HUMELOCK™ II

Cemented

Hemi / Trauma

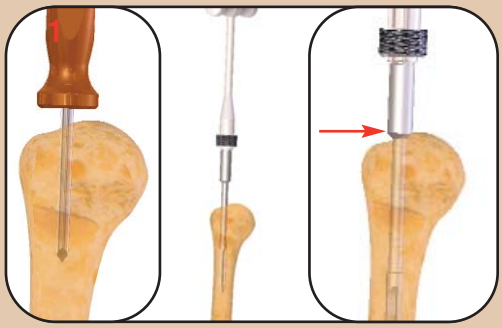
Total / Primary

SURGICAL TECHNIQUE

FX SOLUTIONS

SOMMAIRE

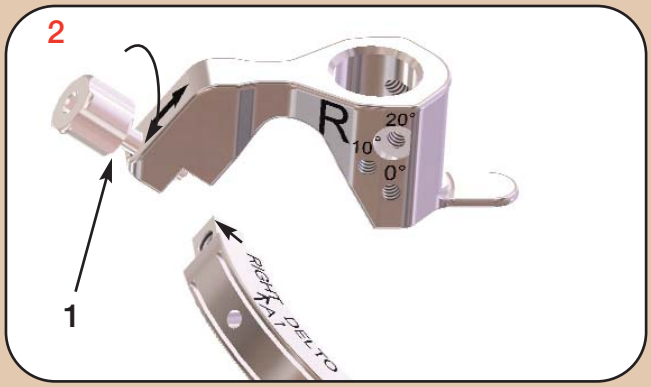
SURGICAL TECH. HUMERUS : DEGENERATIVE



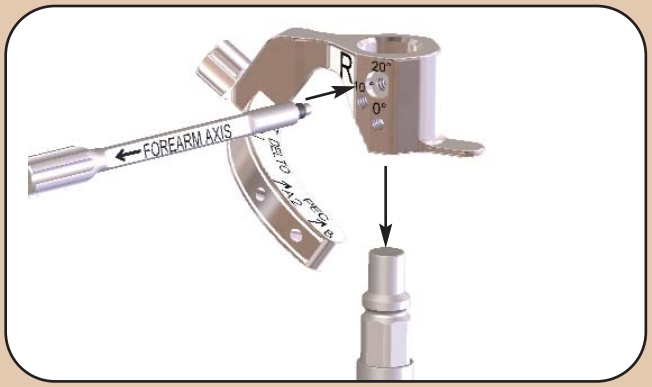
Preparation of the humeral shaft:

Locate and perforate the top of the humeral head in the medullary canal axis using a triangular awl.
Use the reamers in increasing size order on the T handle.
Go from one size to the next until the diameter of the reamer meets the diameter of the shaft.
The reamer should enter the humeral shaft up to the guard (⟶).
The stem choice is made depending on the last reamer size used:
Ø08 mm --> Stem Ø06 mm
Ø10 mm --> Stem Ø08 mm
Ø12 mm --> Stem Ø10 mm

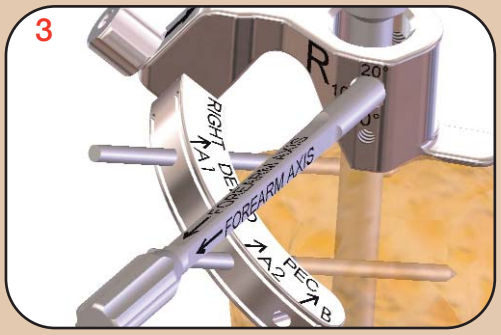
Mounting the delto-pectoral cutting guide:



Place the delto-pectoral cutting guide on the operating side on the guide holder.
Fasten the guide with the knurled screw (1).



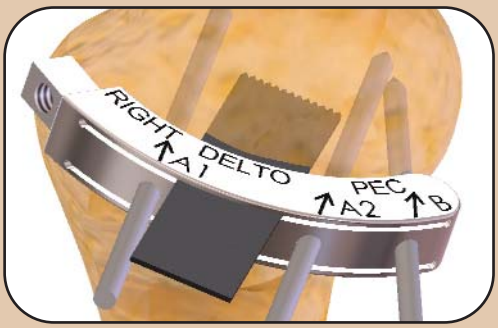
Slide the assembly onto the remaining reamer.
Screw the retroversion stem into one of the three positions according to the required angle: 0°, 10, 20°.



