Evolutis
CREATEUR-FABRICANT

UNIC STEMLESS

Anatomic Short Shoulder Prosthesis

Evolutis

UNIC STEMLESS

Evolutis
CREATEUR-FABRICANT

Table of contents

Evolutis

Context

- Different type of shoulder prosthesis
  - for different clinical indications:
    - Age of patient or activity level
    - Demineralisation status or bone stock
    - Degree and position of cartilage wear
    - State of the rotator cuff / articular stability
    - Degenerative / trauma

Context

- Different type of shoulder prosthesis
  - from less invasive to more invasive:
    - Humeral resurfacing or stemless humeral implant
    - Hemiarthroplasty
    - Anatomic TSA
    - Reverse TSA
    - Fracture Reverse TSA
    - CTA (cuff tear arthroplasty)
    - Revision Reverse

www.evolutisfrance.com

UNIC®

Anatomic,

Reverse,

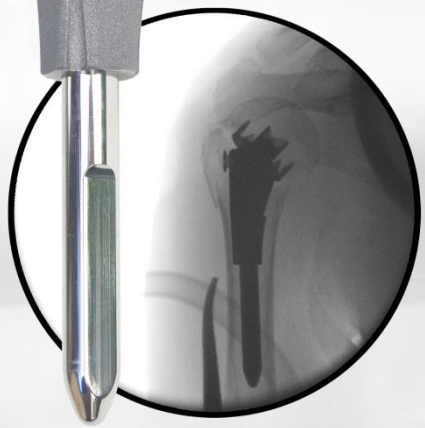
CTA,

Primary,

Reverse,

Fracture,

and more…



Evolutis

UNIC STEMLESS

Evolutis
CREATEUR-FABRICANT

The anatomic shoulder

Evolutis

The anatomic shoulder

- What is the challenge?
  - Implant: sufficient number of sizes and diameter/thickness ratio to adapt closely to each situation
  - Instruments: assist and achieve accurate reproduction of
    - Volume of humeral head
    - Orientation of cut // axial humerus
    - Retroversion of cut

UNIC anatomic & UNIC STEMLESS

In 2012, in France, the market shares were:

-	Hemiarthroplasties:	2889	26%
-	Total Anatomic:	3308	30%
-	Total reverse:	4743	43%
-	Resurfacing:	0095	01%

UNIC STEMLESS can be indicated in:

- Hemiarthroplasty
- Total Anatomic
- Resurfacing

57%

Evolutis

The anatomic shoulder

- Indication:
  - Patients less than 75
  - Good rotator cuff
  - Degenerative omarthrosis
- Requirements:
  - Hemi or total arthroplasty
  - Preservation of the existing cuff
  - Implant replaces the bone in position and volume

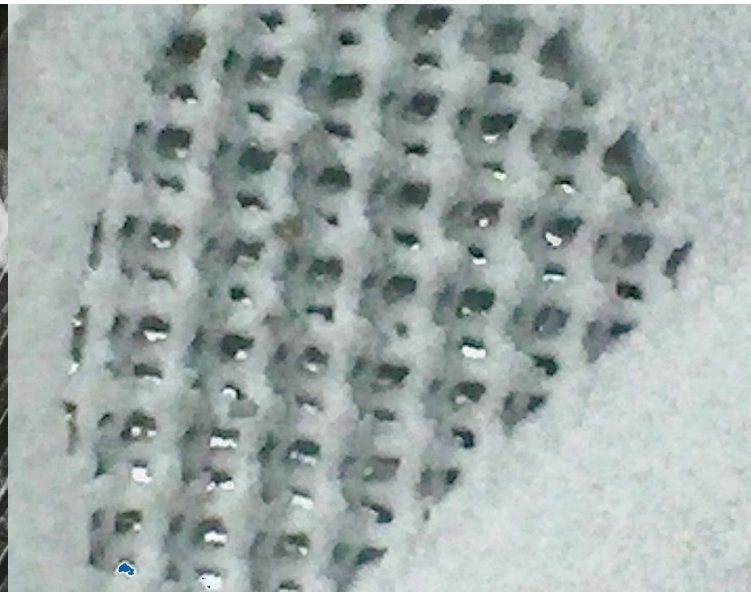
The anatomic shoulder

Why should we use a STEMLESS implant ?

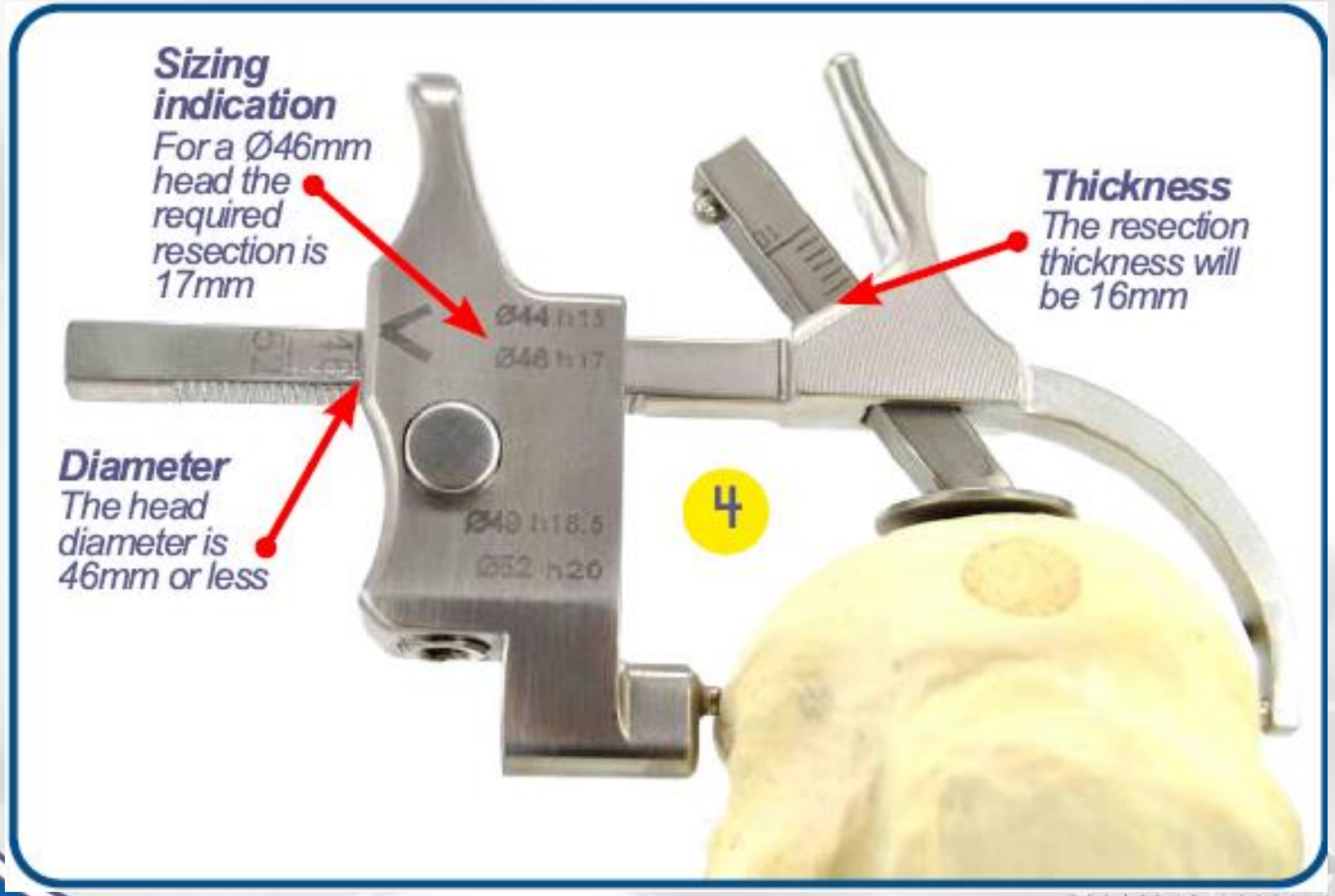
- Humeral head can be positioned independently of the humeral shaft axis, especially important in post traumatic arthritis situations
- Excellent anatomic reconstruction of the humeral head as the prosthesis can be adjusted to the cortical rim of the humeral resection at the anatomical neck
- Potential for less invasive exposure
- Unrestricted approach to the glenoid
- Simplified revision arthroplasty and avoidance of complications associated with humeral shaft osteotomy

