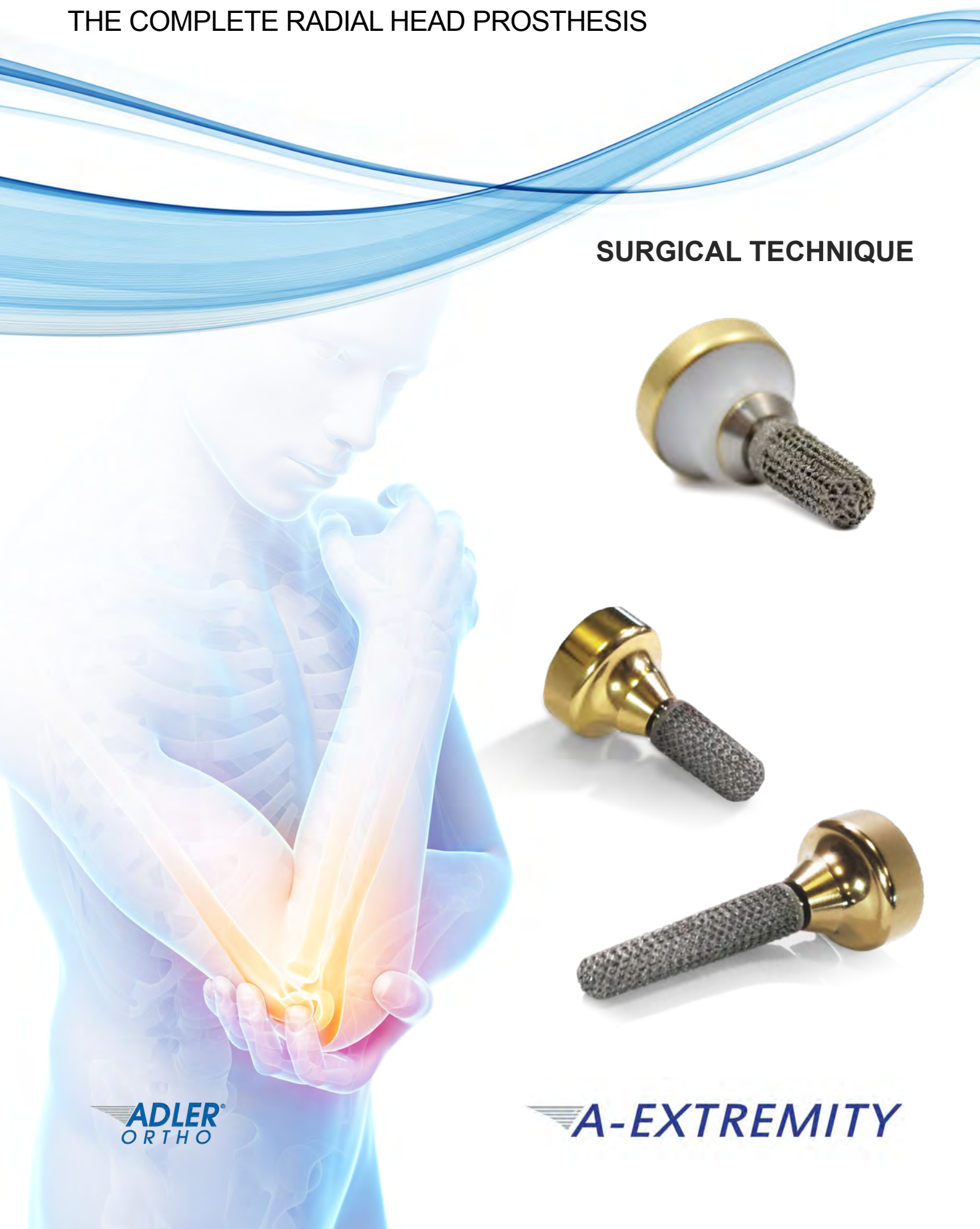


# ANTEA

THE COMPLETE RADIAL HEAD PROSTHESIS



**SURGICAL TECHNIQUE**



**ADLER**  
ORTHO

**A-EXTREMITY**

# ANTEA: A COMPREHENSIVE SYSTEM

## Components



### Bipolar Radial Head

Radiolucent with an anatomical surface. Made of hypoallergenic material. Available in 5 different sizes.



### Bipolar Collar

Available in 3 sizes with increasing offset. Connected to the radial head with a spherical mobile joint and to the radial stem with a Morse taper. The system allows for 10° self-alignment of the radial head.



### Monopolar Radial Head

Monoblock design, connected to the radial stem with a Morse taper system. Manufactured in hypoallergenic material.

Available in 3 different diameters and 3 different heights.



### Short Radial Stem

Uncemented stem made of Titanium, produced with powder manufacturing technology. It features the monolithic three-dimensional Ti-Por® surface.

Available in 9 proportionally growing diameters.



### Long Radial Stem

Uncemented stem made of Titanium, produced with powder manufacturing technology. Features the monolithic three-dimensional Ti-Por® surface.

Available in 6 proportionally growing diameters.



### Long Radial Cemented Stem

Made of Titanium.

Features a smooth surface with 3 anti-rotational cement grooves.

Available in 3 proportionally growing diameters.