Placing the 135°cutting guide:

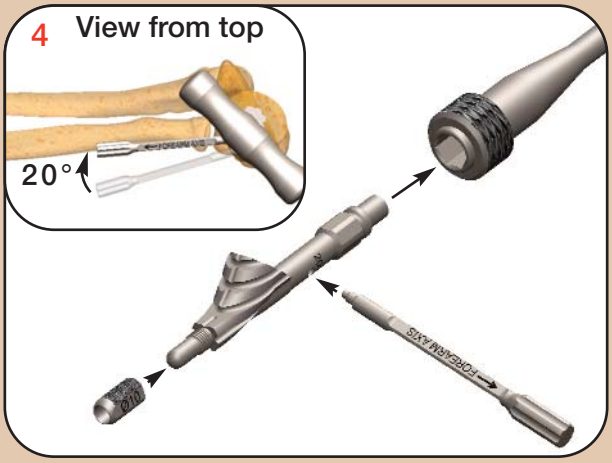
The probe stops at the top of the head and determines the incision height.
The retroversion is determined by screwing the stem into one of 3 positions (0, 10, 20°) and aligning it with the forearm axis. Fastening the retroversion stem sets the position for the cutting guide.
Place two pins (A1+A2) by drilling if necessary, using the Ø3.2 mm bit.

Remove the retroversion stem and the guide holder as well as the reamer.
Slide the cutting guide along the pins.
Stabilize the mounting using a 3rd oblique pin (B).
Make the incision across the slot with a saw blade of a maximum 0.9 mm thickness.



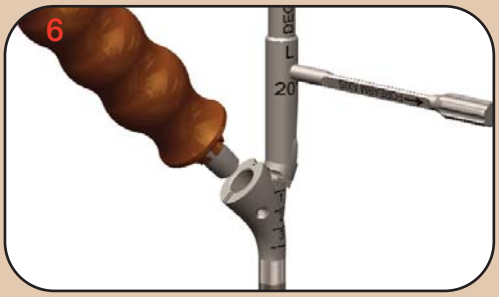
Puncher + retroversion ajustment:

Mount the retroversion rod from the right- or left-hand side.
The size of the sleeve is determined by the size of the last reamer.
Plug the puncher on the T handle.
Place the rod parallel to forarm to achieve 20° retroversion.
Impact the puncher until the resected bone surface.



Fitting the impactor:

Mount the impactor onto the implant with the 3.5 screwdriver
Tighten the screw of the «implant + impactor» assembly.



Impaction of the definitive taper:

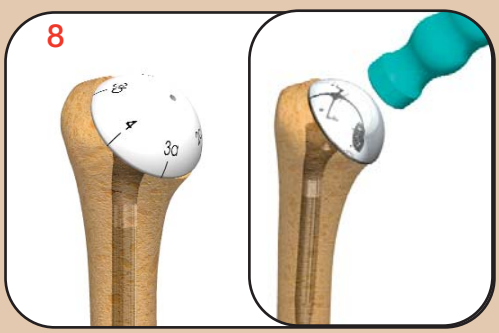
Put the stem into the stem holder before impacting the double taper in it.

Check carefully that there are no splinters on the top of the humeral metaphysis hindering impaction of the morse taper.

Cementing:

Insert the stem in the humeral shaft keeping the good retroversion.
Stem is in place when at the humeral cut
Position a plug, 1 cm under the end of the stem (L=150mm).

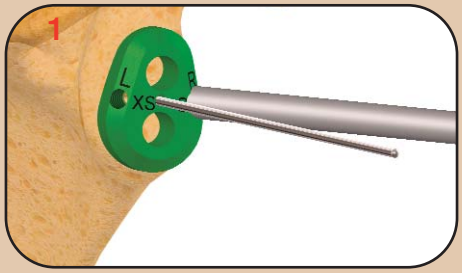
Do not apply too much cement in the proximal position, in order to optimize the osteogenic environment around the tuberosities.
Remove the impactor.



Once the trial head has been selected, (4 centered, 4 offset):

Insert the head onto the taper of the stem.
If an offset head is used (white), turn it to find the best position, i.e., the position that is closest to the anatomical structure.
Record the details so that this position can be used again for the definitive implant.

SURGICAL TECH. GLENOID



Placing the K-wire:

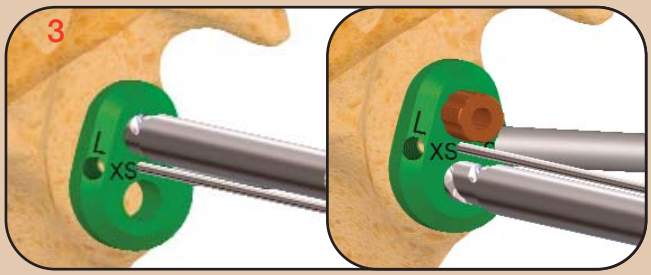
Apply one of the two templates of the glenoid cavity and visualize the fixing pegs.
Small template (green) = implant XS or S
Big template (orange) = implant M or L

Define the positioning of template and insert central K-wire.

