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SURGICAL
TECHNIQUE

enovis

DISCOVERY ELBOW SYSTEM

a LimaCorporate family product

SURGICAL INSTRUMENTS

DISCOVERY ELBOW SYSTEM
Index

Limacorporate S.p.A. is a manufacturer of prosthetic implants and as such does not perform medical procedures. This documentation concerning surgical techniques, which provides surgeons with general guidelines for implanting the Discovery Elbow System, was developed with the advice of a team of surgical experts. All decisions as to the type of surgery and most suitable technique are obviously the responsibility of the health care professional. Surgeons must make their own decisions as to the adequacy of each planned implant technique based on their training, experience and the clinical condition of the patient. For further information about our products, please visit our web site at www.limacorporate.com

DISCOVERY ELBOW SYSTEM
Indications, Contraindications and Risk Factors

INDICATIONS

Discovery Elbow System is a semi-constrained elbow replacement system intended for primary and revision joint arthroplasty.

Discovery Elbow System is indicated for patients with:

- Non-inflammatory degenerative joint disease including osteoarthritis and avascular necrosis;
- Rheumatoid arthritis;
- Revision where other devices or treatments have failed;
- Correction of functional deformity;
- Treatment of acute or chronic fractures with humeral epicondyle involvement, which are unmanageable using other treatment methods.

Discovery Elbow System includes humeral stem, ulnar stems, humeral condyle components and ulnar bearing kit.

The constructs are intended for cemented and uncemented use as specified in the following table.

CONTRAINDICATIONS

Absolute contraindications include:

- infection;
- sepsis;
- osteomyelitis.

Relative contraindications include:

- uncooperative patient or patient with neurologic disorders who is incapable of following directions;
- osteoporosis;
- metabolic disorders which may impair bone formation;
- osteomalacia;
- distant foci of infections which may spread to the implant site;
- rapid joint destruction, marked bone loss or bone resorption apparent on roentgenogram.

		Use	
Components	Material	Cem.	Not Cem.
Humeral stem	Ti6Al4V	X	
	Ti6Al4V + Bond Coat	X	
	Ti6Al4V + Porous Coating + HA		X
Ulnar Stem	UHMWPE + Ti6Al4V	X	
	UHMWPE + Ti6Al4V + Bond Coat	X	
	Ti6Al4V + Porous Coating + HA		X
Humeral Condyle Set	CoCrMo + Ti6Al4V	X	X
XS Humeral Condyle Kit	CoCrMo + Ti6Al4V	X	
Condyle Lock Screw	Ti6Al4V	X	X
Ulnar Bearing Kit	UHMWPE + Ti6Al4V	X	X
XS Revision Ulnar Bearing Kit	UHMWPE + Ti6Al4V	X	
Material Standards			
CoCrMo (ISO 5832-12, ASTM F1537) - UHMWPE (ASTM F648-98) - Ti6Al4V (ASTM F136) - Porous Coating (ASTM F1580) - HA Hydroxyapatite Coating (ISO 13779)			

RISK FACTORS

The following risk factors may result in poor results with this prosthesis:

- overweight*;
- strenuous physical activities (active sports, heavy physical work);
- incorrect implant positioning;
- muscle deficiencies;
- refusal to modify postoperative physical activities;
- patient history of infections;
- systemic diseases and metabolic disorders;
- drug therapies that adversely affect bone quality, healing, or resistance to infection;
- patient's resistance to disease generally weakened (HIV, tumour, infections);
- severe deformity leading to impaired anchorage or improper positioning of implants;
- use our combinations with products, prosthesis or instruments of another manufacturer;
- patient smoking.

** According to the definition of the World Health Organization (WHO), Body Mass Index (BMI) greater than or equal to 25 Kg/m^2.*

COMBINATIONS ALLOWED / NOT ALLOWED

- X-Small humeral components should only be used with X-Small ulnar components.
- X-small humeral condyles should only be used with X-Small humeral components.
- X-Small bearing kits should only be used with X-Small ulnar components.

LimaCorporate specialized technical staff is available to provide advice regarding pre-operative planning, the surgical technique, and product and instrumentation assistance both prior to and during surgery.

DISCOVERY ELBOW SYSTEM
Positioning and Incision

figure 1

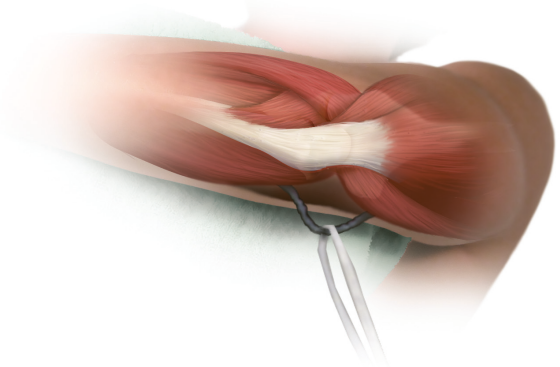

figure 2

POSITIONING AND INCISION

Place the patient in a supine or lateral position. Lay the affected arm across the patient's chest to give access to the posterior aspect of the joint. Towels may be placed under the scapula to elevate the operative site. Drape the arm free to expose the posterior elbow and apply a tourniquet (sterile or non-sterile per surgeon preference).

Make a 12–15cm longitudinal incision slightly lateral to the medial epicondyle and just medial to the tip of the olecranon (Figure 1). Identify the ulnar nerve and decompress the cubital tunnel. Mobilize and carefully control the nerve along the medial/anterior border of the skin incision. Excise the intermuscular septum to ensure proper transposition of the nerve. Pay careful attention to the location of the ulnar nerve throughout the entire procedure (Figure 2). Eventual handling of the nerve should be individualized. The developing surgeons advocate anterior transposition.

This brochure is presented to demonstrate the surgical technique and postoperative rehab protocol of Hill Hastings, II, M.D. and Thomas J. Graham, Limacorporate, as the manufacturer of this device, does not practice medicine and does not recommend this device or technique. Each surgeon is responsible for determining the appropriate device and technique to utilize on each individual patient.

figure 3

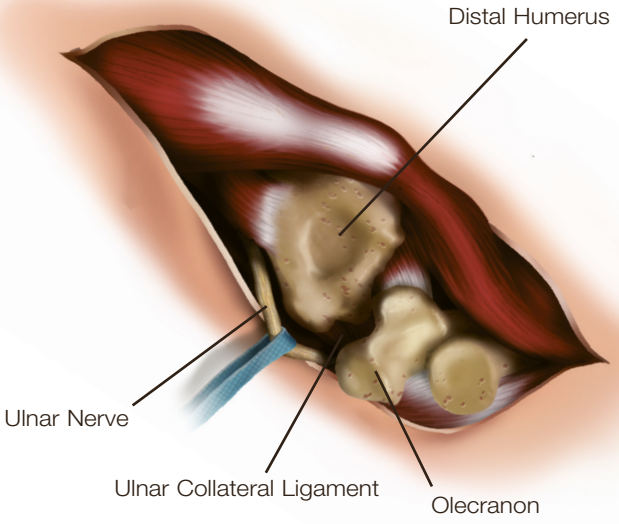

figure 4

TRICEPS-OFF APPROACH

Make an incision in the fascia over the ulnar head of the flexor carpi ulnaris muscle from the cubital tunnel out to a point on the ulnar shaft 7-10 cm distal to the olecranon. Elevate the fascia over to the lateral subcutaneous border of the ulna. After anterior transposition of the ulnar nerve, carry sharp scalpel dissection down to the humerus, posterior to the intermuscular septum. Elevate the triceps proximally from the humerus with a periosteal elevator and distally from the olecranon fossa with a scalpel.

