Surgical Technique

Reversed Shoulder Prosthesis

Aequalis®-Reversed II

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TORNIER
SURGICAL IMPLANTS

Proper surgical procedures and techniques are the responsibility of the medical professional. Individual surgeon evaluation of the surgical technique should be performed based on his or her personal medical training and experience. This essential product information does not include all of the information necessary for selection and use of a device. Please see full labeling on package insert for all necessary information.

TABLE OF CONTENTS

IMPLANT DESCRIPT

The 9 mm Spacer

A 9 mm Spacer allows for increased the lateralization and height of the Humeral Component up to 21 mm to optimize deltoid tension.

The Metaphysis
(Cobalt Chrome for cemented application)

Available in 2 diameters - 36 mm and 42 mm - to adapt to varying patient's anatomy.
An anti-rotation design with a polyethylene plug to secure the fixation between the Metaphysis and Stem.

4 ranges of Polyethylene Inserts

Available to optimize the deltoid tension, implant stability and avoid any risk of acromial impingement.

- **A Centered and + 2 mm Eccentric inserts are available (6 mm, 9 mm and 12 mm).**
- **A Constrained version in different thicknesses (6 mm, 9 mm, 12 mm and 15 mm) *(Available upon request only).***
- **36/42 Combination version allows to match a 36 mm metaphysis with a 42 mm Glenoid Sphere.**

The Stem
(Cobalt Chrome for cemented application)

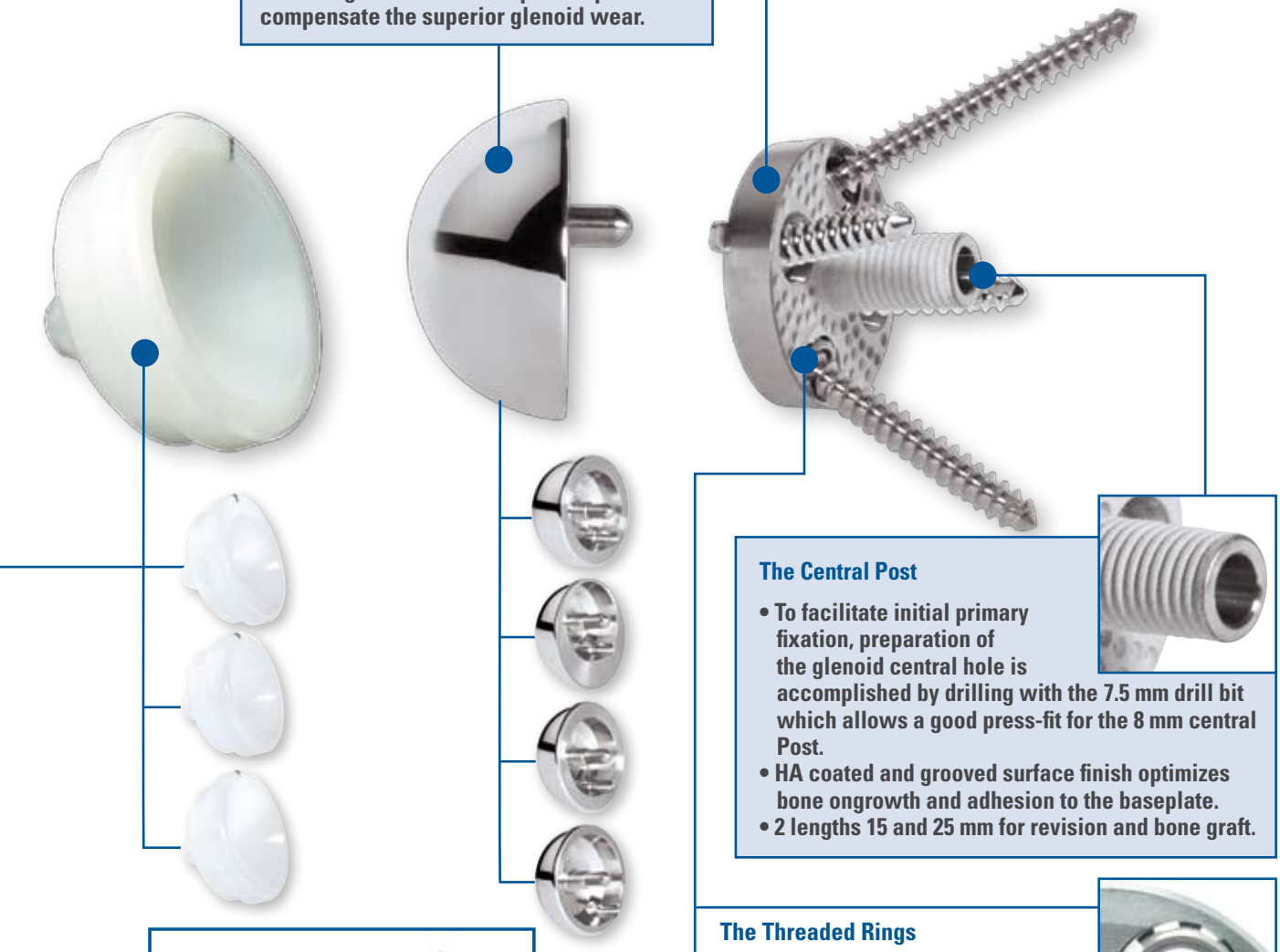
A wide variety of diameters offered to adapt to each patient's anatomy and in multiple lengths for revision purposes.

The Glenoid Sphere

Available in 2 diameters 36 mm and 42 mm.
A 4 mm lowered Eccentric Glenoid Sphere option allows prevention of the risk of scapular notching.
A 10° Angulated Glenoid Sphere option compensate the superior glenoid wear.

The Glenoid Baseplate

Available in 2 diameters: 25 and 29 mm.
Designed to enhance primary fixation (conical central post and 4 peripheral screws) and secondary fixation (HA coating).



The Central Post

- **To facilitate initial primary fixation, preparation of the glenoid central hole is accomplished by drilling with the 7.5 mm drill bit which allows a good press-fit for the 8 mm central Post.**
- **HA coated and grooved surface finish optimizes bone ongrowth and adhesion to the baseplate.**
- **2 lengths 15 and 25 mm for revision and bone graft.**

The Threaded Rings

Threaded rings have been designed in the superior and inferior holes of the Glenoid Baseplate to allow free angulation of the screws within a certain range, and locking of the screws in the desired position :

- superior screw range of angulation is 0° to 30° superior towards the base of the coracoid process and +/-15° in the transverse plane.
- inferior screw range of angulation is 0° to 30° inferior towards the lateral scapula spine and +/-15° in the transverse plane.

The anterior/posterior Hemispherical Head Screws

4.5 mm self-tapping screws allow for added fixation and compression of the baseplate.
With a variable angles (+/-15°), it enhances cortical fixation.

The Multidirectional Screws

A 4.5 mm self-tapping locking head design allows proper orientation of the screw and then secures the angle for optimal fixation.

1. BIOMECHANICS

The Aequalis®-Reversed II design is based upon the principle of kinematic balancing of the shoulder described by Professor Grammont.

Biomechanics of the Aequalis®-Reversed II prosthesis is based on the following:
- Medialization of the center of rotation inside the glenoid bone surface.
- Distalization of the humerus, resulting in retensioning of the deltoid muscle and any rotator cuff muscles that are still competent (in case of massive rotator cuff tear).

This increases the length of the deltoid lever arm and therefore, the deltoid power. When the Aequalis®-Reversed II prosthesis is implanted, the deltoid is the only muscle that acts on active elevation. Furthermore, moving the center of rotation of the joint medially results in a greater muscle volume contributing to elevation. At last, the high congruence between the Glenoid Sphere and the humeral insert component stabilizes the humerus. The humerus is firmly held by the Glenoid Sphere, and contact is maintained by the tension of the deltoid.

2. INDICATIONS

It is indicated for patients with a functional deltoid muscle as a total shoulder replacement for the relief of pain and significant disability following arthropathy associated with massive and non repairable rotator cuff-tear. This device is also indicated for the prosthetic revisions with massive and non repairable rotator cuff-tear. The humeral components are for cemented and cementless use. The glenoid implant is anchored to the bone with 4 screws and is for non-cemented fixation.

3. CONTRAINDICATIONS

The complete list of contraindications can be found in the “Instructions For Use” packaged with the implants.

1. PRE-OPERATIVE PLANNING

Pre-operative planning is performed using x-ray templates of known magnification in the frontal and sagittal views to determine implant size and positioning.

The use of a CT scan or MRI is recommended to determine the orientation of the glenoid and the quality of its bone stock.

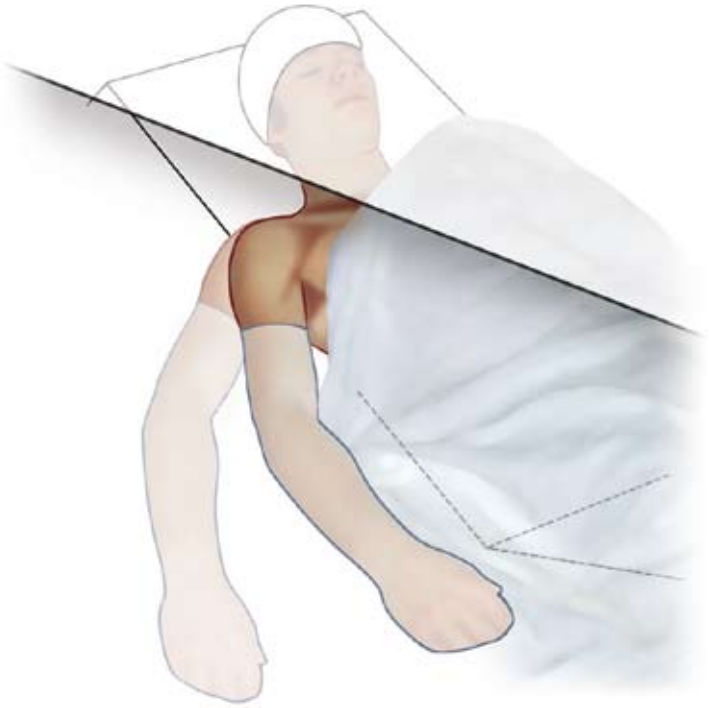
X-ray templates allow the surgeon to assess:

- The size and the optimal length of the gleno-humeral implants.
- The diameter of the metaphysis, the insert, and the glenoid sphere.

2. PATIENT POSITIONING

Beach chair position with the shoulder positioned sufficiently lateral to allow full arm extension.

The patient is vertically inclined depending on the chosen surgical approach.