Glenoid reaming:

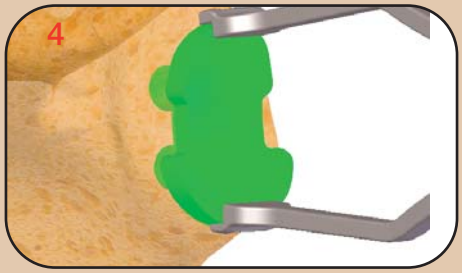
Drill and ream the glenoid using the K-wire guide.
Ream until the subchondral bone is reached.

Green reamer = implant XS or S
Orange reamer = implant M or L



Drilling pegs' holes:

Insert the template through the K-wire.
Drill the first hole until it stops.
Stabilize the assembly with the peg.
Drill the second hole.



Trial implant:

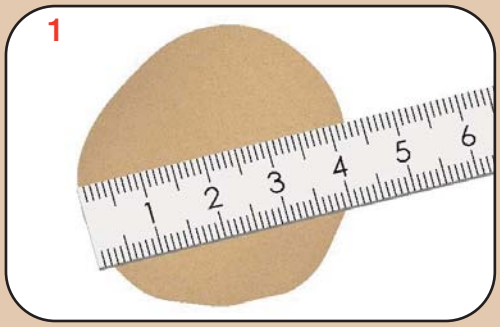
Insert trial implant by using the glenoid holder clamp.
Green template = trial implants XS or S.
Orange template = trial implants M or L.

Test the mobility with trial glenoid.
Trials are identical to final implants.

Definitive implant:

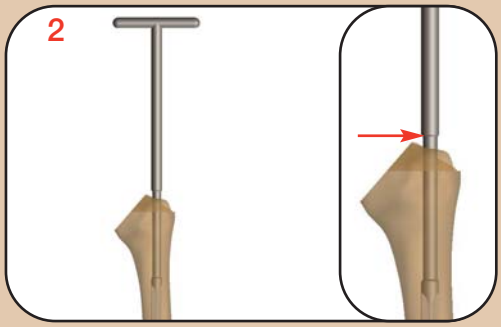
Take the implant of the same size as trial.
Make the cement.
Put some cement in each hole.
Insert the implant with the glenoid holder clamp.
Maintain the pressure with the glenoid impactor.

Allowable combinations humeral heads / glenoid components				
Glenoid size	XS	S	M	L
Head Ø	Ø39 Ø41 Ø43	Ø39 Ø41 Ø43	Ø43 Ø46 Ø48	Ø46 Ø48 Ø50



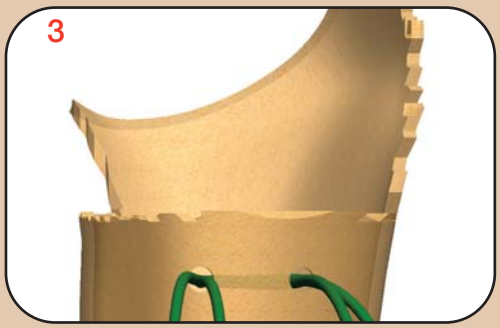
Extraction of the humeral head:

Measure the head using the metalic ruler.
Use a smaller prosthetic head than the size measured.
Example: Measurement = 46 mm => prosthetic head = Ø43 mm.



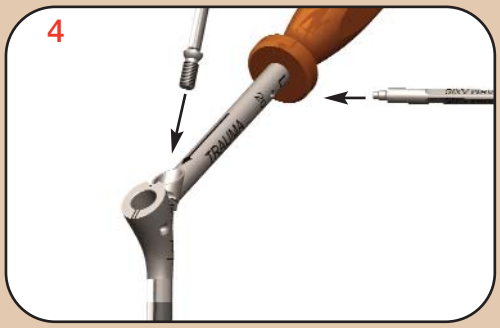
Preparation of the humeral shaft:

Prepare the humeral shaft using the reamers from the smallest to the biggest size.
Use one size then the other until the reamer diameter fits to the humeral intermedullary canal.
The reamer must be introduced into the canal until it stops (→).
Size of the stem is defined by the size of the reamers : size of the stem (Ø06, 08, 10) a reamer below the last one used (Ø08, 10, 12).



