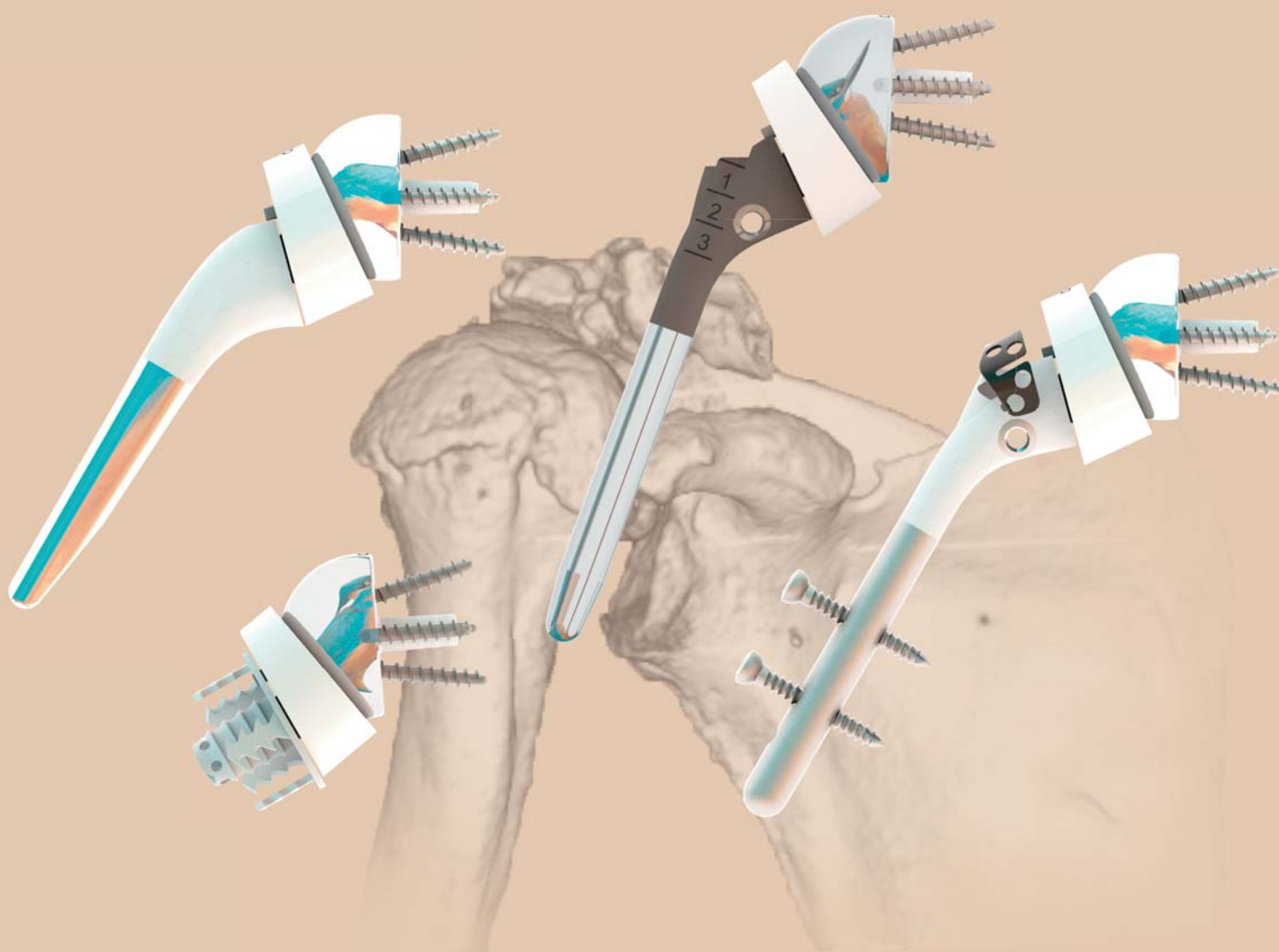




# REVERSIBLE PROSTHESES



SURGICAL TECHNIQUE  
HUMELock II, HUMERIS, EASYTECH (REVISION).

# SURGICAL TECHNIQUE

## Anatomical implants removal:

Remove the head by sliding a blade between the head and the stem.  
 Remove the double taper by screwing the extractor with hammer.  
 Remove the glenoid by sliding a Powels blade between the implant and bone.



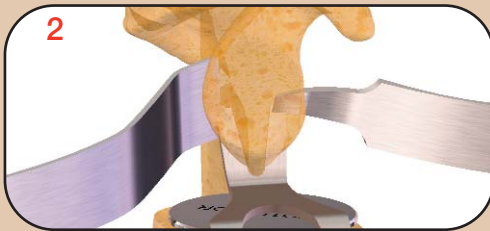
## Glenoid exposure :

Expose the glenoid fully using the three types of retractors.

- Anterior retractor,
- Superior retractor,
- Inferior retractor.

Remove the glenoid labrum.

Remove any potential osteophytes to expose the full bone anatomy.



