

UP. EXTREMITY

# surgical technique

Universal shoulder prosthesis



**ARROW**<sup>®</sup>  
**REVERSE**

GROUP  
**FH** ORTHO™

## TRADE REFERENCES

### HUMERAL STEM

REFERENCE	DIAMETER	HEIGHT
260 516	Ø 08	120
257 320	Ø 08	170
260 517	Ø 10	125
260 519	Ø 12	130
260 521	Ø 14	135

### GLENOSPHERE

REFERENCE	DIAMETER
260 566	Ø 36
260 567	Ø 39
260 568	Ø 42

### STD HUMERAL INSERT

REFERENCE	DIAMETER	HEIGHT
257 057	Ø 36	00
257 058	Ø 36	05
257 059	Ø 36	10
257 060	Ø 39	00
257 061	Ø 39	05
257 062	Ø 39	10
257 063	Ø 42	00
257 064	Ø 42	05
257 065	Ø 42	10

### METAL-BACK GLENOID BASE

REFERENCE	SIZE
260 552	44
264 098	44S
264 099	44R
260 553	46
260 554	48

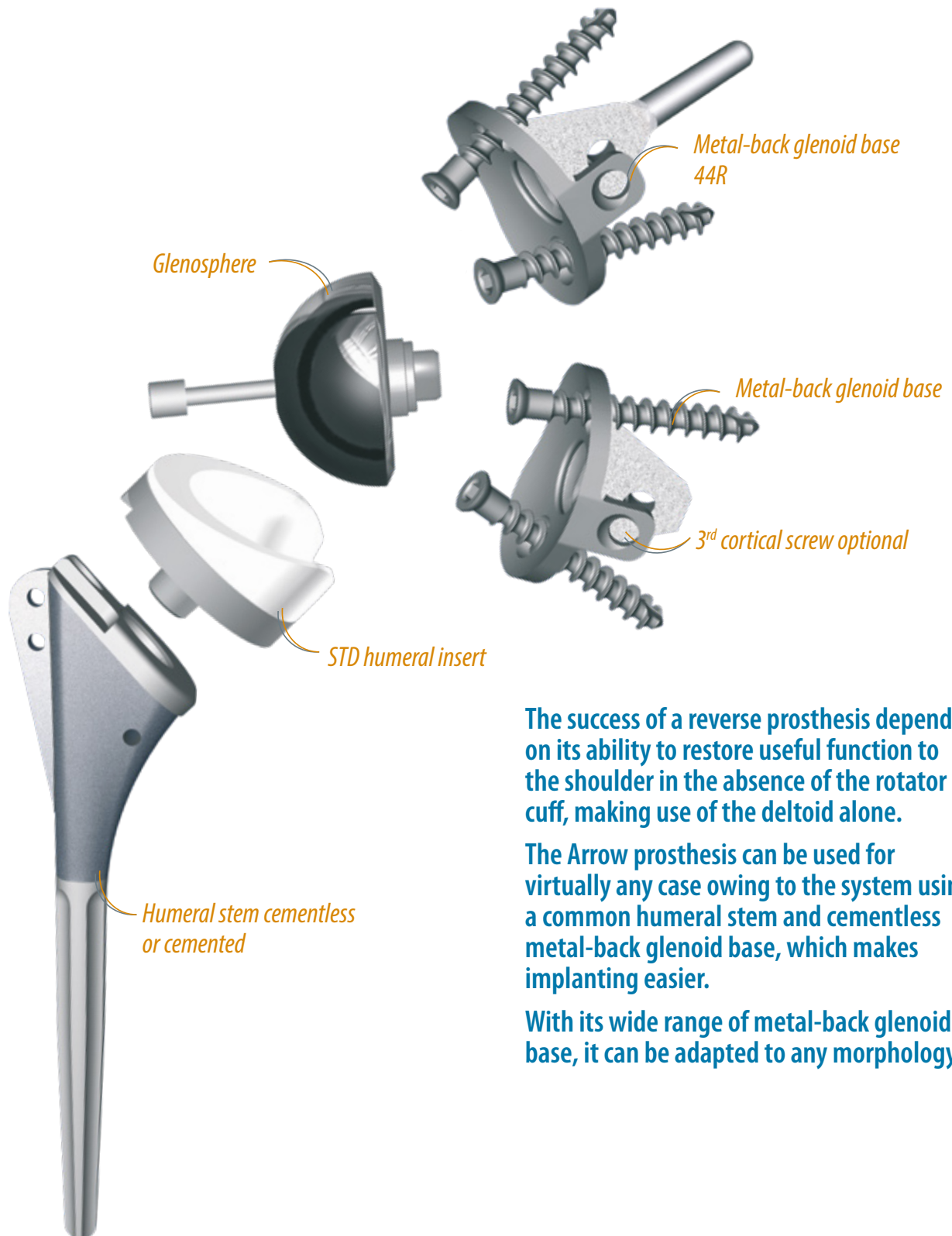
### CANCELLOUS BONE SCREW

REFERENCE	DIAMETER	LENGTH
265 473	Ø 5.5	24
263 468	Ø 5.5	28
263 469	Ø 5.5	32
263 470	Ø 5.5	36
263 471	Ø 5.5	40
263 472	Ø 5.5	45
263 473	Ø 5.5	50

### CORTICAL BONE SCREW

REFERENCE	DIAMETER	LENGTH
263 476	Ø 4.5	32
263 477	Ø 4.5	34
263 479	Ø 4.5	36
263 480	Ø 4.5	38
263 481	Ø 4.5	40

→ optional



The success of a reverse prosthesis depends on its ability to restore useful function to the shoulder in the absence of the rotator cuff, making use of the deltoid alone.

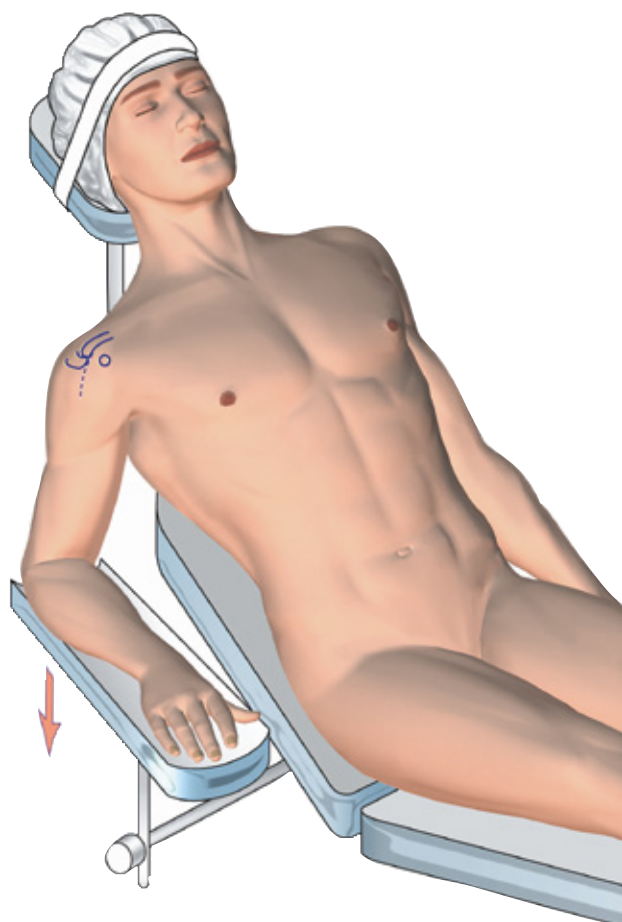
The Arrow prosthesis can be used for virtually any case owing to the system using a common humeral stem and cementless metal-back glenoid base, which makes implanting easier.

With its wide range of metal-back glenoid base, it can be adapted to any morphology.