Fitting of a tension suture:

Make two holes in the diaphysis before inserting the stem into the humeral shaft.
Introduce the suture from the outside to the inside, then through the second hole from the inside to the outside.



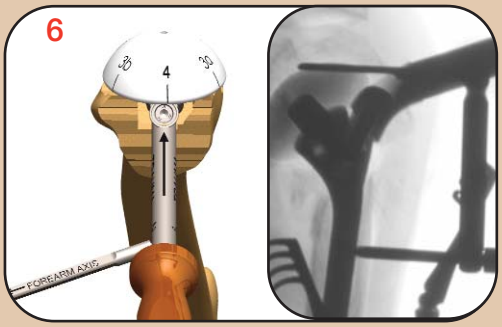
Fitting the impactor:

Mount the impactor onto the implant with the 3.5 screwdriver
Tighten the screw of the «implant + impactor» assembly.

Impaction of the definitive taper:

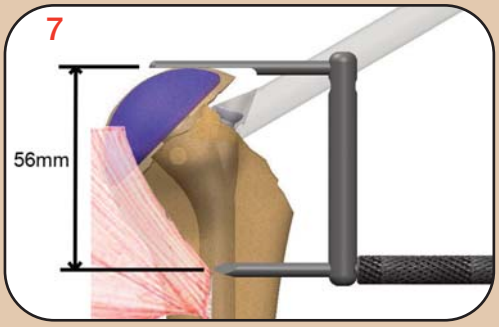
Put the stem into the stem holder before impacting the double taper in it.

Check carefully that there are no splinters on the top of the humeral metaphysis hindering impaction of the morse taper.



Once the trial head has been selected, (4 centered, 4 offset):

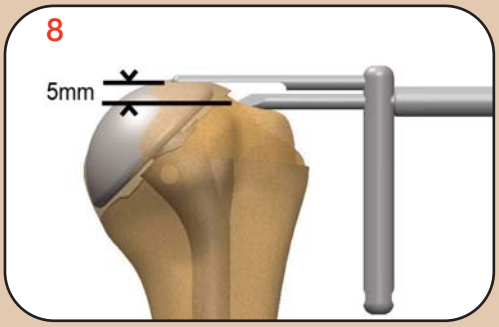
Insert the head onto the taper of the stem.
If an offset head is used (white), turn it to find the best position, i.e., the position that is closest to the anatomical structure.
Record the details so that this position can be used again for the definitive implant.



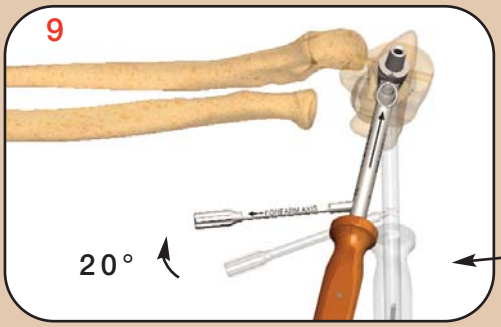
Height adjustment (height gauge):

a) DELTO-PECTORAL APPROACH
Use Murachovsky's criteria (1).
Position the trocar level with the point of insertion of the clavicular fascicle of the pectoralis major muscle.
The face of the top plate indicates the position for the top of the humeral head.

(1) Murachowsky J et al. JSES 06; Torrens C et al. JSES 08; Hasan SA et al. Orthopedics 09



b) SUPERO-EXTERNAL APPROACH
This criteria applies when there is continuity between the diaphysis and the greater tuberosity.
Position the trocar at the top of the greater tuberosity.
The face of the top plate indicates the position for the top of the humeral head.
This position is best assessed by per-operative X-ray.
The best criteria is the anatomical reduction of the tuberosities, if the fracture is not too comminuted.



Retroversion adjustment:

Mount the retroversion rod onto the impactor from the right- or left-hand side.
Position this rod parallel to the forearm to achieve 20° retroversion.

View from top: upper left limb.

Checking of the stem position in regard of tuberosities and glenoid:

Locate the horizontal reference point for any remarkable elements of the metaphysis that you will use to cement the stem at a good height (scalpel line, for example).