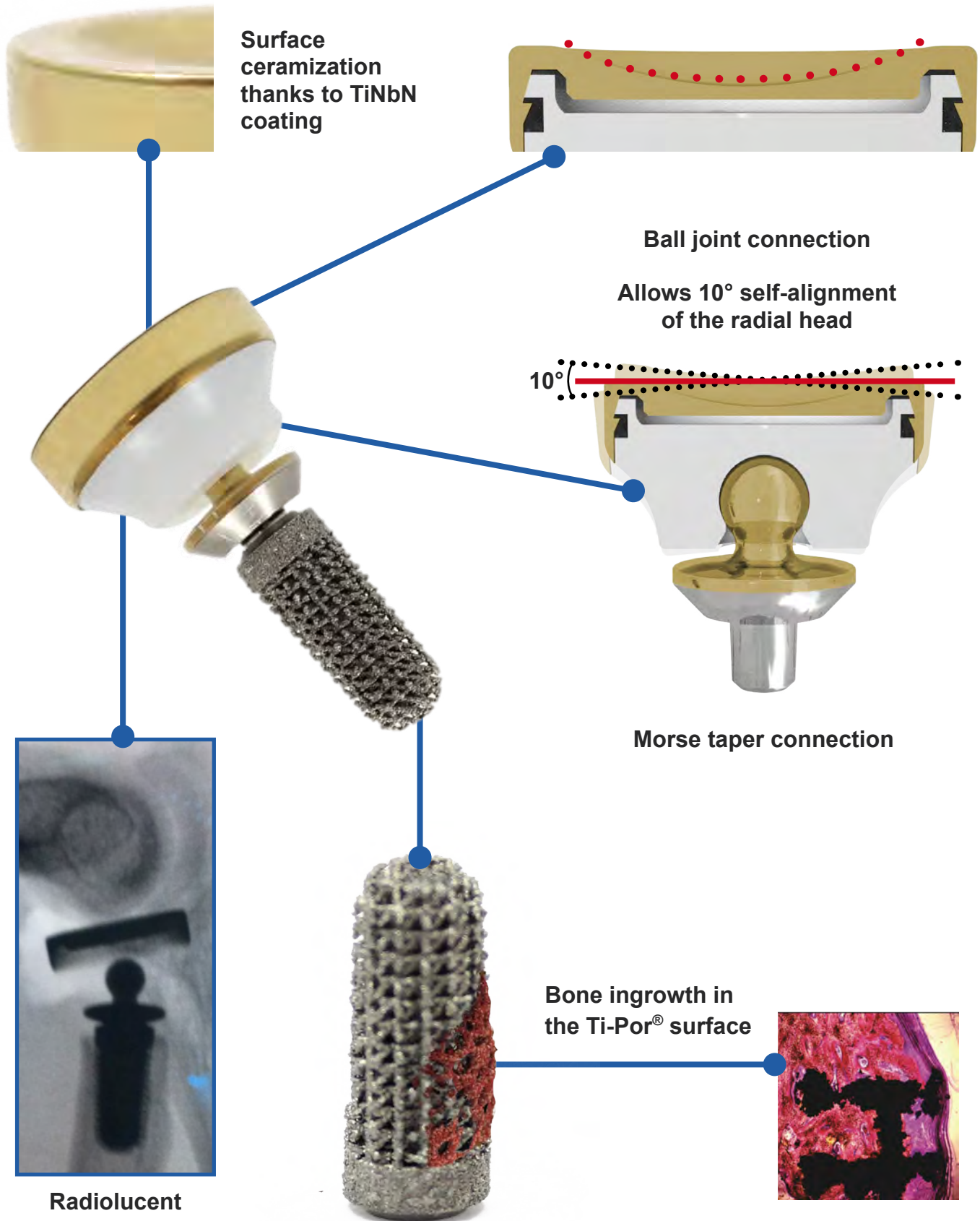
## POSSIBLE CONFIGURATIONS

Full compatibility between all components, providing versatility to allow more than 1500 component combinations



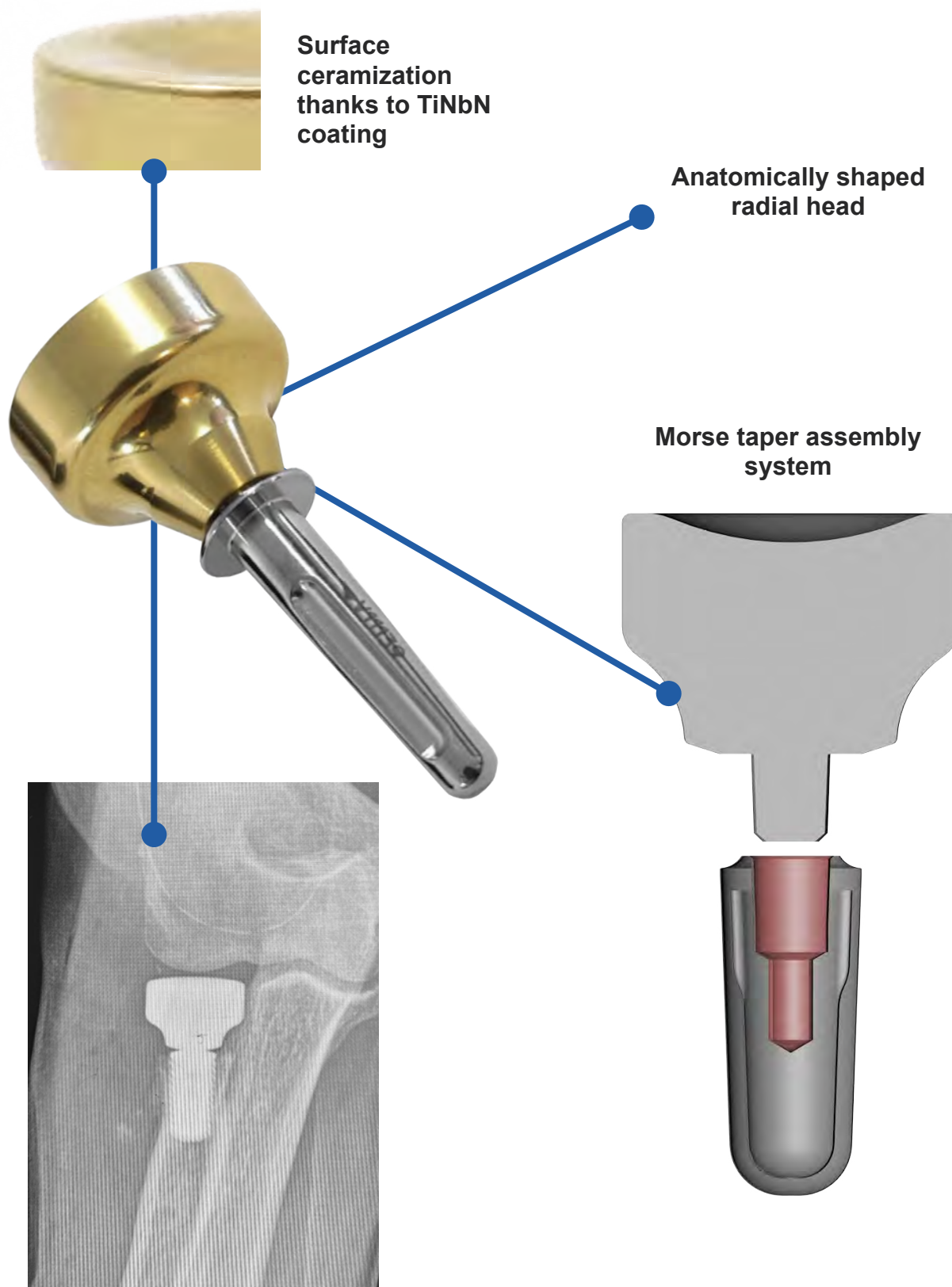
## Antea Radial Head prosthesis - Bipolar head

### THE DETAILS THAT MAKE THE DIFFERENCE



## Antea Radial Head prosthesis - Monopolar head

### THE DETAILS THAT MAKE THE DIFFERENCE



## Antea Radial Head prosthesis - Long Uncemented Stems

### THE DETAILS THAT MAKE THE DIFFERENCE



- Double taper design
- Reinforcement columns underneath the structure
- Ti-Por® 3D monolithic surface
- Constant length 35mm for all sizes



## Antea Radial Head prosthesis - Long Cemented Stems

### THE DETAILS THAT MAKE THE DIFFERENCE



**Constant length  
35mm for all sizes**

**Cement pressurizing  
collar**

**Innovative Design:  
the proximal  
part of the stem  
is cylindrical to  
ensure a constant  
cement mantle**

**Distal 1/3 of stem  
made with a 4°  
taper to guarantee  
a thicker cement  
mantle**

**Made of Ti6Al4V  
alloy ISO 5382.3**



## Surgical technique

### Radial Head resection

The level of resection must be distal to the fracture line and able to allow at least for the introduction of the trial spacer S (Fig 1). During resection the forearm is pronated and supinated keeping the saw blade perpendicular to the axis of rotation (Fig 2a-2b).