3. HUMERAL EXPOSURE

Deltopectoral approach

An incision is made from the tip of the coracoid along the deltopectoral groove, slightly lateral to the axillary fold.
The pectoralis major is identified. The deltoid and cephalic veins are retracted laterally to open the deltopectoral groove.
The coracoid process is identified. A Hohmann retractor is positioned behind the coracoid. Care should be taken to preserve the origin and insertion of the deltoid.
The clavipectoral fascia is incised at the external border of the coraco-brachialis. The axillary nerve is then identified before opening the subscapularis.
With the arm externally rotated, a conservative anterior and inferior capsule release from the humerus to the glenoid may be performed.
With adequate releases made, the humeral head is dislocated into the deltopectoral interval by abduction of the arm and progressive external rotation and extension. In cases of severely restricted external rotation (0° or less), it is recommended to further release the upper pectoralis insertion.

Superolateral approach

The incision is made from the acromioclavicular joint along the anterior border of the acromion and downward approximately 4 cm.
The deltoid is split in line with its fibers. Extra care should be taken to avoid any damage to the axillary nerve, which is located approximately 4 cm distal to the acromion.
The anterior part of the deltoid and the coracoacromial ligament are then carefully detached from their acromial insertion up to the acromioclavicular joint.
The humeral head will then become visable at the anterior border of the acromion. Next, the subscapularis bursa is released and the humeral head dislocated by placing the arm in flexion and external rotation.
To optimize the exposure, the anterior border and the remaining superior cuff can be resected.
In some cases, the remaining subscapularis tendon may be resected.

4. PREPARATION OF THE HUMERUS

4.1 Identification of the Humeral Entry Point

The humeral head is generally deformed and the usual anatomic reference points may not be present.

The humeral entry point is located at the diaphyseal axis at the highest point of the humeral head. This is determined after examination of the sagittal and a anterior-posterior x-rays (in case of humeral head deformity).

The entry point is marked with a starter awl. (Fig. 1)

If necessary, the entry point can also be enlarged with an osteotome before inserting the starter awl down the diaphyseal axis.

Fig. 1

4.2 Humeral Head Resection

Two cutting guides are available:

- One for the Deltopectoral approach (Fig. 2)
- One for the Superolateral approach (Fig. 3)

Fig. 2

Fig.3

The shaft of the monobloc cutting guide is inserted into the medullary canal at the entry point previously determined. It is driven down until the ring contacts the humeral head.

To define the prosthetic retroversion, a retroversion rod is positioned into one of the holes along the axis which allows for retroversion between 0° and 20° (R for right arm and L for left arm). (Fig. 4)

Fig. 4

The cutting guide is turned until the retroversion rod is aligned with the patient's forearm.

Once the retroversion has been determined, the head is then resected with an oscillating saw, below the ring of the cutting guide. (Fig. 5)

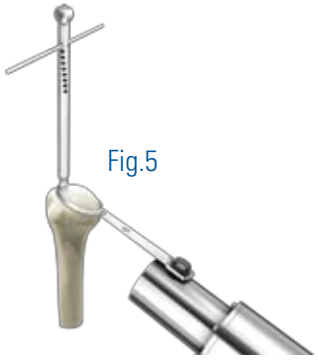


Fig.5

To complete the cut, the cutting guide is removed. (Fig. 6-7)

Fig.6

Fig.7

4.3 Metaphyseal Reaming

The appropriate size is determined preoperatively and confirmed intraoperatively in accordance with the size of the humerus.

The metaphyseal component is available in two diameters 36 mm and 42 mm.

The selection of the metaphyseal diameter is essential, as it will determine the use of either the 36 mm implants and instruments or the 42 mm implants and instruments.

The humeral and glenoid implant of 36 mm diameter (or 42 mm) are usually matched together.
However, it is possible to mix a 36 mm diameter metaphysis with a 42 mm diameter Glenoid Sphere by using the 36/42 Combination Inserts.

The appropriately sized motorized metaphyseal reamer is assembled (36 mm or 42 mm) then quick-connected to the metaphyseal reamer holder. (Fig. 8)

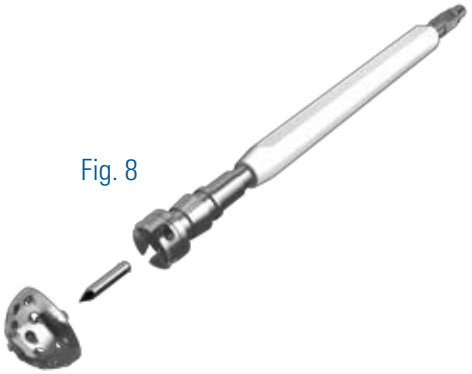


Fig. 8

The pilot tip is positioned in the center of the humeral cut and the metaphyseal region is reamed. (Fig. 9)

Fig. 9

Reaming is complete when the depth of the reamer head is at the level of the cut surface. (Fig. 10)

Fig. 10

4.4 Metaphyseal and Diaphyseal Reaming

The appropriate size metaphyseal reamer is then assembled on the T-handle and inserted up to the level of the height landmark on the shaft of the reamer. (Fig. 11-12)

Fig. 11

Fig. 12

This reaming shapes the metaphysis to receive the conical portion of the metaphyseal cup.

The diaphysis is manually reamed progressively using cylindrical reamers of increasing diameter 6.5 mm, 9 mm, 12 mm and 15 mm respectively.
The reamer should be inserted up to the appropriate height landmark of the desired implant length: 100 mm,150 mm, 180 mm and 210 mm respectively. (Fig. 13 -14)

Fig. 13

Fig. 14

Reaming is complete when the reamer contacts diaphyseal cortical bone. Additional reaming should be avoided to prevent fracturing of the humerus.

The last reamer used determines the final implant diameter and length.

4.5 Positioning of the Trial Implant Stem-Metaphysis

Assemble the selected diaphyseal and metaphyseal trial components. (Fig. 15)

Fig. 15

The trial assembly is then attached to the humeral impactor handle and inserted into the reamed medullary canal. (Fig. 16)

Fig. 16

The retroversion rod is then inserted into the hole of the humeral impactor handle at the previously determined retroversion angle (0° to 20°). (Fig. 17)

Fig. 17

Positioning of the trial assembly is then verified.

The trial assembly is impacted if necessary to ensure that it seats to the proper depth within the metaphysis.

Fig. 18

Once seated, retroversion is checked and the impactor handle is removed from the trial stem with the 4.5 mm screwdriver. (Fig.18)

The cut protector is positioned into the trial metaphysis to protect the prepared humerus during glenoid preparation. (Fig. 19)

Fig. 19

5. GLENOID PREPARATION

5.1 Glenoid Exposure

A partial capsulotomy and resection of the remaining glenoid labrum are performed to expose the glenoid.
A Kolbel retractor is positioned at the inferior border of the glenoid. It is seated on the pillar of the scapula for the superolateral approach or at the posterior aspect of the glenoid for the deltopectoral approach.
Additional retractors are positioned anterior and posterior to the glenoid for the supero-lateral approach and superior and inferior for the deltopectoral approach.
Once the initial exposure is achieved, an additional capsulotomy is performed if necessary.
Glenoid osteophytes are removed to further reveal the anatomical shape.

5.2 Glenoid Preparation

According to patient anatomy, pathology and glenoid wear, Aequalis®-Reversed II's wider range of Glenoid Baseplates and spheres allows for:

- **ease the glenoid preparation and the baseplate implantation.**
- **reduce the risk of bony impingment between humeral metaphysis and scapular pillar and the risk of scapular notching.**
- **compensate for possible superior erosion of the glenoid.**

Aequalis®-Reversed II instrumentation allows for use of different surgical techniques to better suit the situation and surgeon preferences.
The Aequalis®-Reversed II instruments has been designed to increase the safety of the implantation and to assist the surgeon in obtaining accurate and reproducible results
The instrumentation allows either a standard glenoid preparation or a cannulated preparation referencing a guide pin positioned at a chosen orientation.

5.3 Selection of Glenoid Baseplate and Sphere

The selection of the Glenoid Baseplate and sphere is strictly related to the sizing of the humeral insert. It is mandatory to correctly match the Glenoid Baseplate, Glenoid Sphere and humeral insert sizes.

Glenoid Baseplate 25 mm (Std or long post)	• Centered 36 mm Glenoid Sphere • 4 mm Eccentric 36 mm Glenoid Sphere • 10° Angulated 36 mm Glenoid Sphere • Centered 42 mm Glenoid Sphere
Glenoid Baseplate 29 mm (Std or long post)	• Centered 42 mm Glenoid Sphere • 4 mm Eccentric 42 mm Glenoid Sphere • 10° Angulated 42 mm Glenoid Sphere • Centered 36 mm Glenoid Sphere

The choice of Glenoid Sphere implant relies on the size of the baseplate.
It may affect future steps in the surgical technique, such as the reaming, and may not be reversible once those steps have been completed.
Nevertheless both centered spheres are available for either baseplate, if needed.

5.4 Glenoid Preparation Techniques

Aequalis®-Reversed II instrumentation allows the surgeon to choose between two different techniques of glenoid preparation:

• ***Standard glenoid surgical technique (See from page 16 to 19)***

• ***Cannulated glenoid surgical technique (See from page 20 to 24)***

5.4.1 Glenoid Preparation Standard Technique

a/ Central hole drilling

Two sizes of drill guide are available (25 mm and 29 mm) according to the size of the Glenoid Baseplate chosen.
The 6 mm drill guide is therefore the same outer diameter as the final Glenoid Baseplate.

Two types of drill guide handles are available:

- A peripheral handle can be assembled to one of the three holes in the peripherical aspect of the drill guide. (Fig. 20)

Fig. 20

- A central handle can be assembled to the central hole of the drill guide. (Fig. 21)

Fig. 21

According to surgeon preference, exposure and surgical approach, one of the two handles is selected and assembled to the 6.5 mm drill guide.
The drill guide is positioned making sure that its posterior aspect is properly seated on the bone surface.
To limit any risk of impingment, it's important to properly position the glenoid base referencing the inferior glenoid edge .

If a +4 mm Eccentric Glenoid Sphere is used, this eccentricity must be taken into account when positioning the drill guide.

Mark the central hole with a bovie and remove the guide to confirm central hole orientation prior to drilling. When evaluating the central hole location and angle of entry for eroded glenoids, the hole orientation and angle of entry may need to be adjusted to compensate for wear.
According to pre-operative CT scan or MRI, the central hole should be located inferiorly and slightly posterior from the anatomical center.

Insert the 6 mm drill bit into the drill guide and drill until the depth stop makes contact with the bone. (Fig. 22)

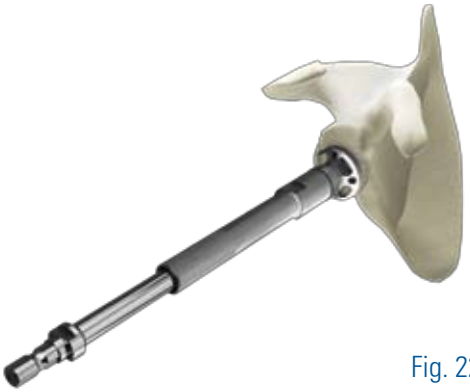


Fig. 22

b/ Glenoid Reaming

To obtain good bone seating and secure fixation of the Glenoid Baseplate it's important to flatten the glenoid surface.