UNIC STEMLESS

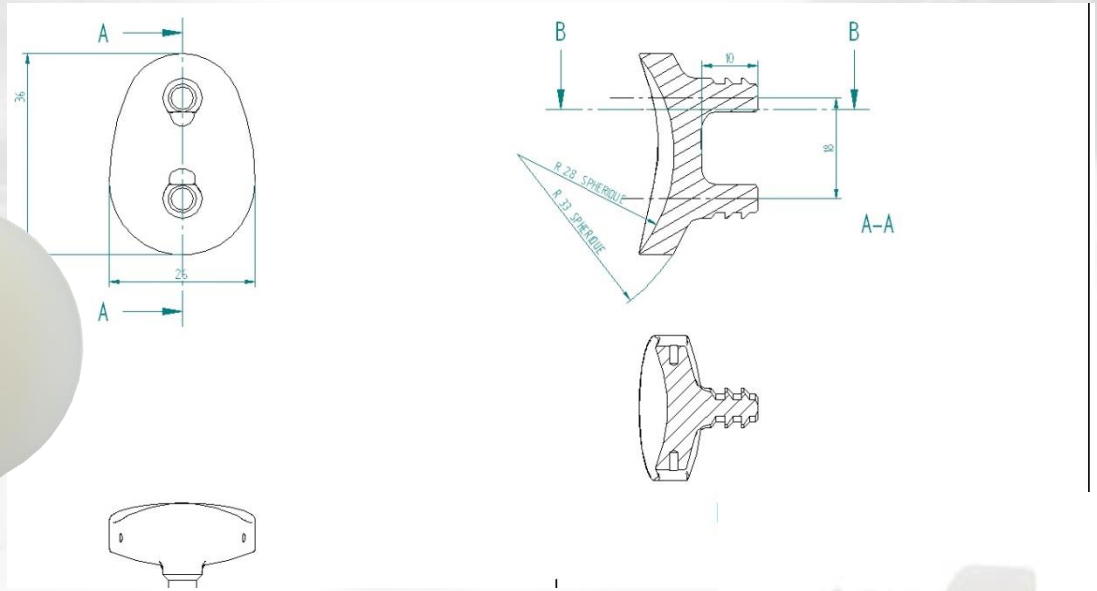
- **5** diameters of **baseplate** 25 to 38mm
- **8** diameters of **humeral head** 35 to 52mm
- Choice of **2 thicknesse**s from head 41mm
- **Additive technology** for enhanced bone in-growth
- Instrumentation allows resection plan / diameter / thickness selection in one step



UNIC STEMLESS



Anatomic GLENOID COMPONENT



Glenoid component

- All PE, bone saving curved contact area with bone
- 2 pegs, bone sparing,
- Cemented only
- avoids keel “rocking” effect,
- allows for revision to reverse
- 2mm mismatch between head and bearing surface to avoid being too congruent

Evolutis

UNIC STEMLESS

Evolutis
CREATEUR-FABRICANT

Competitive Analysis

Evolutis

Competition

- Different solutions for an anatomic and bone preserving humeral component:
  - Short stem (Aequalis Ascent)
  - Total Resurfacing (Copeland, Global-Cap)
  - Focal Resurfacing (Hemi-Cap)
  - Epiphyseal stem (Unic Stemless, TESS…)

Competition (Short stem)

- Less invasive than a conventional humeral stem?: only in the distal intramedullar part.
- Can be retro-converted to a reverse total prosthesis
- Low and high offset humeral heads to adjust to anatomy
- Position of head dependant on the intramedullar axis, may not be more anatomic than a conventional stem

Competition (Total resufacing)

- Initiated by Copeland (Biomet – UK)
- Similar concept to hip resurfacing
- Superficial reaming of the humeral head
- Cemented Resurfacing humeral head with central keel and low thickness
- Technically demanding
- VERY DIFFICULT access to the glenoid
- Complications:
  - overstuffing of articular space
  - with anatomic centralization of the implant
  - Concerns about the stress-shielding of the bone stock

Global-Cap (Depuy)

Durom (Zimmer)

Aequalis (Tornier)

Competition (Focal resurfacing)

- One only diameter of implant (35mm)
- Choice of 10 offsets (6.5mm to 10mm)
- Restores the articular congruity
- High technical skill recommended
- No back-up solution in case of complication
- Indications of hemiarthroplasty only

Hemi-Cap « Arthrosurfaces »

Evolutis

Competition (Stemless)

Nano (Biomet)