Sharply elevate the triceps fibers of attachment to the ulna and mark with a 3-0 braided polyester suture to facilitate later repair. With elbow flexion, expose the joint.

Subperiosteal release of the lateral collateral ligament origin from the humerus and anterior capsulectomy provides additional exposure by allowing further flexion and supination of the forearm from the humerus (Figure 3). Attempt to preserve the integrity of the ulnar collateral ligament. However, severe elbow contractures may require proximal release of its origin for enhanced exposure.

DISCOVERY ELBOW SYSTEM
Triceps-On Approach

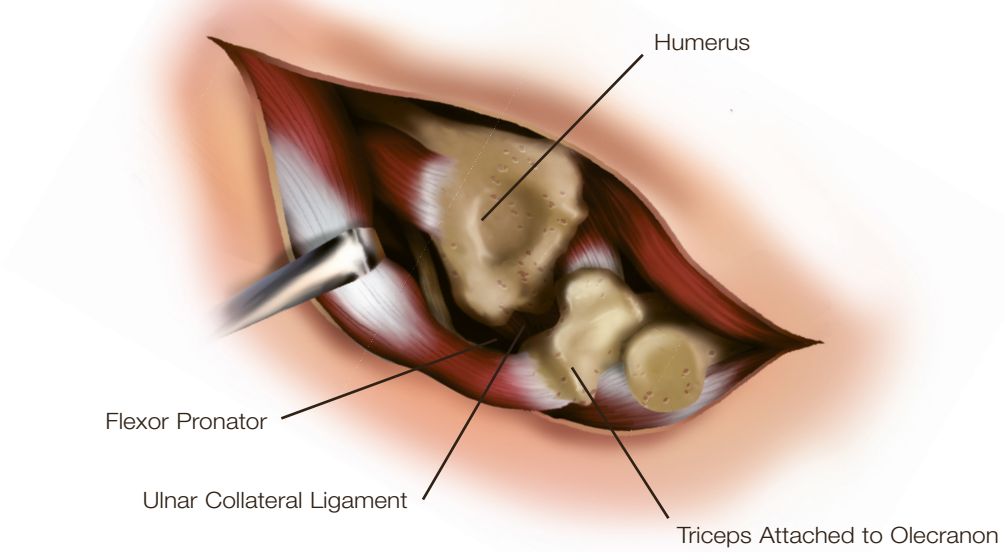

Figure 5

TRICEPS-ON APPROACH

Make an incision on the medial and lateral sides of the tri-ceps. Extend the incision distally to the ulna. On the lat-eral side, extend the dissection between the anconeus and the triceps. Completely detach the flexor-pronator and ulnar collateral ligament origins from the medial epicondyle and condyle. Similarly detach the extensor-supinator and lateral collateral ligament origins on the lateral side. In the case of a distal humeral fracture, excise the fracture condyles. “Button-hole” the distal humerus lateral to the triceps. This exposure allows for easy visualization of the humerus. However, the coverage of the triceps over the proximal ulna compromises visualization of the ulna.

Excise the entire olecranon tip and proximal portion of radial head, deep to the point of triceps attachment. Rotate the forearm into pronation to expose the proximal ulna articular surface.

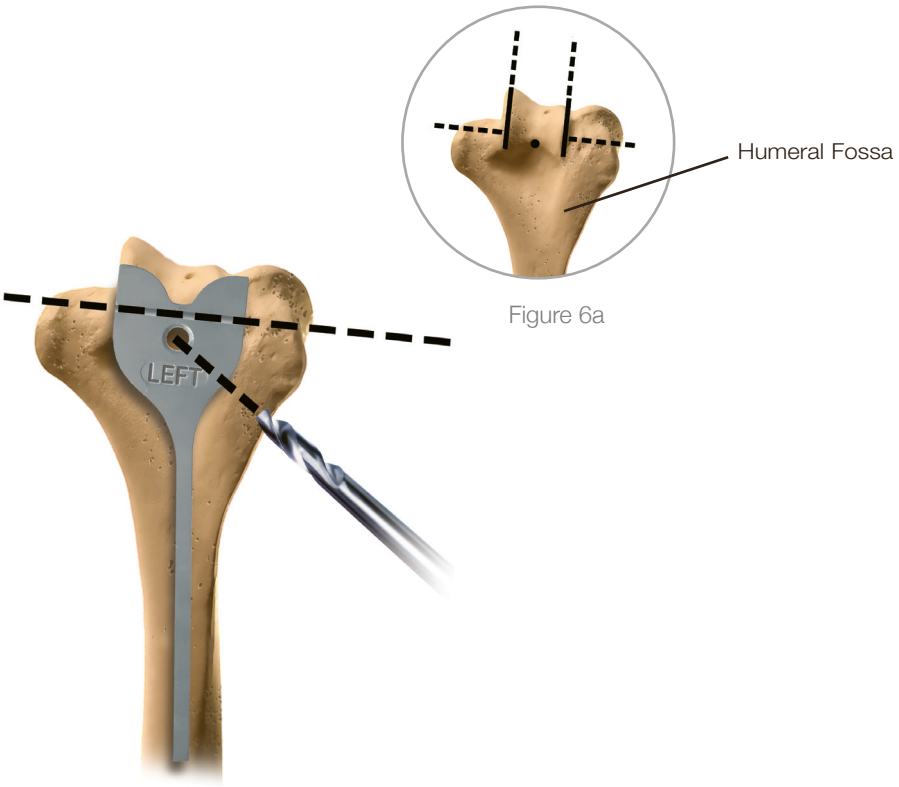

Figure 6a

Figure 6

EXTRAMEDULLARY RESECTION METHOD

Position the external fossa guide over the distal humerus to identify the location for intercondylar resection. Align the medial border of the guide with the medial extent of the trochlea while aligning the proximal stem over the midline of the humeral shaft (Figure 6).

Place a drill bit through the hole in the fossa guide and into the humeral fossa, perpendicular to the slightly internally rotated plane of the flexion-extension axis. With the drill bit in place, mark the humerus on the medial and lateral sides of the guide using electrocautery (Figure 6a).