Two flat reamers are available. The reamers are the same diameter of the Glenoid Baseplate (25 mm or 29 mm). Attach the removable pilot to the appropriate reamer and connect the assembly to power. (Fig. 23a-b)

Fig. 23a

Fig. 23b

Reaming is initiated by accurately placing the pilot tip in the central glenoid hole. It is recommended to start the reamer before contacting the glenoid surface. (Fig. 24a-b)

If insertion of the reamer is difficult, remove or reposition retractors for greater exposure.

A T-handle is available if manual reaming is desired.

Preserve as much bone as possible to support good primary fixation.

It is not advisable to ream down to cancellous bone due to limited glenoid bone stock. Over aggressive reaming should be avoided to prevent possible glenoid fracture.

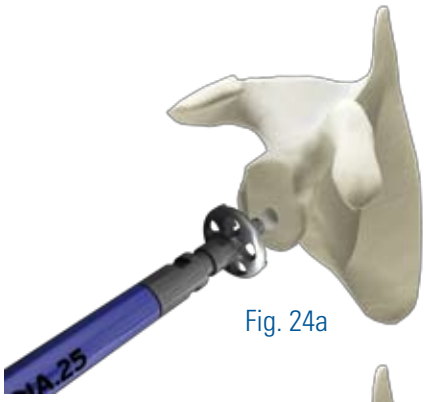


Fig. 24a

Fig. 24b

c/ Peripheral Reaming

To obtain good fixation of the Glenoid Sphere on the baseplate, peripheral reaming is necessary.

Four manual reamers are available according to the sizes of the Glenoid Baseplate and Sphere:

- 36 mm reamer for 25 mm baseplate
- 42 mm reamer for 25 mm baseplate
- 36 mm reamer for 29 mm baseplate
- 42 mm reamer for 29 mm baseplate

Assemble the removable pilot to the appropriate reamer and then attach the T-handle to the reamer. (Fig. 24a-b)

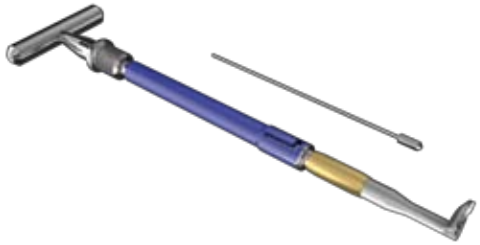


Fig. 24a

Fig. 24b

Place the pilot tip in the glenoid central hole and start the manual reaming until the depth stop contacts the bony surface. (Fig. 25)

After reaming, the glenoid should be flat and smooth. There should be no irregular edges on the reamed surface that would prevent proper seating of the Glenoid Sphere to the baseplate.

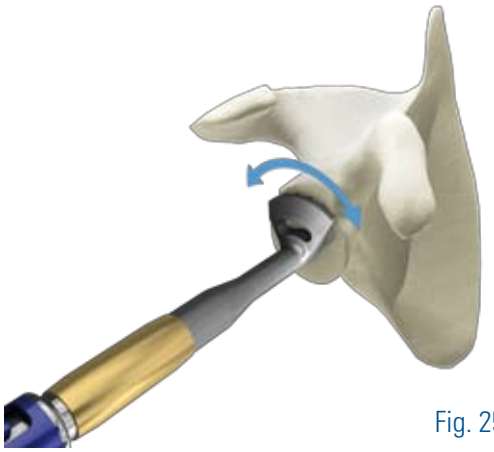


Fig. 25

Remove the reamer and visually check the adequacy of the reaming.

d/ Central Hole Re-Drilling

The glenoid central hole is re-drilled using the 7.5 mm drill bit to enable a press-fit when impacting the final Glenoid Baseplate (the baseplate central peg is 8 mm diameter).
If desired a handle is assembled to the 7.5 mm drill guide.

Two drill bits are available according to the length of the baseplate central Post:

- A 15 mm drill bit for standard post baseplate
- A 25 mm drill bit for long post baseplate

Select the appropriate drill bit and connect it to power.

Place the 7.5 mm drill guide onto the glenoid surface aligned to the 6 mm central hole.

Insert the drill bit into the drill guide and drill until the depth stop contacts the bone. (Fig. 26)

Remove the drill bit.

Please go to page 25 Section 5.5 for the positionning and definitive implantation of the baseplate.

Fig. 26

5.4.2 Glenoid Preparation Cannulated Technique

a/ Introduction

Two types of 2.5 mm drill guides are available:

- An unidirectional drill guide perpendicular to the glenoid axis. (Fig. 27)
- A multidirectional drill guide to be used with the orientation guide socket. (Fig. 28)

Both types of 2.5 mm drill guides are available in two sizes (25 mm and 29 mm) depending on the size of the Glenoid Baseplate.

The 2.5 mm drill guide has the same outer diameter as the final Glenoid Baseplate.

A. When the guide pin orientation has to be strictly perpendicular to the glenoid axis, the unidirectional 2.5 mm drill guide is used.

B. When the guide pin positioning has to restore the glenoid orientation, both in inclination and version, the multidirectional 2.5 mm guide is recommended.

Fig. 27

Fig. 28

Fig. 29

Fig. 30

OPTION 1: UNIDIRECTIONAL 2.5 MM DRILL GUIDE

Two types of drill guide handles are available:

- a peripheral handle may be assembled to one of the three holes in the peripheral aspect of the drill guide. (Fig. 29)
- a central handle may be assembled to the central hole of the drill guide.(Fig. 30)

According to surgeon preference, exposure and surgical approach, one of the handles is selected and assembled to the 2.5 mm drill guide.

OPTION 2: MULTIDIRECTIONAL 2.5 MM DRILL GUIDE

Assemble the 2.5 mm multidirectional drill guide to the orientation guide socket. (Fig. 31)

Fig. 31

Screw the disposable multidirectional olive, which is delivered with the implants, onto the central handle and firmly impact into the drill guide (Fig. 32). The olive spur must align with the notch of the drill guide.

Fig. 32

To facilitate the impaction of the olive into the guide, place the guide on the flat surface.
The orientation guide socket allows a version adjustment of +/- 15° and an inclination adjustment from 0 to 30° in the transverse plan.

Screw the central handle in the drill guide without tightening.

Fig. 33

Insert the 4.5 mm screwdriver in the central handle and adjust the angles in the anterior/posterior plane and in the inferior plane. (Fig. 33-34a-b)

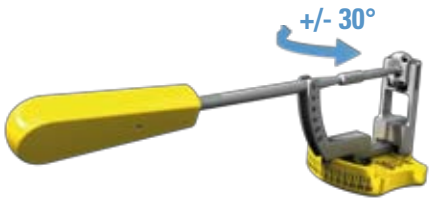


Fig. 34a

Once the angles have been adjusted, tighten the drill guide using the 4.5 mm screwdriver to lock the selected angles.

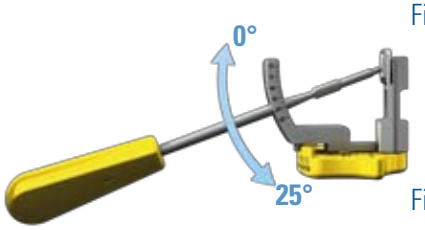


Fig. 34b

The drill guide is then positioned onto the glenoid by holding the central handle.

If desired, a handle can be assembled to the drill guide using one of the peripheral holes. (Fig. 35)

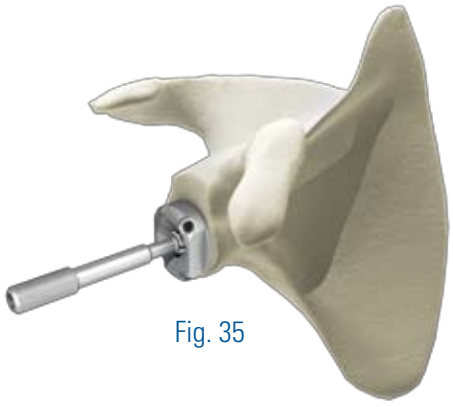


Fig. 35

b/ Guide Pin Positioning

Place the 2.5 mm drill guide (unidirectional or multidirectional, 25 mm or 29 mm) onto the glenoid surface making sure that its posterior aspect is perfectly seated on the bone.

To limit any risk of impingment, it's important to properly position the drill guide referencing the inferior glenoid edge.

If an Eccentric +4 mm Glenoid Sphere is used, the eccentricity must be taken into account when positioning the drill guide.

Once the drill guide is positioned, insert the single use alignment pin into the guide and drill until a trans-cortical fixation is obtained. (Fig. 36a-b)

Check the stability of the pin to avoid any migration in subsequent steps.

Once the alignment pin is inserted, remove the drill guide sliding it over the guide pin.

Visually check the position and orientation of the pin. (Fig. 37)

It is important to check the alignment pin condition after every step of the glenoid preparation. If the guide pin is damaged or bent, use a new guide pin.

Fig. 36a

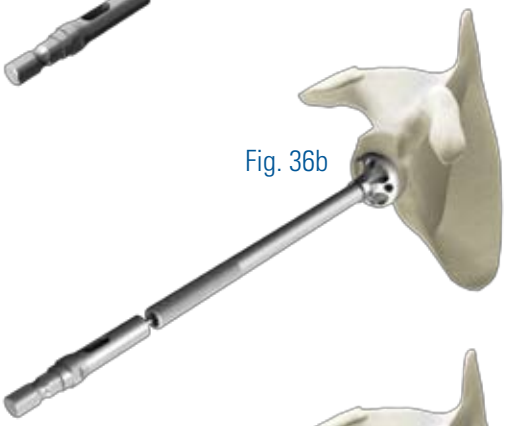


Fig. 36b

Fig. 37

c/ Glenoid Reaming

To obtain good seating and secure fixation of the Glenoid Baseplate, it's important to flatten the glenoid.

Therefore two circular cannulated reamers are available. The reamers are the same diameters of the glenoid bases (25 mm and 29 mm).