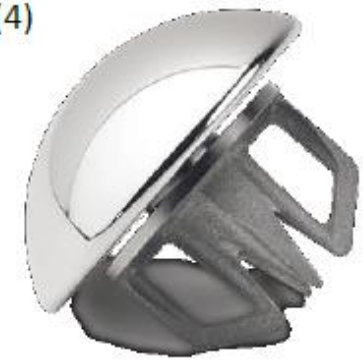
(1)

(2)

(3)

Dispositifs d'épaule à fixation épiphyso-métaphysaire : (1) TESS (Biomet), (2) AFFINIS (Mathys), (3) ECLIPSE (Arthrex), (4) SIDUS (Zimmer), (5) SIMPLICITI (Tornier), (6) UNIC STEMLESS (Evolutis)

(4)



(5)

(6)

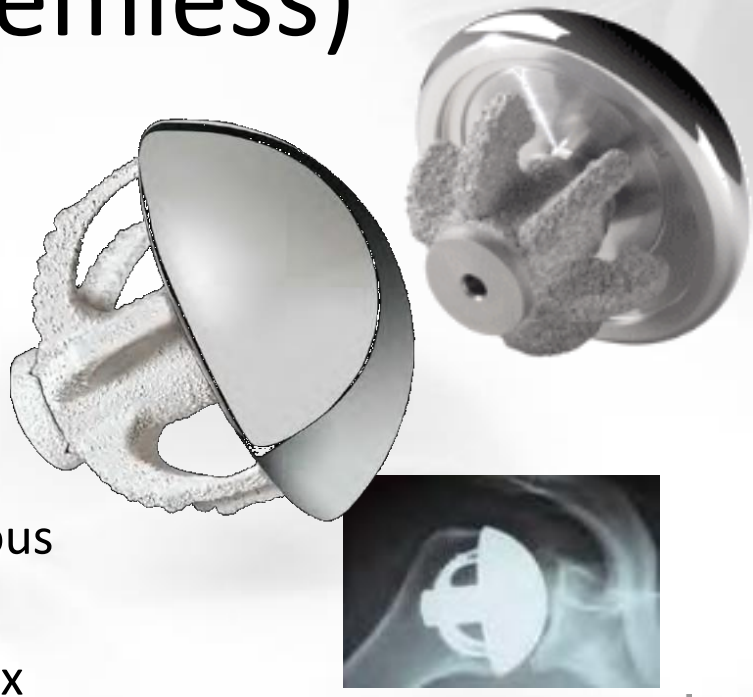
Competition (Stemless)

- UNIC STEMLESS
  - 5 diameters of baseplate 25 to 38mm
  - 8 diameters of humeral head 35 to 52mm
  - Choice of 2 thicknesses from head 41mm
  - Additive technology for enhanced bone in-growth
  - Instrumentation allows resection plan / diameter / thickness selection in one step

Evolutis

Competition (Stemless)

- Biomet TESS (Nano)
  - First stemless launched
  - With or without intramedullar stem
  - Available in Reverse but no compatibility between anatomic and reverse
  - TESS is made of Cobalt Chrome with Porous T40 and HA coating.
  - It consists of 6 branches, and a taper to fix the anatomical heads.
  - Four sizes of corolla, 6 diameters of head, centered and excentric, no thickness adaptation



Competition (Stemless)

- Simpliciti TORNIER
  - 5 diameters of head (40 to 56), each in 3 thicknesses (STB version) or 7 diameters of head (39 to 52) with 2 thicknesses for 50 and 52 (standard)
  - 3 sizes of « nucleus » (baseplate)
  - Free-hands instrumentation : dedicated to expert surgeons

Fig. 4

Competition (Stemless)

- Sidus ZIMMER
  - Similar concept to Evolutis except additive manufacturing
  - 8 head diameters 38 to 52
  - 2 thickness options for 48, 50 and 52
  - 3 baseplates 24 to 32
  - Compatibility with different glenoids, including the trabecular metal

- Surgical technique similar to UNIC stemless except for the calibration of the resection level

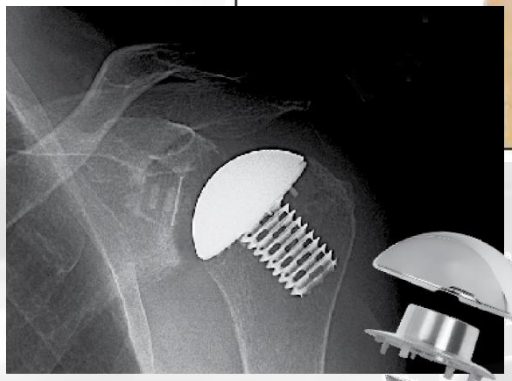
Competition (Stemless)

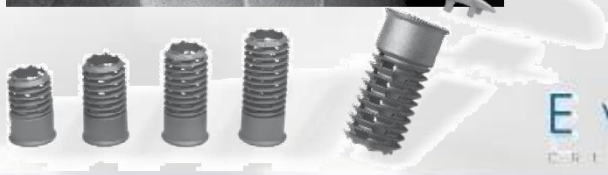
- Affinis MATHYS
  - Only Stemless with a alumina ceramic head
  - Theoretically better for hemiarthroplasty
  - 8 head diameters 39 to 53, no thickness option, increment 1mm/size begining 13
  - Baseplate: 6 sizes
  - Baseplate design with no collar: subsidence?
  - Resection/orientation guide include a thickness gauge, but choice of 3 only: accuracy ?

Competition (Stemless)

Eclipse ARTHREX

- 8 anatomic head sizes available in 2 mm increments (39 to 53)
- 1 head thickness per diameter
- Fenestrated cage screw for enhanced fixation
- 4 cage screw lengths account for anatomical variations (30 to 45mm)
- Humeral cutting guide : only 2 sizes (small or large) no accuracy in resection thickness