DISCOVERY ELBOW SYSTEM
Extramedullary Resection Method

Figure 9a

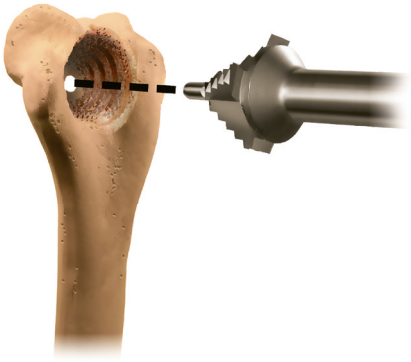

Figure 7

Figure 8

Figure 9

Insert a 5-step fossa reamer into the drill hole in the olecranon fossa (Figure 7). Ream until outermost teeth contact the humeral fossa. Use a saw to cut distal to the outermost circular groove made by the reamer to remove the remains of the trochlea along the previously marked lines (Figure 8).

Remove the trochlea and use the barrel reamer to round out the proximal part of the U-shaped area of resection (Figure 9 and 9a).

Note: *The barrel reamer should be spinning clockwise prior to contact with the bone to prevent jumping and the potential for bone chipping.*

Figure 10

Figure 11

Figure 12

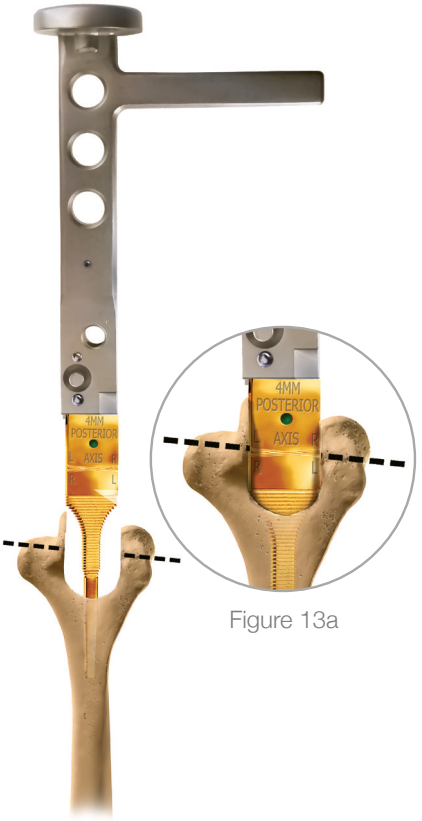

Figure 13a

Figure 13

Use a high speed bur and the starter awl to gain access into the humeral canal at the proximal part of the olecranon fossa with the opening enlarged to 4mm (Figure 10). Using the rasp handle, insert the 3mm proximal starter rasp with the posterior curve of the rasp matching the posterior bow of the humerus (Figure 11).

Note: *On the proximal area of the rasp, "P" faces posterior and "A" faces anterior. Rasp the humerus with progressively larger rasps until cortical resistance is met. At minimum, the 4mm rasp must be used to fit the smallest humeral implant into the canal. Use a mallet to impact and disimpact the rasps until the teeth of the rasp disappear into the canal (Figure 12). If the rasp will not advance, choose the implant based on the last fully seated rasp.*

Choose one of the three color coded distal humeral broaches corresponding to the size of the last proximal humeral rasp used.

Note: *A green mark is present on the 4 x 100 proximal rasp. Similarly, a green mark can be found on the 4mm distal broach. This color coding allows for easier recognition of the proper broach to use.*

Insert the rasp into the canal with the engraving marks positioned posteriorly until the respective left or right axis line aligns with the level of elbow axis, which passes through the most inferior part of the medial epicondyle (Figure 13 and 13a). In case of cementless implant use the dedicated proximal humeral rasp and distal humeral rasp of the instrument set 9014.50.000.

Intramedullary Resection Method

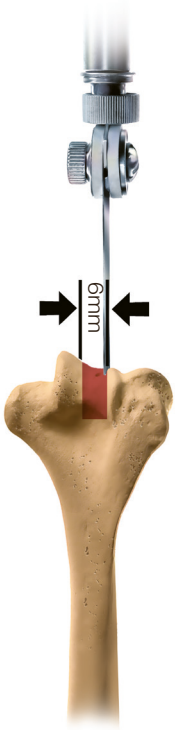

Figure 14

Figure 15

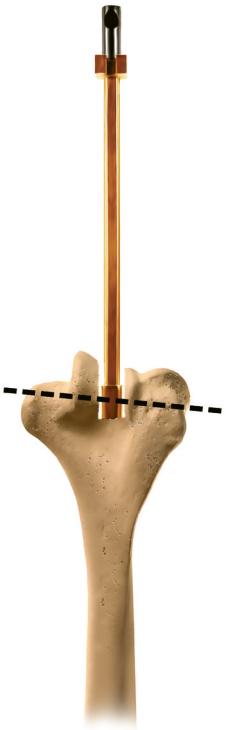

Figure 16

INTRAMEDULLARY RESECTION METHOD

Resect a small section of the central trochlea, centered just above the isthmus of the olecranon fossa (Figure 14). Use a high speed bur and the starter awl at the proximal aspect of the olecranon fossa to gain entry to the medullary canal (Figure 15).

Note: *On the proximal area of the rasp, "P" faces posterior and "A" faces anterior.*

Rasp the humerus with progressively larger rasps until cortical resistance is met. Leave the last rasp used in the canal (Figure 16).

In case of cementless implant use the dedicated proximal humeral rasp of the instrument set 9014.50.000.

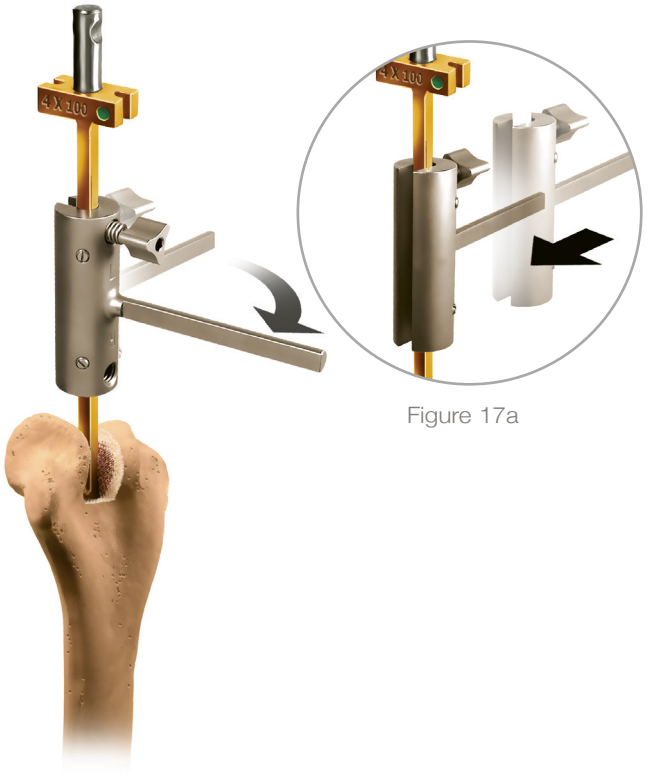

Figure 17

Figure 17a

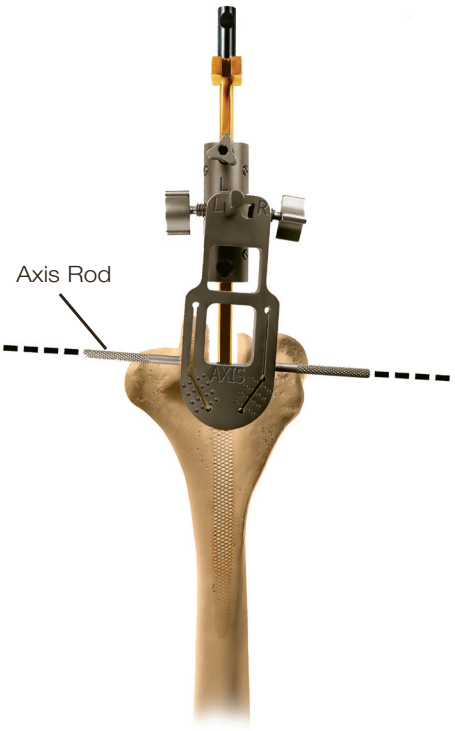

Figure 18

Insert the resection guide boom onto the rasp handle from medial/lateral and rotate 90 degrees posterior (Figure 17 and 17a).