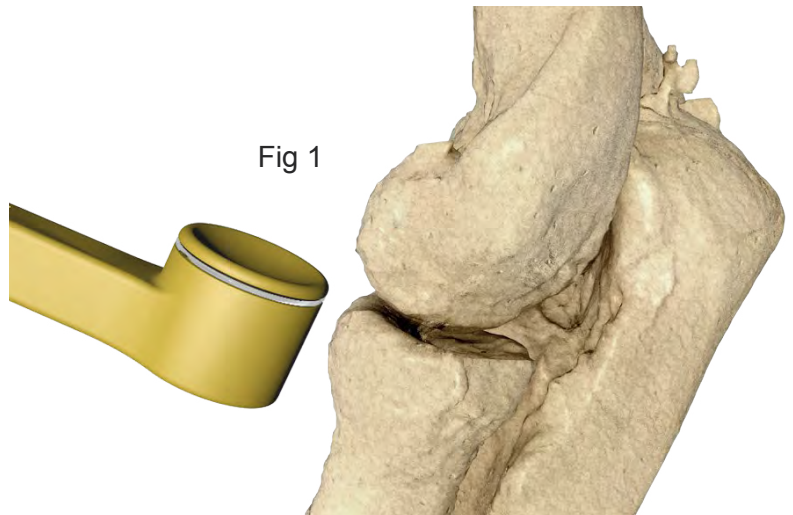


Fig 1

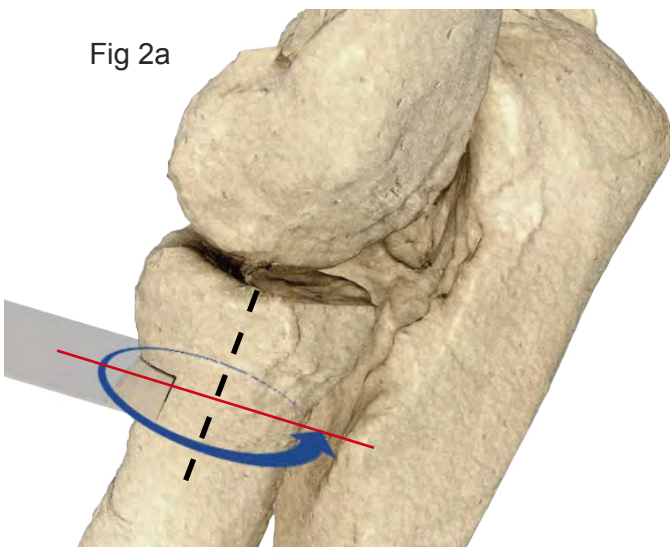


Fig 2a

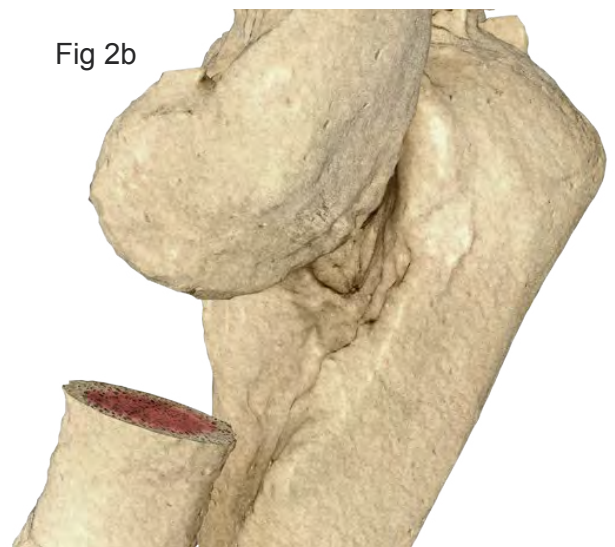


Fig 2b

The Surgeon should then proceed to check the available space using the radiolucent trial spacers.

The bipolar modular Antea system has three different heights (13mm-14.5mm-17mm) plus one available in the revision kit (20mm) which are reproduced in the spacers set (Fig 3). On each spacer the offset number of the bipolar collar to be used is indicated to achieve the appropriate thickness. The same measure is also marked on the Antea Fix heads. In case of "overstuffing" (overcompression of the epicondylar cartilage), it will be necessary to increase the space by distalising the osteotomy.

If the intramedullary canal is not visible after osteotomy, it is possible to use a mini canal finder. The canal finder is marked as a size 0 rasp in the instrument kit.

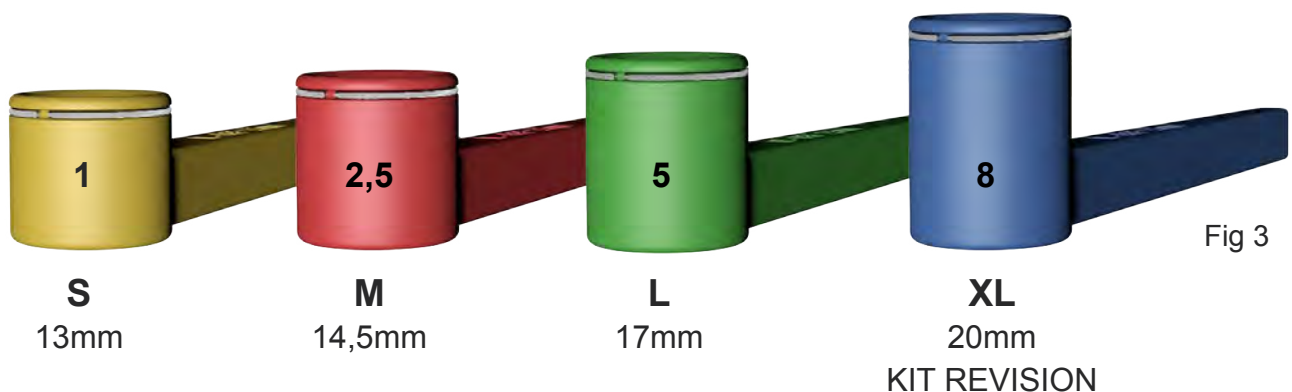


Fig 3

### Radial Head resection

After resection, the Surgeon should proceed to identify the radial canal with the rasp 0 (Fig 4).



Fig 4

### Osteotomy Planer

To level the resection, use a flat reamer guided by the canal opened with the 0 rasp (Fig 5).

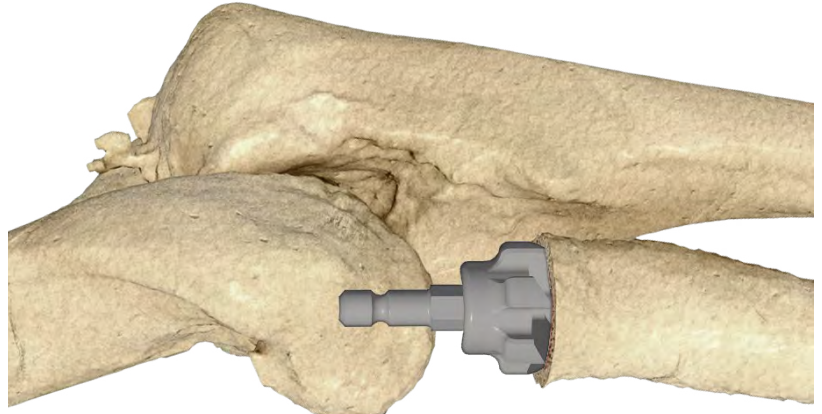
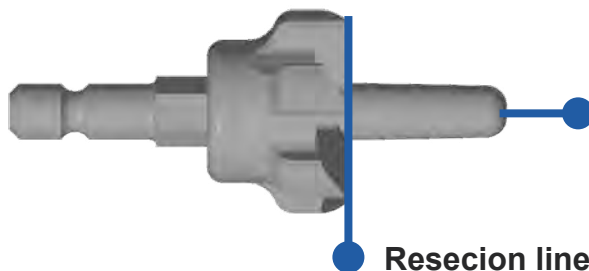


Fig 5

### Flat reamer



Centering peg.  
Same diameter as rasp 0

Resection line

### Resection level assessment

In case of trauma with complete epiphyseal detachment, assessment must be carried out below the last fracture line, checking the integrity of the cortical surface. The spacer is used to evaluate the correct height (13mm – 14.5mm – 17mm).

In case of overstuffing (overcompression of the epicondylar cartilage), increase the space by lowering the osteotomy level. The spacer is then reinserted to evaluate the correct gap and humero-radial stability (Fig 6).