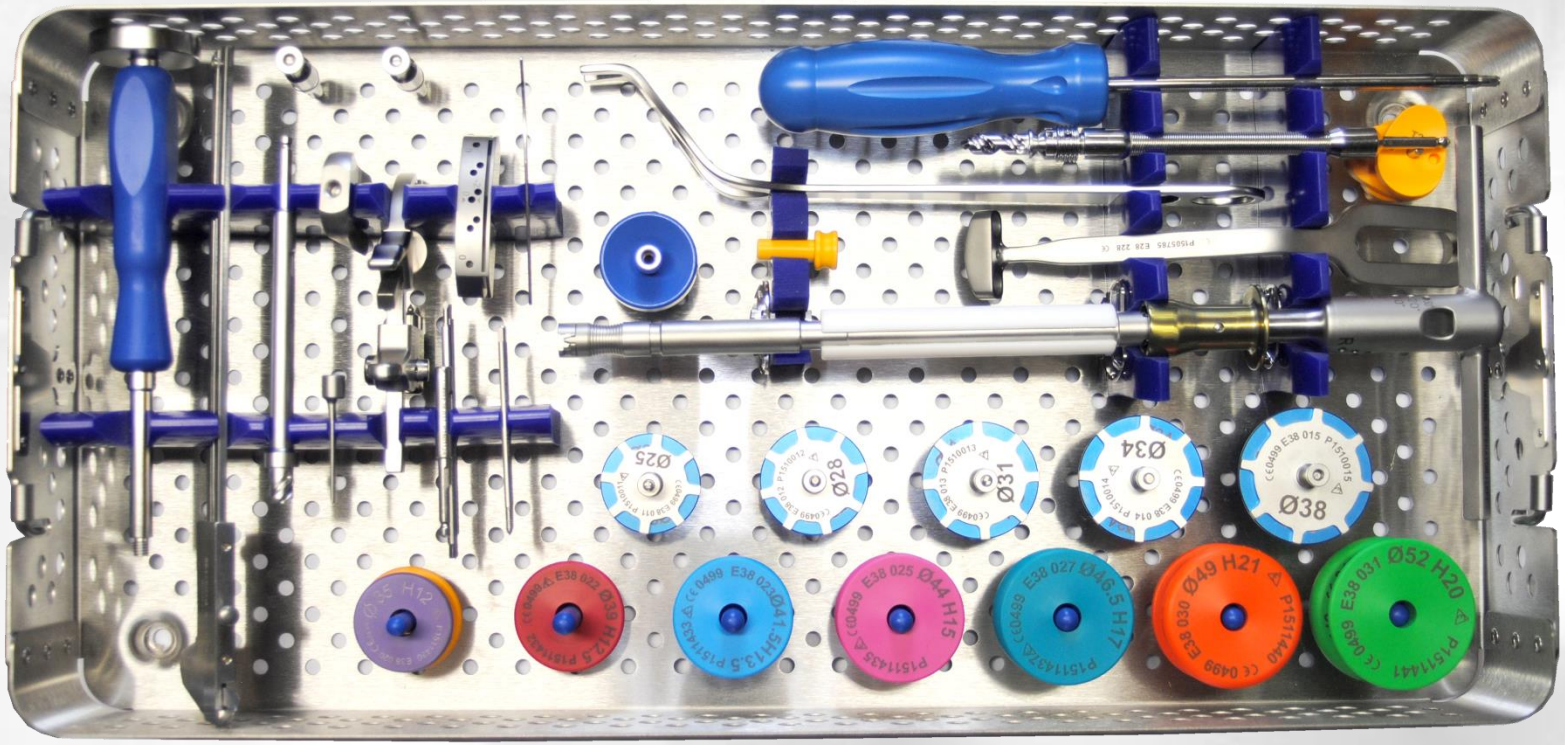
Evolutis

Evolutis
CREATEUR-FABRICANT

UNIC STEMLESS

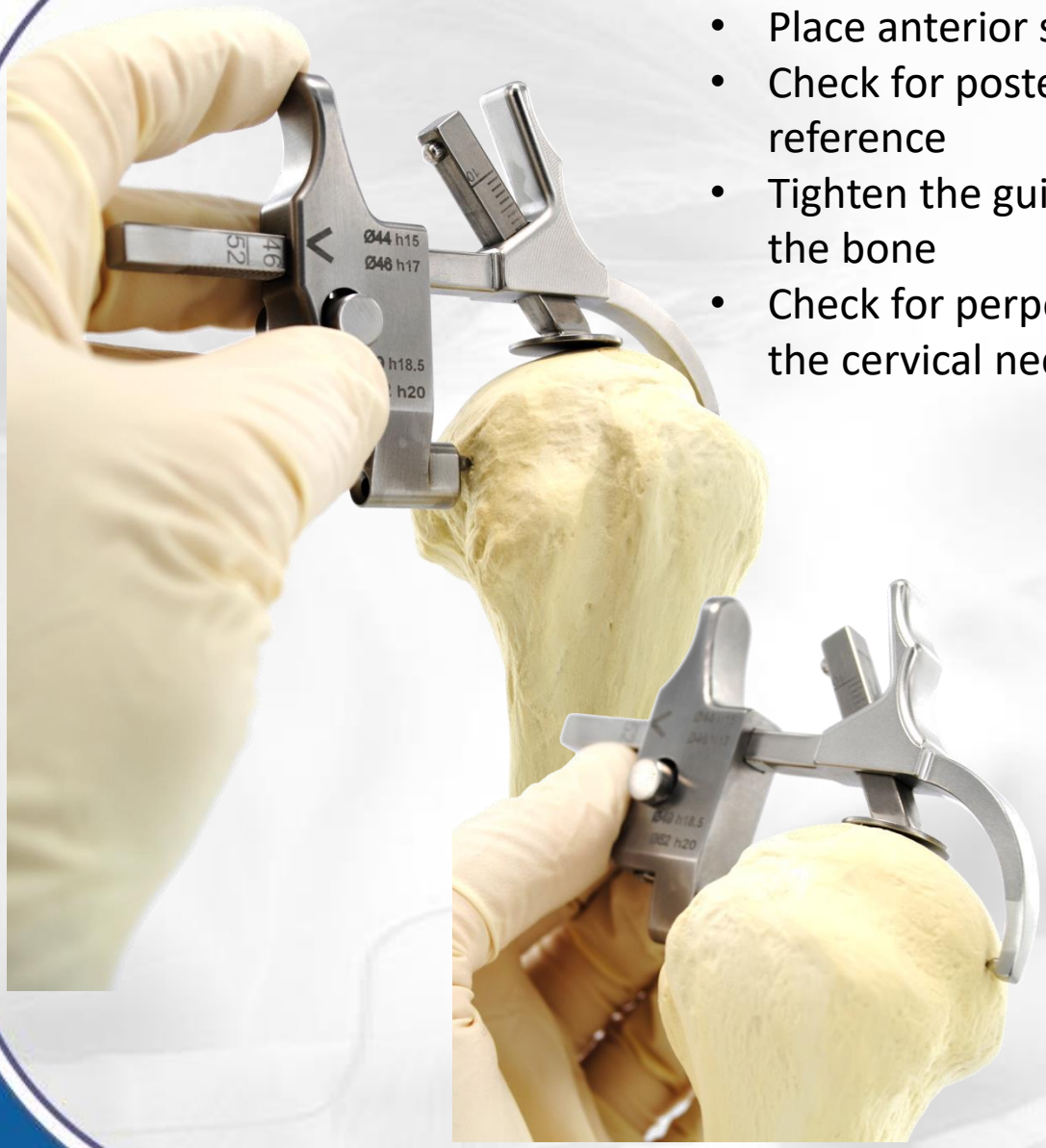
Surgical technique

Evolutis

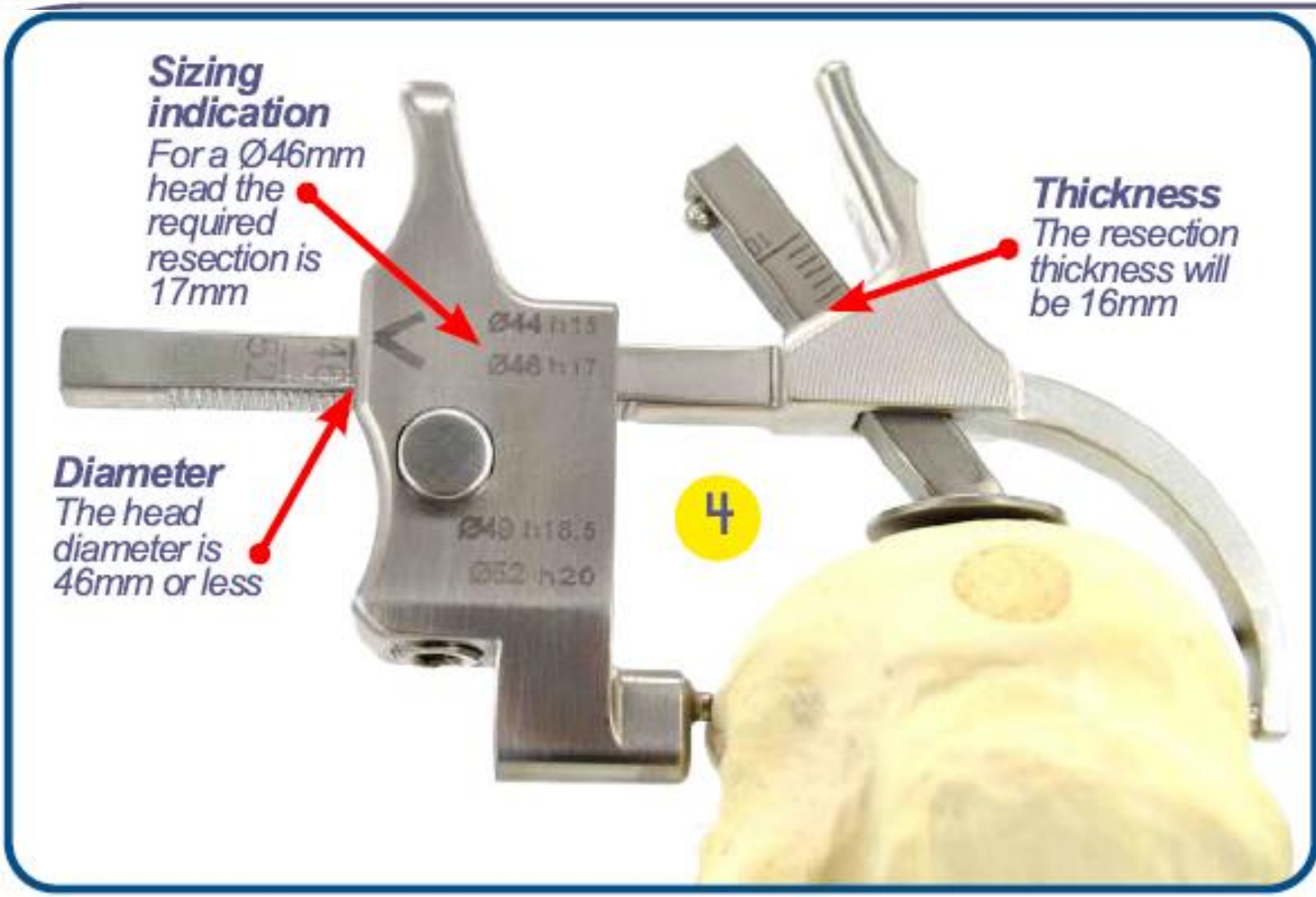


1 instrumentation set for both humeral and glenoid implants.

- Position humeral guide on humerus
- Place anterior spike below the cartilage zone
- Check for posterior spike with same reference
- Tighten the guide for the spikes to penetrate the bone
- Check for perpendicularity of the guide with the cervical neck line

