ARAMIS version REVISION

Revision Shoulder Prosthesis —Surgical Technique

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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 should determine the best surgical implantation for each patient and make the appropriate adjustments.
Read carefully the Instruction For Use.

The Revision prosthesis ARAMIS-R

The revision humeral stem

Thanks to its dedicated humeral stem, the ARAMIS-R prosthesis allows to efficiently treat prosthesis revisions of the upper end of the humerus, whether for loosening or in case of fracture on prosthesis, but also certain indications in tumor surgery.

It is available in an anatomical (hemiarthroplasty/total) or reversed version and, thanks to its locking possibilities, optimizes the stem's hold in the humerus.

Coated with an osteointegratable titanium and hydroxyapatite bi-layer), it is whether or not locked by 2 screws.

The revision humeral stem exists in 5 diameters and 3 lengths, and only one angulation at 140°.

The Ø 7 stem is only available in length 180 mm and is non-lockable.

The implants are available in a fully coated version and a purely metaphyseal coated version.

Its instrumentation allows easy positioning.

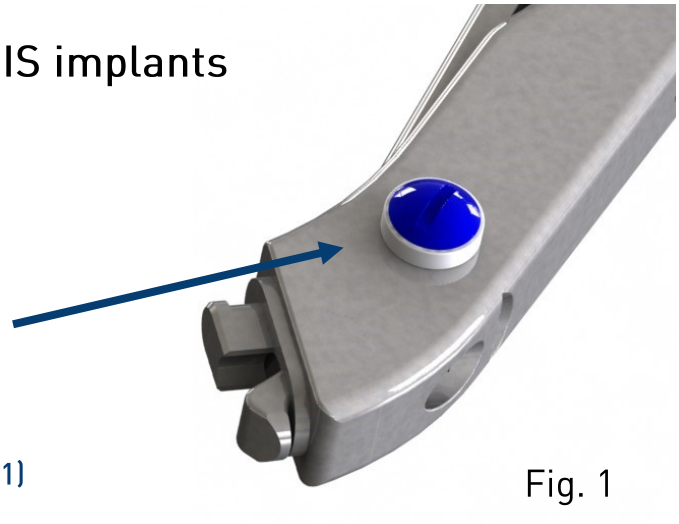
The Revision prosthesis ARAMIS-R has every advantages of the ARAMIS range :

Diaphysis Diameter	Length S	Length M	Length L	Lockable
Ø 7	180 mm	X	X	NO
Ø 8.5	X	205 mm	230 mm	YES
Ø 10	X	205 mm	230 mm	YES
Ø 11.5	X	205 mm	230 mm	YES
Ø 13	X	205 mm	230 mm	YES

Extraction of the implants in place

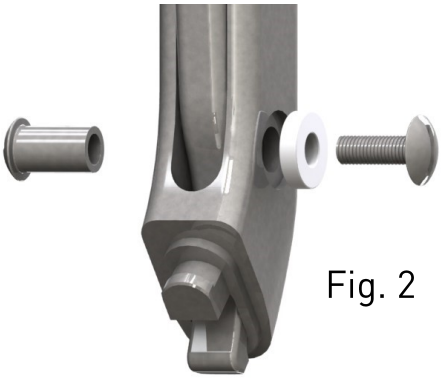
Case of the ARAMIS implants

- To extract the ARAMIS stem:



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

Fig. 1



2) Take off the washer and the screw (Fig. 2)

Fig. 2

3) Take off the spring of the rasp holder (Fig. 3)

Fig. 3

4) Positionning the screw for the extraction (Fig. 4)

Fig. 4

Extraction of the implants in place

5) Attach the set to the stem (Fig. 5) using the 3.5mm EAA TT35 screwdriver and tighten securely with the EAA VPR screw.

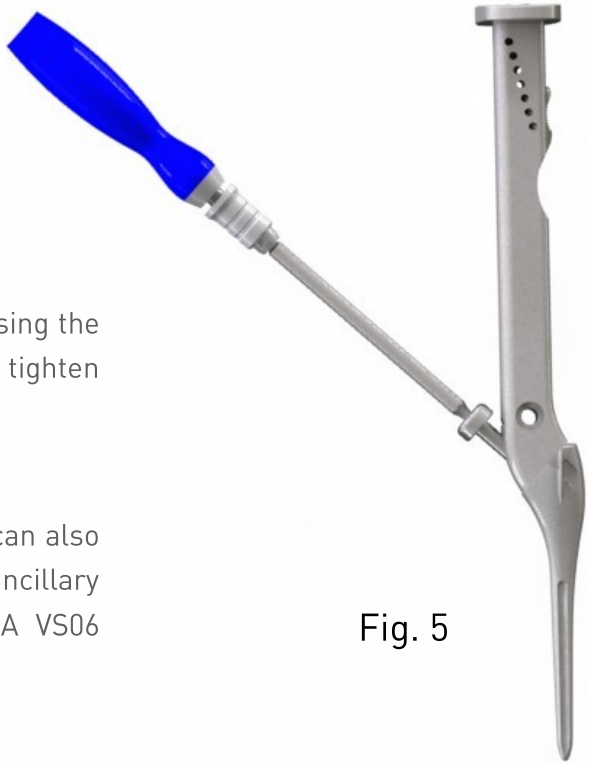


Fig. 5

The ETA IMPT stem impactor (Fig. 6) can also be used directly (depending on the ancillary version) in combination with the ETA VS06 screw.

Fig. 6

Extraction ARAMIS-S

To remove the humeral implant ARAMIS-S

- Use of thin Lambotte blades to break bone bridges.