## Placing the K-wire:

Three different positions for the guide: Left (L), Right (R) for a deltopectoral approach and Superior lateral (S).

Position the K-wire guide on the inferior part of the glenoid to determine the correct height.

The K-wire is 12mm above the lower edge, according to Kelly<sup>1</sup> and must be centered in the antero-posterior plan.

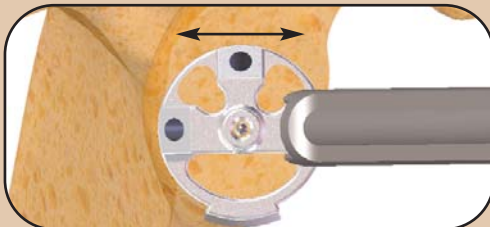
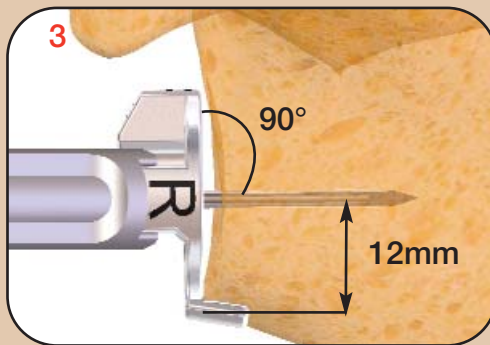
The K-wire guide orientation is important for the glenoid tilt and must be done at 90° (see picture #2).

The glenoid spheres are tilted (lower lip) by 10°.

Positioning should be to fit the anatomy of the patient and planned according to pre-operative X ray.

This element must be decided in pre-operative planning.

By default, the base plate is perpendicular to the mid plane of the glenoid. Insert K-wire by power tool.



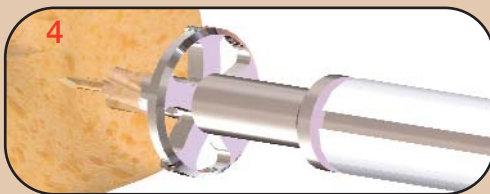
(1) Kelly JD, Humphrey CS, Norris TR. Optimizing glenosphere position and fixation in reverse shoulder arthroplasty, Part One: the twelve-mm rule. J Shoulder Elbow Surg 2008;17:589-94

## Glenoid reaming:

Drill and ream the glenoid using the K-wire guide.

Ream until the subchondral bone is reached.

This step can be done by power or by hand if the glenoid is porotic.

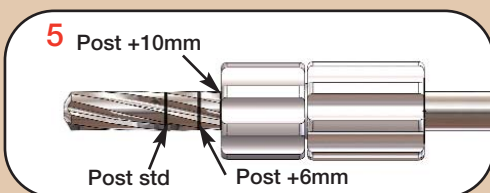


## Extension post:

In the case of revision or lateralisation of the center of rotation with a graft from the pillar of the scapula, it is possible to extend the post by 6 or 10 mm.

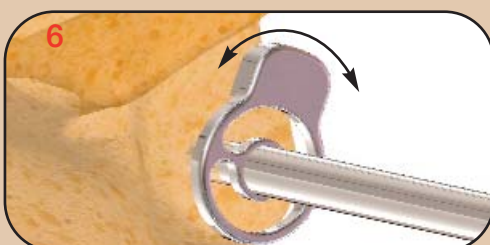
Tighten the block-stop in the correct position by screwing it onto the drill to either 6 mm or 10 mm, as required.

Drill the post again with block stop in position.



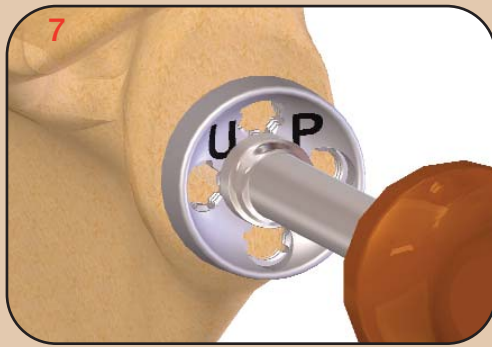
## Glenoid clearance:

To avoid any interference between the glenosphere and the scapula, ream the glenoid using the Ø40 mm hand reamer.



Pay attention to avoid ovalizing the post hole.

360° clearance = succesfull impaction of the glenosphere.



### Positioning the baseplate :

Connect the holder / impactor to the baseplate. Impact the baseplate so that there is pressure over the whole surface. The impactor allows for the upper and lower holes to be placed so that a screw can be positioned in the base of the coracoid and in the pillar of the scapula.



The sign (UP) must be on top under the coracoid basis.

Remove the K-wire.

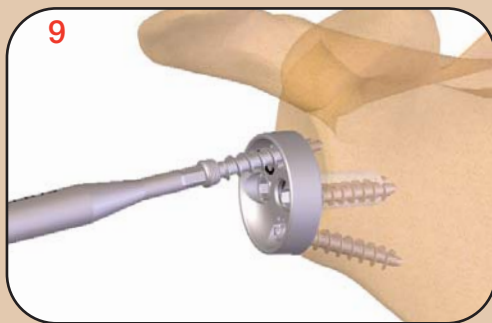


### Length of screws (5 sizes from 20 to 40 mm) :

An adapted guide allows for the holes to be drilled and the length of the screws measured with the Ø 3.2 mm drill bit. The length of the screws are measured directly.