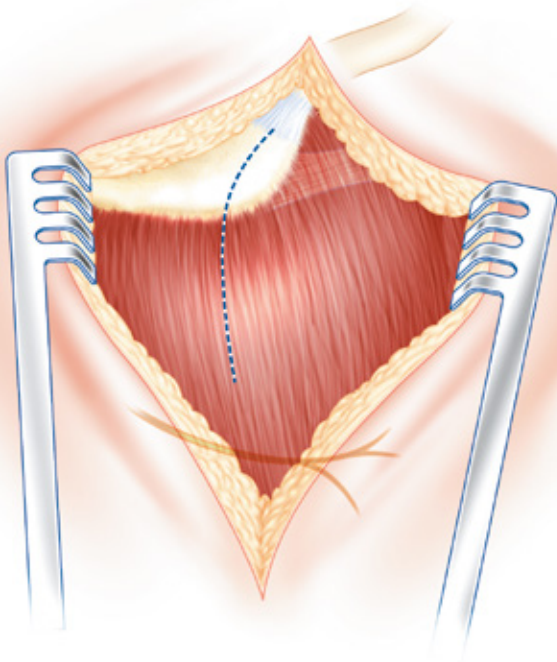
## POSITIONING THE PATIENT

→ In a half-sitting position

→ Upper limb free

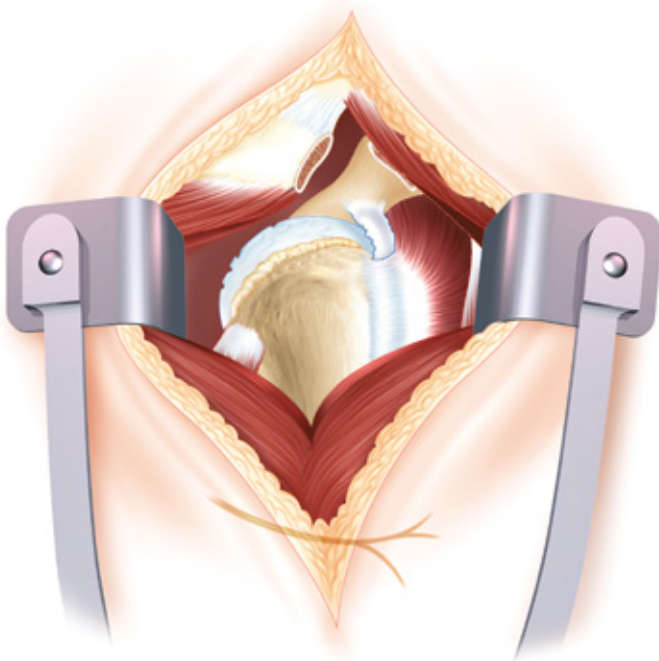


## 1 - SUPERIOR-LATERAL INCISION



- Start the incision at the acromioclavicular joint. Follow the anterior border of the acromion descending onto the lateral surface of the shoulder to 4 to 5 cm from the anterior lateral border of the acromion.

A deltopectoral incision (classic) may also be used if the surgeon is more familiar with this.

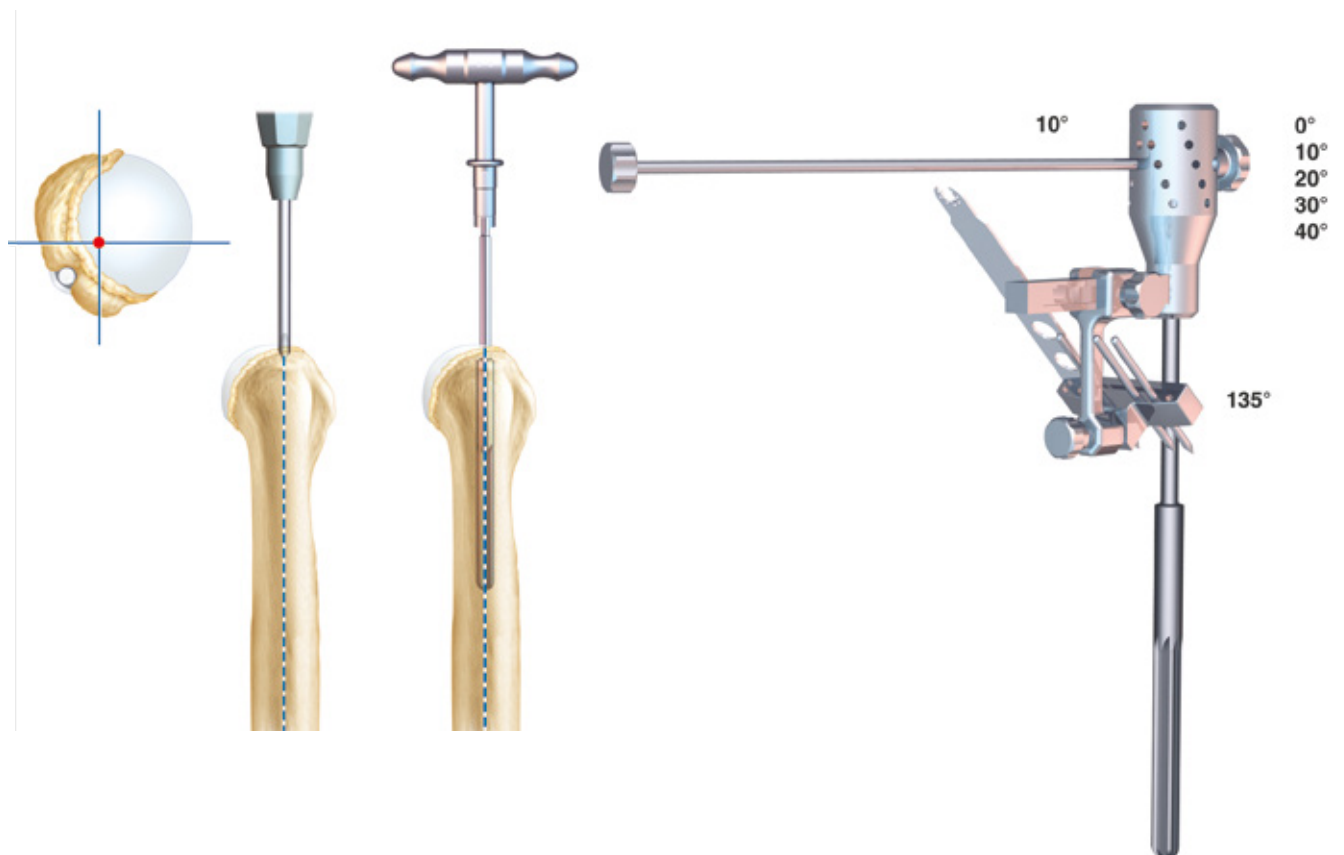


- Detach the deltoid from the anterior border of the acromion, together with osteoperiosteal shavings (to assist in its repair), then divide it in the direction of its fibres, without descending too far thus avoiding the axillary nerve.

If required perform an acromioplasty, resecting the coracoacromial ligament (facilitating the exposure of the bare head of the humerus).

## 2 - HUMERAL PREPARATION

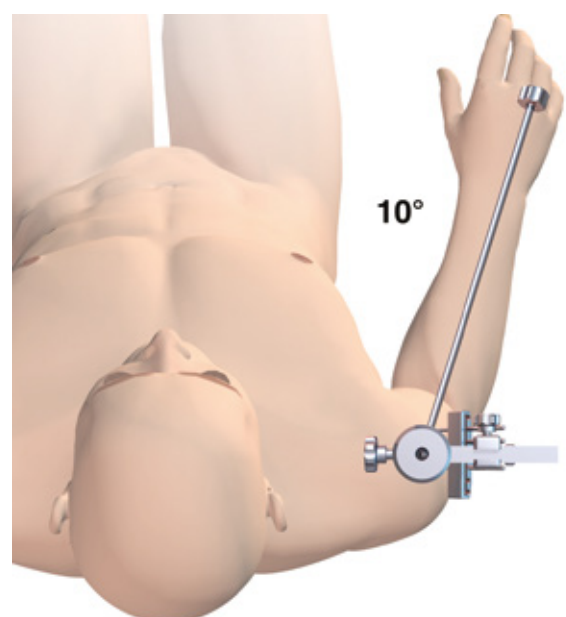
### 2.1 - USE OF THE CUTTING GUIDE



→ The entry point for the square-point awl preparing for the introduction of the diaphyseal reamer is on the summit of the head of the humerus, about 1 cm medially and posterior to the bicipital groove.

Reamers: Ø 8	ref. 261 048
Ø 10	ref. 261 049
Ø 12	ref. 261 050
Ø 14	ref. 261 051

If the cortical bone is thick the Ø6 diaphyseal bit (ref. 261 010) is recommended.





- Assemble the cutting guide (ref. 261 052) with its support (ref. 261 011).
- Use the cutting guide for the superior-lateral route (ref. 261 057) fixed with 4 nails (maximum) (ref. 261 056).
- Put the support for the humeral cutting guide (ref. 261 052) onto the diaphyseal reamer to cut the bone at the anatomical neck at an angle of 135° retroverted by about 10° to 20°. The retroversion is given by the alignment of the forearm on the retroversion shaft (ref. 261 053), fixed on the humeral cutting guide.

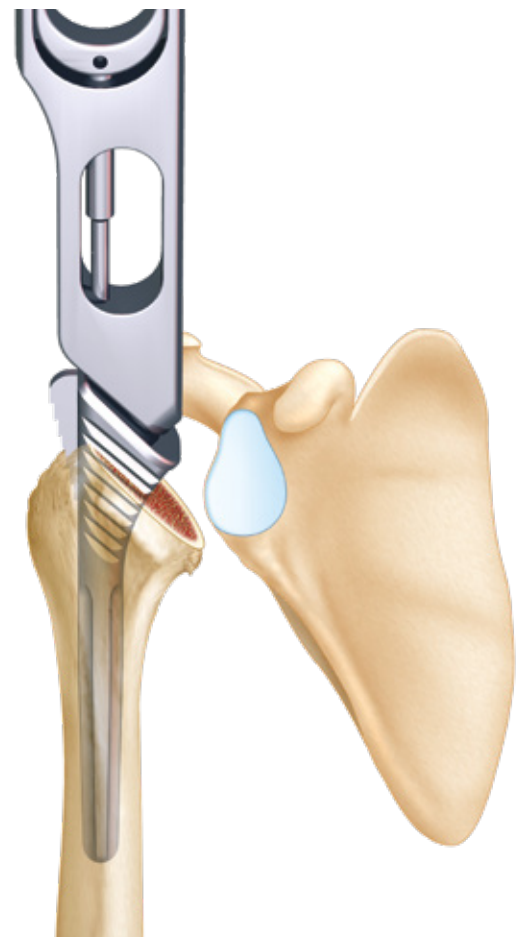
## 2.2 - HUMERAL STEM TRIAL

- The depth of resection of the head of the humerus is sufficiently deep if the medial part of the cut bone ends at the bottom of the glenoid cavity.