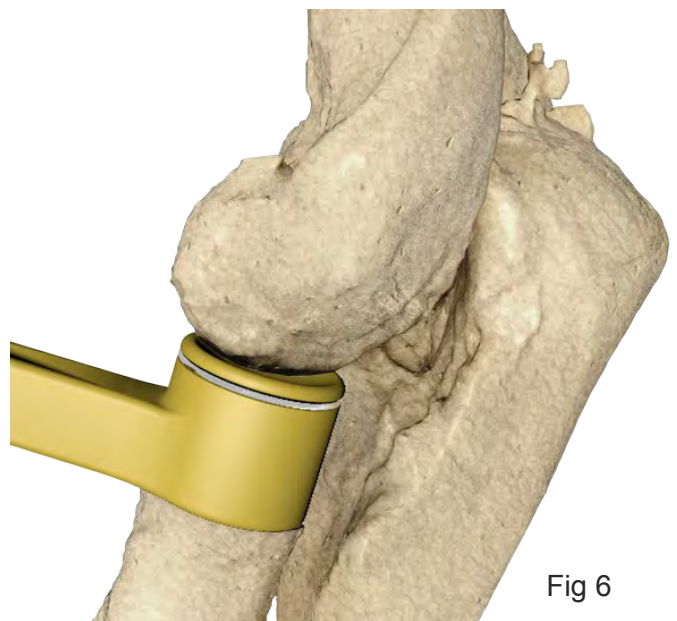
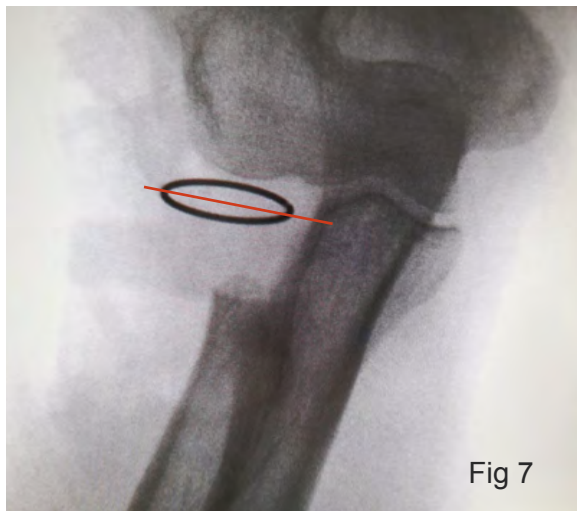


Fig 6

## Spacer X-ray check

It is advisable to perform an x-ray check to verify the prosthetic head alignment to the coronoid.

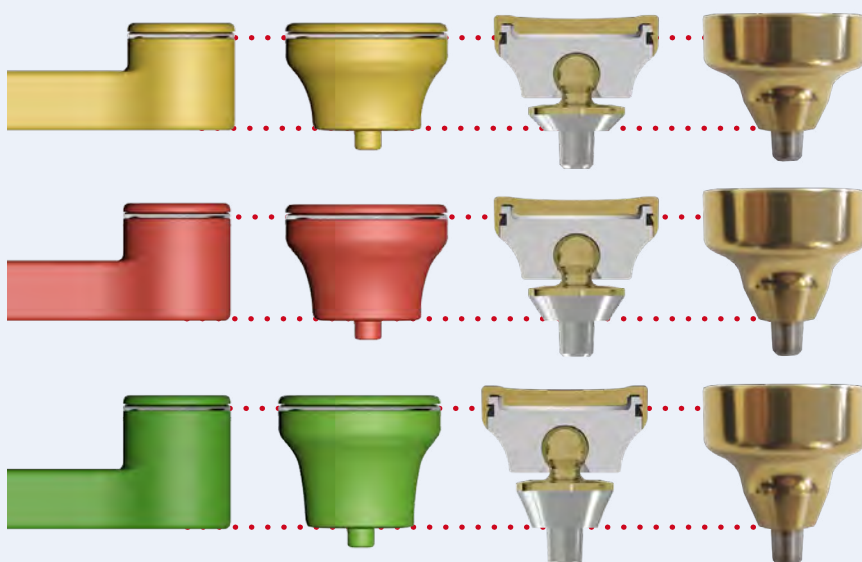
The spacer has a radiographic landmark that identifies the prosthetic radial head (Fig 7).



### Correspondence between trial spacer, trial radial head and final implant.

Both the plastic trial spacer and the trial implant, while being radiolucent, have a radiopaque landmark corresponding to the deepest point of the prosthetic head surface in order to show the point of contact with the humeral capitulum.

The diagram below shows the correspondence between trial spacers and heads and the final head / collar implant assembly for both bi polar and fixed head implants. Trial spacers and trial heads are identified by colour code:



- **Yellow.** 13mm trial spacer. For the final implant the collar with 1mm offset should be selected.
- **Red.** 14.5mm trial spacer. For the final implant the collar with 2.5mm offset should be selected.
- **Green.** 17mm trial spacer. For the final implant the collar with 5mm offset should be selected.

## Canal preparation - Uncemented Stems

After locating the radial canal with the mini canal finder (rasp 0) and preparing the osteotomy with the flat reamer, rasps assembled on an anatomical handle are used. The set contains 9 progressively increasing rasps, the increase step is 0.5 mm for the first 7 sizes and 1mm for the following 2. Progressively increase the rasp size until the correct cortical contact is achieved.

Correct rasp seating is achieved when the cutting teeth are beneath the osteotomy level (Fig. 8 and 9).

While using the rasps it is advisable not to use any rotational force to allow better compaction of the internal cancellous bone.

Rotating the rasps may be appropriate only when excessive press-fit would not allow correct seating of the stem. The procedure is the same for long uncemented stem preparation.

| Size | Diam. (mm) | L (mm) Short Stem | L (mm) Long Stem |
|------|------------|-------------------|------------------|
| 1    | 7          | 19,1              | 30               |
| 1,5  | 7,5        | 19,2              | 35               |
| 2    | 8          | 19,4              | 35               |
| 2,5  | 8,5        | 19,5              | 35               |
| 3    | 9          | 19,7              | 35               |
| 3,5  | 9,5        | 19,8              | 35               |
| 4    | 10         | 20                | 35               |
| 5    | 11         | 20,3              | 35               |
| 6    | 12         | 20,9              | 35               |

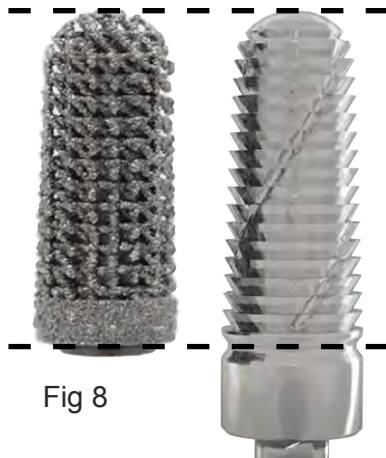


Fig 8

Fig 9



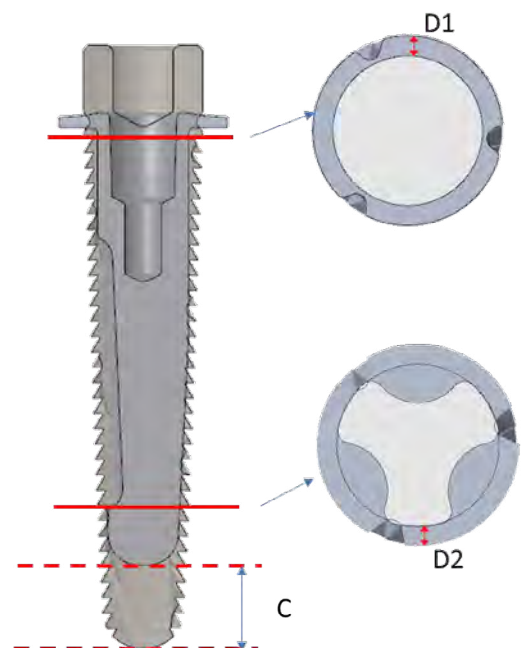
## Canal preparation - Cemented Stems

After locating the radial canal with the mini canal finder (rasp 0) and preparing the osteotomy with the flat reamer, proceed to rasping.

4 rasp sizes with anatomic handles and 1 mm increments are provided. Progressively increase the rasp size until the correct cortical contact is achieved. Correct rasp seating is achieved when the cutting teeth are beneath the osteotomy level (Fig. 8 and 9).