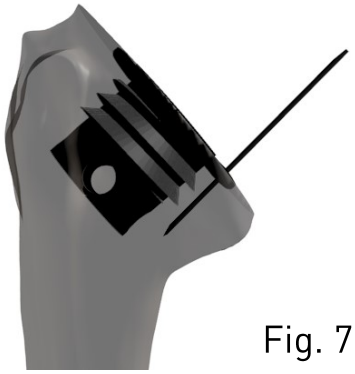


Fig. 7

- Put the Lambotte blades through the notches (Fig. 7).
- Positionning the implant holder and unscrew the implant (Fig. 8) in order to remove it.

Fig. 8

Humeral preparation

Choice of the stem size

- After removal of any in-place implants, the humerus should be prepared and the cement in place should be removed if necessary.
- Prepare the proximal part with the 1st intention rasps.
- Depending on the planning and the size of the diaphysis, it may be necessary to use the flexible reamers available in the operating room.
- Choose the right size and length for a good adaptation and stability.
- It is possible to place a trial prosthesis in order to validate the chosen option (adapted diameter and length) and to verify the correct height adjustment and overall positioning of the humeral stem by means of a reduction trial.

Fig. 9

Trial humeral stem

Positionning

- At this stage, the method of fixation of the humeral stem must be chosen.

There are three possibilities:

1. Self-stable humeral stem.
2. Stabilization of the stem by one or two locking screws
3. Stem stabilization by diaphyseal cementing

Note :

Two versions of ARAMIS-R stems are available

- Long humeral stem with metaphyseal coating (partial coating) with the possibility of locking or diaphyseal cementation.
- Fully coated long humeral stem.

Option stem stabilized by diaphyseal cementing

- Place the stem on the rasp holder. (Fig. 10)
- Place the obturating plugs in the locking holes to prevent the introduction of cement into these locations. (Fig. 11)
- Place the surgical cement in the humeral diaphysis and lower the stem into the shaft.
- Adjust the retroversion.

  A 20° retroversion is usually recommended. (Fig.12)

Fig. 10

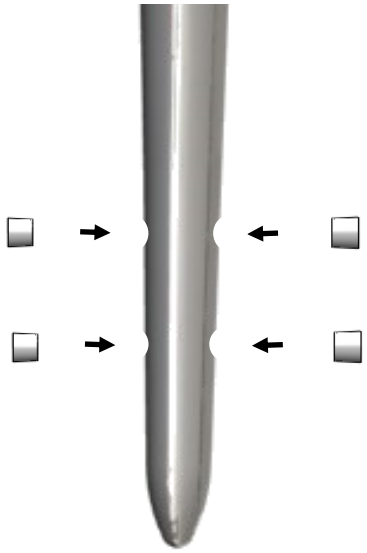
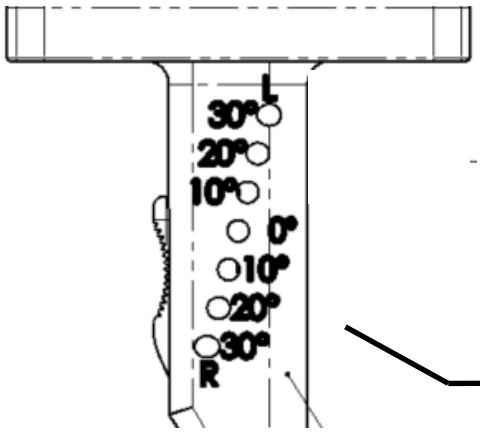


Fig. 11



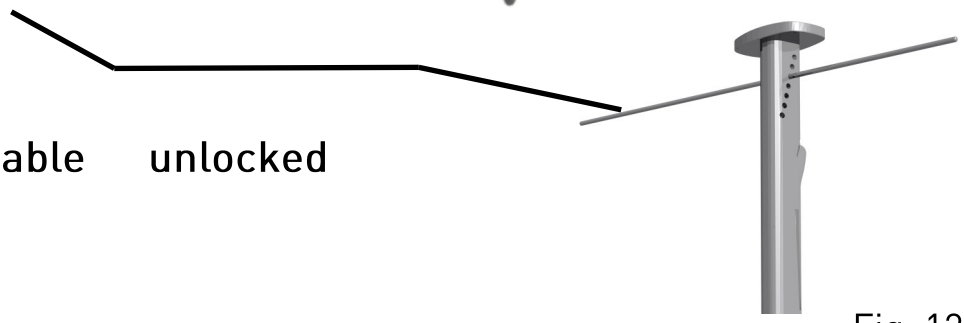


Fig. 12

Option self-stable unlocked stem

- Place the stem on the rasp holder . (Fig. 10)
- Lower the stem into the shaft.
- Adjust the retroversion.

  A 20° retroversion is usually recommended.

Note :

In some cases, humeral calcar is preserved and can be used as a marker for insertion.