Carry out metaphyseal reaming with increasing sizes of rasps to produce the degree of retroversion previously decided.

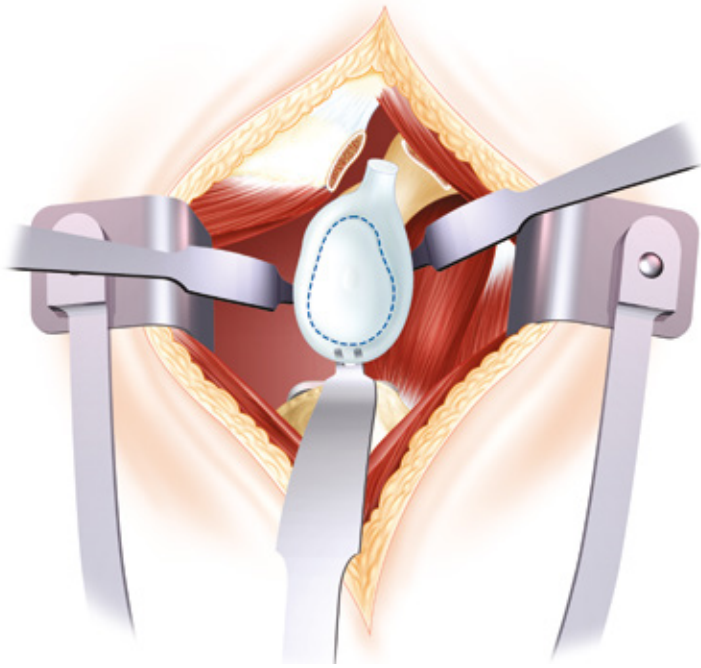
The diaphyseal rasp chosen to serve as the trial humeral prosthesis is left in place to protect the upper end of the humerus during preparation of the glenoid.

Metaphyseal rasp handle:	ref. 261 848
Trial rasps: Ø8	ref. 261 044
Ø10	ref. 261 045
Ø12	ref. 261 046
Ø14	ref. 261 047





## 3 - PREPARATION OF THE GLENOID

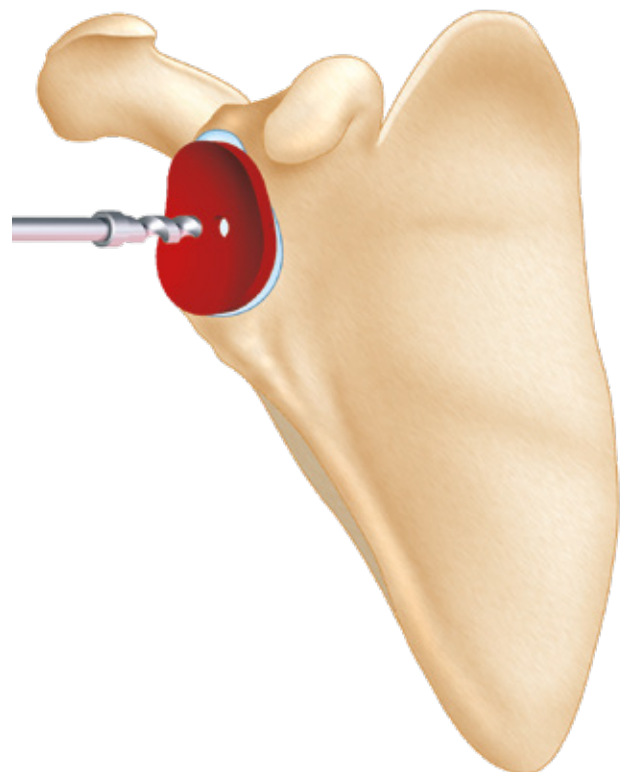


- Capsulectomy and circumferential excision of the labrum (360°) helps to expose and delimit the glenoid. The retractors are positioned below, behind and in front.

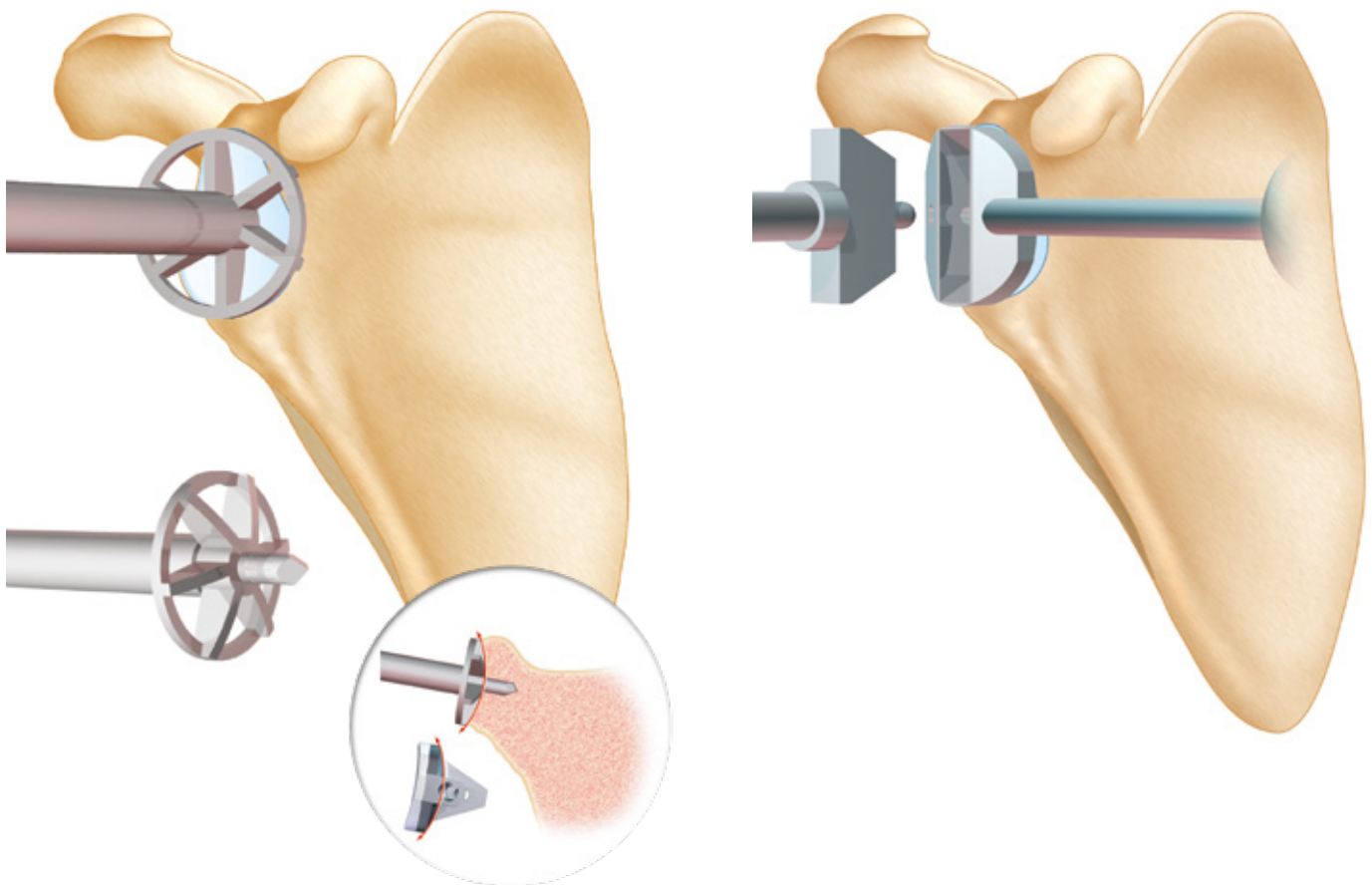
Retractor: ref. 261 059

- Choose the size of the metal-back glenoid base unit using the glenoid templates. Identify the central hole with the square-point awl and drill using a Ø 5 mm drill (ref. 261 069), following the glenoid drilling guide.