Connect the appropriate reamer to power, slide the assembly onto the guide pin and ream. (Fig. 38)

Fig. 38

It is recommended to start the reamer before contacting the glenoid surface and ream until the glenoid surface is flat. (Fig. 39)

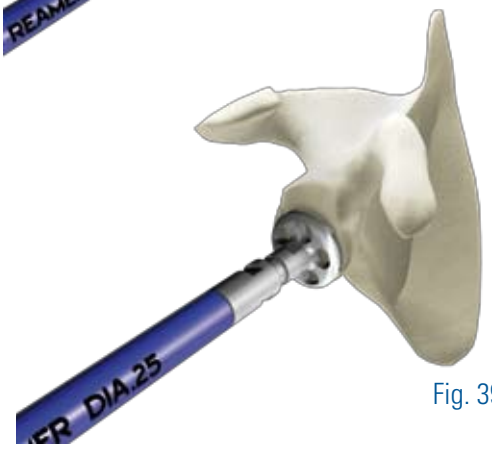


Fig. 39

If insertion of reamer is difficult, remove or reposition retractors for greater exposure.

A T-handle is available if manual reaming is desired.

Preserve as much bone as possible to support good primary fixation.

It is not advisable to ream down to cancellous bone due to limited glenoid bone stock. Over-aggressive reaming should be avoided to prevent possible glenoid fracture.

If the guide pin is damaged or bent, use a new guide pin.

d/ Peripheral Reaming

To obtain good fixation of the Glenoid Sphere on the baseplate, peripheral reaming is necessary.

Four manual cannulated reamers are available according to the size of the Glenoid Baseplate:

- 36 mm reamer for 25 mm baseplate
- 42 mm reamer for 25 mm baseplate
- 36 mm reamer for 29 mm baseplate
- 42 mm reamer for 29 mm baseplate

Assemble the T-handle to the reamer and ream until the depth stop contacts the bony surface. (Fig. 40a-b-c)

After using the peripheral reamer, cortical bone outside the groove has to be removed to make the Glenoid Sphere approach easier.

Remove the reamer and visually check the adequacy of the reaming.

Fig. 40a

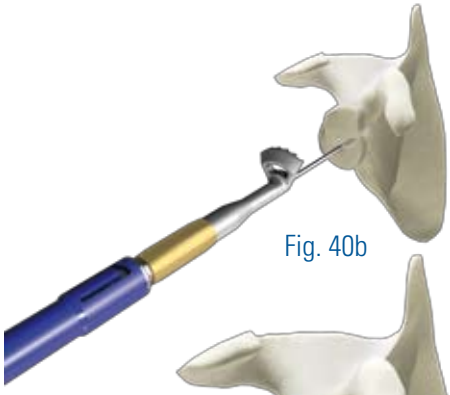


Fig. 40b

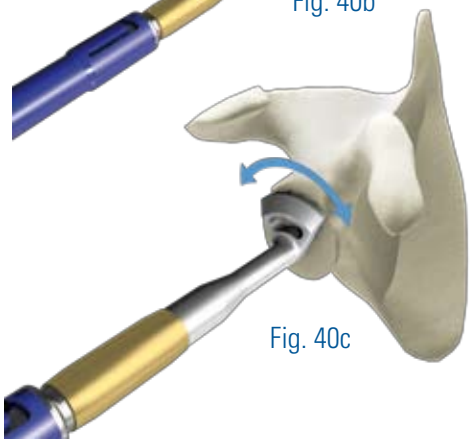


Fig. 40c

e/ Central Hole Drilling

The glenoid central hole is enlarged using the 7.5 mm cannulated drill bit to enable a press-fit when impacting the final glenoid base plate (the baseplate central post is 8 mm diameter).

Two 7.5 mm cannulated drill bits are available according to the length of the Glenoid Baseplate central post:

- A 15 mm drill bit for standard post baseplate
- A 25 mm drill bit for long post baseplate

Select the appropriate drill bit and connect it to power. Slide the assembly onto the guide pin and drill the central hole until the stop contacts the bone. (Fig. 41a-b)

Remove the drill bit.

Remove the guide pin using power.

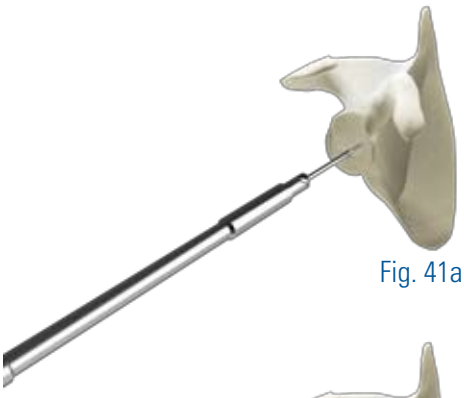


Fig. 41a

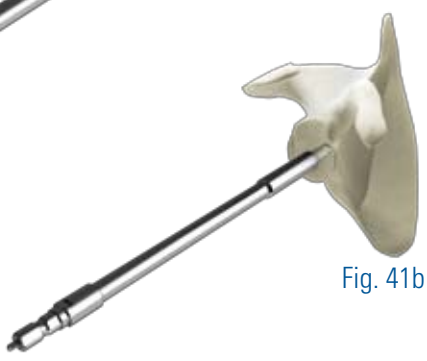


Fig. 41b

5.5 Positioning of the Glenoid Baseplate

Assemble the appropriate Glenoid Baseplate to its impactor.

The Long Post Baseplate is typically recommended in cases where bone graft is used between glenoid baseplate and native glenoid.
It is important to check that the tip of the post is properly implanted into the native glenoid.

Two spurs on the baseplate allow for only one possible position of the impactor.

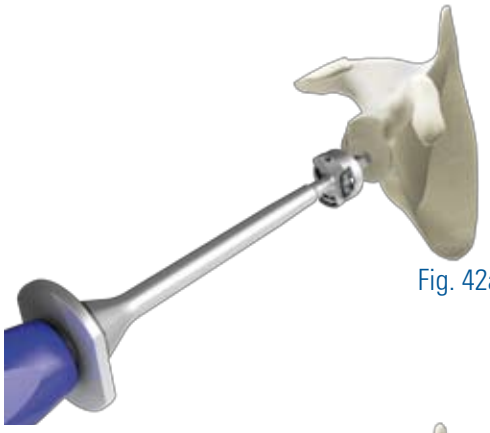


Fig. 42a

The impactor holds the baseplate when its internal rod is completely inserted in the baseplate central hole.

Care should be taken to correctly orient the superior-inferior position of the impactor before impacting the baseplate. (Fig. 42a)

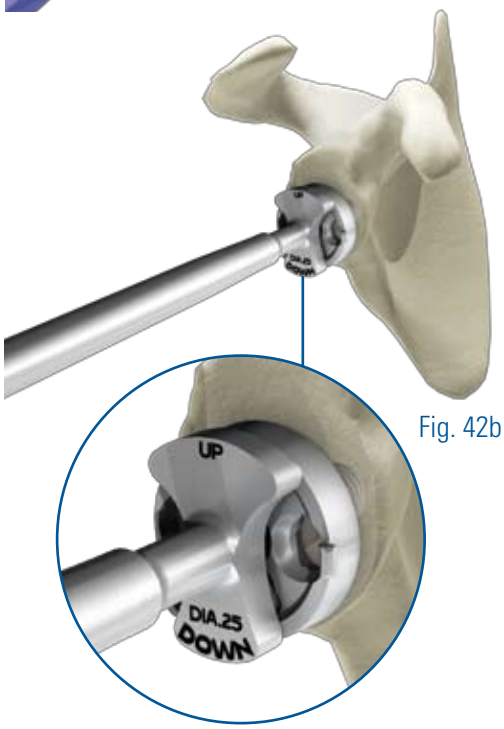


Fig. 42b

Impact the central Post of the Glenoid Baseplate into the previously drilled 7.5 mm diameter hole. (Fig. 42b)

Once impacted, the baseplate should be fully seated on the glenoid. If not, impact until fully seated.

Check that the peripheral aspect of the baseplate is flush with the peripheral reaming. (Fig. 43)

Fig. 43

5.6 Fixation of the Glenoid Baseplate

The Glenoid Baseplate is fixed to the glenoid with four 4.5 mm self-tapping screws.

There are two types:

- 2 hemispherical head screws (Fig. 44)
- 2 multidirectional locking head screws (Fig. 45)

Fig. 44

Fig. 45

Anterior & Posterior head screws

The two anterior and posterior screws are self-tapping and have a hemispherical head to provide compression.
Each screw can be oriented in any direction within a 30° arc.
To optimize fixation, it is recommended to achieve a bi-cortical fixation.

Inferior & Superior head screws

The two inferior and superior screws are self-locking and can be oriented within a deflection range of:

Inferior screw:

- 30° inferiorly and +/- 15° in the transverse plane

Superior screw:

- 30° superiorly and +/- 15° in the transverse plane

To optimize fixation, it is recommended to achieve:

- a bi-cortical fixation or
- a fixation in cortical bone of the pillar of the scapula or coracoid process.

5.6.1 Anterior and Posterior Screw Fixation

The anterior and posterior screws are positioned first to optimize compression of the baseplate.
Each screw can be oriented in any direction within a 30° arc.

The anterior screw can be introduced while keeping in place the baseplate impactor in order to avoid any rotation or loss of compression of the baseplate. (Fig. 46)

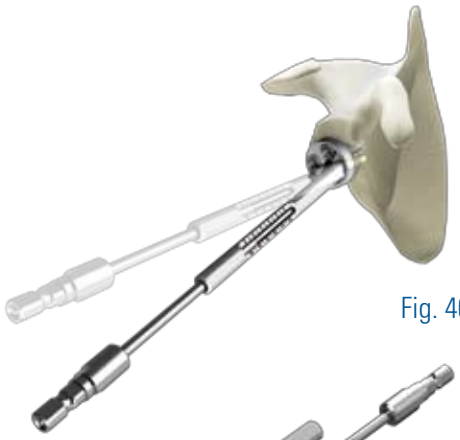


Fig. 46

Using the 3 mm drill bit, drill the screw hole through the specific drill guide for anterior-posterior screws. (Fig. 47)

Fig. 47

The screw length is read directly on the drill guide. (Fig. 48)

Fig. 48

If desired, a standard depth gauge is available.

The anterior screw is inserted with the 4.5 mm screwdriver without tightening to avoid anterior baseplate rocking. (Fig. 49)

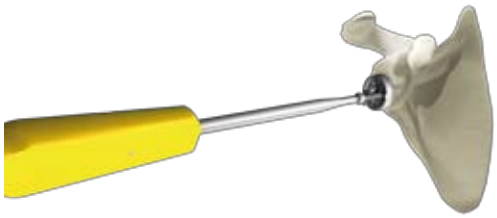


Fig. 49

The posterior screw is placed next in the same manner as the anterior one.

To obtain a good cortical fixation the posterior screw should be directed anterior and inferior to the central Post.

Alternate final tightening of the two compression screws until fully tightened. (Fig. 50)

Fig. 50

5.6.2 Superior and Inferior Screw Fixation

The inferior screw is positioned into the pillar of the scapula. The inferior screw can be oriented within a deflection range of 30° inferiorly and +/- 15° in the transverse plane. (Fig. 51)

Fig. 51

The pillar of the scapula is generally situated downwards in the vertical axis of the glenoid at an angle of approximately 20°.