Assembly of the aiming instrumentation

Option locked stem

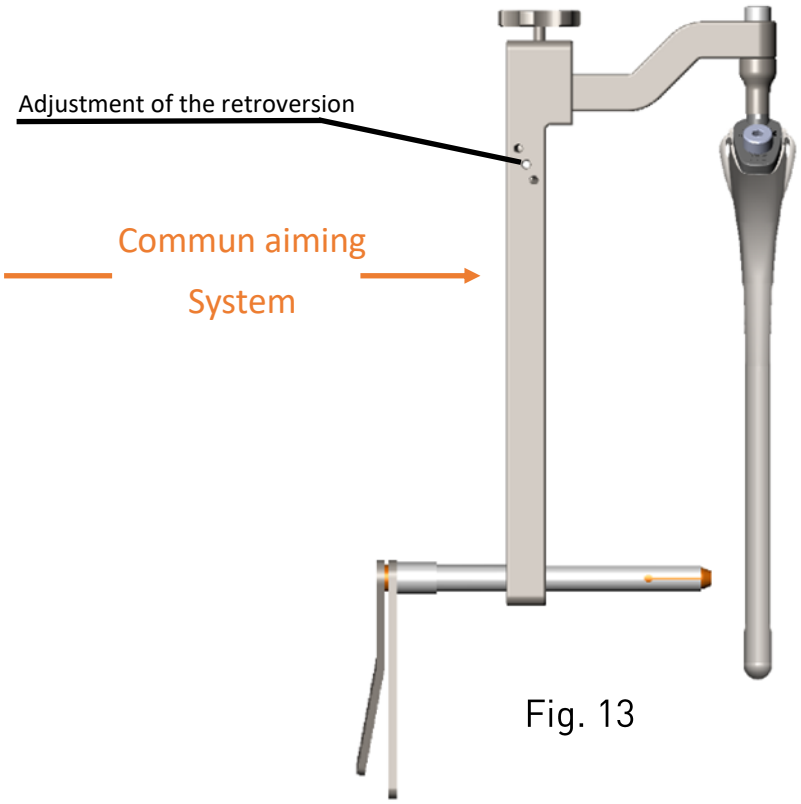
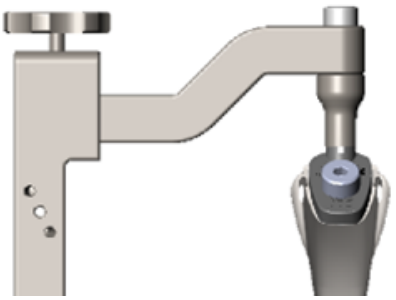


Fig. 13

Assembly of the locking nail connector

Assemble the connector (ERAATxx) corresponding to the size (xx) of the revision stem directly onto the thread at the bottom of the cone. Then place the aiming nail connector system (ETARC00) thanks to the screw (ETAVF06). Adapt the external nail connector (ERASV01) on its support.



Assembly of the stem connactor on the cone

High positioning of the Humeral implant

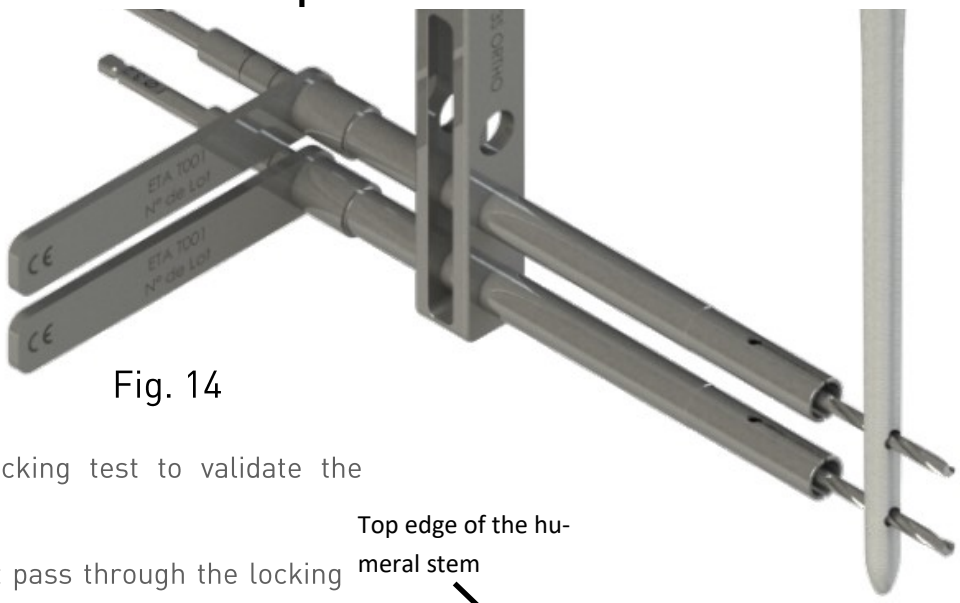


Fig. 14

Carry out a "no-load" locking test to validate the assembly.

The locking drill bits must pass through the locking holes without forcing. (Fig. 14).

- Lower the stem into the humeral shaft with the locking guide.
- Adjust the humeral height before locking.
- In order to position the humeral stem at the right height, one can find the position in relation to the inner edge of the humeral diaphysis, depending on the remaining part of the calcar and respecting the preoperative planning. Murashovski's criteria can also be used (Figs. 15 and 16).