Glenoid template: S44 ref. 261 077  
S46 ref. 261 078  
S48 ref. 261 079



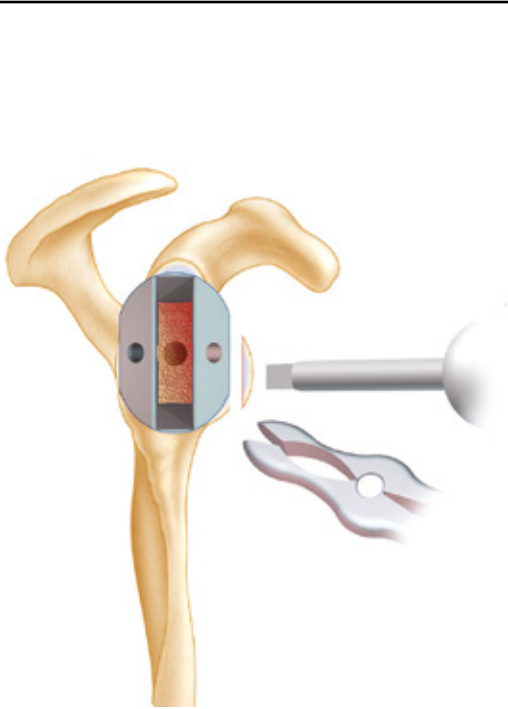




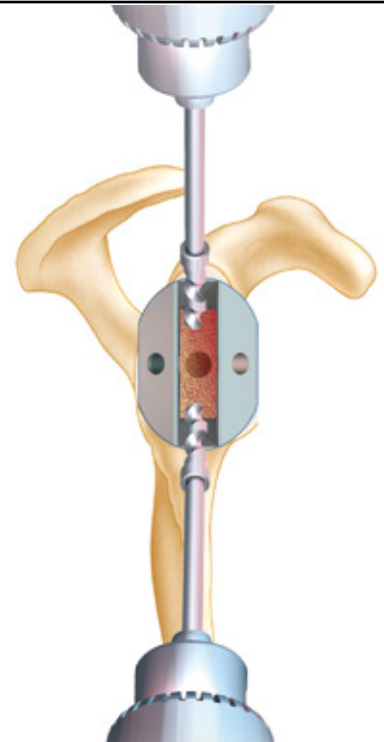
- ↑ Ablate the glenoid cartilage using a small (*ref. 261 074*) or large (*ref. 261 075*) convex openwork reamer to provide a perfect fit with the convex bottom of the metal-back glenoid base.
  - Leave the subchondral bone intact.
  - Start the burr concerned several millimetres from the glenoid cavity to avoid any risk of fracture. Burring can be motorised or done by hand using the handle (*ref. 261 076*).

- ↑ Mount the glenoid cutting block on a handle (*ref. 261 095*). The cutting block must correspond to the size of the metal-back glenoid base chosen and be perfectly aligned in the central hole by means of the centring device (*ref. 261 087*).

Cutting blocks: S44S *ref. 264 100*  
 S44 *ref. 261 082*  
 S46 *ref. 261 083*  
 S48 *ref. 261 084*

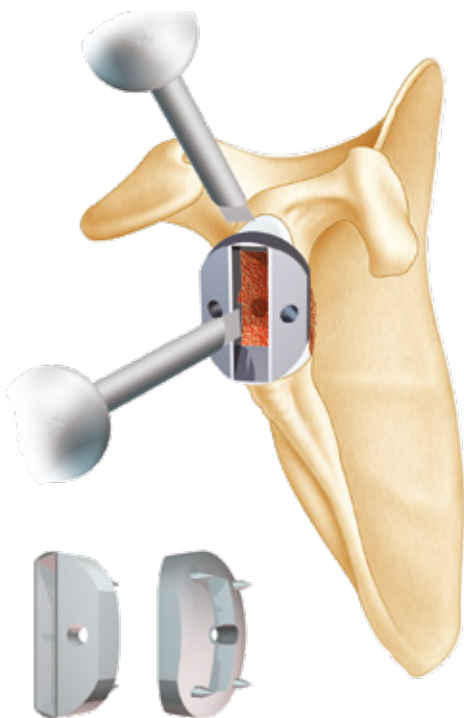


↑ Make an economical anterior cut using the oscillating saw, the osteotome (ref. 261 103) or bone forceps, to perfectly shape the anterior lug.



↑ Carry out superior and inferior drilling and collapse the subchondral bone.

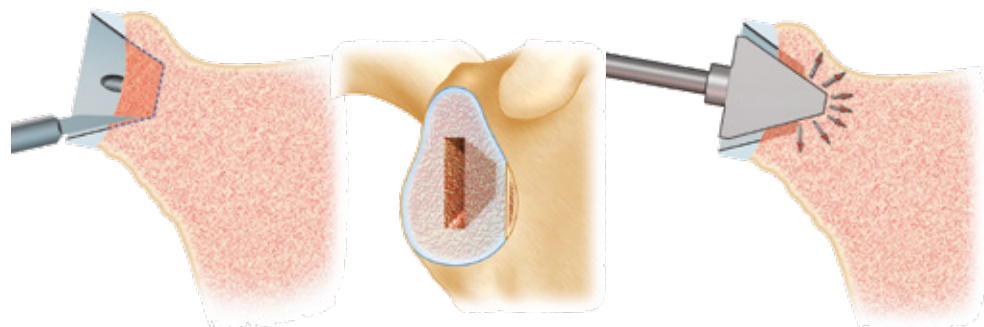
Stopped drill bit: ref. 261 069

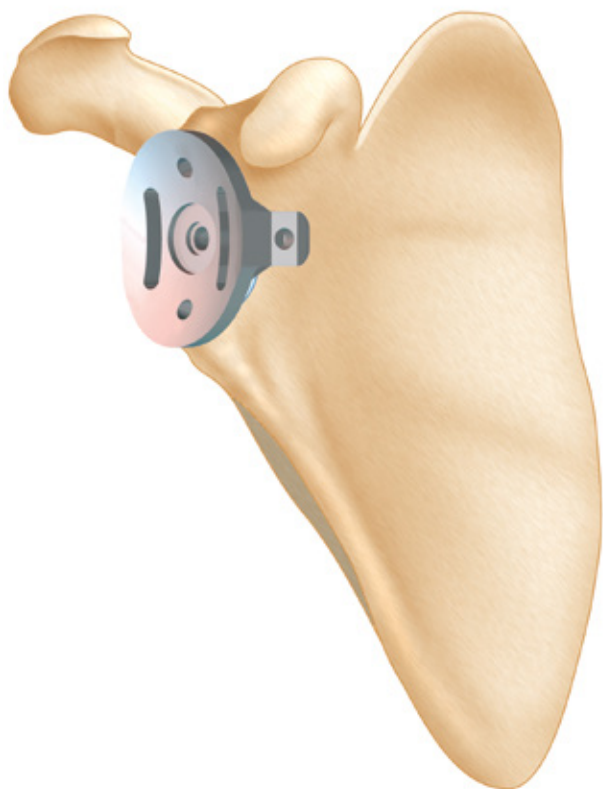


### Bone cut to receive the central keel.

Using the osteotome (ref. 261 103) with caution, make oblique and frontal cuts; only the osteochondral part is removed.

Prepare for the keel using the tapered punch handle (ref. 261 104), followed by the compactor punch handle (ref. 261 086), retaining the spongy bone.





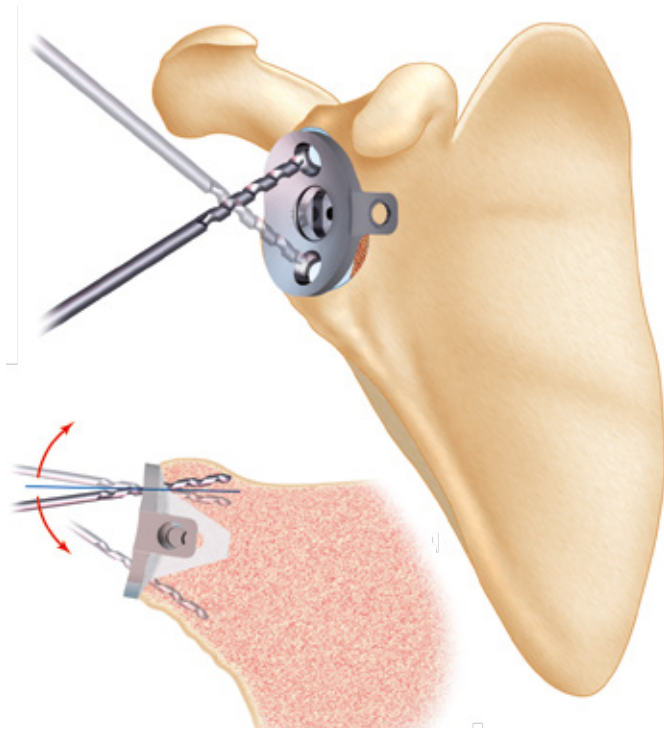
➤ Perform a **trial metal-back glenoid base** fitting using the handle (*ref. 261 095*). Check the primary stability and contact of the metal-back glenoid base with the whole of the glenoid surface.

If necessary repeat the preceding steps concerning preparation for the keel.