To allow for a minimum cement thickness, the table below the table summarises the rasp/stem ratio.

| Size | Rasp Size | C (mm) | D1 (mm) | D2 (mm) |
|------|-----------|--------|---------|---------|
| 1    | 2         | 5,4    | 1,6     | 1,2     |
| 2    | 3         | 0,9    | 1,6     | 0,7     |
| 3    | 4         | 0,6    | 1,6     | 0,7     |



## Insertion of the final press-fit short or long stem

After rasping in increasing succession and having obtained an acceptable fit in the canal to an adequate depth, proceed with the final stem insertion. Two options are available to insert the stem:

### Option A (Fig. 10A)

The stem is positioned using the instrument IK00700.

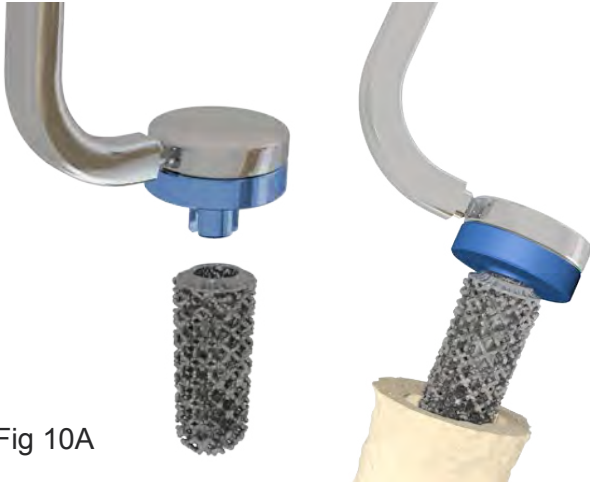


Fig 10A

### Option B (Fig.10B)

The stem is positioned using the instrument IK01100, by screwing the threaded handle on the implant. The handle should be unscrewed prior to final implant positioning.



Fig 10B

### Final Positioning - Option A

(Fig 11A) Offset handle IK00700. Impact stem until the blue plastic insert contacts the osteotomy level.

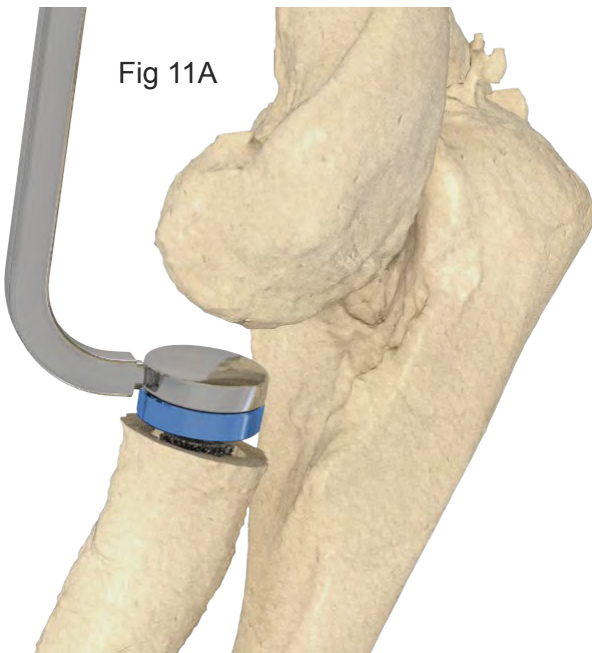


Fig 11A

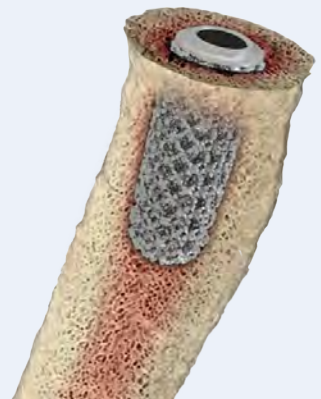
### Final positioning - Option B

IK01650 on the straight handle IK01100. and impact stem until the blue plastic insert is in contact with the osteotomy level.



Fig 11B

Correct position of the Antea press-fit radial stem as indicated below.



### Insertion of the final cemented stem

After having prepared and inserted bone cement inside the canal, impact the final cemented stem until the pressurising stem collar is in touch with the osteotomy level (Fig 12).



Fig 12

**Note:** This step can be done also using the IK01100 positioning handle together with the IK1650 modulus.

### Stems Removal

IK01100 handle can be used for the removal of both cemented and press-fit stems. The handle is attached to the implant by screwing it into the threaded hole available in all the stems and then tap backward for extraction. With uncemented press-fit stems, if removal is difficult, small holes can be made around the stem using an 0.8/1mm Kirschner wire to loosen the bone integration around the stem before removal. (Fig 13).

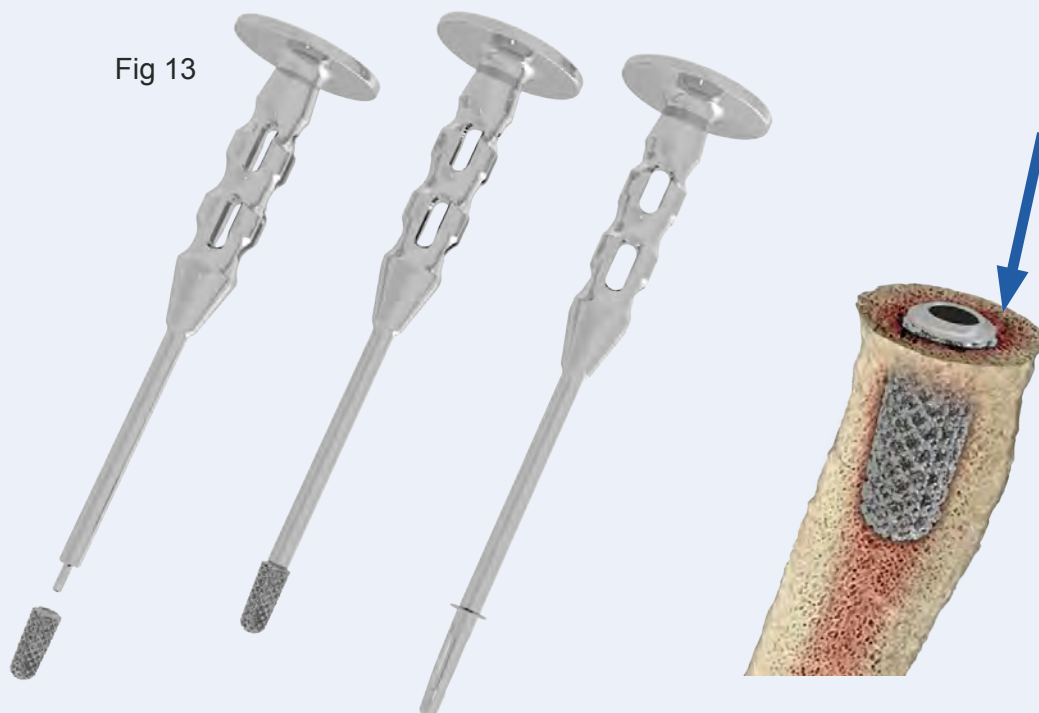


Fig 13

## Evaluation of the radial head size

The surgeon should start by recomposing the radial head bone fragments in order to make an accurate calibration. If the head is still intact it is possible to proceed directly with calibration using the dedicated sizing plate (Fig 14). Recommended to under-size the prosthetic implant by at least one size with respect to the original bone dimension.

