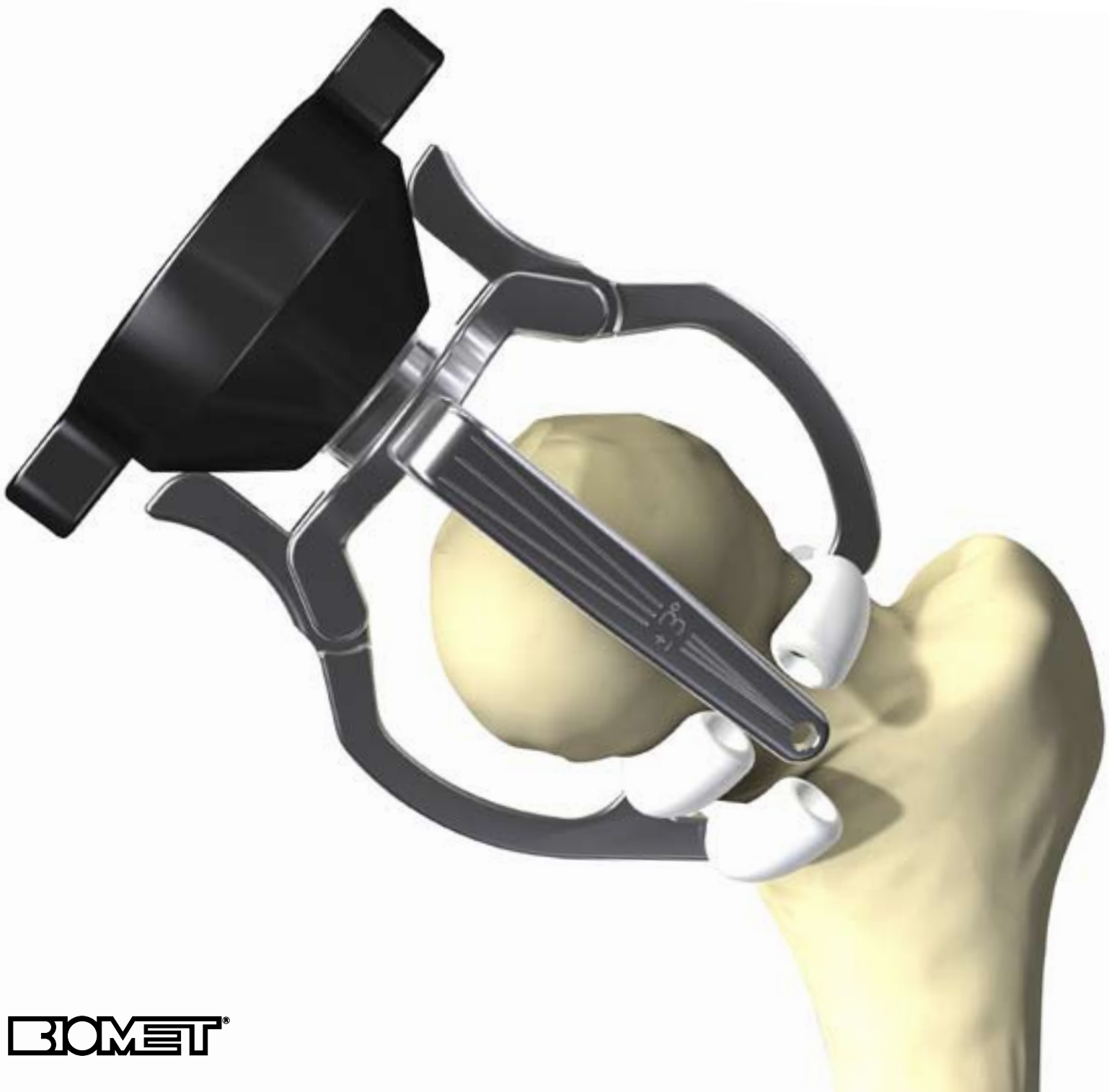


ReCap® KS Alignment Device

Design Rationale and Surgical Technique



Design Rationale

Femoral component positioning is vital to the success of hip resurfacing^{1,2}. Current devices on the market for guide pin placement are generally cumbersome and require a considerable amount of visualisation as well as user experience to ensure accurate guide pin placement.

In response to market demands for improved guide pin instrumentation and, therefore, implant positioning³, Mr Keshav Singhal, Consultant Orthopaedic Surgeon at the Princess of Wales Hospital, Bridgend, has been working with Biomet in designing and validating an alignment device that enables EFFICIENT, REPRODUCIBLE and RELIABLE implant positioning.

Validation and Testing

Extensive cadaveric testing has been conducted which showed the ReCap[®] KS alignment device (Ref:31-600367) consistently placed the ReCap[®] femoral implant within acceptable limits pre-determined by computer aided navigation⁴.