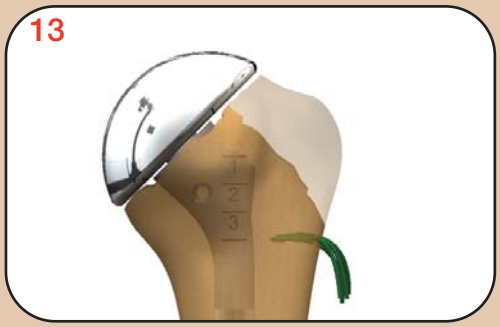
Impaction of the head:

Record the position of the offset head in relation to the arrow on the impactor.
Take the appropriate implant and insert it on the taper of the stem in the same way.
Check carefully that there are no splinters on the top of the humeral metaphysis hindering impaction of the morse taper.

Cementing

Position a plug, 1 cm under the end of the stem (L=150mm).

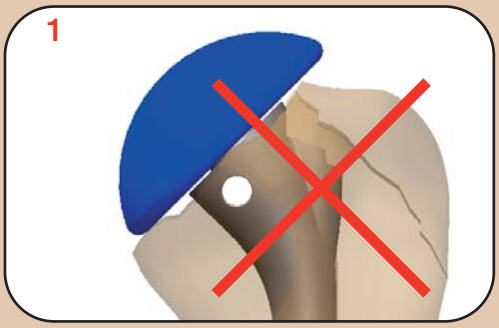
Do not apply too much cement in the proximal position, in order to optimize the osteogenic environment around the consolidation zone of the tuberosities.



Removal of the impactor:

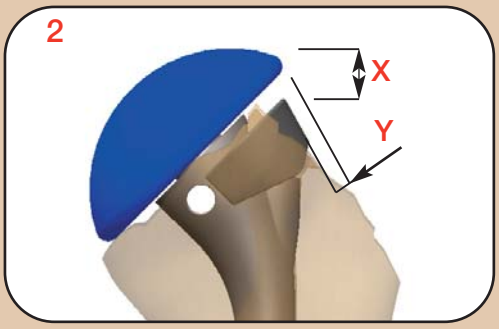
Remove the impactor's screw.
Remove the impactor.

USING THE OMS SYSTEM



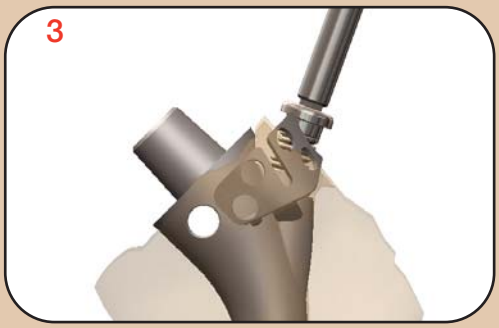
Initial position:

Once the stem has been interlocked, remove the aimer.
Reposition the tuberosities.
In the event of their medialisation, use one of five cages from the offset modular system (OMS).



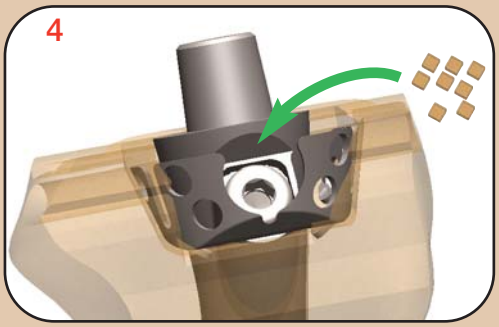
Selecting of the cage size:

Use trial cages in increasing order of size.
Change from one size to another until the diameter of the cage allows correct filling of the epiphyseal space.
From the front view, the cage must be lower than (X) and inside (Y) the top edge of the prosthetic head.
The size selected depends on the anatomy of the tuberosities.



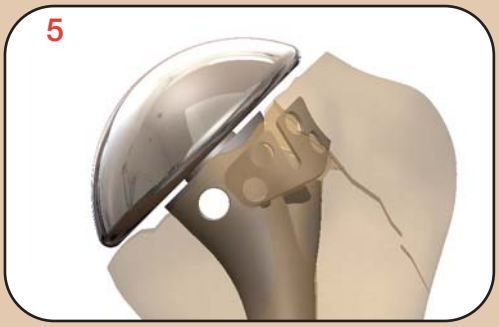
Fitting of the definitive cage:

Take the appropriate implant and fit it onto the stem.
Secure using the screw provided for this purpose and the hex 3.5 mm screwdriver.



Filling the cage:

If necessary, use small autograft cubes (5 mm) taken from the natural head to fill the cage.
Reconstruct a homogeneous epiphyseal mass.



Adjusting the cage:

Cages are designed to allow flexion of the walls in order to adapt a better configuration of the tuberosities and preserve the bone stock.
The cage must be adjusted to ensure continuity between the articular surface and the greater tuberosity.

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