Attach the resection cut guide on to the guide boom and orient it for the proper resection. Position the guide so the axis rods are slightly proximal to the distal edge of the medial epicondyle. Make proper height adjustments and lock into place using the imbedded screws (Figure 18). (These may be tightened using an optional 3.5mm hex driver.)

Place two 0.062 inch Kirschner wires through the pin holes on each side of the resection guide and into the humerus. The proximal rasp maintains the same contour as the humeral implant so the guide will position the area of resection to accurately match the subsequent implant.

DISCOVERY ELBOW SYSTEM
Intramedullary Resection Method

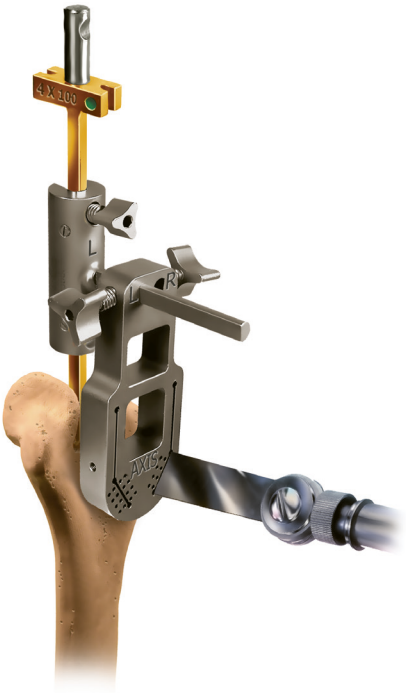

Figure 19

Figure 20

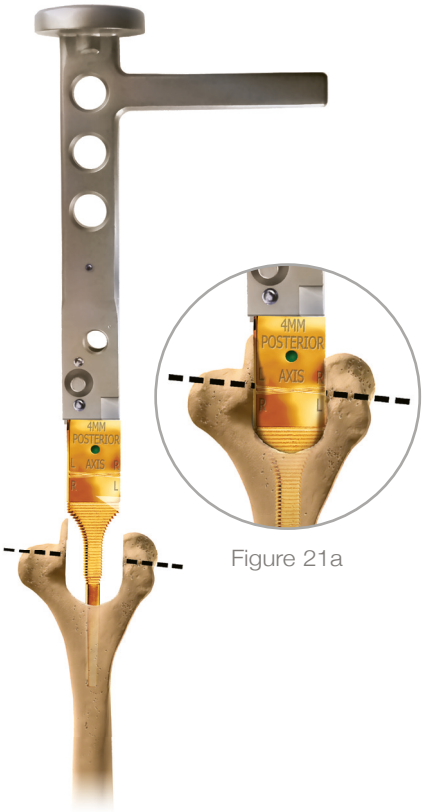

Figure 21a

Figure 21

Remove the trochlea by making four saw cuts through the resection guide (Figure 19), and round out the proximal portion of the resected area with the barrel reamer (Figure 20).

Choose one of the three color coded distal humeral broaches corresponding to the size of the last proximal humeral rasp used.

Note: *A green mark is present on the 4 x 100 proximal rasp. Similarly, a green mark can be found on the 4mm distal broach. This color coding allows for easier recognition of the proper broach to use.*

Note: *The barrel reamer should be spinning clockwise prior to contact with the bone to prevent jumping and the potential for bone chipping.*

Insert the rasp into the canal with the engraving marks positioned posteriorly until the respective left or right axis line aligns with the level of elbow axis, which passes through the most inferior part of the medial epicondyle (Figure 21 and 21a).

In case of cementless implant use the dedicated distal humeral rasp of the instrument set 9014.50.000.

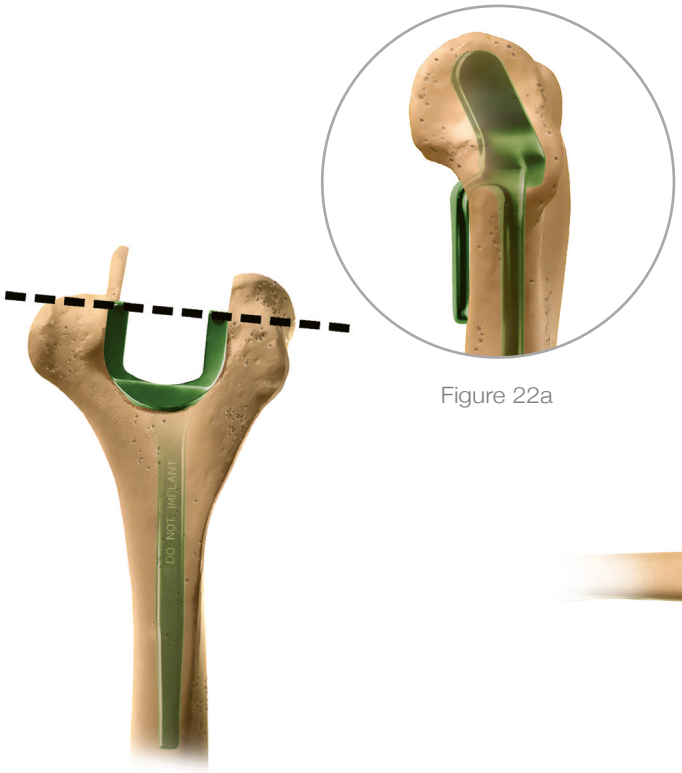

Figure 22

Figure 22a

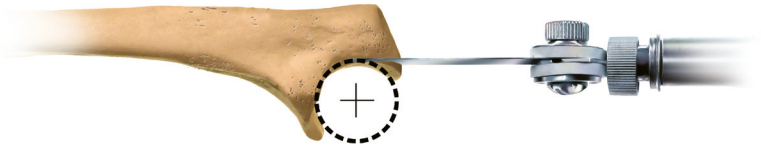

Figure 23

HUMERAL TRIALING

Select the humeral provisional that corresponds to the size of the last proximal/distal humeral rasp used, and insert it into the canal to check the fit (Figure 22). If obstructions are encountered, use a small rotating bur to contour or remove any bony obstructions and allow full seating of the provisional. The barrel reamer may also be used to help contour the resection to receive the provisional.