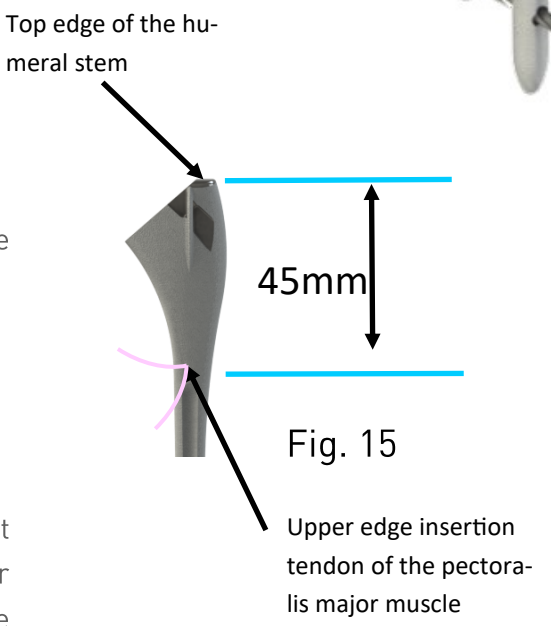


Fig. 15

Use of Murachovski criteria

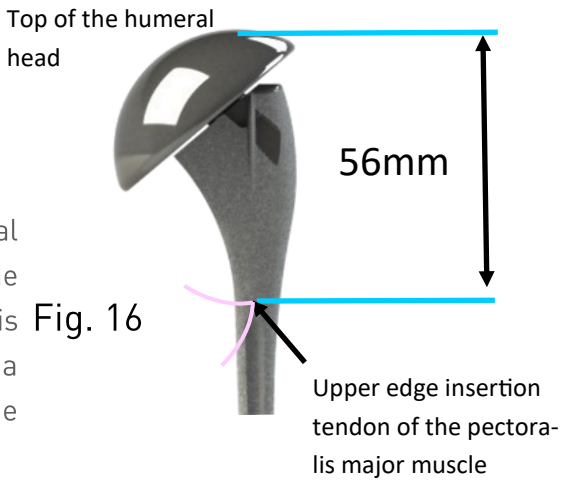


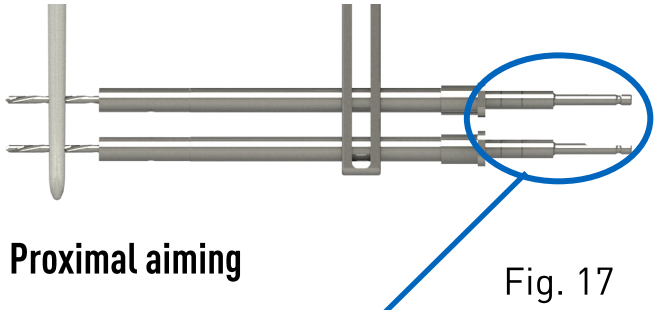
Fig. 16

- According to Murachovsky, the top of the humeral head is on average 56 mm from the upper edge of the tendon of the pectoralis major muscle. This value is relatively constant (+/- 4mm). This corresponds to a distance of 45 mm between the upper edge of the stem and the insertion of the tendon.

Distal interlocking with cortical screw

- Set the desired retroversion using the orientation stem.

Drilling and measurement of the proximal screw

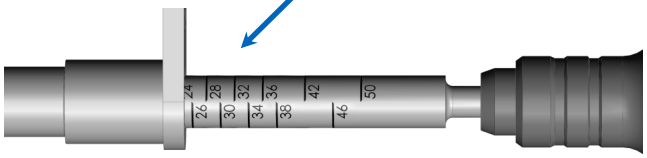


Proximal aiming

Fig. 17

- Using the soft tissue protection tube in the upper hole, drill with the 3.2 mm drill bit. (Fig. 17)

- <u>Graduated drill bit method :</u>



Screw length = L+4mm

Fig. 18

On contact with the 2nd cortical, estimate the size of the screw on the graduation, noting the first visible at the exit of the tube. (Fig. 18)

Chose a screw with a length of + 4 mm.

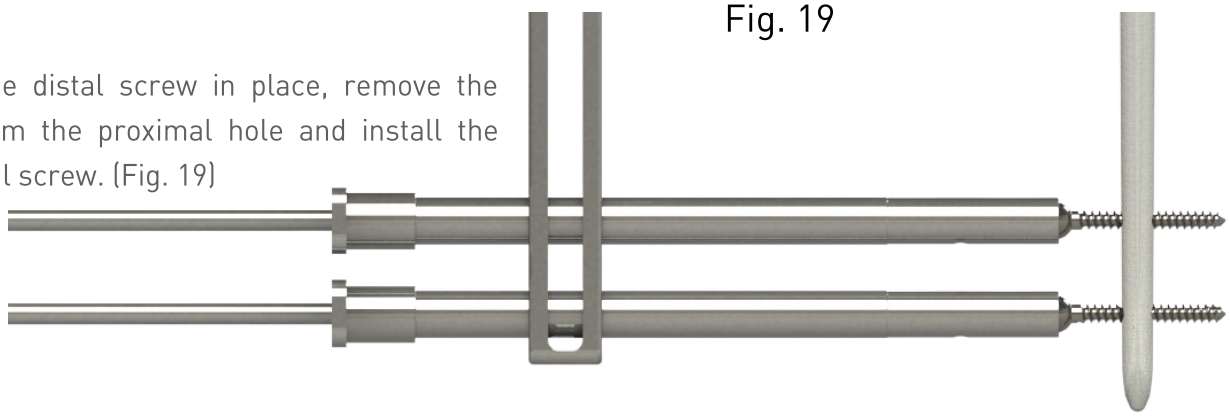
- Pierce the 2nd cortical. Leave the drill bit in place.

Drilling and placement of the most distal screw

Proceed the same way for the 2nd locking screw. Chose the screw with the adapted length and place it using th screwdriver through the soft tissue protection.

Fig. 19

Once the distal screw in place, remove the drill from the proximal hole and install the proximal screw. (Fig. 19)



Distal interlocking with locking pin

- Set the desired retroversion using the orientation stem.