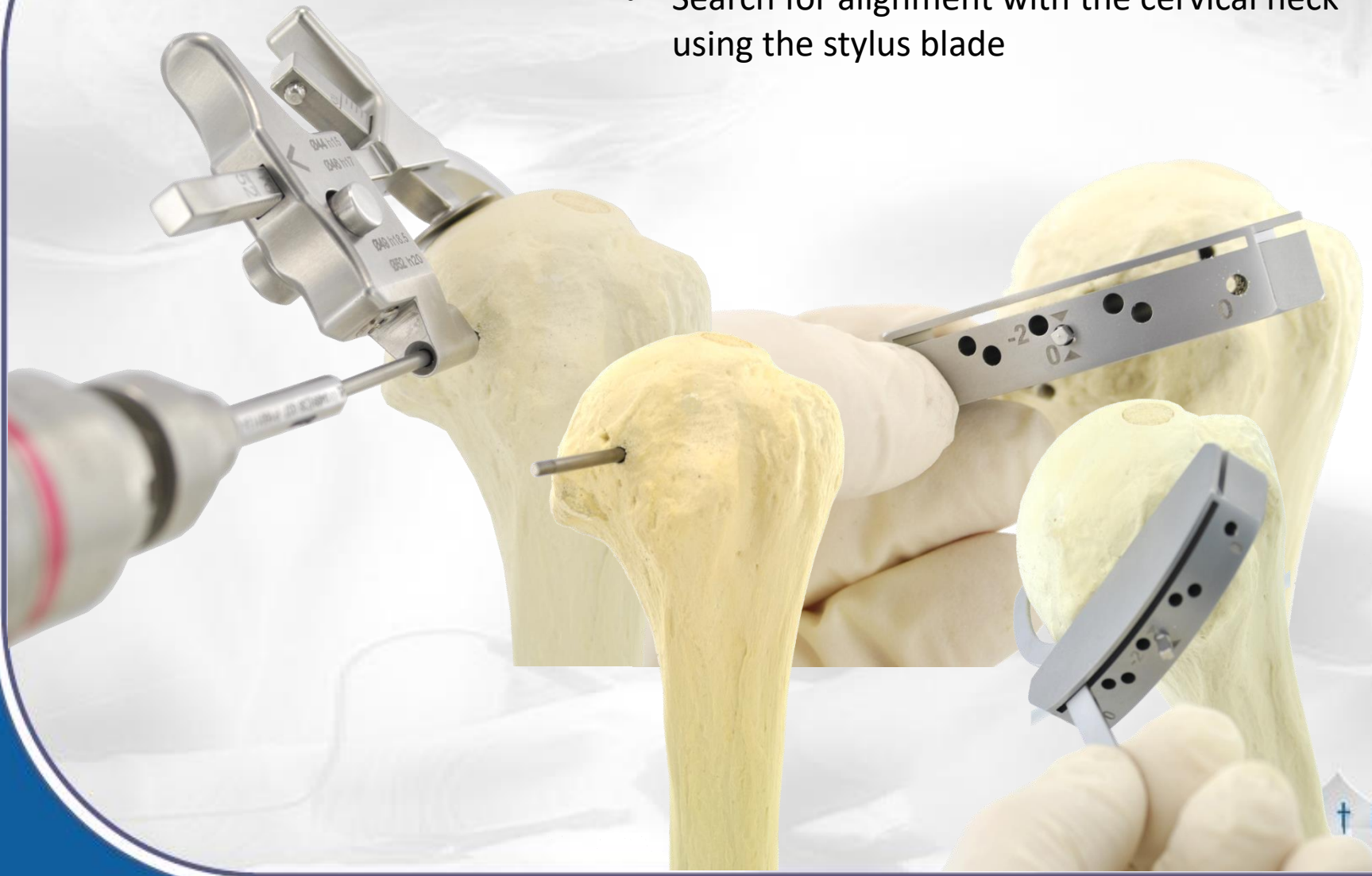


Evolutis



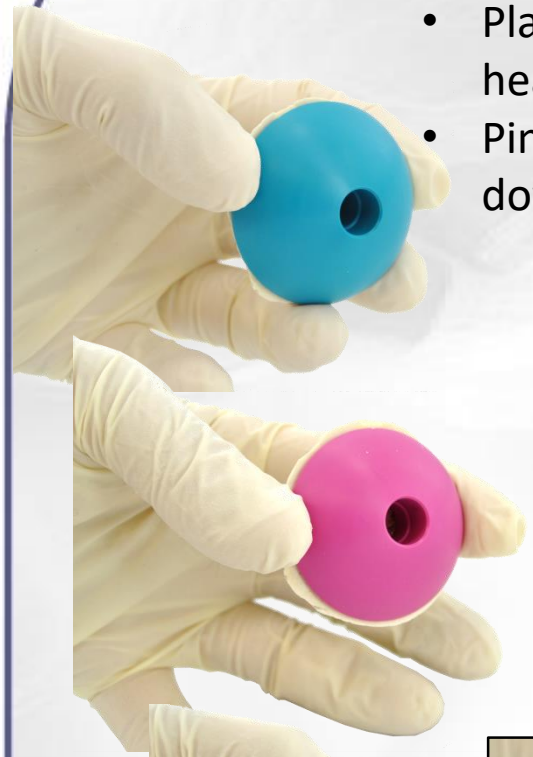
- Check correspondance of diameter/thickness values
- The thickness value on the guide is always the smallest one available
- If uncorrect, modify position of spikes

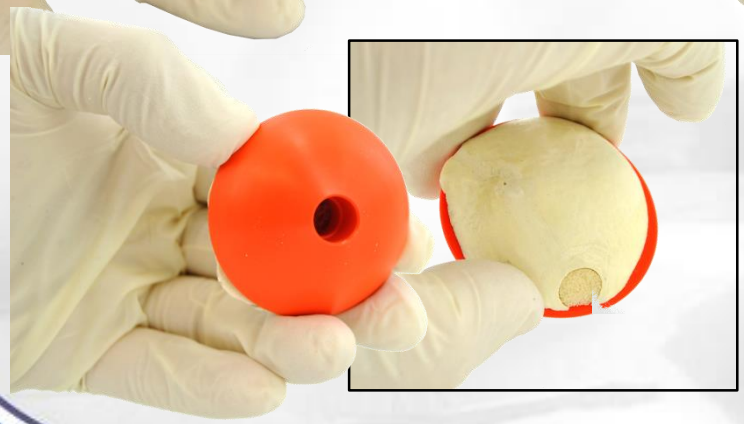
- Pin the guide in central position
- Remove the guide
- Place the cutting jig on the pin
- Search for alignment with the cervical neck using the stylus blade



- Pin the guide with 2 pins in the cervical neck position
- Resect the humeral head
- Check the resection thickness