The specific 3 mm drill guide for superior and inferior screws is positioned into the inferior threaded hole of the baseplate. (Fig. 52)

Fig. 52

The direction of the drill axis is chosen by free orientation of the drill guide.
The 3 mm drill bit is passed through the guide and the hole is drilled bicortically.

NOTE: In the event of poor bone fixation, the orientation of the drill guide should be changed and the hole drilled again into more sufficient bone stock.

Fig. 53

The screw length is read directly on the drill guide. (Fig. 53)
If desired, a standard depth gauge is available.
The screw is introduced into the inferior hole and fully tightened with the 4.5 mm screwdriver. (Fig. 54)

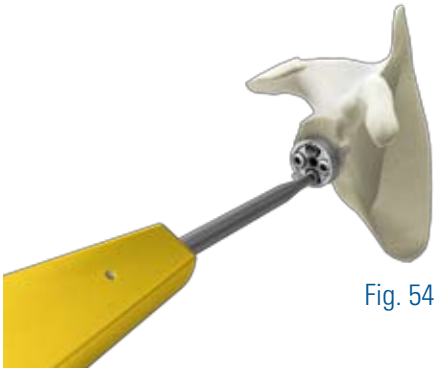


Fig. 54

Finally, the superior screw is placed in the same manner as in the inferior screw.

The superior screw is positioned into the base of the coracoid process.

The coracoid is generally situated superiorly in the vertical axis of the glenoid at an angle of approximately 20° anteriorly in the transverse axis of the glenoid at an angle of approximately 10°. (Fig. 55)

Fig. 55

NOTE: In the event of poor bone fixation, the orientation of the drill guide should be changed and the hole drilled again into more sufficient bone stock.

5.7 Positioning of the Final Glenoid Sphere

In the most cases size of the Glenoid Sphere is identical to the insert size determined during humeral preparation (36 mm or 42 mm). Unless a 36/42 Combination Insert is utilized in which case a 42 mm Glenoid Sphere maybe used in conjunction with a 36 Metaphysis component. The choice among the Centered Glenoid Sphere, the Eccentric Glenoid Sphere and the 10° Angulated Glenoid Sphere is made according to the glenoid preparation and the surgeon preference.

If desired, Trial Glenoid Spheres are available to perform a functional evaluation of the different types of Glenoid Sphere options. (Fig. 56)
A color code will help to clearly identify to different types of Spheres and associated tools (see table p 36).

Fig. 56

Prior to positioning of the definitive Glenoid Sphere, it is important to remove any soft tissue between the baseplate and the Glenoid Sphere. In some cases, it may be necessary to remove the humeral trial to avoid metallic contact that could damage the Glenoid Sphere.

Engage the Glenoid Sphere holder in the appropriate definitive Glenoid Sphere. (Fig. 57)

Fig. 57

Place the Glenoid Sphere on the baseplate making sure that the anti-rotation tabs on the baseplate are aligned to the slots in back of the Glenoid Sphere. (Fig. 58)

Fig. 58

Visually check the positioning of the sphere. Make sure that the mark on the Sphere is superior.
When an Eccentric Sphere is used, the eccentricity is located in the inferior aspect of the glenoid.
The Glenoid Sphere is assembled to the baseplate by tightening clockwise the central screw with the 4.5 mm screwdriver. (Fig. 59)

Fig. 59

ATTENTION : Do not impact the Glenoid Sphere

Thread engagement must start after one quarter of turn of screwdriver to make the taper fixation effective.
When tightening, resistance should be felt immediately. Tightening is completely effective after 3 to 5 turns. Tightening is complete once the Glenoid Sphere is flush with the baseplate.

The fixation of the assembly is visually checked to ensure that no soft tissue is present between baseplate and Glenoid Sphere.

If the Glenoid Sphere seems difficult to thread onto the baseplate or no fixation is obtained after 5 turns, completely unscrew the sphere and repeat the procedure, make sure that there is no soft tissue between the Glenoid Sphere and the baseplate, especially in the peripheral aspect of the baseplate, impeding the perfect contact between the components.

ATTENTION : It is mandatory that the Glenoid Sphere is screwed manually. Definitive implant should be handled with clean gloves.

6. FINAL IMPLANT

6.1 Selection of the Humeral Insert

Remove the cup protector.

Four different insert types are available: Centered, Eccentric, Constrained and 36/42 Combination and each of those are available in different thicknesses. (Fig. 60)

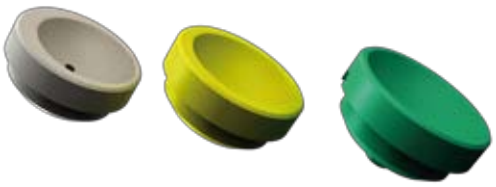


Fig. 60

If a +4 mm Eccentric Glenoid Sphere is used, an Eccentric Insert (+2 mm) may be used in order to compensate for the height of the humerus and to avoid excessive deltoid tensioning.

The chosen trial insert of the desired thickness is inserted into the trial metaphyseal cup in preparation for the trial reduction. (Fig. 61)

Fig. 61

The humeral trial component is then reduced to articulate with the Glenoid Sphere to check deltoid tension, stability and range of motion.

In case of severe bone defects or inadequate deltoid tension, a 9 mm lateralized spacer can be added to the metaphysis. This will increase the combined lateralized thickness to either 15, 18 or 21 mm. (Fig. 62)

Fig. 62

If the deltoid tension is still not adequate with the thickest insert (12 mm), the 9 mm lateralized spacer is secured to the metaphysis. Trial reduction is again performed beginning with the thinnest insert (6 mm).

If muscles are over-tensioned, additional resection of the metaphysis may be considered in order to reposition the component more distally in the humerus.

NOTE: It is recommend that the stability of cementless humeral stem be verified intra-operatively. If the implant is not stable within the humeral canal replaced it with a cemented stem.

6.2 Assembly and Insertion of the Final Humeral Implant

Use the humeral extractor to remove the humeral trial. (Fig. 63)

Fig. 63

A supplemental antirotation polyethylene plug within the threads of the metaphyseal stem help prevent the components from possible dissociation.

The final metaphyseal component (assembled with a spacer if necessary) is screwed to the impactor. (Fig. 64)

Fig. 64

The final implant stem is then secured to the metaphyseal cup implant with the 14 mm wrench. The blue handle will help to tighten the two components together. (Fig. 65)

The blue handle can be assembled to the humeral impactor in one of the 3 holes.

Fig. 65

The humeral canal is irrigated and dried.

A cement restrictor is inserted. Next, the cement is injected into the medullary canal using a standard cementing technique.

The final implant is inserted into the canal utilizing the extractor/impactor handle. The retroversion is verified by reinserting the retroversion rod into the shaft of the impactor/extractor. (Fig. 66)

Fig. 66

Use the 4.5 mm screwdriver to disengage the impactor from the metaphysis.

If desired, deltoid tension can be checked again with a trial insert.

6.3 Impaction of the Humeral Insert

The metaphyseal component is thoroughly cleaned and dried. (Fig. 67)

If a lateralized spacer is used, before the final insert is assembled, impact the spacer into the metaphyseal cup using the head impactor assembly.
After impaction, the central screw is inserted and fully tightened with the 4.5 mm screwdriver, securing the spacer onto the metaphysis.

The selected polyethylene insert is then positioned by aligning the inserts orientation notch with the metaphyseal tab. (Fig. 68)

Final fixation is achieved by impacting the insert into the cup with the spherical impactor assembly. (Fig. 69)

The prosthesis is then reduced using the reducer. (Fig. 70)

Fig. 67

Fig. 68

Fig. 69

6.4 Reduction, Trial and Closure

Reduction
The prosthesis is then reduced and stability is checked.

Peri-Operative function
Pull the arm at the distal humerus away from the body after reduction to ensure that there is no pistoning effect.A complete separation of the humeral insert from the Glenoid Sphere while pulling indicates inadequate tensioning of the deltoid.Abduction of the arm is performed to check that there is no impingement and that anterior elevation and abduction has been restored.External rotation with the elbow at the side checks for mobility and risk of subluxation. Internal rotation with the elbow at the side and in abduction (the forearm has to be parallel to the thorax) is performed. Adduct the arm to check that there is no impingement between the pillar of the scapula and the humeral implant. After reduction, the conjoined tendon should show sufficient muscular tension (similar to the deltoid).

Closure
In the supero-lateral approach, the deltoid is reattached to the acromion with trans-osseous suture.
In the deltopectoral approach, a full or partial reinsertion of the subscapularis is performed if possible.

Fig. 70

7. POST-OPERATIVE CARE

7.1 Complications

Postoperative stiffness

In case of significant preoperative stiffness, it may be difficult to regain postoperative mobility.
A surgical arthrolysis in conjunction with a capsulotomy may be required with the removal of soft tissue adhesions and removal of the tuberosities.Postoperatively, the arm is usually immobilized in a shoulder abduction splint for 3 to 6 weeks (in 60 degrees abduction).
Passive elevation above the splint in the scapular plane is started immediately.

Prosthesis instability

Possible causes:
- Improper humeral cut
- Massive humeral bone deficiency

Such cases are the consequence of insufficient deltoid tension.
In case of early postoperative dislocation, a closed reduction under local anesthesia is performed. If the prosthesis is in good position, then immobilization for 6 weeks normally restores stability.
With recurrent instability, a revision is needed to check the humeral version and increase (if necessary) the humeral lateralization utilizing a thicker insert and/or lateralized spacer.

Scapula notch

Impingement between the pillar of the scapula and the humeral implant can lead to bone scapula erosion. This notch usually does not impact function or mobility but may compromise fixation. X-ray follow-ups are recommended.

Absence of active external rotation

In the absence of the Teres Minor and Infraspinatus due to cuff tear or fatty infiltration there may be loss of active external and internal rotation. At the time of surgery, a Latissimus Dorsi Transfer alone or with Pectoralis Major transfer to the greater tuberosity may be considered.

7.2 Rehabilitation

Post-operative rehabilitation

The arm is placed in a brace with the elbow close to the body in neutral or internal rotation.
An abduction cushion can be used especially in cases of deltoid detachment or if the supero-lateral approach was performed.Rehabilitation is performed with passive pendular motion exercices five times per day at 5 minutes per session.
Aquatic therapy can begin as soon as healing has occurred.

Arm motion to be avoided

Abduction/external rotation or abduction/internal rotation.
Note: active motion in the arm is restricted in daily activity as only elbow, wrist and finger motion is allowed.

