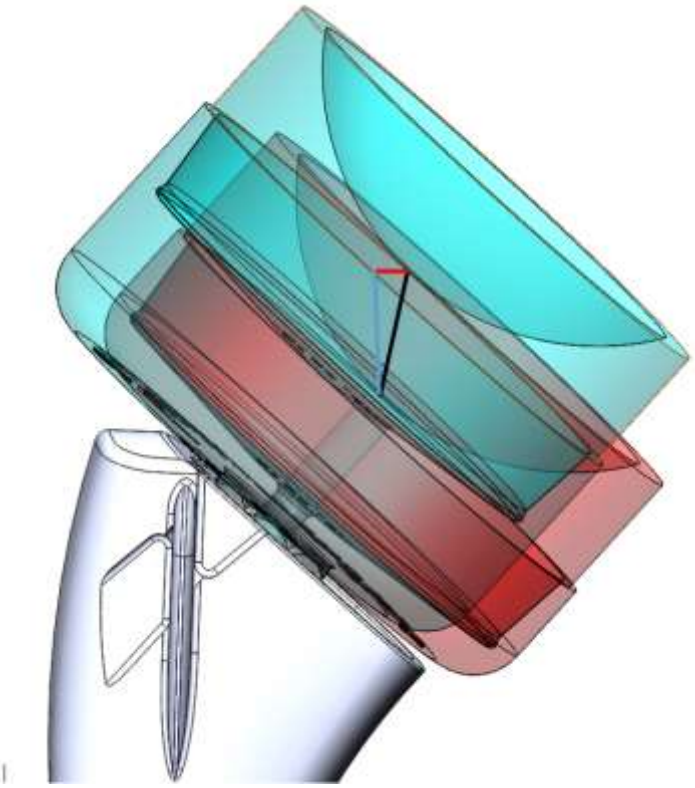


Fig. 107

The use of the high-offset cup will lower the humerus by 9 mm and lateralize it by 1.5 mm.

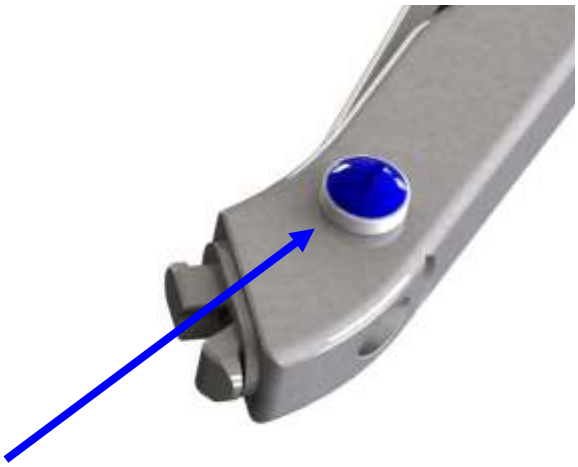


Reminder : the use of the low position of the junction raises the humerus by 4.6 mm and and lateralize it by 3.9 mm compared to the high position.

Fig. 108

Rasp or stem extraction

- To remove an ARAMIS stem or rasp if the rasp holder doesn't work :



Disassembly of rasp holder :

1) Unscrew the rasp holder screw (Fig. 109)

Fig. 109

2) Remove the washer and the hollow screw (Fig. 110)

Fig. 110

3) Remove the spring from the rasp holder (Fig. 111)

Fig. 111

Rasp or stem extraction

4) Put the rasp screw in the rasp holder (Fig. 112)

Fig. 112

5) Fix the assembly on the rasp or the stem (Fig. 113) with the 3.5mm screwdriver (EAA TT35) and screw.