An additional cadaveric study proved there to be no significant difference in implant positioning when an inexperienced surgeon used the alignment device, and an experienced surgeon using navigation⁵, whilst implanting the ReCap[®] femoral component.

Operative Technique

Pre-operative planning

Selection of the correct components is paramount to implant success in resurfacing and is achieved through careful pre-operative planning. This can be achieved either by means of x-ray templates, or with a PAC system.

Surgical Exposure

The ReCap[®] Hip Resurfacing System can be implanted using any of the standard approaches for total hip replacement.

Guide Wire Placement using the ReCap[®] KS Alignment Device

Step 1

Once the soft tissues have been resected and the femoral head dislocated it is important to make sure that the calcar is visible from the sub capital region to the lesser trochanter, a Waghs forceps should be placed on the calcar and the central line of the inferior calcar marked with a diathermy.

At this stage it is important to verify that the size of the femoral head, selected at the pre-operative planning stage, is indeed correct with the head/neck sizing gauges (as per the ReCap[®] operative technique, order ref. FLH156).

Visible neck osteophytes should be carefully removed to prevent malpositioning of the alignment device.

Place the device over the femoral neck so that the arm marked 'inferior neck' sits on the inferior side of the femoral neck, with the jaws centralised over the diathermy mark. Whilst securing the device with one hand, the black handle of the device should be turned clockwise until the device feels secure on the neck, making sure the jaws are still centralised over the diathermy mark. (Figure 1).

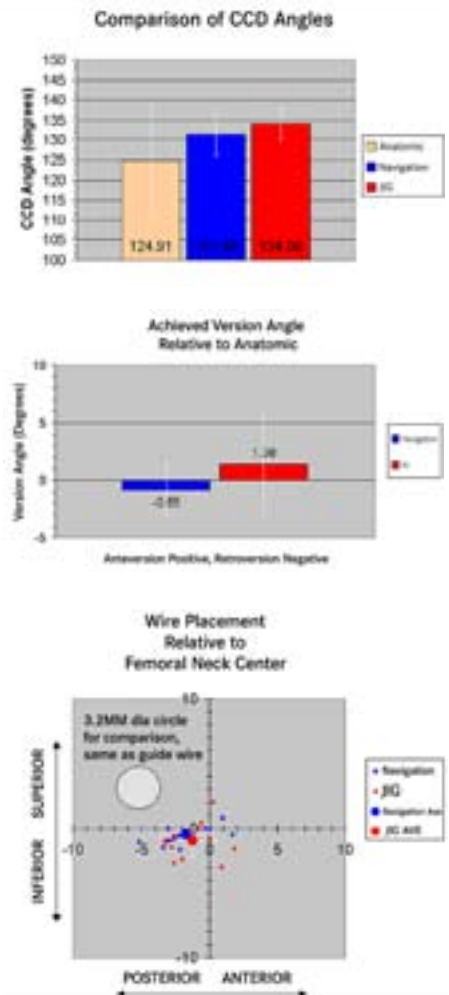


Figure 1

Step 2

Select the 9" guide wire (the shorter of the two long guide wires) from the ReCap® general instrument tray.

Before inserting the 9" guide wire in to the device there are a number of side (left or right) specific hole options available, which allow placement of the wire in varying degrees of varus/valgus and anteversion (Figure 2).

Indicated by the two arrows, the hole most commonly chosen will place the guide wire and, therefore, the implant in slight valgus and anteversion relative to the patients natural anatomy.

The device is designed such that the guide wire will pass through the centre of the neck in both axes.

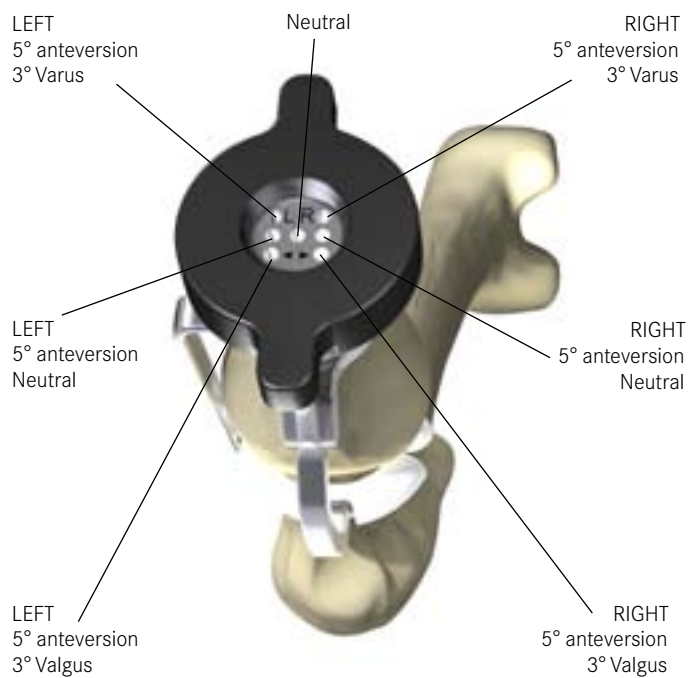


Figure 2

Before inserting the guide wire it is possible to check the valgus/varus placement of the guide wire with the target arm, which slides through the available slot on the anterior aspect of the device (Figure 3). Once satisfied with the position of the device, remove the target arm to proceed.