6 weeks post-op

Strengthening of the deltoid muscle and external rotators at 6 weeks post-op can be initiated with isometric exercise against resistance.Strengthening of the external rotators with the elbow at the level of the arm can be initiated by isometric exercise against resistance.Provided that deltoid attachment has not been disrupted, normal active elevation is generally rapidly recovered.

8. AEQUALIS®-REVERSED HEMI-ADAPTOR TECHNIQUE

8.1 How and When to use it

The Aequalis®-Reversed Hemi-Adaptor implants may be used to convert an Aequalis®-Reversed humeral stem with metaphysis into a modified hemi-arthroplasty.

8.2 Rationale

If it is found that the glenoid bone stock is insufficient to support a rigidly fixed baseplate with screws, due to either poor (osteopenic) quality bone or intraoperative glenoid fracture, a variety of bone grafting techniques can be employed.By reconstructing the glenoid architecture, thus rebuilding bone stock, the surgeon may return months later to convert the hemi-adaptor back to a Reversed prosthesis.To convert to a Reversed system, a simple exchange of humeral implants coupled with the implantation of the baseplate, screws, and Glenoid Sphere construct would be all that is required.If the surgeon chooses not to graft the glenoid and return later, then the procedure simply turns into a pain relief procedure with limited or no shoulder function improvement. The goal of restoring center of rotation and patient kinematics, as in a standard hemi-arthroplasty, is no longer important when employing the hemi-adaptor. The patient does not have an adequate rotator cuff to move his/her arm before the procedure, so a change in shoulder landscape will not positively or negatively impact his/her ability to move the arm and will only provide pain relief.

8.3 Indications

When during the primary surgery the glenoid bone stock appears to be insufficient to bear the reversed glenoid components or when glenoid bone fracture occurs intraoperatively, the hemi-prosthesis adaptor and the union screw can be adapted to the humeral components in order to transform the Aequalis®-Reversed II prosthesis into a hemi-prosthesis.

When in case of revision of an Aequalis®-Reversed II prosthesis, the glenoid bone stock appears to be insufficient to implant again a baseplate and a sphere of Aequalis®-Reversed II range, the use of the hemi-prosthesis adaptor and the union screw allows for the transformation of the Aequalis®-Reversed II prosthesis into a hemi-prosthesis in order to avoid the revision of the humeral component.

8.4 Preparation of the Metaphyseal Component

If necessary, the polyethylene is removed with an osteotome. (Fig. 71)

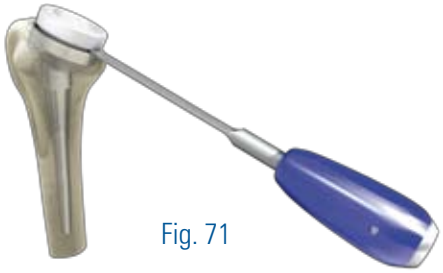


Fig. 71

8.5 Fixing the Adaptor/Metaphysis Union Screw

The adaptor/metaphysis union screw is screwed into the threaded hole of the cup by hand and tightened fully with the 12 mm wrench. (Fig. 72)

Make sure to tighten the screw with the wrench with as much force as possible to avoid micromotion.

Fig. 72

8.6 Implantation of the Adaptor

The internal cup of the metaphyseal component is thoroughly cleaned and dried.
The adaptor is then positioned over the adaptor/metaphysis union screw into the metaphyseal component and impacted into the metaphysis with the adaptor impactor screwed to the insert impaction handle. (Fig. 73)
After impaction, hand check the adaptor to ensure it is well fixed into the metaphysis. A small gap (less than 1 mm) will remain between the adaptor and metaphysis.
Two sizes are available (36 mm & 42 mm).
The hemi-adaptor size must be the same size as the metaphyseal component.

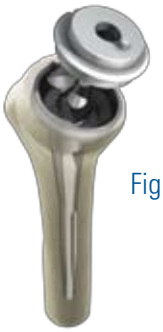


Fig. 73

8.7 Implantation of the Humeral Head

A larger over-sized head is recommended to provide continuous stable glenohumeral contact and fill the joint.
Once the appropriate head diameter and thickness is selected, the male taper of the adaptor/metaphysis union screw is thoroughly dried and cleaned.

The Aequalis head of the chosen diameter and offset is then impacted onto the male taper of the union screw with the Glenoid Sphere impactor. (Fig. 74a-b)

Fig. 74a

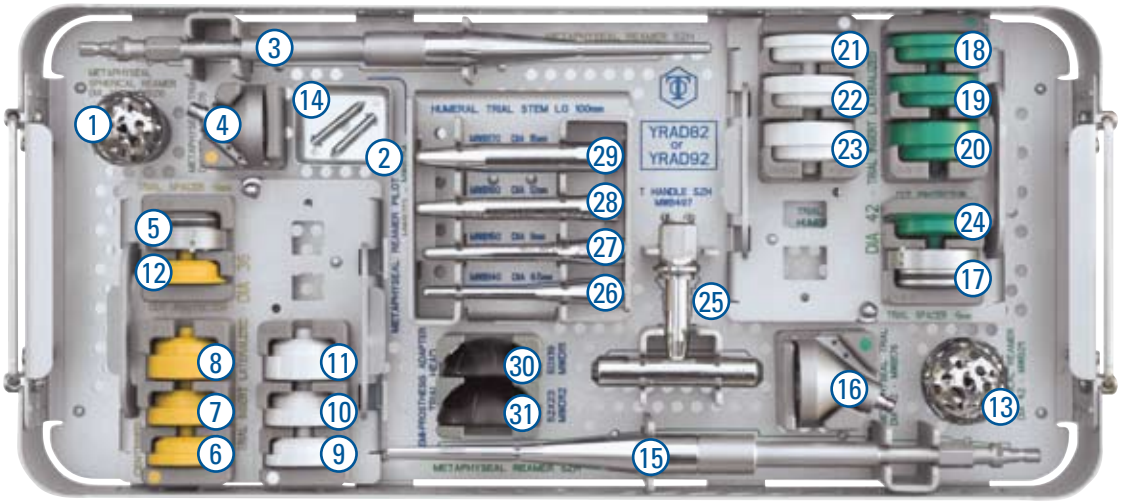
Fig. 74b

COLOR CODING

Humeral Side	
Trial Liner	**Color**
36 mm Lateralized Insert + 6 mm	Yellow
36 mm Lateralized Insert + 9 mm	
36 mm Lateralized Insert + 12 mm	
36 mm + 2 mm Eccentric Insert + 6 mm	Beige
36 mm + 2 mm Eccentric Insert + 9 mm	
36 mm + 2 mm Eccentric Insert + 12 mm	
36/42 mm Combination Insert + 6 mm	Black
36/42 mm Combination Insert + 9 mm	
36/42 mm Combination Insert + 12 mm	
42 mm Lateralized Insert + 6 mm	Green
42 mm Lateralized Insert + 9 mm	
42 mm Lateralized Insert + 12 mm	
42 mm + 2 mm Eccentric Insert + 6 mm	Beige
42 mm + 2 mm Eccentric Insert + 9 mm	
42 mm + 2 mm Eccentric Insert + 12 mm	

Glenoid Side					
Glenoid Preparation				**Trial Sphere**	**Color**
Baseplate	**Color**	**Sphere**	**Color**		
25 mm	Blue	36 mm	Yellow	36 mm Centered	Yellow
				36 mm + 4 mm Eccentric	Red
				36 mm 10° Angulated	Black
		42 mm	Green	42 mm Centered	Green
29 mm	Grey	36 mm	Yellow	36 mm Centered	Yellow
		42 mm	Green	42 mm Centered	Green
				42 mm + 4 mm Eccentric	Red
				42 mm 10° Angulated	Black

Humeral Instruments YKAD82 - 36 and 42 mm Box



Ref. YKAD82

36 mm Instrumentation

#	Description	Reference	Quantity
1	Ø 36 mm metaphyseal spherical reamer	MWB210	1
2	Ø 36 mm metaphyseal reamer pilot	MWB213	1
3	Ø 36 mm metaphyseal reamer	MWB495	1
4	Ø 36 mm metaphyseal trial	MWB175	1
5	Ø 36 mm trial spacer +9 mm	MWB190	1
6	Ø 36 mm trial insert / lateralized + 6 mm	MWB180	1
7	Ø 36 mm trial insert / lateralized + 9 mm	MWB181	1
8	Ø 36 mm trial insert / lateralized + 12 mm	MWB182	1
9	Ø 36 mm trial insert / lateralized + 6 mm / offset 2 mm	MWB970	1
10	Ø 36 mm trial insert / lateralized + 9 mm / offset 2 mm	MWB971	1
11	Ø 36 mm trial insert / lateralized + 12 mm / offset 2 mm	MWB972	1
12	Ø 36 mm humeral cut protector	MWB192	1

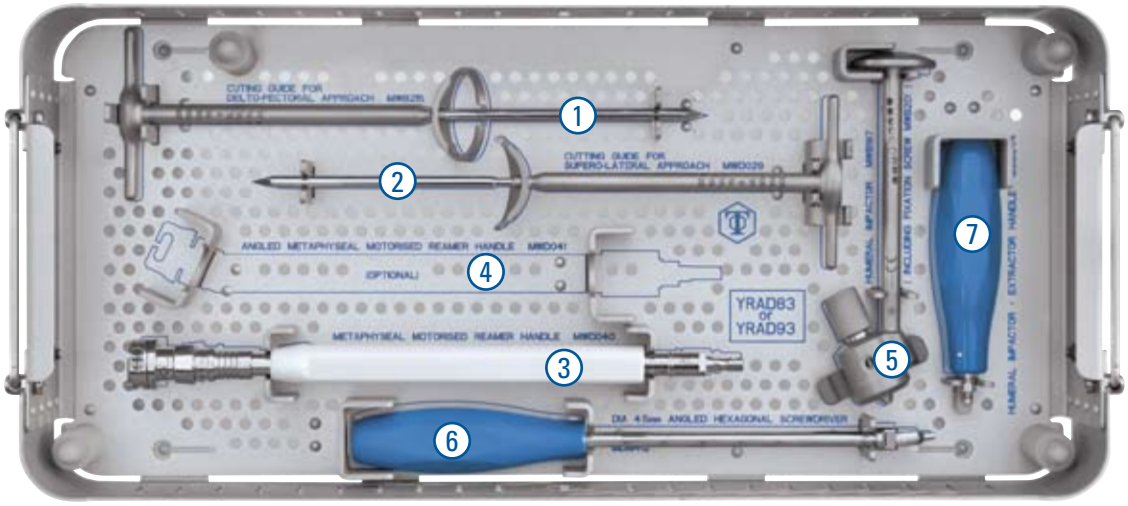
42 mm Instrumentation

#	Description	Reference	Quantity
13	Ø 42 mm metaphyseal spherical reamer	MWB211	1
14	Ø 42 mm metaphyseal reamer pilot	MWB214	1
15	Ø 42 mm metaphyseal reamer	MWB496	1
16	Ø 42 mm metaphyseal trial	MWB176	1
17	Ø 42 mm trial spacer +9 mm	MWB191	1
18	Ø 42 mm trial insert / lateralized + 6 mm	MWB185	1
19	Ø 42 mm trial insert / lateralized + 9 mm	MWB186	1
20	Ø 42 mm trial insert / lateralized + 12 mm	MWB187	1
21	Ø 42 mm trial insert / lateralized + 6 mm / offset 2 mm	MWB980	1
22	Ø 42 mm trial insert / lateralized + 9 mm / offset 2 mm	MWB981	1
23	Ø 42 mm trial insert / lateralized + 12 mm / offset 2 mm	MWB982	1
24	Ø 42 mm humeral cut protector	MWB193	1