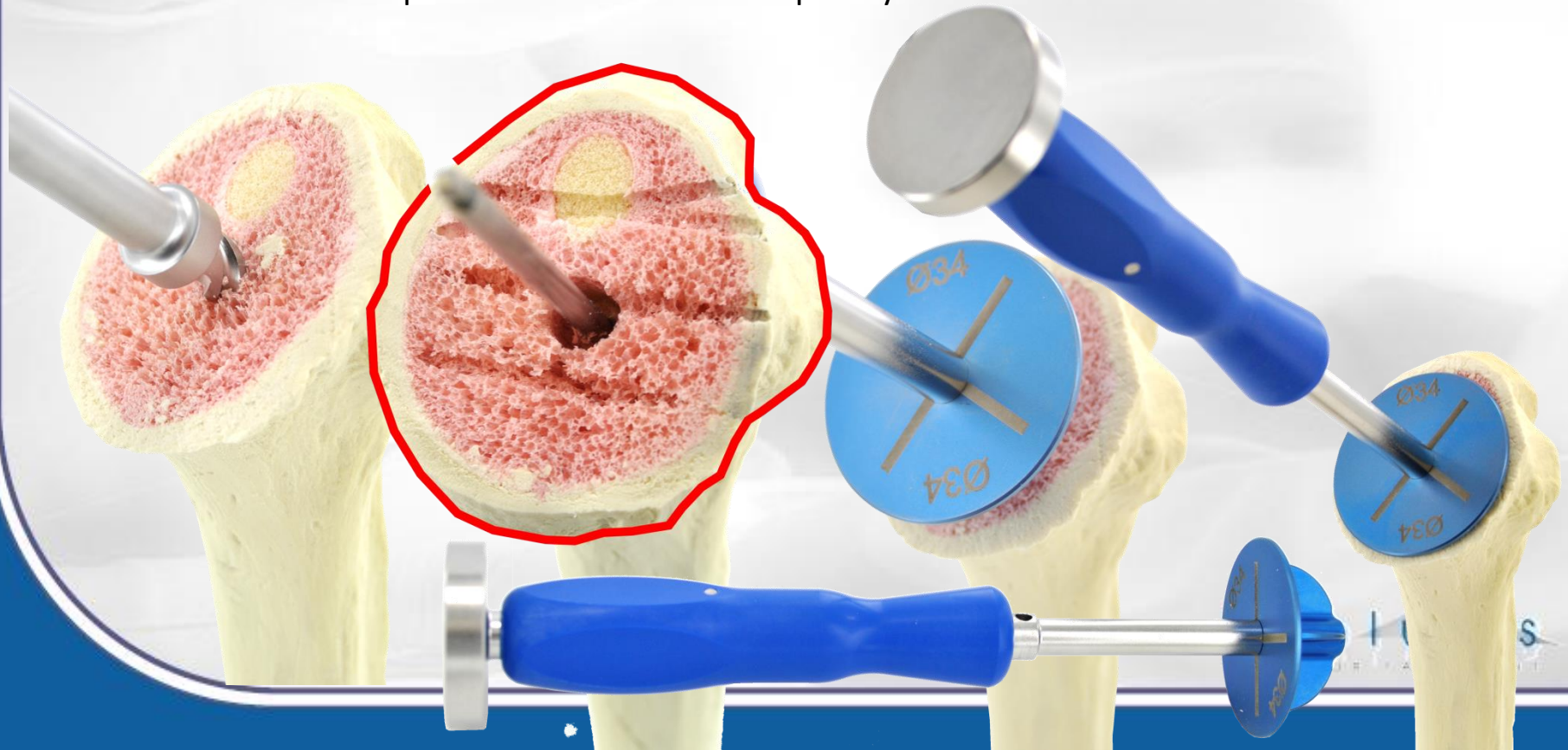
- Select the head size best adapted to the resected head bone
- Place the pin centralizer on the head
- Pin through the centralizer and down to the lateral cortex





- Select the size of the baseplate:
  - Introduce one trial baseplate on the central pin
  - The larger diameter of the trial baseplate (summit of the spigots) should not overhang the cortex bone
  - The smaller diameter of the trial baseplate should remain away from the inner diameter of the cortex bone

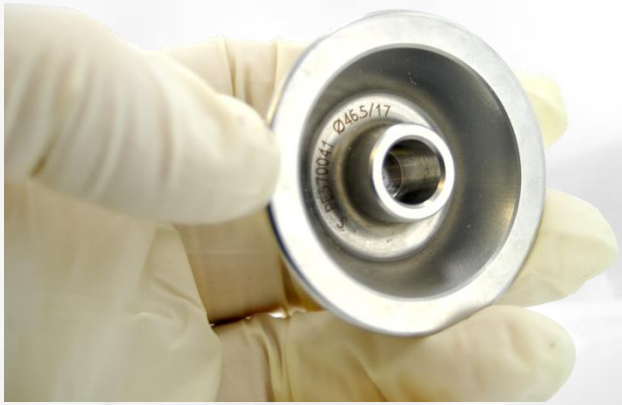
- Once the correct size has been selected:
  - Introduce the stop-drill on the central pin
  - Drill the bone with until the stop
  - Remove the drill
  - Identify clearly the weak zones of the bone (bicipital groove and lesser tuberosity)
  - Prepare the conformator with the impaction handle
  - Present the conformator on the central pin
  - Orientate the blades of the conformator away from the weak zones
  - Impact the conformator completely



- Unscrew the impaction handle from the conformator
- Place the trial taper on the conformator
- Place a trial head of selected diameter and thickness, and reduce the shoulder for stability and mobility tests

- Remove the conformator and the pin
- Prepare the implant on the impaction handle
- Check that the fins are aligned with the cancellous shape
- Impact the baseplate until contact with the bone

- Prepare the humeral head
- Place the head on the taper of the baseplate
- Impact thoroughly for taper connection and final positioning of baseplate.



…least but not last :

– If the STEMLESS UNIC needs to be revised:

- Use the Head Extractor E38 038 to separate the humeral head from the Stemless baseplate.
- Prepare Impaction Handle H38 033 with Short Osteotome H38 035 and resect the bone fixation to the 4 wings.
- Attach the Impaction Handle directly to the implant and hammer the implant out.