The humeral implant has an anterior flange that provides an additional cortex to push against when a load is applied. It may be necessary to remove 3–4mm of the central anterior humeral cortex for the flange to rest in the proper position (Figure 22a).

When humeral preparation is complete, remove the provisional, using the humeral extractor to remove if necesary.

In case of cementless implant use the dedicated humeral trial of the instrument set 9014.50.000.

ULNAR PREPARATION

If not performed earlier, use an oscillating saw to remove the tip of the olecranon along a line tangent to the posterior-most portion of the olecranon articulation (Figure 23). In addition, it may be necessary to remove any ectopic or excessive bone (2-3mm) from the tip of the coronoid. An anterior capsulectomy may also be done at this time.

DISCOVERY ELBOW SYSTEM
Ulnar Preparation

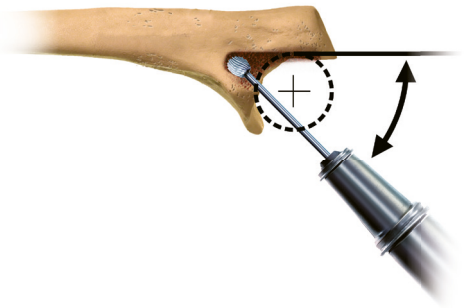

Figure 24

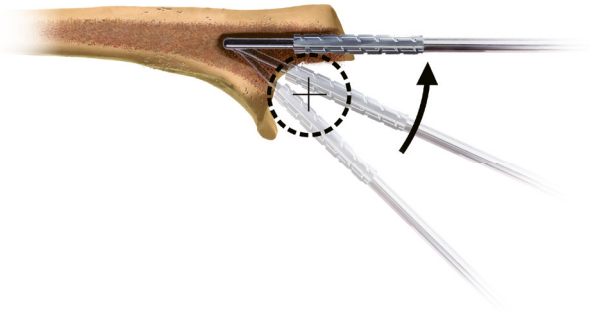

Figure 25

Figure 26*

Begin opening the ulnar canal at the intersection of the olecranon with the coronoid. The bur should be aimed parallel to the ulnar canal and 55 degrees anteriorly (Figure 24).

Once the canal is located, use the olecranon trough reamer and flexible reamers to prepare a channel through the olecranon to gain straight access to the ulnar canal.

Note: *The olecranon trough reamer may be used with the modular T-handle or the power adaptor. The smooth tip of the reamer is designed to act as a pivot point to drive this side-cutting instrument in a posterior direction (Figure 25). This instrument is not to be driven distally as a reame*

Create a trough in the olecranon by moving the rotating trough reamer to a position parallel to the axis of the ulna (Figures 26).

* Superior view of olecranon

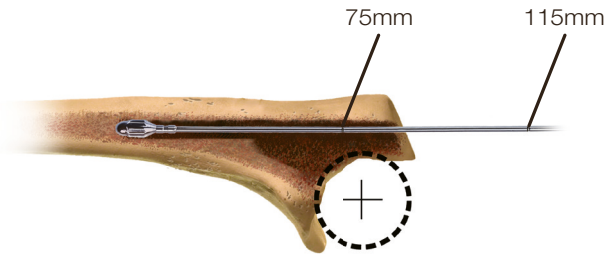

Figure 27

Figure 28

ULNAR REAMING

Attach the smallest ulnar flex reamer to the modular T-handle or power adaptor. Carefully drive the reamer to one of the two guide markers corresponding to the desired implant stem length (Figure 27).

Continue sequentially reaming until cortical contact is achieved.

Note: *The purpose of the ulnar flex reamers is to remove/ dislodge the soft cancellous bone inside the canal to enhance the integrity of the cement mantle.*

ULNAR RASPING

Attach the appropriate left or right 3mm ulnar rasp to the modular rasp handle. Drive the rasp distally until it is seated against the coronoid. Position the rasp in a slightly posterior direction while tapping back and forth, using the hole in the rasp to determine the natural axis of rotation. Continue this back and forth motion, keeping the rasp posterior, until final seating occurs (Figure 28).

In case of cementless implant use the dedicated ulnar rasp of the instrument set 9014.50.000.

Ulnar Rasping \ Ulnar Trialing

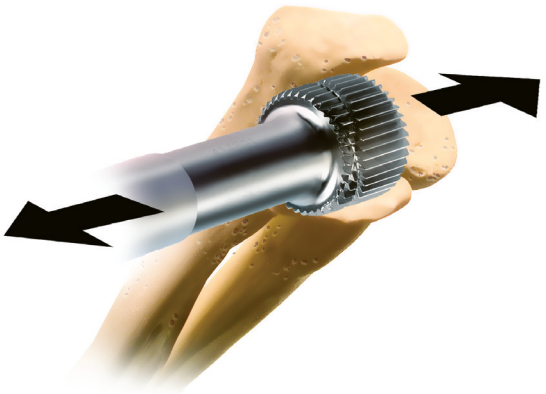

Figure 29

Figure 30

If the desired placement is not obtained, a high-speed rotating bur may be used to carefully enhance the trough in the bed of the trochlea and coronoid process.
This technique, used in conjunction with the rasps, should yield the desired placement of the ulnar component.

Continue sequentially rasping until cortical contact is achieved. The largest rasp that fully seats indicates the size of implant to be used.

Use the barrel reamer in a perpendicular fashion to contour the olecranon and coronoid surfaces. This allows the ulnar component to properly seat and accurately reproduce the axis of rotation (Figure 29).

Note: *Move the barrel reamer clockwise to prevent jumping.*

ULNAR TRIALING

Select the ulnar provisional that corresponds to the last fully seated ulnar rasp. Fully seat the ulnar provisional into the ulnar canal (Figure 30). The hole in the ulna represents the ulnar axis of rotation. Ensure the axis is accurately reproduced.

In case of cementless implant use the dedicated ulnar trial of the instrument set 9014.50.000.

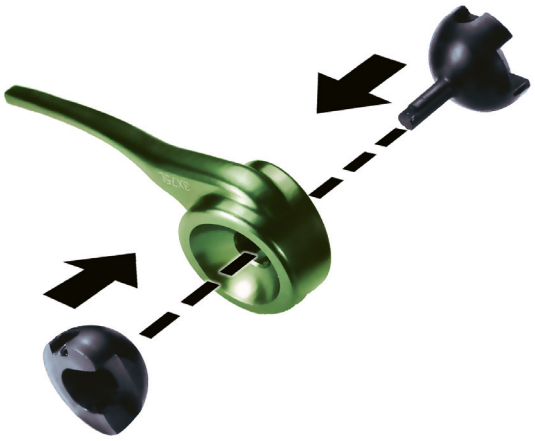

Figure 31

Figure 32

CONNECTING THE HUMERAL AND ULNAR PROVISIONAL COMPONENTS

Reinsert the humeral provisional. Assemble the hemispherical condyle provisionals through the hole in the ulnar provisional, making sure the recess for the screw heads are facing posterior with the spheres aligned to receive the humeral provisional (Figure 31).