*Trial metal-back glenoid base:*

S44S	ref. 264 101
S44	ref. 261 088
S44R	ref. 264 951
T46	ref. 261 089
T48	ref. 261 090

## 4 - DEFINITIVE IMPLANTS : METAL-BACK GLENOID BASE



Put the **definitive metal-back glenoid base** into place using the glenosphere handle (ref. 261 101), and then impact it using the impactor (refs. 261 009 and 261 081). Drill with the Ø 3.2 mm bit (ref. 261 065).

The best bone fixation areas can be sought because of tolerance of 20°.

- The upper Ø5.5mm cancellous screw aims for the base of the coracoid.
- The lower Ø5.5mm cancellous screw aims for the pillar of the scapula.

Screwdriver, 6 sided ref. 261 100

ARROW length gauge ref. 257 204

## 5 - PROSTHESIS TRIALS

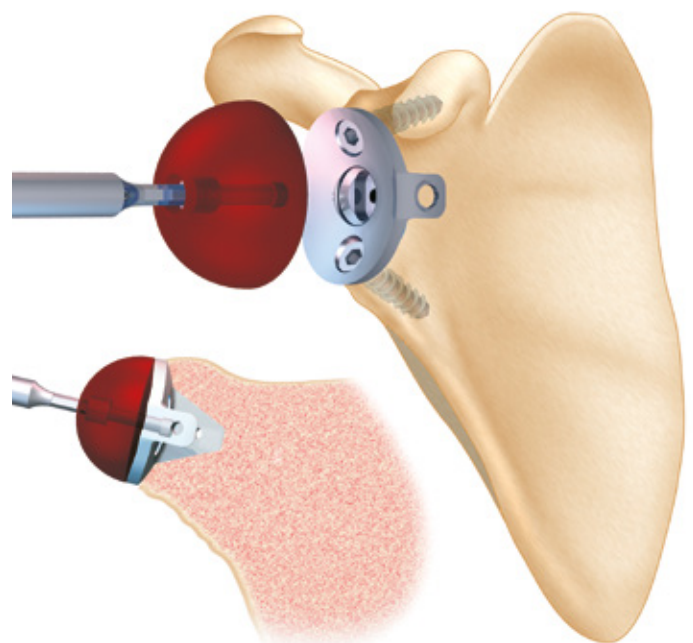
### 5.1 - TRIAL GLENSPHERE

- Remove the screw from the trial glenosphere. Put the trial glenosphere in place with the glenosphere handle (ref. 261 101). Fix the trial glenosphere to the definitive metal-back glenoid base using the screw.

Trial glenosphere: Ø36 ref. 261 092

Ø39 ref. 261 093

- If the optional anterior-posterior screw is inserted: see the technique on page 16.



## 5.2 - TRIAL HUMERAL INSERT

➤ Impact the trial humeral insert onto the trial rasp.

Impaction handle: ref. 261 009

Trial humeral inserts: 36/00 ref. 261 096  
 36/05 ref. 261 097  
 39/00 ref. 261 098  
 39/05 ref. 261 099

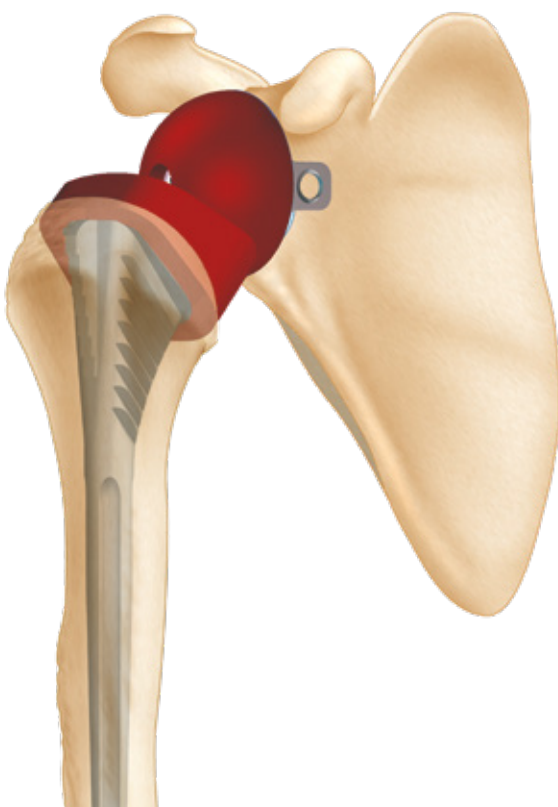
### Compatibility table

METAL-BACK GLENOID BASE PLATE	GLENOSPHERE	HUMERAL INSERT STD
S 44S / 44 / 44R	ø 36	ø 36/00-36/05-36/10
S 44 or 46	ø 39	ø 39/00-39/05-39/10
S 46 or 48	ø 42	ø 42/00-42/05-42-10

➤ optional



## 5.3 - FULL TRIAL TEST



- Reduce the joint:  
 Movement must not be restricted (gleno-humeral mobility 0°-70° without moving the scapula).  
 Test elbow to body rotation and abduction to 90°.  
 If there is any decoaptation, glenoid conflict (posterior, anterior, inferior) must be investigated.
- Slight laxity between the glenosphere and the humeral cup is nevertheless desirable.
- Difficulty in reducing the trial prosthesis or too much "tension" in the implant will limit active post-operative mobility and means that the humerus should be recut. Reduce the prosthesis by adducting the arm.
- Check the stability of the prosthesis in abduction.
- External and internal rotation: Check that there is no internal or posterior conflict during adduction of the arm and ER1.