It is possible to drill up to the 2<sup>nd</sup> cortex and use the gauge to measure the screw length.

The screw length is measured from under the head. Two types of screws are available, locking or standard.



### Fixation of the baseplate:

Standard screws allow the baseplate to be lagged to the bone, and locking screws fix the mounting.

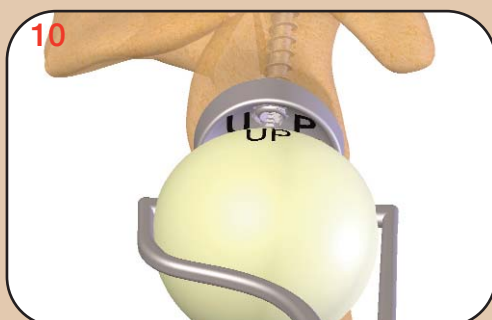
Each screw allows an angulation of +/-12° around the axial hole.

The upper hole for the first screw is pre-oriented by 10° to optimise its positioning in the base of the coracoid.

### Recommendations:

2 compression screws (std) for anterior and posterior holes.

2 locking screws for superior and inferior holes.



### Glenosphere trial (10° tilt):

There are two diameters of glenospheres: Ø36 and 40 mm.

All glenospheres are centered or eccentric with or without a screw.

The choice of glenosphere does not depend on the size of the humeral stem.

All glenospheres are tilted downwards by 10°.

For slim patients (BMI (W/S2)≤21) (Body Mass Index (weight / size<sup>2</sup>)), use of the Ø 40 mm glenosphere is recommended, where possible, particularly if the subject is male.

Position the glenosphere with the special clamp allowing the humerus to be circumvented by the delto-pectoral approach.

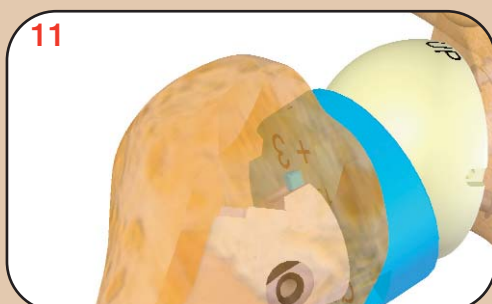
### 135/145° trial cup:

The cup diameter matches the glenosphere diameter.

Three heights are available (+3, +6, +9 mm).



Take care to respect index marks on the stem and cup.

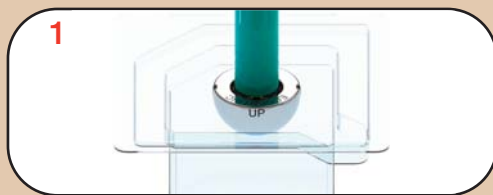


Test for stability and mobility.

Trials are identical to final implants.

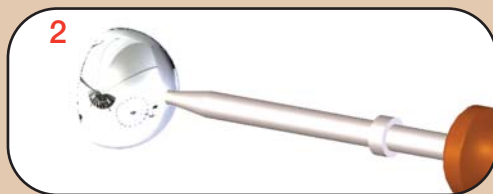


# DEFINITIVE IMPLANTS



Handling of the definitive glenosphere:  
**Impacted glenosphere**

Insert the glenosphere implant holder into the definitive implant. On the specially designed clamp, there are notches on the jaws which should be positioned to coincide with those on the middle of the glenosphere implant.



Handling of the definitive glenosphere w/screw:  
**Impacted glenosphere w/screw**

Insert the 3.5 mm hex screwdriver in the screw of the glenosphere.



Fitting of the definitive implants:  
**Impacted glenosphere**

When positioning the glenosphere, pay attention to the "UP" marking, if an eccentric glenosphere is used. First introduce the guiding post, then the female taper of the glenosphere into the male taper of the baseplate. Be sure to check that the baseplate is clean and free of any bone or tissue particles that could hinder impaction of the Morse taper.



**Impact the glenosphere and check it before closure.**



Fitting of the definitive implants:  
**Impacted glenosphere w/screw**

Insert the glenosphere paying attention to the «UP» marking, if an eccentric glenosphere is used. Introduce the screw of the glenosphere in the post of the baseplate. Be sure to check that the baseplate is clean and free of any bone or tissue particles that could hinder impaction of the Morse taper.



**Do not impact the glenosphere with the screwdriver.**

- 1- Begin to screw the glenosphere w/screw.
- 2- Impact the glenosphere with the impactor.
- 3- Finish screwing



**Index of the definitive cup 135/145°:**

Find the index marks on both the definitive cup and the stem. Position the cup so that the index matches the index on the stem.

Insert the cup into the taper of the stem so that indices of the cup and stem are correctly aligned. Check there is nothing impeding impaction of the cup and impact it.