Fig 14



## Trial Radial Heads

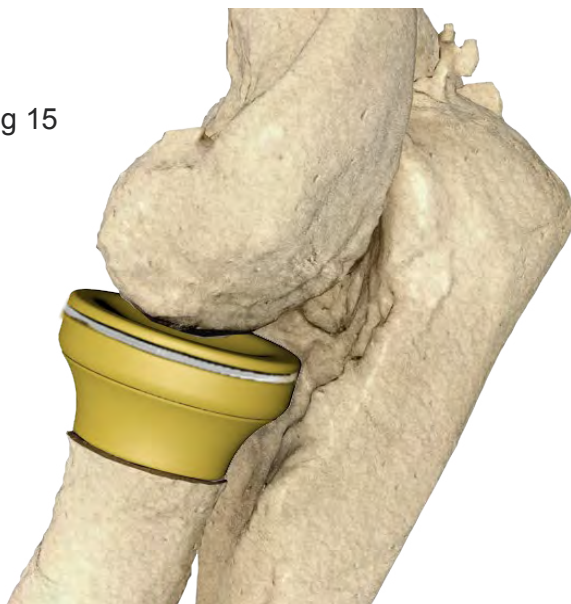
Following insertion of the final stem, assessment of the collar is made. Based on the spacer used during the first surgical step (S-M-L-XL) identify the correct trial implant (collar + head assembly) and position it on the stem (Fig 15).

After having carried out a joint reduction, perform x-ray check to verify that the radio-opaque ring on the trial is aligned with the proximal surface of the ulna, in relation to the coronoid (Fig 16).

Proceed with flexion/extension as well as pronation/supination movements to evaluate any need for correction.

|          |      | OFFSET |     |   |   |
|----------|------|--------|-----|---|---|
|          |      | 1      | 2,5 | 5 | 8 |
| DIAMETER | 17,5 |        |     |   |   |
|          | 19   |        |     |   |   |
|          | 20,5 |        |     |   |   |
|          | 22   |        |     |   |   |
|          | 23,5 |        |     |   |   |

Fig 15



Coupling between bipolar collars and radial head diameters to be chosen depending on the trial head used.



Fig 16

## Final head and collar assembly

*This step should be performed only if using a bipolar head.*

The selected final implant components should be assembled using the dedicated press. Position the collar in its appropriate housing with the head above it, and proceed by screwing the press until the two components are fully assembled (Fig 17A - 17B - 17C).

**Note:** to facilitate the extraction of the implant from the press, it is recommended to place the removal fork (code IK01000) between the press and the collar (Fig. 17D).



Fig 17A



Fig 17B

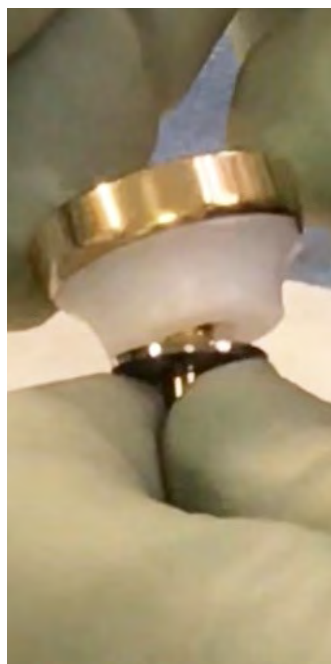


Fig 17C

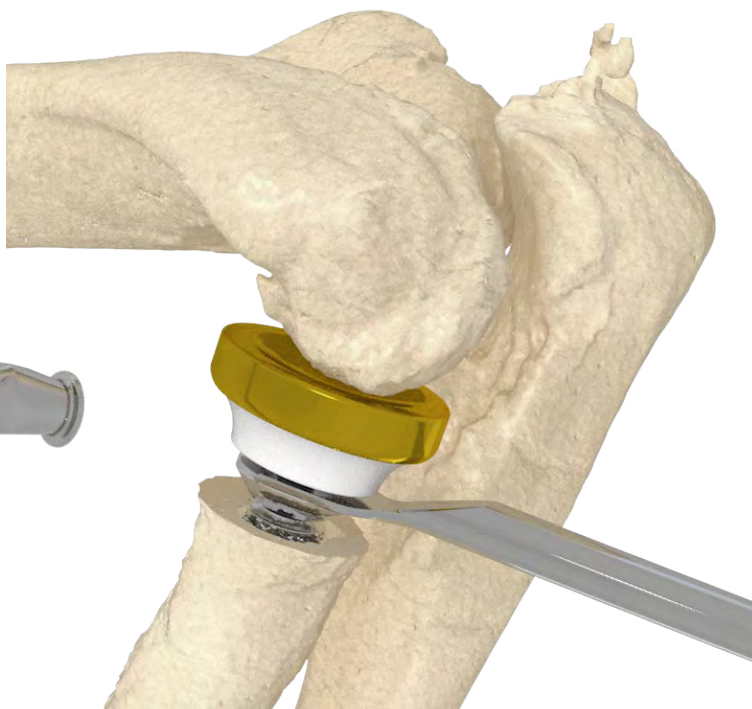


Fig 17D

To make the final implant positioning easier, use instrument IK01000 as shown in Fig. 17E.



Fig 17E



### Final positioning - Bipolar Head

The head / collar assembly are inserted onto the final stem.

Position the male morse cone of the collar in the proximal hole of the stem and impact using the the dedicated anatomical positioning instrument (Fig 18A - 18B - 18C - 18D). At the end of the procedure it is recommended to carry out a pull-out test to verify the morse taper has engaged securely.

**NOTE:** to connect the head / collar assembly onto the stem use the insert instrument IK01000 in between the head and the neck in order to retain alignment and avoid head tilting.

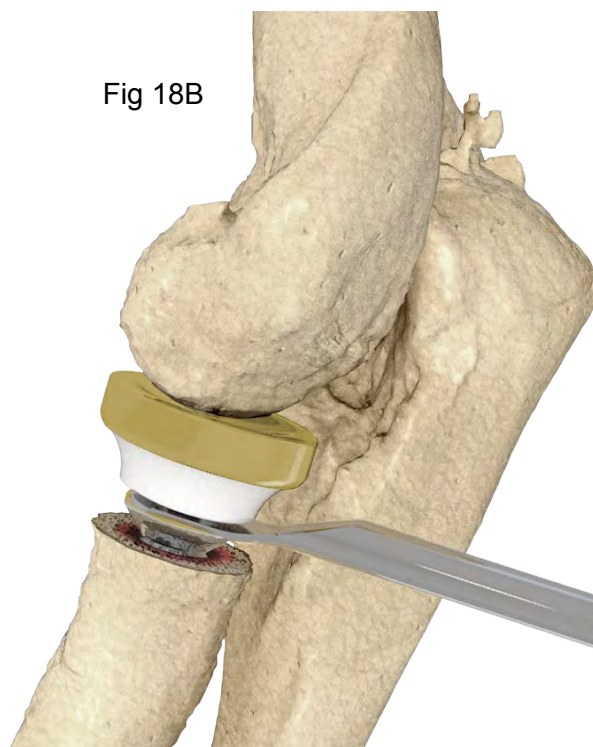
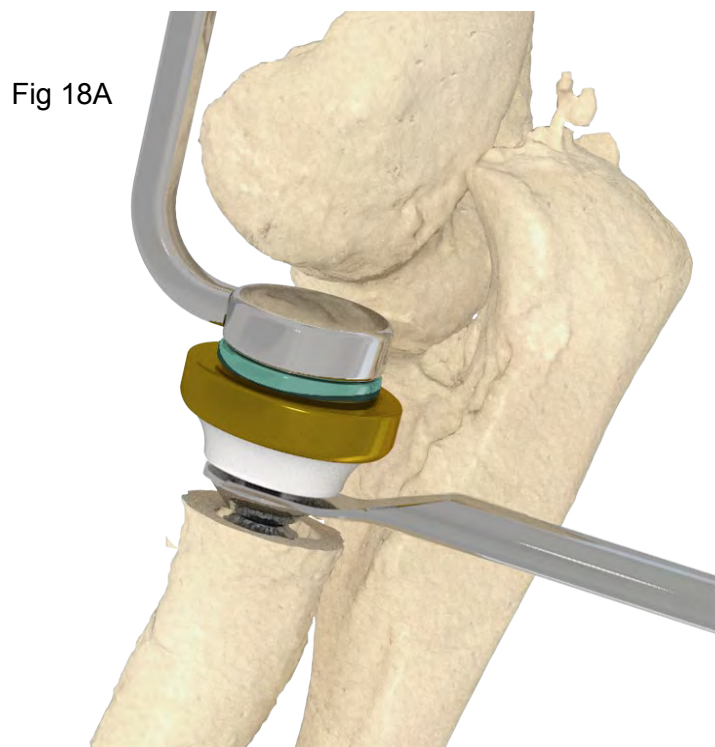


Fig 18D



### Final positioning - Monopolar Head

If a monopolar monobloc head is used, proceed by positioning the male morse taper in the proximal hole of the stem. The two components are assembled using the dedicated anatomically shaped tool (Fig 19A - 19B - 19C - 19D).