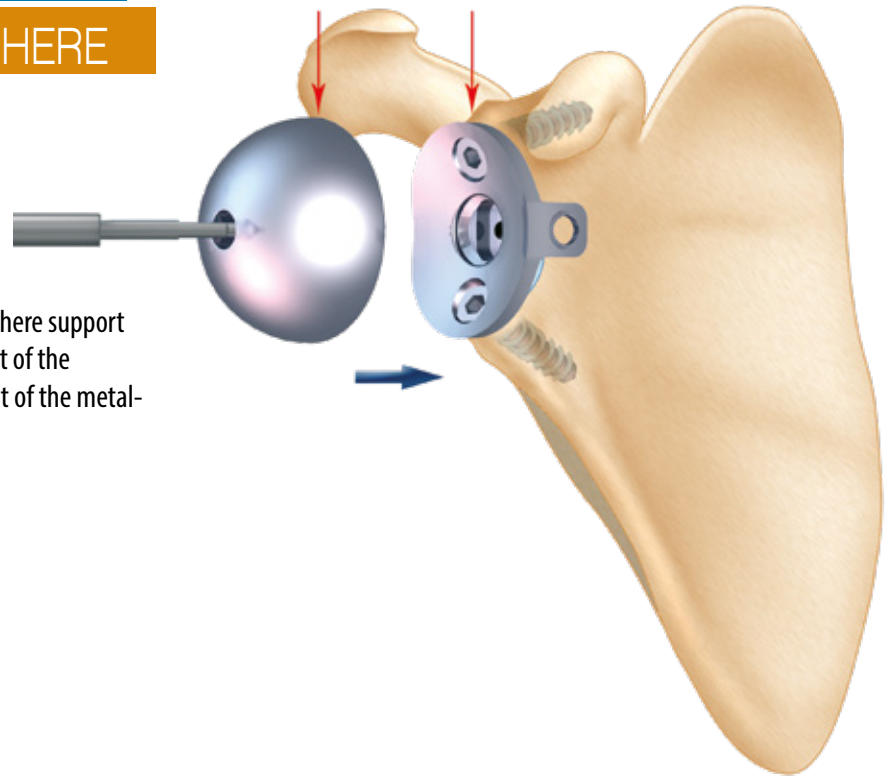


## 6 - DEFINITIVE IMPLANTS

### 6.1 - DEFINITIVE GLENOSPHERE

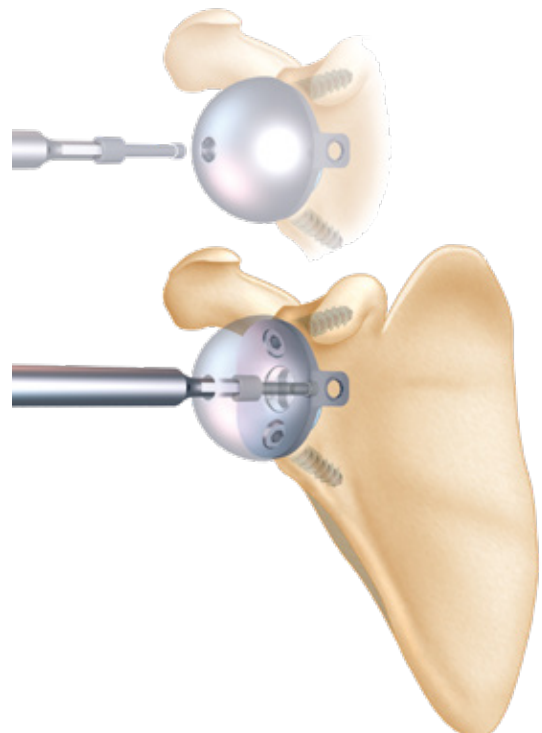
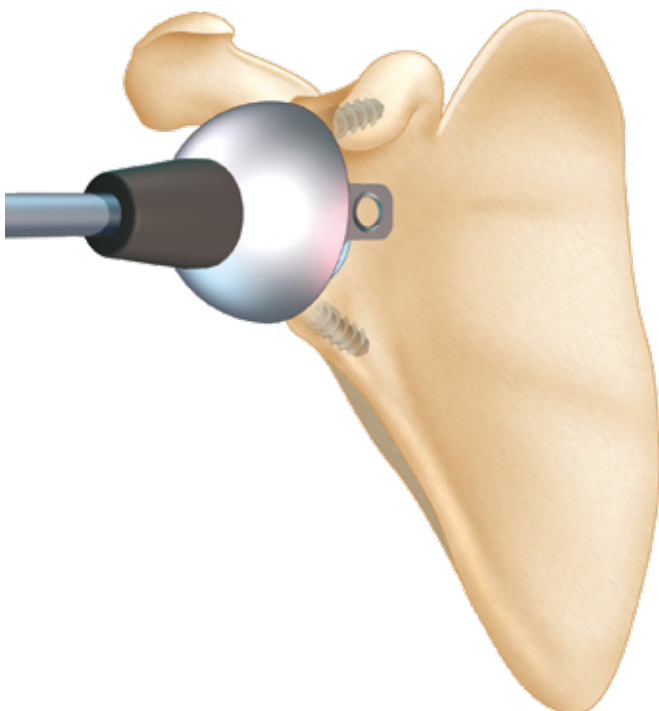
- **1.** Fit the definitive glenosphere using the glenosphere support (ref. 261 101). Position the notch on the superior part of the glenosphere in line with the mark on the upper part of the metal-back glenoid base.

**DO NOT IMPACT.**



- ↓ **2. IMPACT** the definitive glenosphere using the impaction endpiece (ref. 261 043) fitted to the handle (ref. 261 009).

- ↓ **3.** The definitive glenosphere in place using the six-sided screwdriver (ref. 261 100).

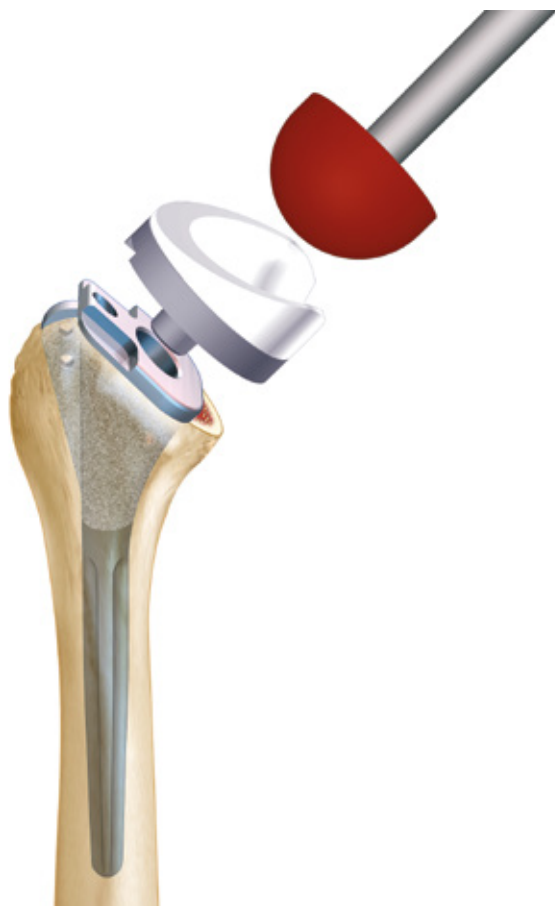






## 6.2 - DEFINITIVE STEM AND INSERT

- ↳ The STD humeral insert is inclined at 155° and hollowed medially to avoid glenoid notching.
- ↳ The cup is held in place by impacting the morse cone and its under-surface locking into the shape of the humeral plate (complementary surfaces).



- ↳ Cement the diaphyseal part of the humeral stem if the bone is osteoporotic or press-fit the humeral prosthesis without cement with shavings of metaphyseal cancellous bone.
- ↳ The STD humeral insert is impacted after the contours of the plate have been cleaned.
- ↳ Test the prosthesis in abduction, external and internal rotation; check that there is no internal conflict during adduction of the arm.

*Humeral insert impaction piece: Ø36 ref. 261 105*

*Ø39 ref. 261 106*

*Impaction handle: ref. 261 009*

## OPTIONAL

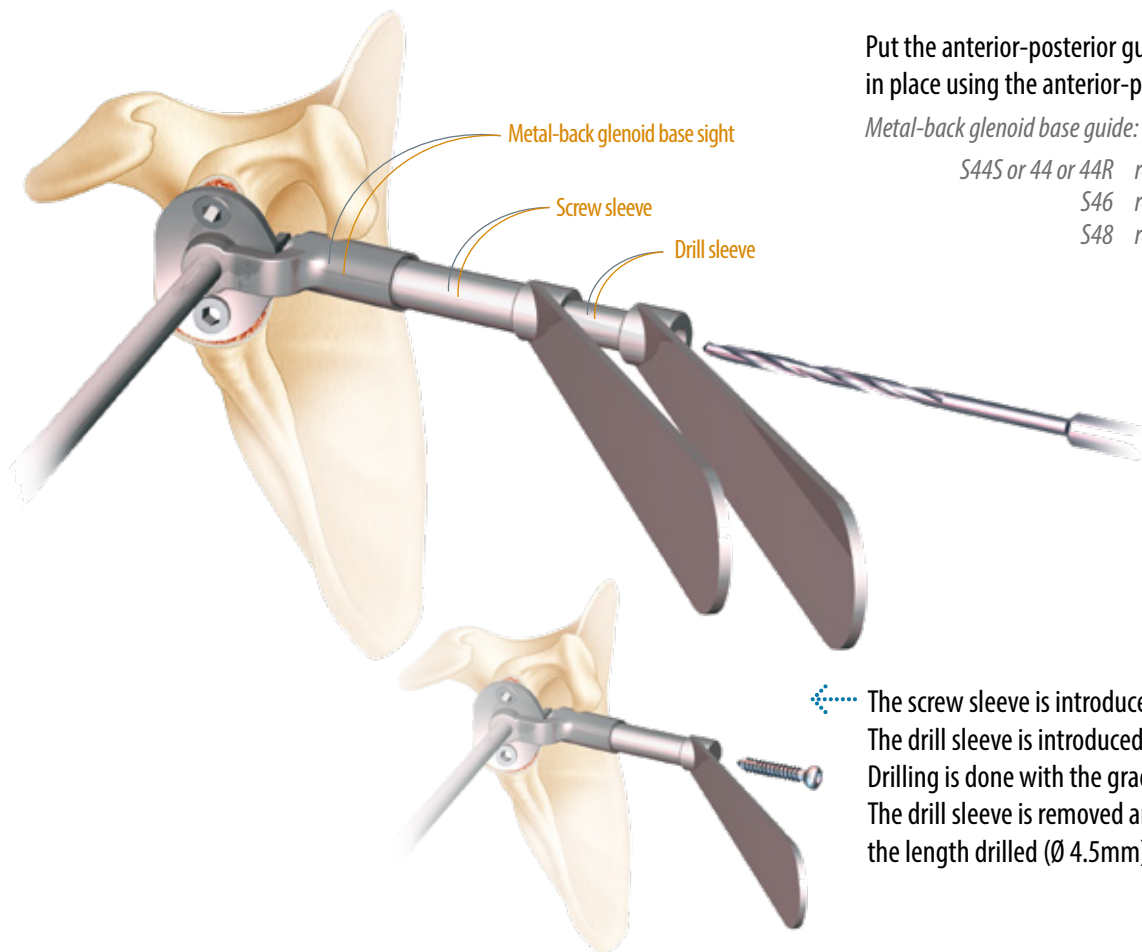
### FITTING THE ANTERIOR-POSTERIOR SCREW

This procedure is recommended for a bone graft or anterior glenoid fracture. A deltopectoral approach makes it easier. In the case of a superior-lateral approach, it could be done transcutaneously.

Put the anterior-posterior guide for the metal-back glenoid base in place using the anterior-posterior guide handle (ref. 261 844).