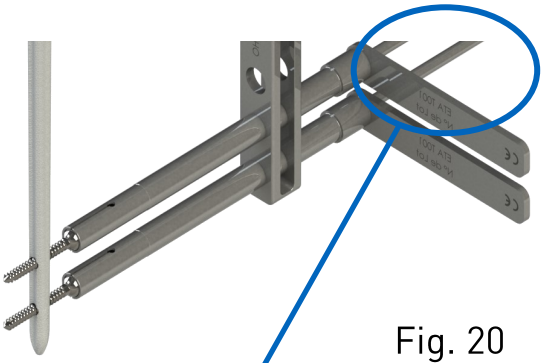
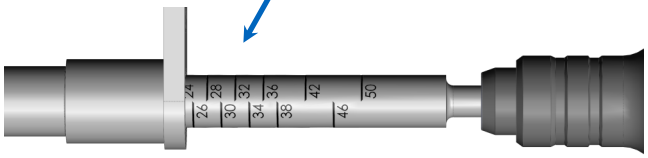


Fig. 20

Drilling and measurement of the proximal locking pin

- Using the soft tissue protection tube in the upper hole, drill with the 4 mm drill bit (Fig.20)

Proximal aiming



- <u>Graduated drill bit method :</u>

On contact with the 2nd cortical, estimate the size of the locking pin on the graduation, noting the first visible at the exit of the tube. (Fig. 21)

Locking pin length = L+4mm

Fig. 21

Chose a locking spin with a length of + 4 mm.

Pierce the 2nd cortical. Leave the drill bit in place.

Drilling and placement of the most distal locking pin

Proceed the same way for the 2nd locking pin. Chose the locking pin with the adapted length and place it using th screwdriver through the soft tissue protection.

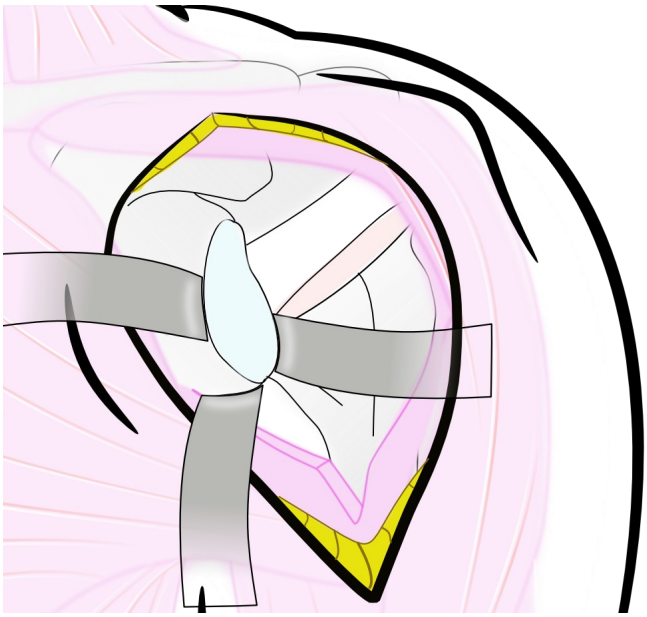
Fig. 22

- Once the distal locking pin in place, remove the drill from the proximal hole and install the proximal screw.

Genoid Exposure

Place three retractors :

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



Note :

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

If necessary, extract the implants already in place.

Exctraction of implants

To remove a glenosphere of ARAMIS, use the 3.5mm screwdriver and unscrew the sphere to disassemble it from the glonoid baseplate.(Fig. 23)

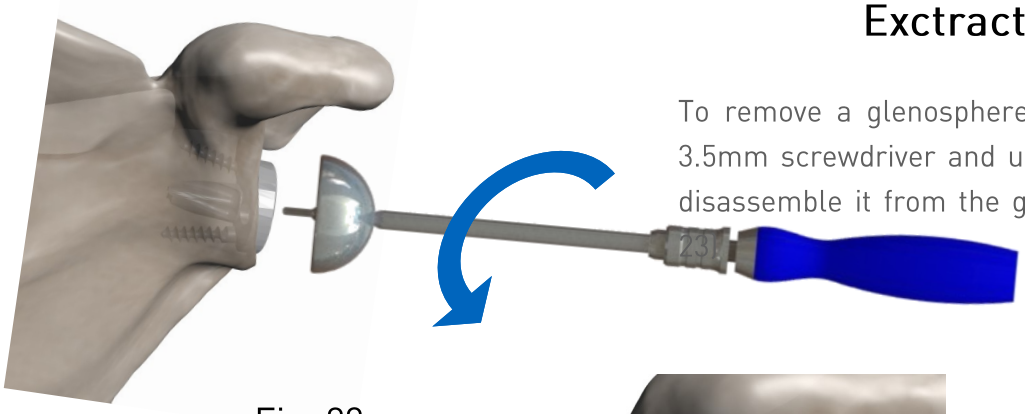
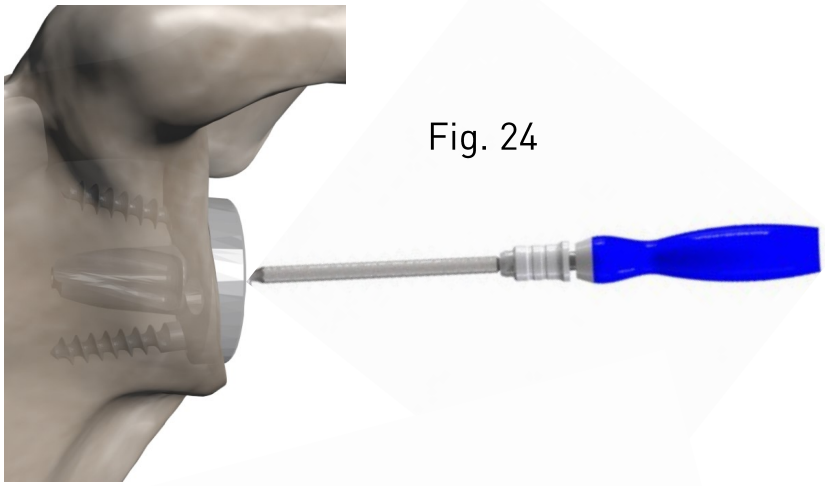


Fig. 23

- Remove the fixation screws. (Fig. 24)

Fig. 24



- Assemble the holder with threaded end (EAA MF05 or EAA MIUO depnding on the 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.