At the end of the procedure it is recommended to carry out a pull-out test to verify the morse taper has engaged securely.

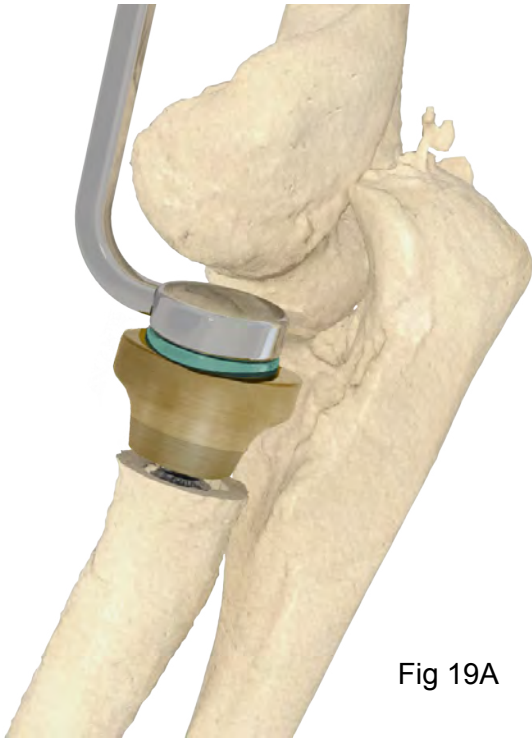


Fig 19A

Fig 19B



Fig 19C



Fig 19D

### Monopolar and Bipolar head removal

If a single-piece monopolar head is used, position instrument IK1000 between the stem and the head (Fig 20A). For a bipolar head, position the instrument between the stem and the collar morse taper (Fig 20B), then proceed by tapping on the handle until the morse taper assembly disengages.

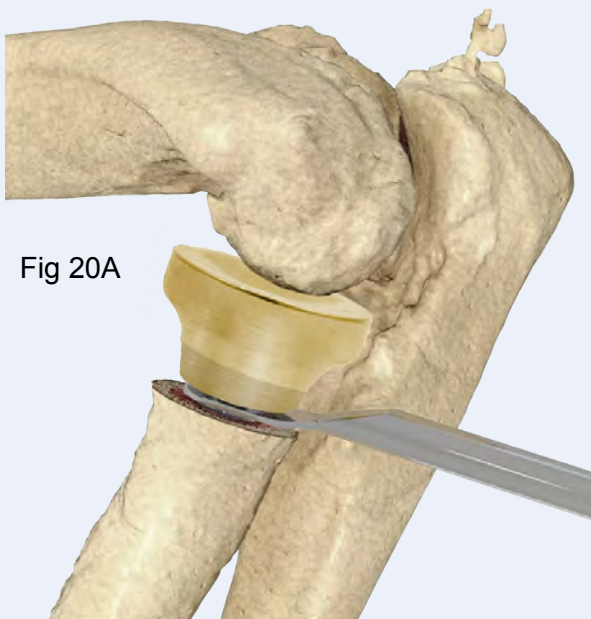


Fig 20A

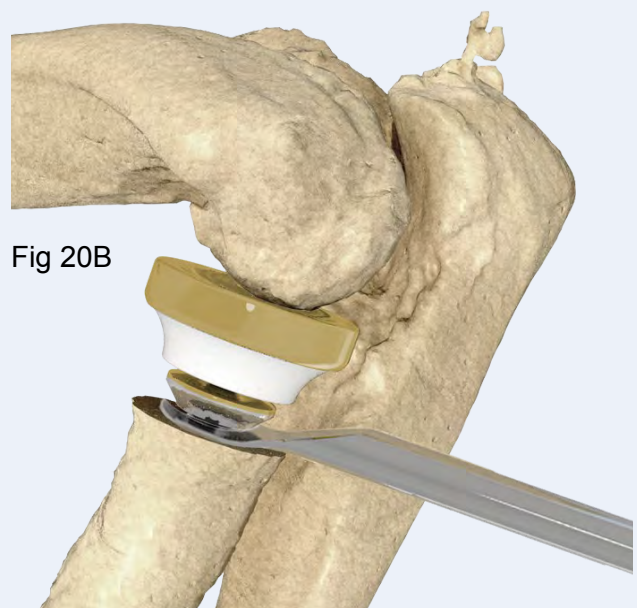


Fig 20B

## Antea - Radial Stems

| Code    | Description                                 |
|---------|---------------------------------------------|
| 3100001 | Antea Uncemented Radial Stem Size 1 Short   |
| 3100115 | Antea Uncemented Radial Stem Size 1,5 Short |
| 3100002 | Antea Uncemented Radial Stem Size 2 Short   |
| 3100125 | Antea Uncemented Radial Stem Size 2,5 Short |
| 3100003 | Antea Uncemented Radial Stem Size 3 Short   |
| 3100135 | Antea Uncemented Radial Stem Size 3,5 Short |
| 3100004 | Antea Uncemented Radial Stem Size 4 Short   |
| 3100005 | Antea Uncemented Radial Stem Size 5 Short   |
| 3100006 | Antea Uncemented Radial Stem Size 6 Short   |



|         |                                            |
|---------|--------------------------------------------|
| 3100011 | Antea Uncemented Radial Stem Size 1 Long   |
| 3100215 | Antea Uncemented Radial Stem Size 1,5 Long |
| 3100012 | Antea Uncemented Radial Stem Size 2 Long   |
| 3100225 | Antea Uncemented Radial Stem Size 2,5 Long |
| 3100013 | Antea Uncemented Radial Stem Size 3 Long   |
| 3100014 | Antea Uncemented Radial Stem Size 4 Long   |
| 3100015 | Antea Uncemented Radial Stem Size 5 Long   |



|         |                                        |
|---------|----------------------------------------|
| 3180011 | Antea Cemented Radial Stem Size 1 Long |
| 3180012 | Antea Cemented Radial Stem Size 2 Long |
| 3180013 | Antea Cemented Radial Stem Size 3 Long |



## Antea - Collars and Radial Heads

| Code    | Description                                     |
|---------|-------------------------------------------------|
| 3200101 | Antea Bipolar Collar TiNbN coated Offset 1 mm   |
| 3200102 | Antea Bipolar Collar TiNbN coated Offset 2.5 mm |
| 3200103 | Antea Bipolar Collar TiNbN coated Offset 5 mm   |
| 3200104 | Antea Bipolar Collar TiNbN coated Offset 8 mm   |