Common Instrumentation

#	Description	Reference	Quantity
25	Metaphyseal reamer handle	MWB497	1
26	Ø 6,5 mm Humeral trial stem L 100 mm	MWB140	1
27	Ø 9 mm Humeral trial stem L 100 mm	MWB150	1
28	Ø 12 mm Humeral trial stem L 100 mm	MWB160	1
29	Ø 15 mm Humeral trial stem L 100 mm	MWB170	1
30	Hemi-prosthesis adapter: trial head 50x19	MWD111	1
31	Hemi-prosthesis adapter: trial head 52x23	MWD112	1

Humeral Instruments YKAD83 - Humeral Box

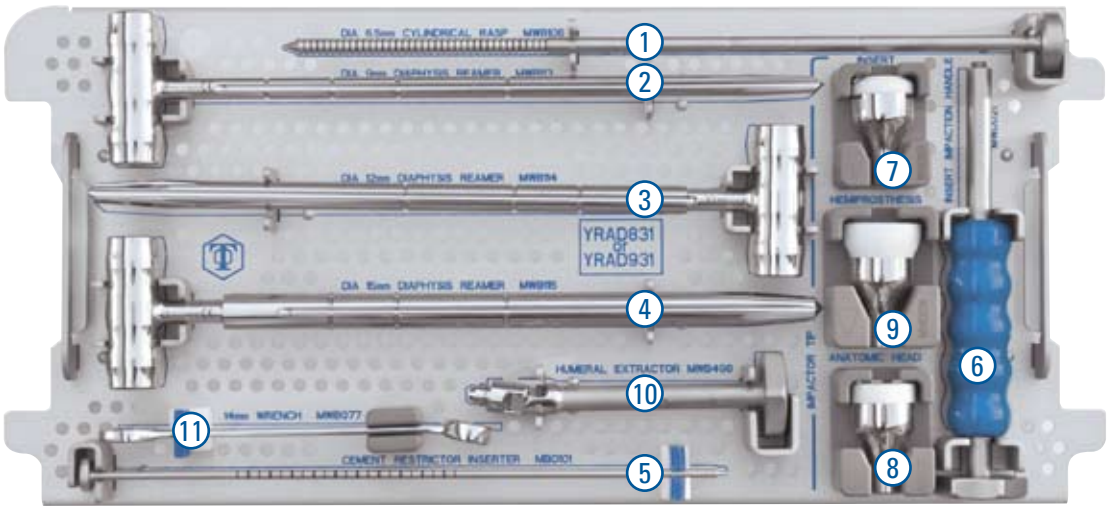


Ref. YKAD83

Lower Tray

#	Description	Reference	Quantity
1	Cutting guide for deltopectoral approach	MWB215	1
2	Cutting guide for superolateral approach	MWD029	1
3	Metaphyseal motorized reamer handle	MWD040	1
4	Angled metaphyseal motorized reamer handle (optional)	MWD041	1
5	Humeral impactor (including fixation screw MWB201)	MWB197	1
6	Ø 4.5 mm angled hexagonal screwdriver	MDM412	1
7	Humeral impactor / extractor handle	MWD044	1

Humeral Instruments YKAD831 - Humeral Box

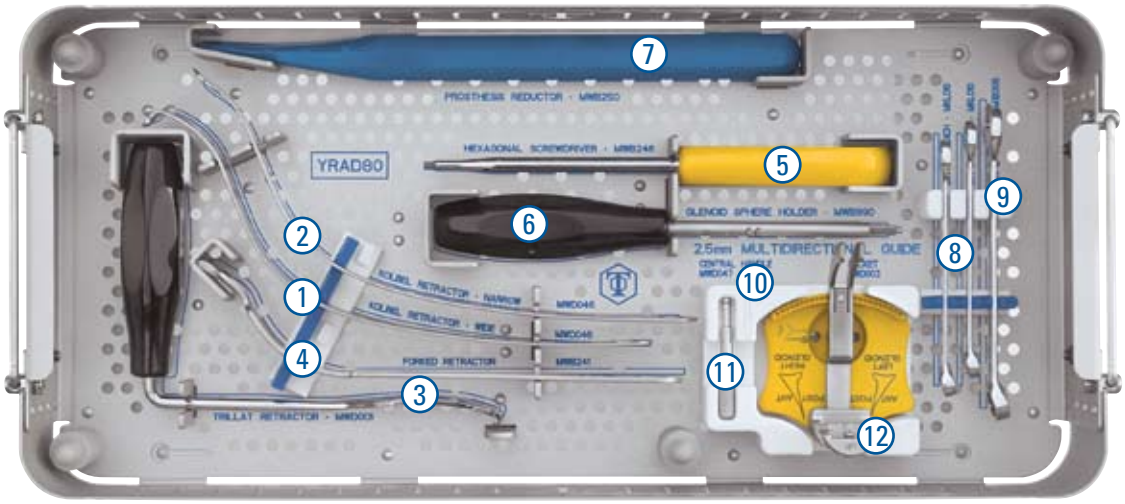


Ref. YKAD831

Upper Tray

#	Description	Reference	Quantity
1	Ø 6,5 mm cylindrical rasp	MWB106	1
2	Ø 9 mm diaphysis reamer	MWB113	1
3	Ø 12 mm diaphysis reamer	MWB114	1
4	Ø 15 mm diaphysis reamer	MWB115	1
5	Cement restrictor inserter	MBO101	1
6	Insert impaction handle	MWD021	1
7	Insert impactor Tip	MWD023	1
8	Hemiprosthesis adaptator impactor Tip	MWD024	1
9	Anatomic Head Impactor Tip	MWD025	1
10	Humeral extractor	MWB498	1
11	14 mm wrench	MWB077	1

Glenoid Instruments YKAD80 - Universal Instruments

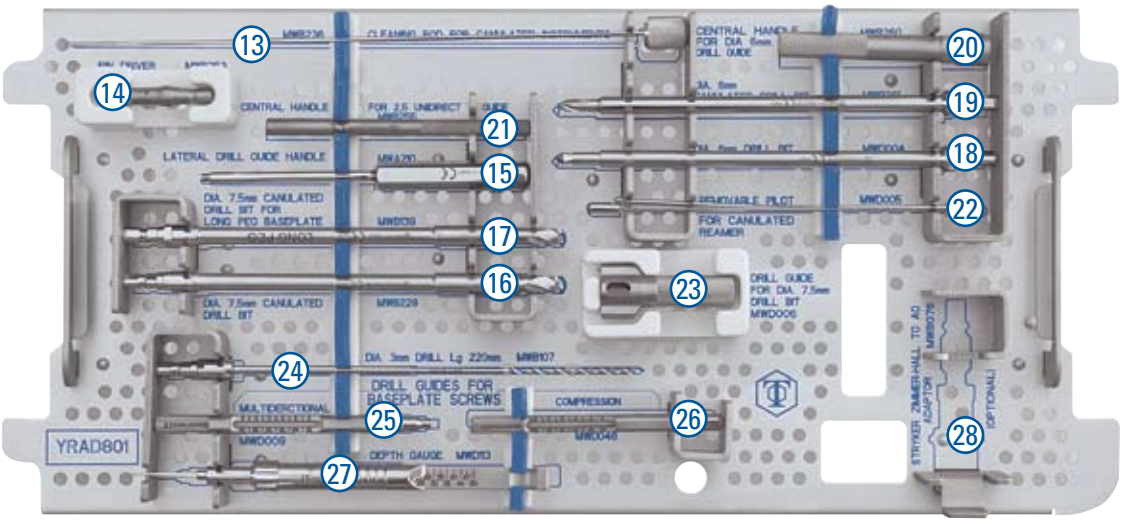


Ref. YKAD80

Lower Tray: Universal Instrumentation

#	Description	Reference	Quantity
1	Kolbel rectractor - Wide	MWD045	1
2	Kolbel rectractor - Narrow	MWD046	1
3	Favard retractor	MWD001	1
4	Forked rectractor	MWB241	1
5	Ø 4.5 mm hexagonal screwdriver	MWB246	1
6	Glenoid sphere holder	MWB990	1
7	Prosthesis Reductor	MWB250	1
8	Ø 8 mm wrench	MKL010	2
9	Ø 12 mm wrench	MGB306	1
10	Orientation guide kit	MWE002	1
	This kit is composed of :		
11	• *Central handle for orientation guide*	*MWD047*	1
12	• *Orientation guide socket*	*MWD003*	1

Glenoid Instruments YKAD801- Universal Instruments

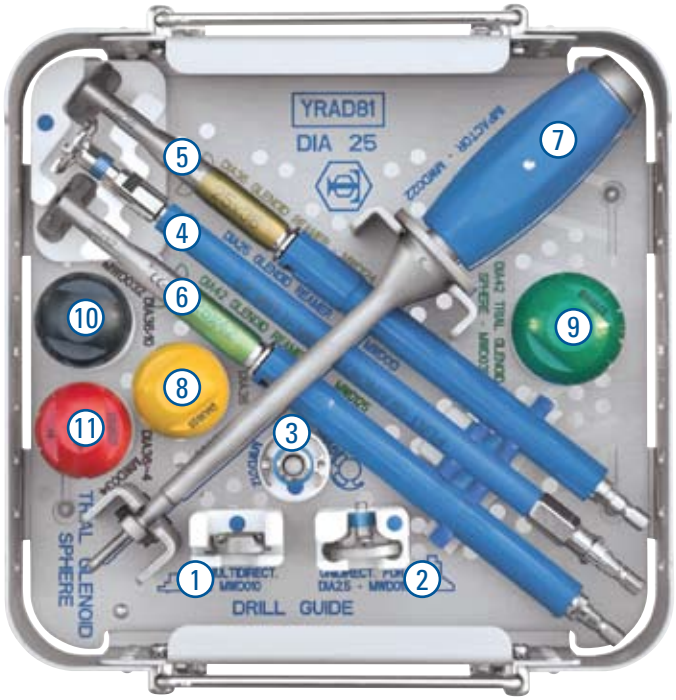


Ref. YKAD801

Upper Tray: Glenoid Preparation Instrumentation

#	Description	Reference	Quantity
13	Cleaning rod for canulated instruments	MWB236	1
14	Pin Driver	MWB253	1
15	Drill guide handle	MWA210	1
16	Ø 7.5 mm canulated drill bit	MWB228	1
17	Ø 7.5 mm canulated drill bit for long Peg Baseplate	MWB139	1
18	Ø 6 mm monobloc drill bit	MWD004	1
19	Ø 6 mm canulated drill bit	MWB261	1
20	Central handle for central hole drill guide	MWB260	1
21	Centralized handle for canulated orientation guide	MWB255	1
22	Removable pilot for canulated Reamer	MWD005	2
23	Drill Guide for Ø 7.5 mm drill bit	MWD006	1
24	Ø 3 mm drill bit / Lg 220 mm	MWB107	1
25	Drill guide for Supero-Inferior screws	MWD009	1
26	Drill guide for Antero-Superior screws	MWD048	1
27	Depth gauge	MWD113	1
28	AO to Stryker Zimmer-Hall adaptor (optional)	MWB076	1