Fig. 113

Sphere and glenoid base extraction

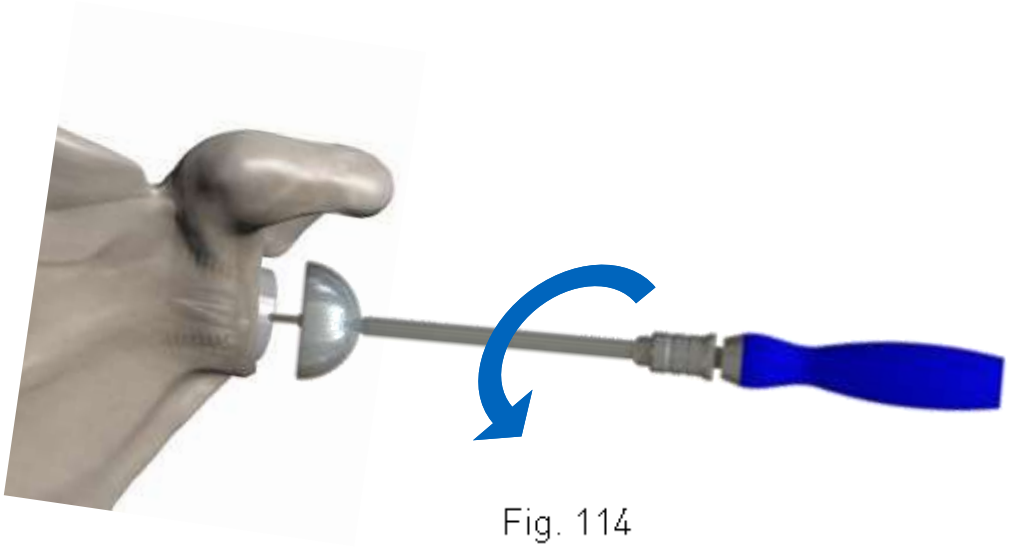


Fig. 114

- To remove an ARAMIS glenosphere, use the 3.5mm screwdriver and unscrew the sphere to disassemble it from the glenoid baseplate.

- Remove the fixation screws.

Fig. 115

- Assemble the holder with threaded end (EAA MF05 or EAA MIU0 different version) on the central thread of the glenoid baseplate. After breaking the bone bridges, on the back of the baseplate with a Lambotte blade, extract the implant.

Fig. 116

Implant references

Cemented stem

EAI 0C07	Cemented stem Ø7mm 132°
EAI 0C08	Cemented stem Ø8.5mm 132°
EAI 0C10	Cemented stem Ø10mm 132°
EAI 0C11	Cemented stem Ø11.5mm 132°
EAI 1C07	Cemented stem Ø7mm 140°
EAI 1C08	Cemented stem Ø8.5mm 140°
EAI 1C10	Cemented stem Ø10mm 140°
EAI 1C11	Cemented stem Ø11.5mm 140°

Cementless stem

EAI 0H08	Cementless stem Ø8mm 132°
EAI 0H10	Cementless stem Ø10mm 132°
EAI 0H11	Cementless stem Ø11.5mm 132°
EAI 0H13	Cementless stem Ø13mm 132°
EAI 1H08	Cementless stem Ø8mm 140°
EAI 1H10	Cementless stem Ø10mm 140°
EAI 1H11	Cementless stem Ø11.5mm 140°
EAI 1H13	Cementless stem Ø13mm 140°

Humeral head

EAI 4013	Humeral head Ø40 H13mm
EAI 4315	Humeral head Ø43 H15mm
EAI 4617	Humeral head Ø46 H17mm
EAI 4918	Humeral head Ø49 H18mm
EAI 4920	Humeral head Ø49 H20mm

Polyethylene glenoid

EAI G030	Polyethylene glenoid Ø30mm
EAI G033	Polyethylene glenoid Ø33mm
EAI G036	Polyethylene glenoid Ø36mm
EAI G136	Polyethylene glenoid Ø36mm R34

References

Humeral cup

EAI CHC0	Centered 0° humeral cup
EAI CHD0	Off-centered 0° humeral cup
EAI CHC8	Centered 8° humeral cup
EAI CH10	Cup with high-offset +10mm

Polyethylene insert

EAI IS06	Standard PE insert +6mm
EAI IS09	Standard PE insert +9mm
EAI IS12	Standard PE insert +12mm
EAI IR09	Retentive PE insert +9mm

Glenosphere and baseplate

EAI SG38	Glenosphere Ø38mm
EAI 0BPS	Glenoid baseplate—Standard peg Ø28mm
EAI 0BPL	Glenoid baseplte—Long peg Ø28mm
EAI 0B28	Helical glenoid baseplate Ø28mm