Glenoid preparation

Embase glène à plot long et à fond

It is common to experience loss of bone substance in the glenoid requiring the use of a bone graft. (allograft or autograft)

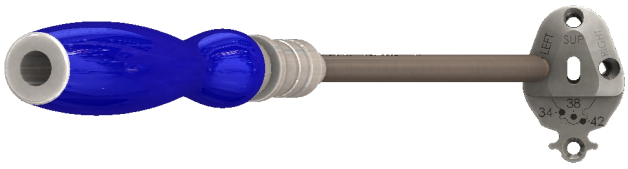


Fig. 25

Clean carefully and sharpen the surface In the case of an associated bone graft, the use of a long-peg, flat-bottomed glenoid base (ERI 0BLP) allowing anchoring in the native bone is recommended.
Placement of the glenoid drill guide (Fig. 25) The use of the pin drill guide optimizes the positioning of the guide pin. The location of the pin determines the final position of the glenosphere.

The glenoid should be as covered as possible and the sphere should be positioned slightly below its lower edge.

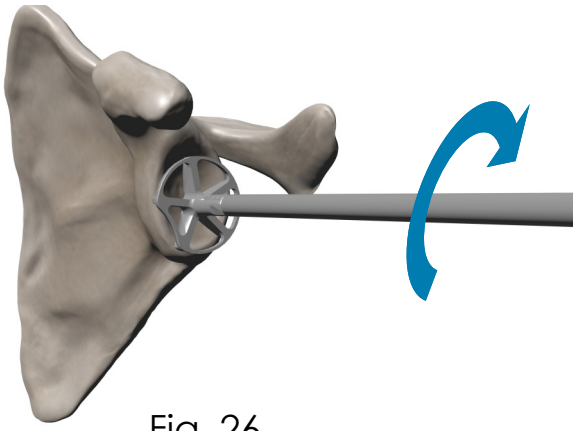


Fig. 26

Above all, sufficient bone anchorage must be

If a graft is used, this surface could have been prepared directly on the extraction site as described in the Norris technique or on the table. For the flat-bottomed glenoid base, the EAA FC00 reamer will be used. (Fig. 26).

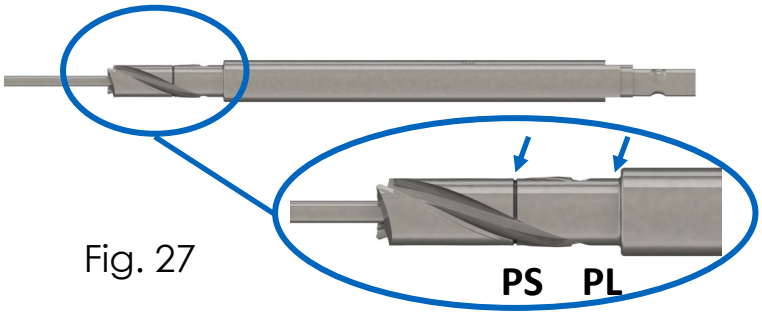


Fig. 27

Drill the glenoid with the pin-guided drill bit to the desired length (mark and abutment visible on the EAA MP80 drill bit) (Fig. 27). If the graft is positioned directly on the glenoid base, it will not be necessary to drill all the way to the abutment.

Adapt the definitive glenoid base to the impaction tool (Fig. 28).

Fig. 28

Note : All screw holes allow a 10° displacement.

Glenoid preparation

Insert the assembly on the pin and carefully impact the plate into the glenoid.

Check the correct application of the base plate by bone contact through the screw holes.

Insert the Ø 5 screws in the same way as in the conventional technique (Fig. 29), and tighten them alternately to ensure gradual compression.

Insert the glenosphere and perform the tests with reference to the general Aramis surgical technique.

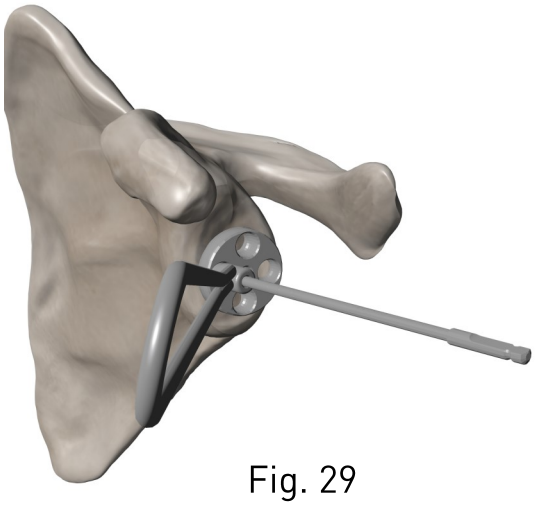


Fig. 29

Anatomical keel glenoid

Screw the ream on its handle and tighten with a flat key (Fig. 30). The Hudson junction enables to fix the ream on a motor using the « REAM » function. It has to be fixed to the T-handle to ream manually.