*Metal-back glenoid base guide:*

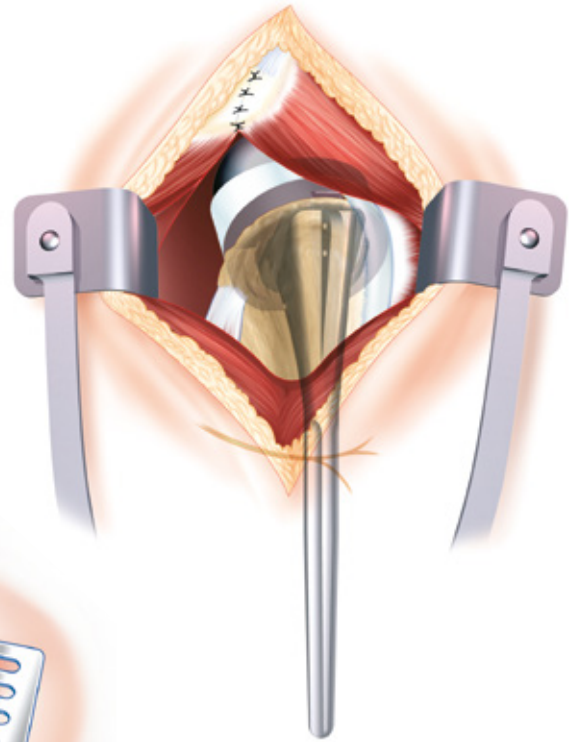
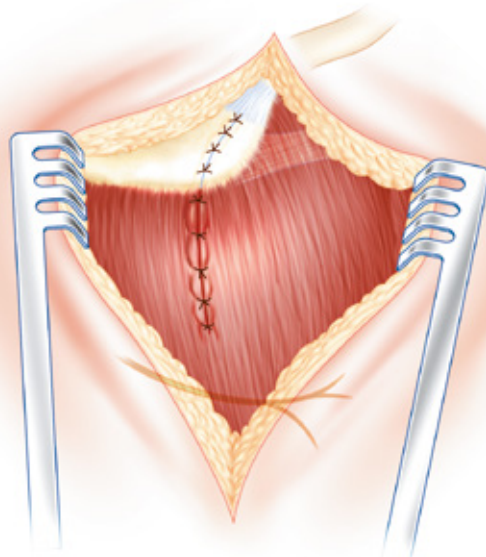
S44S or 44 or 44R	ref. 261 840
S46	ref. 261 841
S48	ref. 261 842



- The screw sleeve is introduced (ref. 261 846).
- The drill sleeve is introduced (ref. 261 847).
- Drilling is done with the graduated drill bit (ref. 261 065).
- The drill sleeve is removed and a cortical screw, corresponding to the length drilled ( $\varnothing$  4.5mm), is inserted.

## 7 - CLOSURE

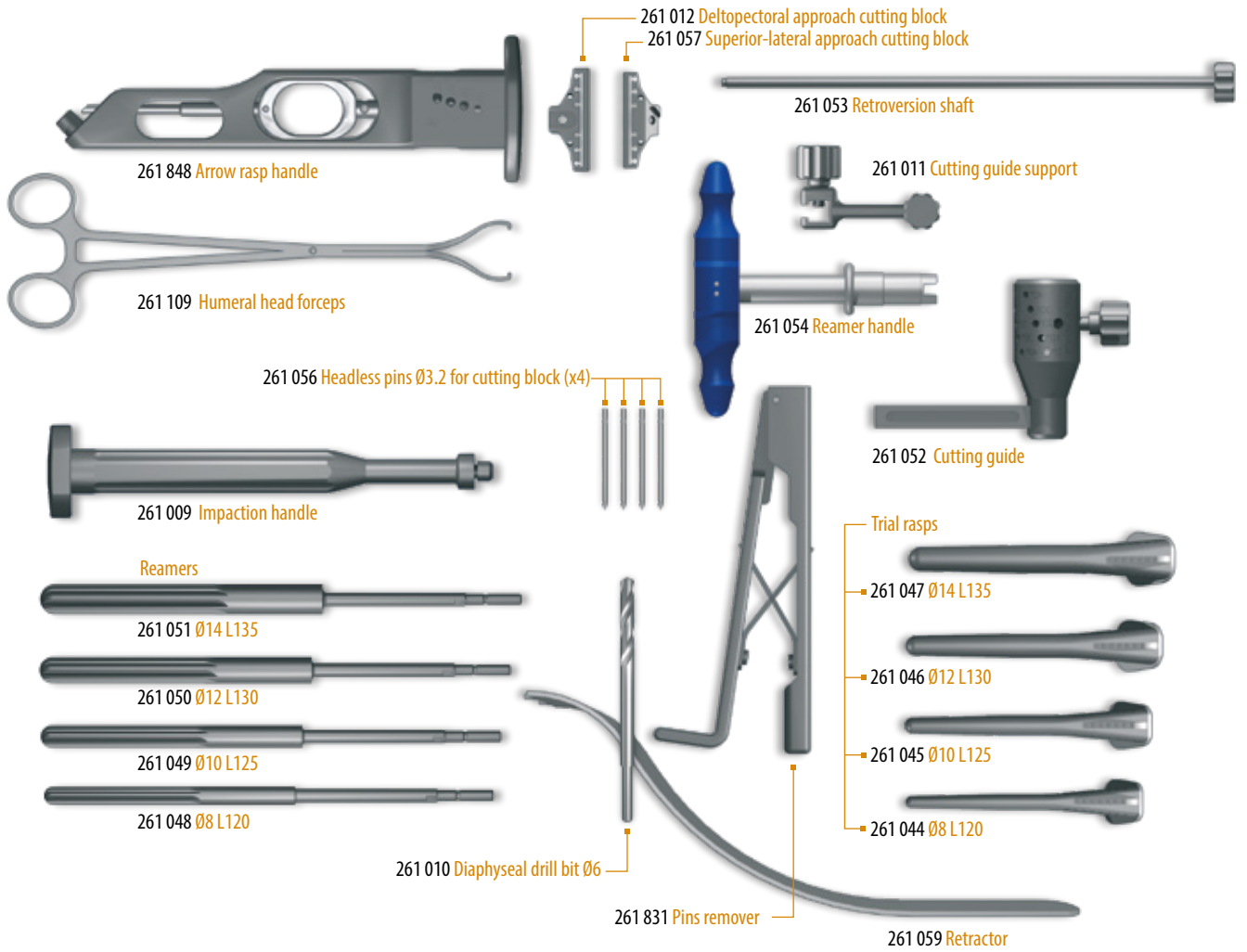
- Reinsert the anterior fibres of the deltoid on the acromion (facilitated by the osteo-cancellous shavings).
- Bring the fibres of the deltoid back together.
- Close the skin on two levels with a drain in place.



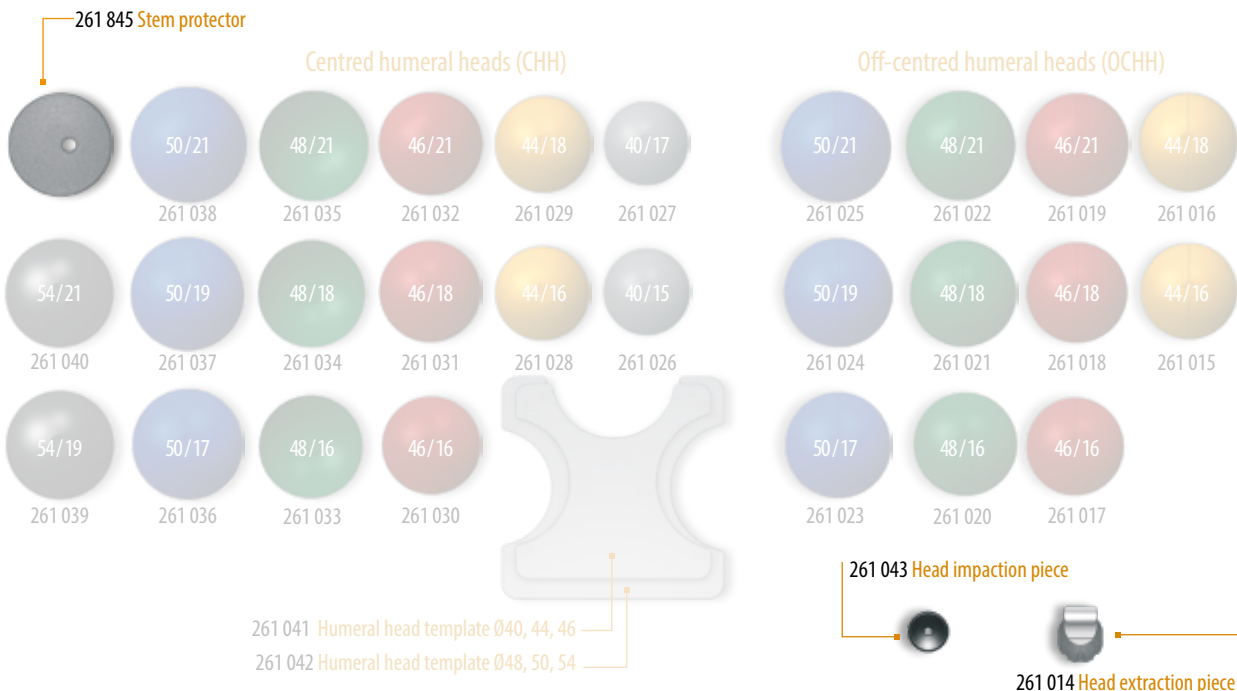
## 8 - POSSIBLE POST-OPERATIVE TREATMENT