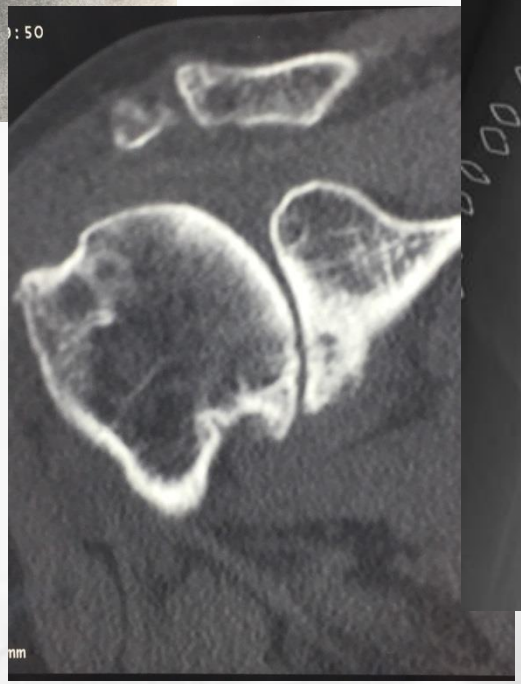
Evolutis

Evolutis
CREATEUR-FABRICANT

UNIC STEMLESS

Post operative radiographs

Evolutis



Evolutis

UNIC STEMLESS

Evolutis
CREATEUR-FABRICANT

Reference List and SNP

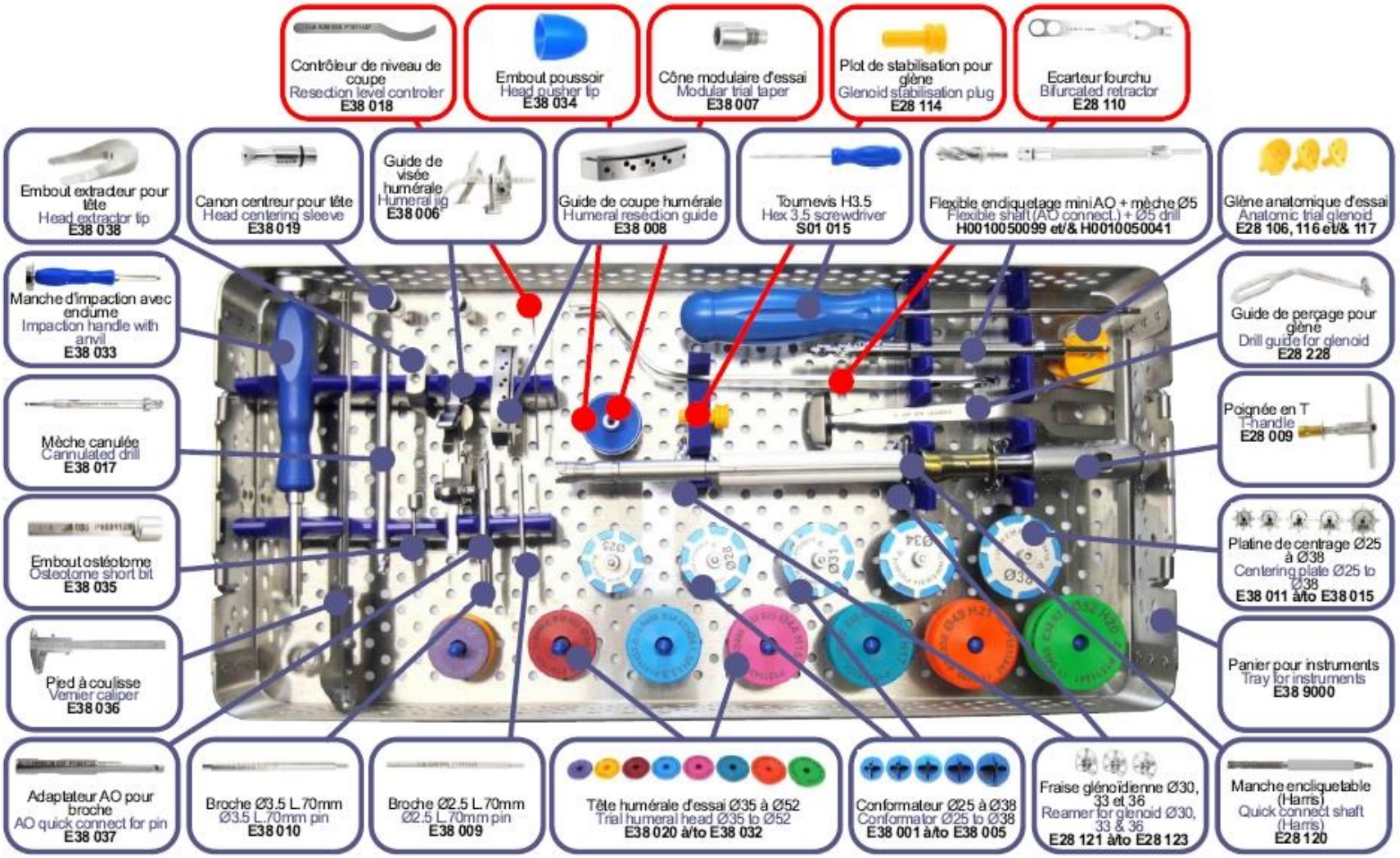
Evolutis

Ref.code	Description		Ø	H. (mm)	Radius (mm)	Mismatch (mm)
E37 001	Short anatomic stem S.25	*Tige anatomique courte T.25*	Ø25			
E37 002	Short anatomic stem S.28	*Tige anatomique courte T.28*	Ø28			
E37 003	Short anatomic stem S.31	*Tige anatomique courte T.31*	Ø31			
E37 004	Short anatomic stem S.34	*Tige anatomique courte T.34*	Ø34			
E37 005	Short anatomic stem S.38	*Tige anatomique courte T.38*	Ø38			
E37 M3512	Humeral head S.35/12	*Tête humérale T.35/12*	Ø35	H.12	21	-7
E37 M3712	Humeral head S.37/12	*Tête humérale T.37/12*	Ø37	H.12	22	-6
E37 M3912	Humeral head S.39/12	*Tête humérale T.39/12*	Ø39	H.12	23	-5
E37 M4113	Humeral head S.41/13	*Tête humérale T.41/13*	Ø41	H.13	24	-4
E37 M4116	Humeral head S.41/16	*Tête humérale T.41/16*	Ø41	H.16	24	-4
E37 M4415	Humeral head S.44/15	*Tête humérale T.44/15*	Ø44	H.15	24.5	-3.5
E37 M4418	Humeral head S.44/18	*Tête humérale T.44/18*	Ø44	H.18	24.5	-3.5
E37 M4617	Humeral head S.46/17	*Tête humérale T.46/17*	Ø46	H.17	25	-3
E37 M4620	Humeral head S.46/20	*Tête humérale T.46/20*	Ø46	H.20	25	-3
E37 M4918	Humeral head S.49/18	*Tête humérale T.49/18*	Ø49	H.18	26	-2
E37 M4921	Humeral head S.49/21	*Tête humérale T.49/21*	Ø49	H.21	26	-2
E37 M5220	Humeral head S.52/20	*Tête humérale T.52/20*	Ø52	H.20	27.5	-0.5
E37 M5223	Humeral head S.52/23	*Tête humérale T.52/23*	Ø52	H.23	27.5	-0.5
E27 130	Cemented anatomic glenoid S.1	*Glène anatomique cimentée T.1*	Ø30/22		28	
E27 133	Cemented anatomic glenoid S.2	*Glène anatomique cimentée T.2*	Ø33/24		28	
E27 136	Cemented anatomic glenoid S.3	*Glène anatomique cimentée T.3*	Ø36/26		28	

Instrumentation SNAPSHOT

Ref : E38 9100

UNIC STEMLESS



Avril 2016 / Ref: BI_UNIC STEMLESS SNP E38 9100

Probably the best shoulder system available !