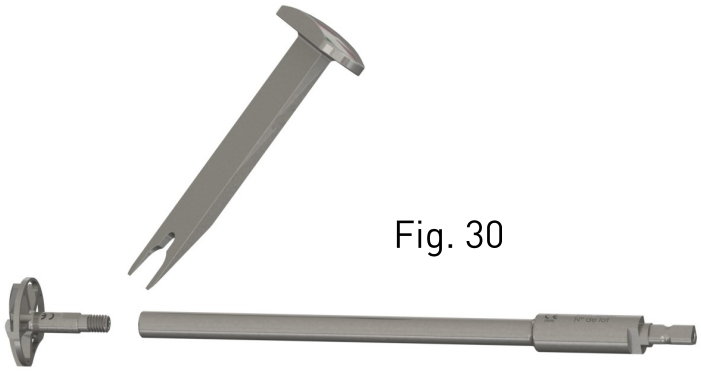


Fig. 30

Position the threaded pin sterile ref BS-025F-200 in the center of the glenoid using the drill guides (Fig. 31). The orientation of this pin will be in accordance with the preoperative planning. Carry out the reaming on the pin with the reamers adapted to the glenoid sizes: Ø30, Ø33 and Ø36mm.

Fig. 31

Note : To be careful, it is prefered to drill manually. If the motor is used, start the motor at a few millimeters of the glenoid surface and apply the ream in movement, to avoid the cutting edges of the ream engaging too brutally.(Fig. 32)

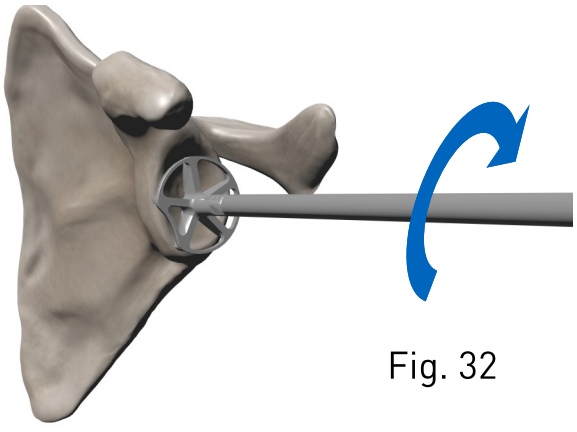


Fig. 32

Glenoid preparation

Prepare the periphic holes of the anchoring keel.
Use the drill guide for the keel and position it on the pin in place. Align the holes of the guide in the upper-inferior axis of the native glenoid. Drill the upper hole with the Ø5 mm abutment drill bit (ERA MB50) up to the guard. Insert the stabilizing pin (ERA PS01) and drill the lower hole the same way. Remove the assembly. Remove the pin. Place the drill guide for the center hole by positioning the 2 pegs in the upper and lower holes.

Drill the center block with the Ø 5 drill bit (ERA MB50) until the abutment is in contact with the guide.

The bone bridges between the three holes are broken with gouge clamps or a small osteotome. Then use the compactor (ERA CK00) to make an impression of the keel.

Placing the trial glenoid.

Chose the size of the humeral head.

There are four different diameters : Ø40, 43, 46 and 49mm (Fig. 33).

At this stage, refer to the surgical technique of ARAMIS anatomical to do the trial and place the definitive implants.

According to recent studies , the use of a 5mm mismatch is ideal.

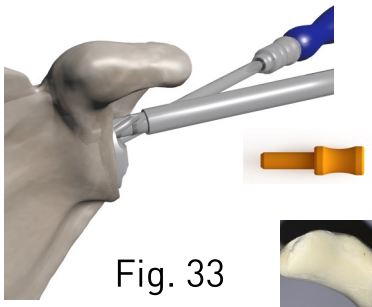


Fig. 33

Fig. 34

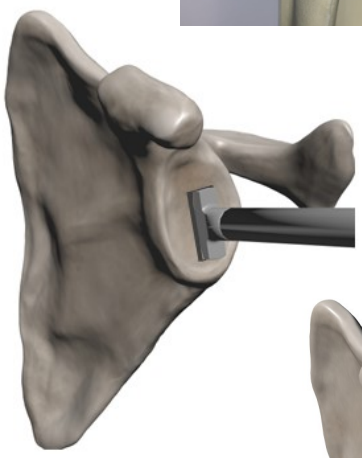


Fig. 35

Fig. 36

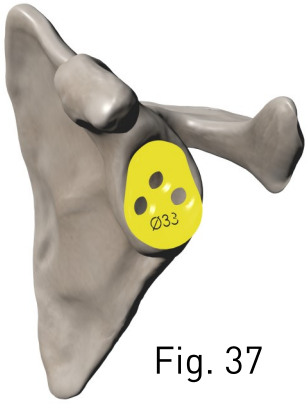


Fig. 37

	Ø30	Ø33	Ø36	Ø36 R34
Ø40H13	✓ 5mm	✓ 5mm	✓ 5mm	✗ 9mm
Ø43H15	✓ 5mm	✓ 5mm	✓ 5mm	✗ 9mm
Ø46H17	✓ 5mm	✓ 5mm	✓ 5mm	✗ 9mm
Ø49H18	✗ 1mm	✗ 1mm	✗ 1mm	✓ 5mm
Ø49H20	✗ 1mm	✗ 1mm	✗ 1mm	✓ 5mm