Humeral and ulnar trials can be assembled before or after insertion.

Carefully relocate the joint while facilitating the assembly of the condyle provisionals onto the humeral provisional.

With the provisional components together, insert both provisional locking screws and tighten with the X-lock driver (Figure 32).

Perform a trial reduction and range of motion. Take care that the olecranon and/or coronoid do not impinge on bone or provisionals.

In case of cementless implant use the dedicated humeral and ulnar trials of the instrument set 9014.50.000.

Cementing the Implants

Figure 33

Figure 34

CEMENTING THE IMPLANTS

The humeral and ulnar components can be assembled before, during or after cementing. Two of the three possible methods of cementing are described.

Before mixing the bone cement, ensure that the applicator tube will fit into the medullary canals. The applicator tube must be of sufficient length and flexibility to reach the distal end of each chosen stem in the medullary canals

Low viscosity bone cement is recommended.

The provisionals are the same size as the substrate of the final implants but do not include the thin layer of plasma spray.

Note: *It is advised to trial the final implants prior to dispensing bone cement to be sure they will fit as expected. Clean and dry the implants before inserting them into the cement.*

- During the trialing of the final humeral implant, inspect the space between the anterior flange and the anterior cortex of the humerus. The typical fit of the flange with the anterior cortex requires little or no graft (Figure 33). If a space is present, a bone chip or artificial graft may be used in the space to establish contact between the flange and the bone (Figure 34). The graft may be placed during cementation. Conversely, if there is not enough space between the anterior flange of the implant and the anterior cortex, a bur may be used to create the proper fit.

Figure 35

- Small diameter cement restrictors are available for use in the humerus and ulna. Preoperatively determine the diameter of the medullary canal during templating. Restrictor sizes range from 6 to 14mm. If the cement restrictor is too small it will not meet enough resistance to occlude the flow of cement down the canal. If the restrictor chosen is slightly large, it will deform to fit within the medullary canal.

  Caution: *An excessively large cement restrictor will deform and tilt off axis to the extent that it will not be able to stop the flow of cement. The restrictor should rest 1–2cm past the depth of the implant stem. (Figure 35).*

- Attach the cement plug inserter onto the T-handle. Thread on the chosen cement restrictor and place in the canal. Depth markings on the inserter assist in determining proper canal placement. Unthread the inserter shaft to disengage from the restrictor.

Figure 36

Figure 37

CEMENTING UNASSEMBLED COMPONENTS

HUMERAL COMPONENT

Dispense bone cement into the humerus to the opening of the canal. Insert the humeral implant, paying close attention to the orientation.

Use the humeral impactor to fully seat the implant (Figure 36). Assess implant position (Figure 37), and remove all excess cement.

If applicable, place a bone chip or artificial graft under the anterior flange to enhance stability. This may be done before or after the cement has cured, depending on preference.

Figure 38

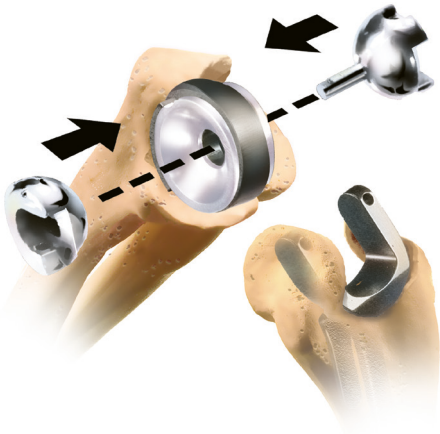

Figure 39

Figure 40

ULNAR COMPONENT

Dispense bone cement into the ulna to the opening of the canal. Press the ulnar implant into the canal, paying close attention to its orientation.

Use the ulnar impactor to fully seat the implant (Figure 38). Thoroughly remove all excess bone cement, especially where the polyethylene meets the metal.

Extend the arm and join the components using the cobalt chrome condyles. An alternate method is to join with trials until cement sets, then join with real condyles.

To assemble the condyles, place the condyles through the ulnar component (Figure 39). Ensure the screw pockets in the condyles reside on the posterior side of the assembled implant and are free of bone cement and debris. With the components together, insert both locking screws and thoroughly tighten using the screwdriver (Figure 40).

Note: *Alternate tightening lateral and medial screws until locked.*

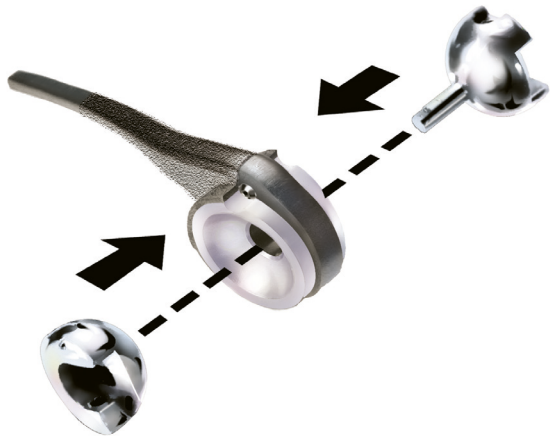

Figure 41

Figure 42

CEMENTING ASSEMBLED COMPONENTS

Note: *When using this method, take care to follow each step as there is only one opportunity to do it correctly once cement is dispensed.*

Assemble the components before inserting, using the condyles and screws provided (Figures 41 and 42). Thoroughly tighten the screws using the screwdriver.

Perform a trial insertion to verify fit before dispensing bone cement. Be sure to clean and dry the implants before inserting them into the cement.

Figure 43

Figure 44

When the bone cement is mixed, fill the humerus and ulna to the openings of the canals. With the arm in full flexion, insert the assembled humeral and ulnar implants (Figure 43).

Gently extend the arm to fully seat the components. If necessary, use the humeral and ulnar impactors to help seat the components. Thoroughly remove all excess bone cement.

Hold the arm in extension until the cement has cured (Figure 44). Recheck for excess cement, as this technique will cause some of the cement to extrude around the implants. Thoroughly remove all excess bone cement from around the implants and allow the cement to cure.

If applicable, place a bone chip or artificial graft under the anterior flange of the humeral component to enhance stability.

Implanting Cementless Components

Figure 45

Figure 46

Figure 47

HUMERAL COMPONENT

Insert the final cementless humeral implant, paying close attention to the orientation.

Use the humeral impactor to fully seat the implant (Figure 45), checking to have a proper initial stability of the implant. If applicable, place a bone chip or artificial graft under the anterior flange to enhance stability.

ULNAR COMPONENT

Press the ulnar implant into the canal, paying close attention to its orientation. Use the ulnar impactor to fully seat the implant (Figure 46), checking to have a proper initial stability of the implant. Extend the arm and join the components using the final cobalt chrome condyles.

To assemble the components, place the condyles through the ulnar component (Figure 47). Ensure the screw pockets in the condyles reside on the posterior side of the assembled implant and are free of bone debris. With the components together, insert both locking screws and thoroughly tighten using the screwdriver.