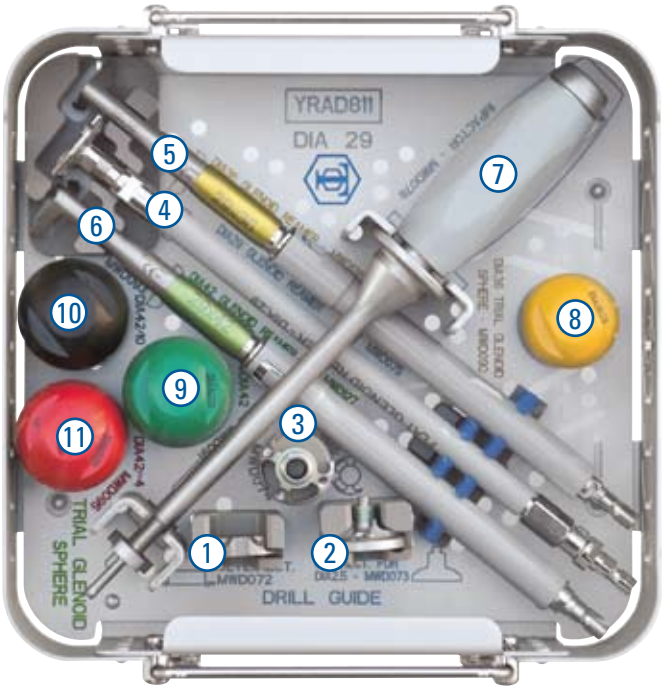
Glenoid Instruments YKAD81 - 25 mm Baseplate Preparation



Ref. YKAD81

#	Description	Reference	Quantity
1	Ø 25 mm Multidirectional drill guide for Ø 2.5 mm pin	MWD010	1
2	Ø 25 mm Unidirectional drill guide for Ø 2.5 mm pin	MWD011	1
3	Ø 25 mm Unidirectional drill guide for Ø 6 mm drill bit	MWD012	1
4	Ø 25 mm glenoid reamer assembled to the handle	MWD013	1
	This assembly is composed of :		
	Ø 25 mm canulated glenoid reamer	*MWD016*	1
	Reamer handle		
5	Ø 36 mm peripheral glenoid reamer for Ø 25 mm baseplate	MWD124	1
	Including Blue Handle	*MWD139*	1
6	Ø 42 mm peripheral glenoid reamer for Ø 25 mm baseplate	MWD125	1
	Including Blue Handle	*MWD139*	1
7	Ø 25 mm baseplate impactor	MWD022	1
8	Ø 36 mm trial Glenoid Sphere for Ø 25 mm baseplate	MWD030	1
9	Ø 42 mm trial Glenoid Sphere for Ø 25 mm baseplate	MWD031	1
10	Ø 36 mm trial 10° Angulated Glenoid Sphere for Ø 25 mm baseplate	MWD032	1
11	Ø 36 mm trial + 4 mm Eccentric Glenoid Sphere for Ø 25 mm baseplate	MWD034	1

Glenoid Instruments YKAD811 - 29 mm Baseplate Preparation



Ref. YKAD811

#	Description	Reference	Quantity
1	Ø 29 mm Multirectional drill guide for Ø 2.5 mm pin	MWD072	1
2	Ø 29 mm Unidirectional drill guide for Ø 2.5 mm pin	MWD073	1
3	Ø 29 mm Unidirectional drill guide for Ø 6 mm drill bit	MWD074	1
4	Ø 29 mm glenoid reamer assembled to the handle	MWD075	1
	This assembly is composed of :		
	Ø 29 mm canulated glenoid reamer	*MWD108*	1
	Reamer handle		
5	Ø 36 mm peripheral glenoid reamer for Ø 29 mm baseplate	MWD126	1
	Including Grey Handle	*MWD140*	1
6	Ø 42 mm peripheral glenoid reamer for Ø 29 mm baseplate	MWD127	1
	Including Grey Handle	*MWD140*	1
7	Ø 29 mm baseplate impactor	MWD078	1
8	Ø 36 mm trial Glenoid Sphere for Ø 29 mm baseplate	MWD090	1
9	Ø 42 mm trial Glenoid Sphere for Ø 29 mm baseplate	MWD091	1
10	Ø 42 mm trial 10° Angulated Glenoid Sphere for Ø 29 mm baseplate	MWD093	1
11	Ø 42 mm trial + 4 mm Eccentric Glenoid Sphere for Ø 29 mm baseplate	MWD095	1

IMPLANTS

AEQUALIS®-REVERSED II

Glenoid Implants

Glenoid Baseplate

Description	Reference
Ø 25 mm Glenoid Baseplate	DWD880
Ø 29 mm Glenoid Baseplate	DWD888
Ø 25 mm Glenoid Baseplate with Long Post *	DWD881
Ø 29 mm Glenoid Baseplate with Long Post *	DWD889

Glenoid Sphere for Glenoid Baseplate

Diam.	Description	Reference
Ø 25 mm	Centered Ø 36 mm Glenoid Sphere	DWD872
	Centered Ø 42 mm Glenoid Sphere	DWD873
	10° Angulated Ø 36 mm Glenoid Sphere	DWD874
	4 mm Eccentric Ø 36 mm Glenoid Sphere	DWD876
Ø 29 mm	Centered Ø 36 mm Glenoid Sphere	DWD890
	Centered Ø 42 mm Glenoid Sphere	DWD891
	10° Angulated Ø 42 mm Glenoid Sphere	DWD893
	4 mm Eccentric Ø 42 mm Glenoid Sphere	DWD894

Not Sterile Glenoid Baseplate Screws

Ø 4.5 mm Compression Screw	
Size	Reference
L 18 mm	VDV218
L 20 mm	VDV220
L 23 mm	VDV223
L 26 mm	VDV226
L 29 mm	VDV229
L 32 mm	VDV232
L 35 mm	VDV235
L 38 mm	VDV238
L 41 mm	VDV241
L 45 mm	VDV245
L 50 mm	VDV250

Ø 4.5 mm Multidirectional Locking Screw	
Size	Reference
L 20 mm	DWD020
L 23 mm	DWD023
L 26 mm	DWD026
L 29 mm	DWD029
L 32 mm	DWD032
L 35 mm	DWD035
L 38 mm	DWD038
L 41 mm	DWD041
L 44 mm	DWD044
L 47 mm	DWD047

Sterile Instruments Single Use

Description	Reference
Ø 2.5 mm Alignement Pin L 200 mm - Single Use	DWD063
Multidirectional Olive	DWD162

Humeral Implants

Cemented Humeral Stems

Diam.\ Length	100 mm	150 mm*	180 mm*	210 mm*
6,5 mm	DWB940	DWB941	DWB942	DWB943
9 mm	DWB945	DWB946	DWB947	DWB948
12 mm	DWB950	DWB951	DWB952	DWB953
15 mm	DWB955	DWB956	DWB957	

Cementless Humeral Stems

Diam.\ L	100 mm	150 mm*	180 mm*	210 mm*
6,5 mm	DWB966	DWB967	DWB968	DWB969
9 mm	DWB971	DWB972	DWB973	DWB974
12 mm	DWB976	DWB977	DWB978	DWB979
15 mm	DWB981	DWB982	DWB983	

* upon request only

Humeral Implants (next)

Cemented Humeral Metaphysis

Diam.	Reference
36 mm	DWB960
42 mm	DWB961

Cementless Metaphysis (HA Coating)

Diam.	Reference
36 mm	DWB986
42 mm	DWB987

Humeral Spacer

Diam.	Height	Reference
36 mm	+ 9 mm	DWB931
42 mm	+ 9 mm	DWB932
includes tightening screw:		
	+ 9 mm	DWB937
	+ 18 mm	DWD160*

Adaptor

Diameter	Reference
36 mm	DWB991
42 mm	DWB992

Aequalis Head

Dimension	Reference
50 x 19 mm	DWB251
52 x 23 mm	DWB253

Adaptor/Metaphysis Union Screw

Reference
DWD054
DWB990

or

Standard Humeral Inserts

Diam.	Height	Reference
36 mm	+ 6 mm	DWB993
36 mm	+ 9 mm	DWB994
36 mm	+ 12 mm	DWB995
42 mm	+ 6 mm	DWB996
42 mm	+ 9 mm	DWB997
42 mm	+ 12 mm	DWB998

Eccentric Humeral Inserts

Diameter	Lateralization	Excentration	Reference
36 mm	+ 6 mm	+ 2 mm	DWD070
36 mm	+ 9 mm	+ 2 mm	DWD071
36 mm	+ 12 mm	+ 2 mm	DWD072
42 mm	+ 6 mm	+ 2 mm	DWD080
42 mm	+ 9 mm	+ 2 mm	DWD081
42 mm	+ 12 mm	+ 2 mm	DWD082

Constrained Humeral Inserts*

Diameter	Lateralization	Reference
36 mm	+ 6 mm	DWD980
36 mm	+ 9 mm	DWD982
36 mm	+ 12 mm	DWD984
36 mm	+ 15 mm	DWD986
42 mm	+ 6 mm	DWD981
42 mm	+ 9 mm	DWD983
42 mm	+ 12 mm	DWD985
42 mm	+ 15 mm	DWD987

36/42 Combination Inserts

Diameter	Lateralization	Reference
42 mm	+ 6 mm	DWD988
42 mm	+ 9 mm	DWD989
42 mm	+ 12 mm	DWD990

Inserts for Metaphysis Ø 36 mm and Sphere Ø 42 mm

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