Instrument references

ERA M040	Graduated drill Ø 4
ERA MB50	Abutment drill Ø 5
ETA RC00	Nail connector
ETA VF06	Attachment screw
ERA RT08	Stem connector 8.5
ERA RT08	Stem connector 10
ERA RT08	Stem connector 11,5
ERA RT08	Stem connector 13
ERA SV01	Long aiming system
ETA T035	Screwdriver hexa. 3.5mm
ETA T001	Guard tube
ETA GB20	K-wire guide
ETA G0M0	Round guide
ETA IMPT	Stem impactor
ERA GK01	Drill guide peripheric hole
ERA GK00	Drill guide central hole
ERA PS01	Stabilization peg Ø 5
ERA CK00	Keel compactor
ETA VS06	Captive M6 screw
ERA SE07	Trial humeral revision stem Ø7 mm L180 mm
ERA ME08	Trial humeral revision stem Ø8.5 mm L205 mm
ERA ME10	Trial humeral revision stem Ø10 mm L 205 mm
ERA ME11	Trial humeral revision stem Ø11.5 mm L205 mm
ERA ME13	Trial humeral revision stem Ø13 mm L205 mm
ERA LE08	Trial humeral revision stem Ø8.5 mm L230 mm
ERA LE10	Trial humeral revision stem Ø10 mm L230 mm
ERA LE11	Trial humeral revision stem Ø11.5 mm L230 mm
ERA LE13	Trial humeral revision stem Ø13 mm L230 mm
ERA KE30	Trial keel glenoid Ø30mm
ERA KE33	Trial keel glenoid Ø33mm
ERA KE36	Trial keel glenoid Ø36mm
ERA KE00	Trial keel glenoid Ø36mm R34

Implant references

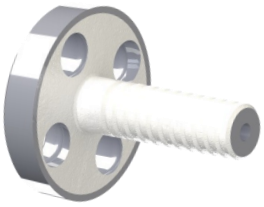
PARTIAL COATING STEMS

ERI SP07	Cementless humeral revision stem Ø7 mm L 180 mm—partial coating
ERI MP08	Locking humeral revision stem Ø8.5 mm L 205 mm—partial coating
ERI MP10	Locking humeral revision stem Ø10 mm L 205 mm—Partial coating
ERI MP11	Locking humeral revision stem Ø11.5 mm L205 mm—Partial coating
ERI MP13	Locking humeral revision stem Ø13 mm L 205 mm—partial coating
ERI LP08	Locking humeral revision stem Ø8.5 mm L230 mm—partial coating
ERI LP10	Locking humeral revision stem Ø10 mm L230 mm—Partial coating
ERI LP11	Locking humeral revision stem Ø11.5 mm L 230 mm—Partial coating
ERI LP13	Locking humeral revision stem Ø13 mm L230 mm—Partial coating

TOTAL COATING STEMS

ERI SH07	Cementless humeral revision stem Ø7 mm L 180 mm—Total coating
ERI MH08	Cementless locking humeral revision stem Ø8.5 mm L205 mm—Total coating
ERI MH10	Cementless locking humeral revision stem Ø10 mm L205 mm—Total coating
ERI MH11	Cementless locking humeral revision stem Ø11.5 mm L205 mm—Total coating
ERI MH13	Cementless locking humeral revision stem Ø13 mm L205 mm—Total coating
ERI LH08	Cementless locking humeral revision stem Ø8.5 mm L230 mm—Total coating
ERI LH10	Cementless locking humeral revision stem Ø10 mm L230 mm—Total coating
ERI LH11	Cementless locking humeral revision stem Ø11.5 mm L230 mm—Total coating
ERI LH13	Cementless locking humeral revision stem Ø13 mm L 230 mm—Total coating

Implant references



GLENES

ERI K030	keel glenoid Ø30mm
ERI K033	keel glenoid Ø33mm
ERI K036	keel glenoid Ø36mm
ERI K136	keel glenoid Ø36mm R34
ERI 0BLP	Baseplate - Long peg with flat bottom

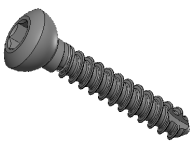
BOUCHONS

ETI PLUG	Obturator plug X6

VIS CLAVETTE

ERI C424	Locking pin Ø4 L24 mm
ERI C428	Locking pin Ø4 L28_mm
ERI C432	Locking pin Ø4 L32 mm
ERI C436	Locking pin Ø4 L36 mm
ERI C44	Locking pin Ø4 L40 mm

VIS



ETI V420	Screw Ø4 L20mm
ETI V422	Screw Ø4 L22mm
ETI V424	Screw Ø4 L24mm
ETI V426	Screw Ø4 L26mm
ETI V428	Screw Ø4 L28mm
ETI V430	Screw Ø4 L30mm
ETI V432	Screw Ø4 L32mm
ETI V434	Screw Ø4 L34mm
ETI V436	Screw Ø4 L36mm
ETI V438	Screw Ø4 L38mm
ETI V442	Screw Ø4 L42mm
ETI V446	Screw Ø4 L46mm
ETI V450	Screw Ø4 L50mm

NOTES

Les passerelles

24 avenue Joannès Masset

69009 LYON

Tél. : 04.37.24.07.45

Fax. : 04.72.74.90.41

CE 1984

Dispositif médical de classe III // Indication : arthroplastie de l'articulation gléno-humérale

Dispositif médical remboursé par la sécurité sociale

Consulter la technique opératoire avant utilisation

Lire attentivement la notice

Réf : ERI TOFR V1-02.2021