Note: *Alternate tightening lateral and medial screws until locked.*

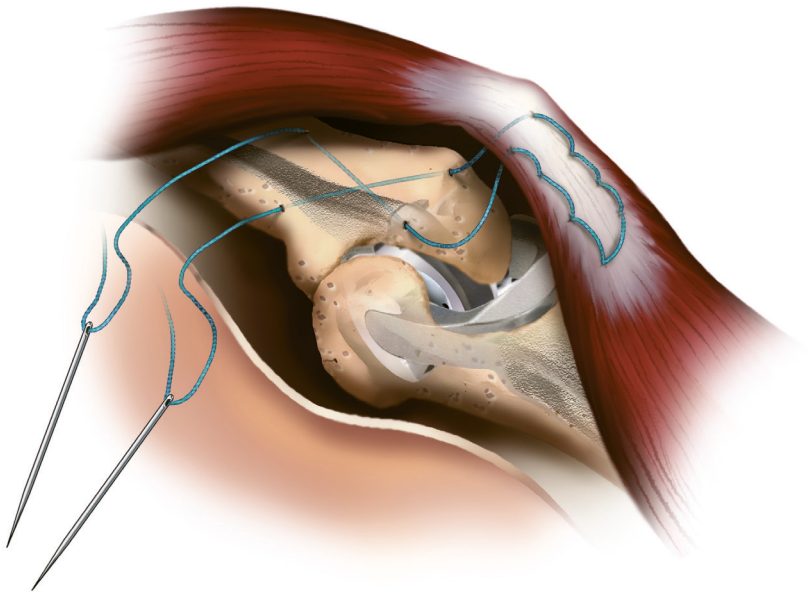

Figure 48

WOUND CLOSURE

When the triceps attachment has not been violated, the only necessary deep soft-tissue closure is repair of the lateral collateral and common extensor origins back to the humeral condyle. This is done through two drill holes using No. 2 braided polyester with a polyethylene core and Kevlar.

When the triceps has been detached, repair it back to the olecranon with No. 2 polyester and Kevlar suture through two drill holes in the ulna. Repair the medial and lateral fascial sleeves with a running No. 2 bioabsorbable suture. (Figure 48).

The ulnar nerve almost always remains stably located in an anterior position. Place one suction drain in the deep wound and one in the subcutaneous space and bring it out through the proximal skin. Approximate subcuticular tissues with No. 3-0 or 4-0 bioabsorbable sutures, and close the skin with staples or sutures. Apply a bulky dressing and splint with the elbow in 60 degrees of flexion to minimize posterior wound tension.

DISCOVERY ELBOW SYSTEM
Rehabilitation

REHABILITATION

Continue postoperative antibiotics for 24 hours. Remove suction drains at 48 hours or when drainage has stopped. Patients are usually discharged on the second postoperative day. Between the third and fifth postoperative days, remove the dressing, check the wound and initiate active range of motion. Regardless of how the triceps was handled, instruct the patient on active and passive flexion exercises.

When the triceps has required repair, passive extension and active extension assisted by gravity are allowed.

When the triceps has not been detached, active and passive extension, even against resistance, is allowed. Employ weighted extension exercises to correct any residual tightness to extension. Use a long-arm splint in full extension at night to maintain extension..

Remove sutures or staples 10-14 days postoperatively and obtain routine radiographs. Initiate normal light use and strengthening at six weeks postoperative.

DISCOVERY ELBOW SYSTEM

Product Codes

Discovery Humeral Stems

PART NUMBER	DESCRIPTION	SIZE
114904	Discovery Humeral Component*	4 x 100mm, Left
114905	Discovery Humeral Component*	4 x 100mm, Right
114906	Discovery Humeral Component*	5 x 100mm, Left
114907	Discovery Humeral Component*	5 x 100mm, Right
114908	Discovery Humeral Component*	6 x 100mm, Left
114909	Discovery Humeral Component*	6 x 100mm, Right
114914	Discovery Humeral Component*	4 x 150mm, Left
114915	Discovery Humeral Component*	4 x 150mm, Right
114916	Discovery Humeral Component*	5 x 150mm, Left
114917	Discovery Humeral Component*	5 x 150mm, Right
114918	Discovery Humeral Component*	6 x 150mm, Left
114919	Discovery Humeral Component*	6 x 150mm, Right
114924	Discovery Humeral Component*	4 x 200mm, Left
114925	Discovery Humeral Component*	4 x 200mm, Right
114926	Discovery Humeral Component*	5 x 200mm, Left
114927	Discovery Humeral Component*	5 x 200mm, Right
114928	Discovery Humeral Component*	6 x 200mm, Left
114929	Discovery Humeral Component*	6 x 200mm, Right

Discovery XS Humeral Stems

PART NUMBER	DESCRIPTION	SIZE
114902	Discovery XS Humeral Component	3.5 x 84 mm, Left
114903	Discovery XS Humeral Component	3.5 x 84mm, Right
114912	Discovery XS Humeral Component	3.5 x 124mm, Left
114913	Discovery XS Humeral Component	3.5 x 124mm, Right

Discovery Cementless Humeral Stems

PART NUMBER	DESCRIPTION	SIZE
114704	Discovery Flanged Humeral with HA	4 x 100mm, Left
114705	Discovery Flanged Humeral with HA	4 x 100mm, Right
114706	Discovery Flanged Humeral with HA	5 x 100mm, Left
114707	Discovery Flanged Humeral with HA	5 x 100mm, Right
114708	Discovery Flanged Humeral with HA	6 x 100mm, Left
114709	Discovery Flanged Humeral with HA	6 x 100mm, Right
114714	Discovery Flanged Humeral with HA	4 x 150mm, Left
114715	Discovery Flanged Humeral with HA	4 x 150mm, Right
114716	Discovery Flanged Humeral with HA	5 x 150mm, Left
114717	Discovery Flanged Humeral with HA	5 x 150mm, Right
114718	Discovery Flanged Humeral with HA	6 x 150mm, Left
114719	Discovery Flanged Humeral with HA	6 x 150mm, Right

Product Codes

Discovery Ulnar Stems

PART NUMBER	DESCRIPTION	SIZE
114812	Discovery Ulnar Component	3 x 75mm, Left
114813	Discovery Ulnar Component	3 x 75mm, Right
114822	Discovery Ulnar Component	4 x 75mm, Left
114823	Discovery Ulnar Component	4 x 75mm, Right
114832	Discovery Ulnar Component	5 x 75mm, Left
114833	Discovery Ulnar Component	5 x 75mm, Right
114816	Discovery Ulnar Component	3 x 115mm, Left
114817	Discovery Ulnar Component	3 x 115mm, Right
114826	Discovery Ulnar Component	4 x 115mm, Left
114827	Discovery Ulnar Component	4 x 115mm, Right
114836	Discovery Ulnar Component	5 x 115mm, Left
114837	Discovery Ulnar Component	5 x 115mm, Right
114818	Discovery Ulnar Component	3 x 155mm, Left
114819	Discovery Ulnar Component	3 x 155mm, Right
114828	Discovery Ulnar Component	4 x 155mm, Left
114829	Discovery Ulnar Component	4 x 155mm, Right
114838	Discovery Ulnar Component	5 x 155mm, Left
114839	Discovery Ulnar Component	5 x 155mm, Right