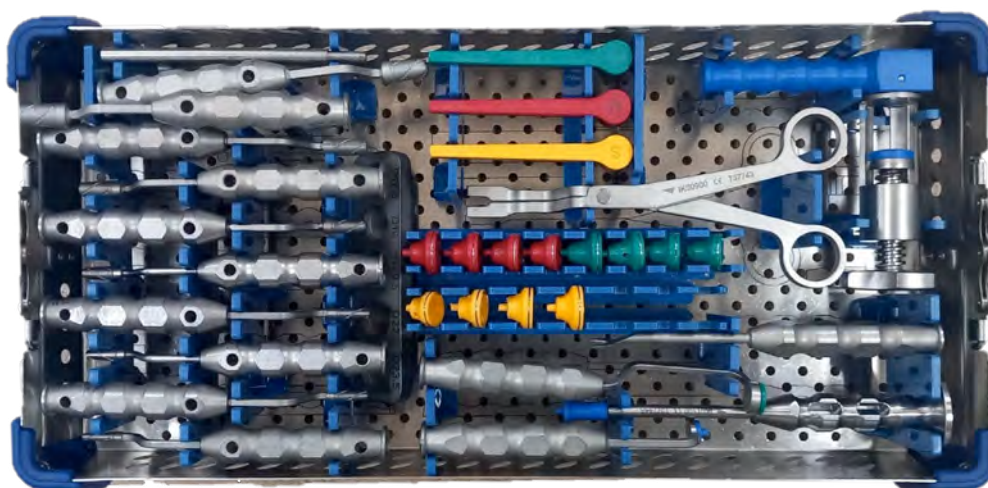
|         |                                         |
|---------|-----------------------------------------|
| 3300001 | Antea Radial Head Ti6Al4V PE Diam. 17.5 |
| 3300002 | Antea Radial Head Ti6Al4V PE Diam. 19   |
| 3300003 | Antea Radial Head Ti6Al4V PE Diam. 20.5 |
| 3300004 | Antea Radial Head Ti6Al4V PE Diam. 22   |
| 3300005 | Antea Radial Head Ti6Al4V PE Diam. 23.5 |



|         |                                                           |
|---------|-----------------------------------------------------------|
| 3301152 | Antea Radial Head Ti6Al4V TiNbN coated Diam. 19 H 1mm     |
| 3301153 | Antea Radial Head Ti6Al4V TiNbN coated Diam. 20.5 H 1mm   |
| 3301154 | Antea Radial Head Ti6Al4V TiNbN coated Diam. 22 H 1mm     |
| 3301252 | Antea Radial Head Ti6Al4V TiNbN coated Diam. 19 H 2,5mm   |
| 3301253 | Antea Radial Head Ti6Al4V TiNbN coated Diam. 20.5 H 2,5mm |
| 3301254 | Antea Radial Head Ti6Al4V TiNbN coated Diam. 22 H 2,5mm   |
| 3301352 | Antea Radial Head Ti6Al4V TiNbN coated Diam. 19 H 5mm     |
| 3301353 | Antea Radial Head Ti6Al4V TiNbN coated Diam. 20.5 H 5mm   |
| 3301354 | Antea Radial Head Ti6Al4V TiNbN coated Diam. 22 H 5mm     |



## Standard Instruments Kit



| IK00000 Antea Radial Head Instruments |                                         |          |
|---------------------------------------|-----------------------------------------|----------|
| Code                                  | Description                             | Quantity |
| IC00700                               | TOMMY BAR                               | 1        |
| IC90161                               | ANTEA INSTRUMENTS TRAY COVER            | 1        |
| IC90162                               | ANTEA INSTRUMENTS TRAY                  | 1        |
| IK00312                               | ANTEA TRIAL RAD HEAD D19 OFF 1          | 1        |
| IK00313                               | ANTEA TRIAL RAD HEAD D20.5 OFF 1        | 1        |
| IK00314                               | ANTEA TRIAL RAD HEAD D22 OFF 1          | 1        |
| IK00315                               | ANTEA TRIAL RAD HEAD D23.5 OFF 1        | 1        |
| IK00322                               | ANTEA TRIAL RAD HEAD D19 OFF 2.5        | 1        |
| IK00323                               | ANTEA TRIAL RAD HEAD D20.5 OFF 2.5      | 1        |
| IK00324                               | ANTEA TRIAL RAD HEAD D22 OFF 2.5        | 1        |
| IK00325                               | ANTEA TRIAL RAD HEAD D23.5 OFF 2.5      | 1        |
| IK00332                               | ANTEA TRIAL RAD HEAD D19 OFF 5          | 1        |
| IK00333                               | ANTEA TRIAL RAD HEAD D20.5 OFF 5        | 1        |
| IK00334                               | ANTEA TRIAL RAD HEAD D22 OFF 5          | 1        |
| IK00335                               | ANTEA TRIAL RAD HEAD D23.5 OFF 5        | 1        |
| IK00400                               | SPACER SZ. S                            | 1        |
| IK00410                               | SPACER SZ. M                            | 1        |
| IK00420                               | SPACER SZ. L                            | 1        |
| IK00515                               | ANTEA RADIAL HEAD RASP SZ. 1.5 S        | 1        |
| IK00525                               | ANTEA RADIAL HEAD RASP SZ. 2.5 S        | 1        |
| IK00535                               | ANTEA RADIAL HEAD RASP SZ. 3.5 S        | 1        |
| IK00700                               | ANTEA STEM POSITIONING INSTRUMENT       | 1        |
| IK00750                               | ANTEA POSITIONING INSTRUMENT            | 1        |
| IK00900                               | ANTEA HEAD-NECK DISASSEMBLY INSTRUMENT  | 1        |
| IK00950                               | ANTEA HEAD-NECK ASSEMBLY PRESS          | 1        |
| IK01000                               | RADIAL HEAD - NECK UNLOCKING INSTRUMENT | 1        |
| IK01100                               | RADIAL HEAD EXTRACTOR                   | 1        |
| IK01500                               | ANTEA RADIAL HEAD RASP SZ. 0            | 1        |
| IK01510                               | ANTEA RADIAL HEAD RASP SZ. 1            | 1        |
| IK01520                               | ANTEA RADIAL HEAD RASP SZ. 2            | 1        |
| IK01530                               | ANTEA RADIAL HEAD RASP SZ. 3            | 1        |
| IK01540                               | ANTEA RADIAL HEAD RASP SZ. 4            | 1        |
| IK01550                               | ANTEA RADIAL HEAD RASP SZ. 5            | 1        |
| IK01560                               | ANTEA RADIAL HEAD RASP SZ. 6            | 1        |
| IK01570                               | ANTEA RADIAL HEAD RASP SZ. 7            | 1        |
| IK01600                               | RADIAL HEAD SIZING PLATE                | 1        |
| IK01650                               | MODULAR STEM POSITIONER                 | 1        |

## Revision Instruments Kit



| IK00001 Antea Radial Head Revision Instruments |                                     |          |
|------------------------------------------------|-------------------------------------|----------|
| Code                                           | Description                         | Quantity |
| IC90202                                        | ANTEA REVISION TRAY COVER           | 1        |
| IC90203                                        | ANTEA REVISION TRAY                 | 1        |
| IK00341                                        | ANTEA TRIAL HEAD D17.5 OFF 8        | 1        |
| IK00342                                        | ANTEA TRIAL HEAD D19 OFF 8          | 1        |
| IK00343                                        | ANTEA TRIAL HEAD D20.5 OFF 8        | 1        |
| IK00344                                        | ANTEA TRIAL HEAD D22 OFF 8          | 1        |
| IK00345                                        | ANTEA TRIAL HEAD D23.5 OFF 8        | 1        |
| IK00430                                        | ANTEA SPACER SZ. XL                 | 1        |
| IK00610                                        | ANTEA RADIAL HEAD RASP SZ. 1 LONG   | 1        |
| IK00615                                        | ANTEA RADIAL HEAD RASP SZ. 1.5 LONG | 1        |
| IK00620                                        | ANTEA RADIAL HEAD RASP SZ. 2 LONG   | 1        |
| IK00625                                        | ANTEA RADIAL HEAD RASP SZ. 2.5 LONG | 1        |
| IK00630                                        | ANTEA RADIAL HEAD RASP SZ. 3 LONG   | 1        |
| IK00640                                        | ANTEA RADIAL HEAD RASP SZ. 4 LONG   | 1        |
| IK00650                                        | ANTEA RADIAL HEAD RASP SZ. 5 LONG   | 1        |

Manufactured by



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