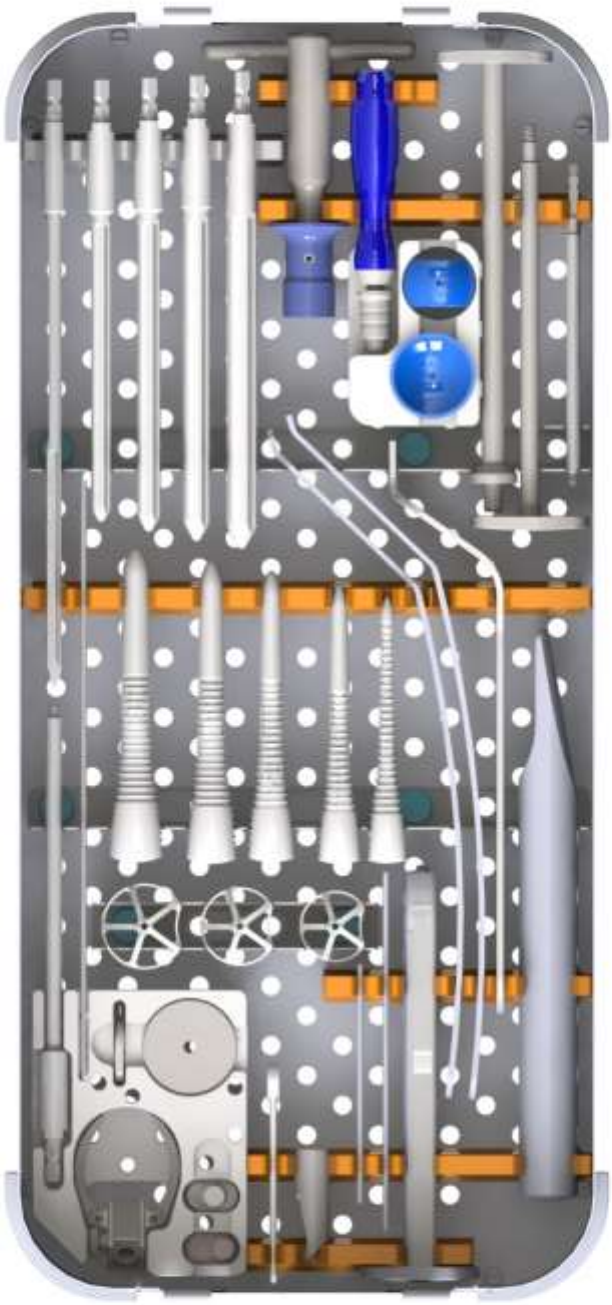
Screw

EAI V515	Screw Ø5mm L15mm
EAI V520	Screw Ø5mm L20mm
EAI V525	Screw Ø5mm L25mm
EAI V530	Screw Ø5mm L30mm
EAI V535	Screw Ø5mm L35mm
EAI V540	Screw Ø5mm L40mm
EAI V545	Screw Ø5mm L45mm