Discovery XS Ulnar Stems

PART NUMBER	DESCRIPTION	SIZE
114802	Discovery XS Ulnar Component	2.5 x 53mm, Left
114803	Discovery XS Ulnar Component	2.5 x 53mm, Right
114806	Discovery XS Ulnar Component	2.5 x 84mm, Left
114807	Discovery XS Ulnar Component	2.5 x 84mm, Right

Discovery Cementless Ulnar Stems

PART NUMBER	DESCRIPTION	SIZE
114744	Discovery Ulna with HA	3 x 75mm, Left
114745	Discovery Ulna with HA	3 x 75mm, Right
114746	Discovery Ulna with HA	4 x 75mm, Left
114747	Discovery Ulna with HA	4 x 75mm, Right
114748	Discovery Ulna with HA	5 x 75mm, Left
114749	Discovery Ulna with HA	5 x 75mm, Right
114754	Discovery Ulna with HA	3 x 115mm, Left
114755	Discovery Ulna with HA	3 x 115mm, Right
114756	Discovery Ulna with HA	4 x 115mm, Left
114757	Discovery Ulna with HA	4 x 115mm, Right
114758	Discovery Ulna with HA	5 x 115mm, Left
114759	Discovery Ulna with HA	5 x 115mm, Right

DISCOVERY ELBOW SYSTEM

Product Codes

PART NUMBER	DESCRIPTION	SIZE
114700	**Discovery** Humeral Condyle Set (includes two condyles and two screws)	
114991	**Discovery** XS Humeral Condyle Kit	

114993	Condyle Lock Screw, Single	

114800	**Discovery** Ulna Bearing Kit (includes ulna bearing and two locking pins)	
114801	**Discovery** XS Revision Ulnar Bearing w / Extra P	

Discovery Humeral Instrument Set 9014.10.000

PART NUMBER	DESCRIPTION	SIZE
414800	Modular Rasp Handle	
414801	Starter Awl/Rasp	
414810	Proximal Humeral Rasp	3 x 100mm
414811	Proximal Humeral Rasp	4 x 100mm
414812	Proximal Humeral Rasp	5 x 100mm
414813	Proximal Humeral Rasp	6 x 100mm
414816	Proximal Humeral Rasp	4 x 150mm
414817	Proximal Humeral Rasp	5 x 150mm
414818	Proximal Humeral Rasp	6 x 150mm
414912	5 Step Humeral Fossa Reamer	
414915	Humeral Fossa Drill Guide	
414931	Humeral Condyle Rasp	
414935	I/M Humeral Alignment Jig	
414936	I/M Humeral Resection Guide	
414937	Axis Rod	
35-463012	Humeral Guide Drill Bit	
414806	Provisional Lock Screw	
414821	Distal Humeral Rasp	4mm
414822	Distal Humeral Rasp	5mm
414823	Distal Humeral Rasp	6mm
414831	Humeral Trial	4 X 100mm, Left
414836	Humeral Trial	4 X 100mm, Right
414832	Humeral Trial	5 X 100mm, Left
414837	Humeral Trial	5 X 100mm, Right
414833	Humeral Trial	6 X 100mm, Left
414838	Humeral Trial	6 X 100mm, Right
414841	Humeral Trial	4 X 150mm, Left
414846	Humeral Trial	4 X 150mm, Right
414842	Humeral Trial	5 X 150mm, Left
414847	Humeral Trial	5 X 150mm, Right
414843	Humeral Trial	6 X 150mm, Left
414848	Humeral Trial	6 X 150mm, Right
414896	Humeral Condyle Provisional	
414922	2.0/2.7mm Screwdriver Handle	
414923	2.4mm X-Lock STD Screwdriver	
414926	Hexalobular Screwdriver	
430022	Slap Hammer	
595327	Humeral Instrument Case	

Instrumentation

Discovery Ulna Instrument Set 9014.20.000

PART NUMBER	DESCRIPTION	SIZE
414851	Ulna Flexible Reamer	Ø3mm
414852	Ulna Flexible Reamer	Ø4mm
414853	Ulna Flexible Reamer	Ø5mm
414854	Ulna Flexible Reamer	Ø6mm
414855	Ulna Flexible Reamer	Ø7mm
414856	Ulna Flexible Reamer	Ø8mm
414861	Ulna Rasp	3mm, Left
414862	Ulna Rasp	3mm, Right
414863	Ulna Rasp	4mm, Left
414864	Ulna Rasp	4mm, Right
414865	Ulna Rasp	5mm, Left
414866	Ulna Rasp	5mm, Right
414871	Ulna Trial	3 X 75mm, Left
414876	Ulna Trial	3 X 75mm, Right
414872	Ulna Trial	4 X 75mm, Left
414877	Ulna Trial	4 X 75mm, Right
414873	Ulna Trial	5 X 75mm, Left
414878	Ulna Trial	5 X 75mm, Right
414881	Ulna Trial	3 X 115mm, Left
414886	Ulna Trial	3 X 115mm, Right
414882	Ulna Trial	4 X 115mm, Left
414887	Ulna Trial	4 X 115mm, Right
414883	Ulna Trial	5 X 115mm, Left
414888	Ulna Trial	5 X 110mm, Right
414890	Ulna Olecranon Trough Reamer	
414891	Barrel Reamer	
414892	T-Handle	
414893	1/2 Scale Zim. To Zim. Adaptor	
414894	Ulna Impactor	
414895	Ulna Extractor	
414921	Humeral Extractor	
414924	Humeral Impactor	
414925	Impactor Handle	
414930	Condyle Manipulator	
595328	Ulna Instrument Case	

Discovery XS Instrument Set 9014.30.000

PART NUMBER	DESCRIPTION	SIZE
414814	XS Proximal Humeral Rasp	3.5 X 84mm
414815	XS Proximal Humeral Rasp	3.5 X 124mm
414820	XS Distal Humeral	3.5mm
414830	XS Humeral Trial	3.5 X 84mm, Left
414835	XS Humeral Trial	3.5 X 84mm, Right
414840	XS Humeral Trial	3.5 X 124mm, Left
414845	XS Humeral Trial	3.5 X 124mm, Right
414867	XS Ulna Rasp	2.5mm, Left
414868	XS Ulna Rasp	2.5mm, Right
414870	XS Ulna Trial	2.5 X 53mm, Left
414875	XS Ulna Trial	2.5 X 53mm, Right
414880	XS Ulna Trial	2.5 X 84mm, Left
414885	XS Ulna Trial	2.5 X 84mm, Right
414897	XS Humeral Condyle Provisional	
414913	XS 5 Step Humeral Fossa Reamer	
414916	XS Humeral Fossa Drill Guide	
414938	XS I/M Humeral Resection Guide	
414920	XS Humeral Extractor	
414927	XS Humeral Impactor	
414929	XS Condyle Manipulator	
595358	XS Instrument Case	

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