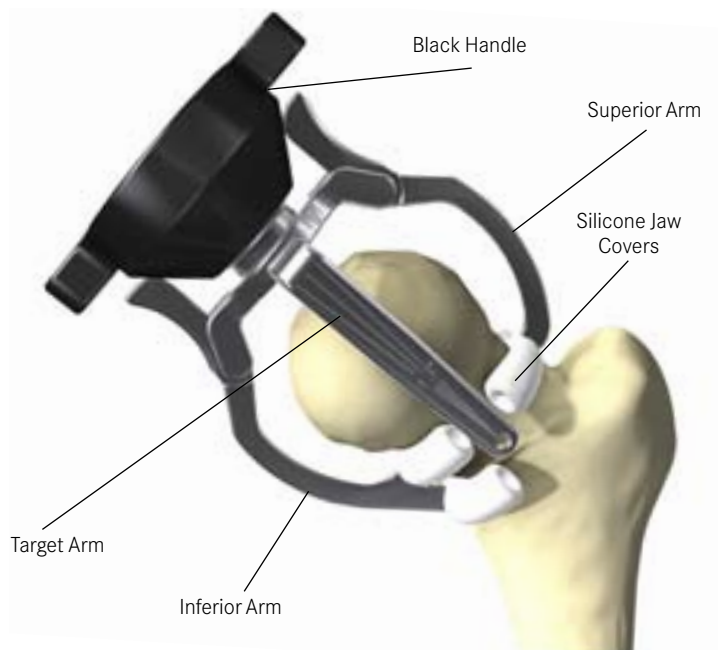


Figure 3

Step 3

Advance the 9" guide wire through the chosen hole, approximately 5cm in to the femoral neck. Unscrew the device and use the appropriate ReCap® sizing gauge to verify the guide wire position.

Slide the appropriate size neck gauge over the guide wire and rotate the neck gauge around the femoral neck. If at any position the point of the stylus touches the femoral neck it may be necessary to reposition the device or increase the size of the femoral resurfacing head. Be aware that if the second option is chosen, it will also be necessary to increase the size of the acetabular component. Once the placement of the guide wire has been verified, it can be advanced into the lateral cortex. (Figure 4)

If the stylus shows the guide wire to be in an unsatisfactory position, remove the wire and repeat steps 1-3 taking particular care to remove any residual osteophytes on the neck.

Once the wire is correctly aligned proceed with the operation as per the ReCap® surgical technique (FLH156).



Figure 4

Ordering Information

ReCap KS Alignment Device (Complete)	31-600367
ReCap Alignment Device Jaw Cover (Packet of 6)	31-600367-10
Target Arm	31-600367-11

M2A Magnum Surgical Technique	FLH171 (10/05)
M2A Magnum Product Rationale	FLH172 (10/05)
ReCap Surgical Technique	FLH156 (09/2006)
ReCap Product Rationale	FLH155 (10/2005)
ReCap Technical Design Rationale	FLH174 (10/2005)
ReCap/Magnum X-ray Template Set (T1)	31-600470
ReCap/Magnum X-ray Template Set (T12/14)	31-600473

References

- 1) SOME ANATOMICAL AND MECHANICAL CONSIDERATIONS RELEVANT TO THE SURFACE REPLACEMENT OF THE FEMORAL HEAD
Freeman mar. Clinical Orthopaedics, 1978; 134:19-24
- 2) FEMORAL NECK FRACTURES FOLLOWING BIRMINGHAM HIP RESURFACING
Schimmis et al. JBJS 2005; 87b: 19-24
- 3) DATA COLLATED AT BACK TO THE FUTURE HIP SYMPOSIUM, BARCELONA, 2005.
- 4) VALIDATION OF A FEMORAL RESURFACING ALIGNMENT DEVICE USING COMPUTER AIDED NAVIGATION
A Phadnis, K Singhal*, V Pitkänen, A Turner, 2006*
- 5) FEMORAL RESURFACING COMPONENT POSITION USING AN ALIGNMENT DEVICE VERSUS COMPUTER AIDED NAVIGATION
A Phadnis, K Singhal*, V Pitkänen, A Turner*