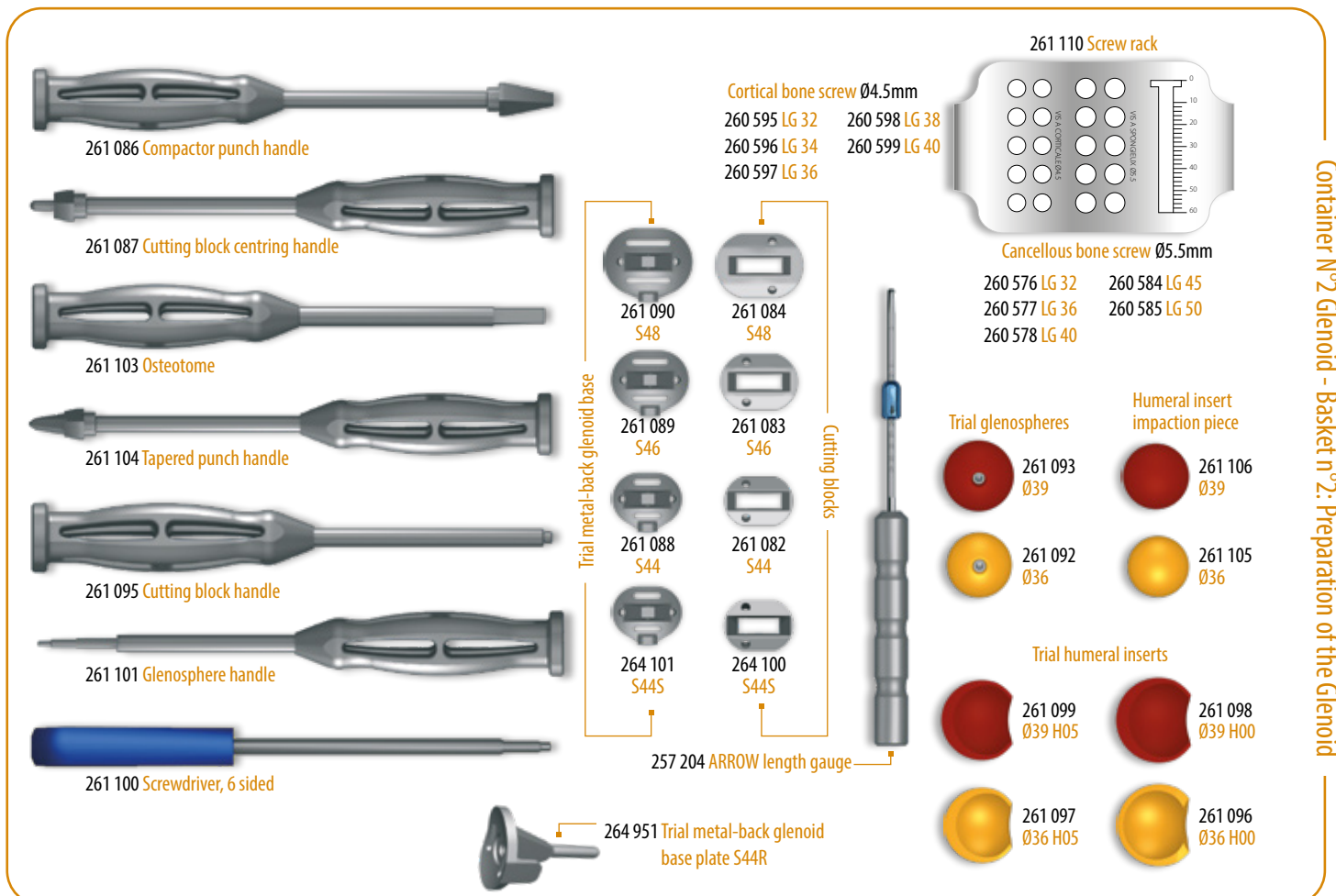
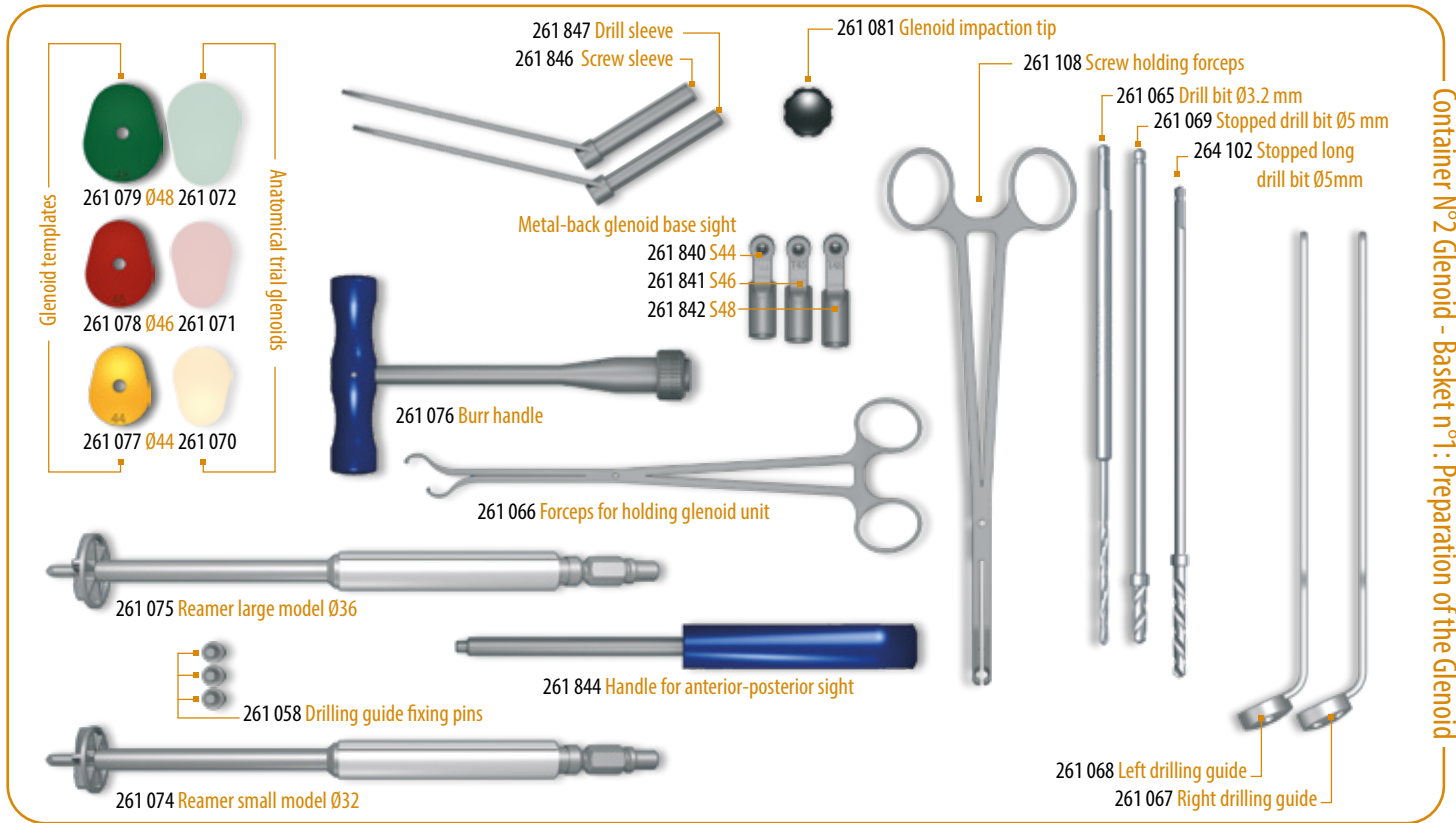
- Hospitalisation for about 5 days.
- Removal of the drain after 48 hours.
- Sling with neutral rotation to be worn for 15 days.
- Physiotherapy is started immediately: passive elevation in the plane of the scapula with isometric contraction of the deltoid when the arm is raised. Assisted active elevation from the 4<sup>th</sup> week.

Container N°1 Humerus - Basket n°1: Humerus stem



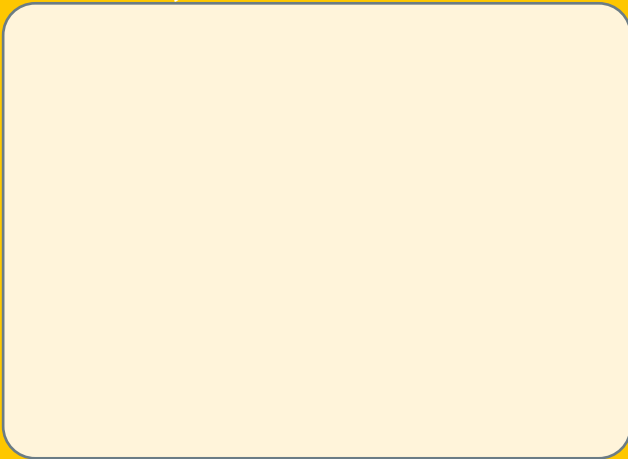
Container N°1 Humerus - Basket n°2: Humeral Heads





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