Instrument set

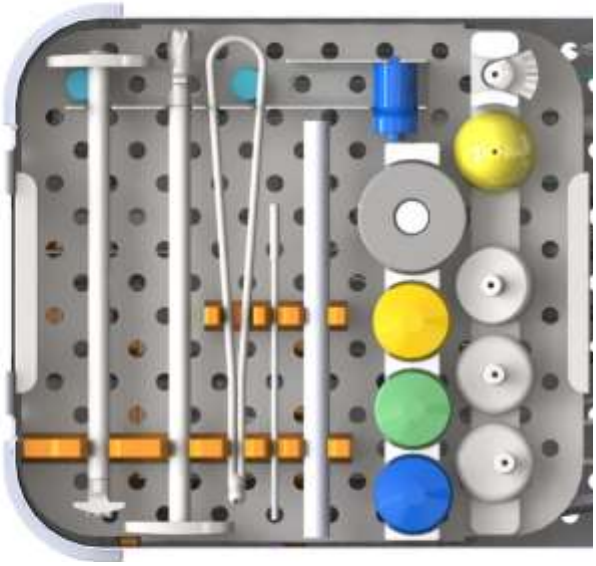
EAA A070	Drill Ø7mm
EAA A085	Drill Ø8.5mm
EAA A100	Drill Ø10mm
EAA A115	Drill Ø11.5mm
EAA A130	Drill Ø13mm
EAA R070	Rasp Ø7mm
EAA R085	Rasp Ø8.5mm
EAA R100	Rasp Ø10mm
EAA R115	Rasp Ø11.5mm
EAA R130	Rasp Ø13mm
EAA GDC0	Humeral cutting guide
EAA C140	High angle corrector
EAA C141	Low angle corrector
EAA EH00	Humeral retractor
EAA EG01	Glenoid retractor
EAA EF02	Glenoid retractor
EAA PT00	T-handle
UH01	AO-handle
EAA CA00	Ablation wrench
EAA GCBG	Glenoid centering
EAA PP00	Humeral protector
EAA FG30	Glenoid ream Ø30mm
EAA FG33	Glenoid ream Ø33mm
EAA FG36	Glenoid ream Ø36mm
EAA MF00	Ream handle
EAA TT35	3.5mm screwdriver
EAA PR00	Rasp holder
EAA VPR0	Screw for rasp holder
EAA CP00	Flat wrench
EAA TA00	Orientation stem
EAA EITH	Head impactor
EAA EIG0	Glenoid impactor
EAA MF04	Threaded AO handle
EAA PRV0	Retroversion plate
EAA MIU0	Impactor handle
BNS-025T-100	K-wires Ø2.5mm L100mm
BNS-025F-150	K-wires Ø2.5mm L150mm

Common tray



Instrument set

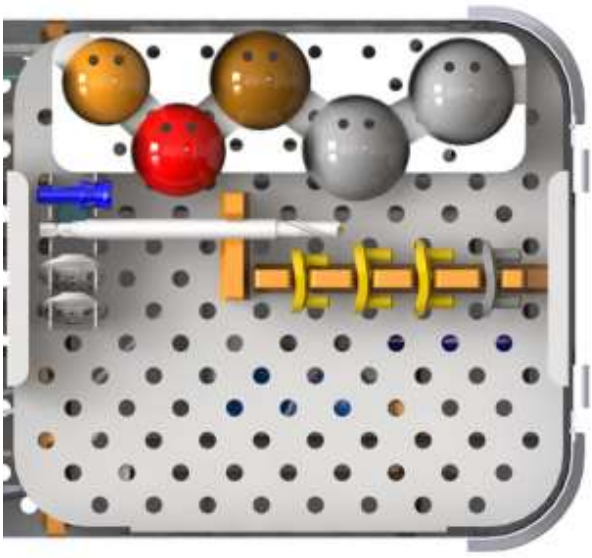
Reversed tray



EAA FG39	Peripheric ream Ø39mm
EAA OM00	Helix preparator
EAA ODT0	Helicoidal chisel
EAA GM32	Drill guide Ø3.2mm
EAA M032	Drill Ø3.2mm
EAA MV00	Depth gauge
EAA GI00	Baseplate impactor
EAA EA00	Anvil
EAA IE06	Insert trial +6mm
EAA IE09	Insert trial +9mm
EAA IE12	Insert trial +12mm
EAA SE38	Glenosphere trial
EAA CEC8	Centered 8° trial cup
EAA CEC0	Centered 0° trial cup
EAA CED0	Off-centered 0° trial cup
EAA CECI	Centered trial cup with angle corrector

EAA GP18	Drill guide 18mm
EAA GP21	Drill guide 21mm
EAA MB80	Drill bit with stop Ø8mm
EAA PS00	Stabilize
EAA TD40	Humeral head trial Ø40H13
EAA TD43	Humeral head trial Ø43H15
EAA TD46	Humeral head trial Ø46H17
EAA TD49	Humeral head trial Ø49H18
EAA TD50	Humeral head trial Ø49H20
EAA GE30	Glenoid trial Ø30mm
EAA GE33	Glenoid trial Ø33mm
EAA GE36	Glenoid trial Ø36mm
EAA GE00	Glenoid trial Ø36mm R34
26901	Glenoid holder

Anatomical tray



EAA C02H	ARAMIS case
EAA C02C	ARAMIS lid
EAA C02I	Reversed case
EAA C02A	Anatomical case

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