ZIMMER BIOMET

Z1™ Femoral Hip System

Surgical Technique

INTENDED USE

The Z1 Hip System is intended for total or hemi hip arthroplasty.

INDICATIONS

1. Advanced wear of the joint due to degenerative, post-traumatic or rheumatic diseases.
2. Failed previous hip surgery including joint reconstruction (osteotomy), arthrodesis, hemi-arthroplasty or total hip replacement (THR).
3. Acute traumatic fracture of the femoral head or neck.
4. Avascular necrosis of the femoral head.

Z1 Hip System is for cementless use only.

CONTRAINDICATIONS

1. Acute, chronic, local, or systemic infections.
2. Severe muscular, neural, or vascular diseases that endanger the limbs involved.
3. Lack of bony structures proximal or distal to the joint, so that good anchorage of the implant is unlikely or impossible.
4. Total or partial absence of the muscular or ligamentous apparatus.
5. Any concomitant diseases that can jeopardize the functioning and the success of the implant.
6. Allergy to the implanted material, especially to metal (e. g., cobalt, chromium, nickel, etc.).
7. Local bone tumors and/or cysts.
8. Pregnancy.
9. Skeletal immaturity.

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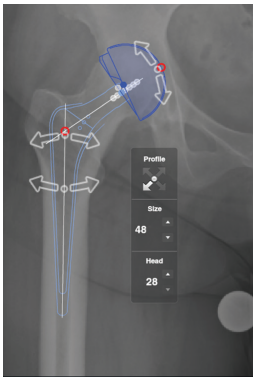

Step 1:
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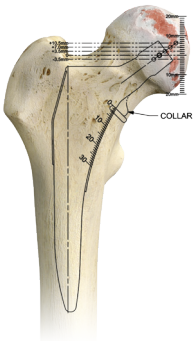

Step 2:
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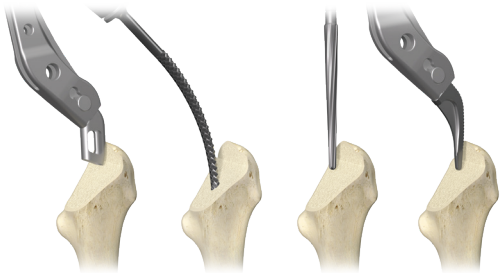

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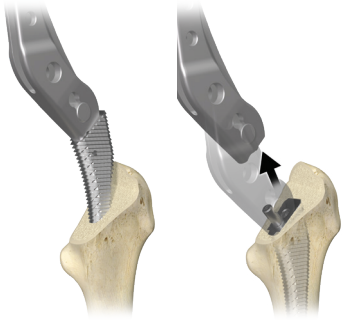

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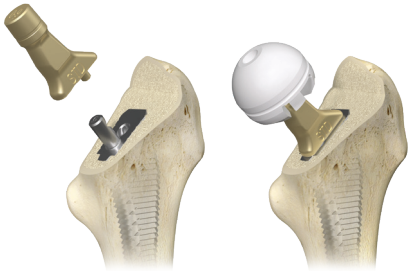

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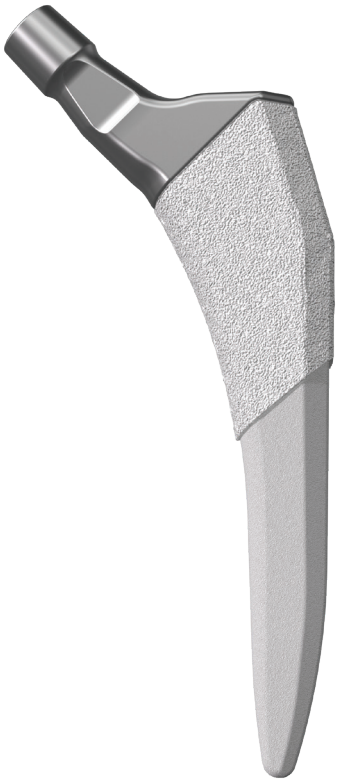
Cementless Collared



Cementless Collarless

System Overview

The Z1 Hip System includes two different implant bodies.

- Cementless Collared,
- Cementless Collarless,

The cementless implants come in Standard (135 degrees), High offset (135 degrees), and Coxa Vara (126.5 degrees) neck options.

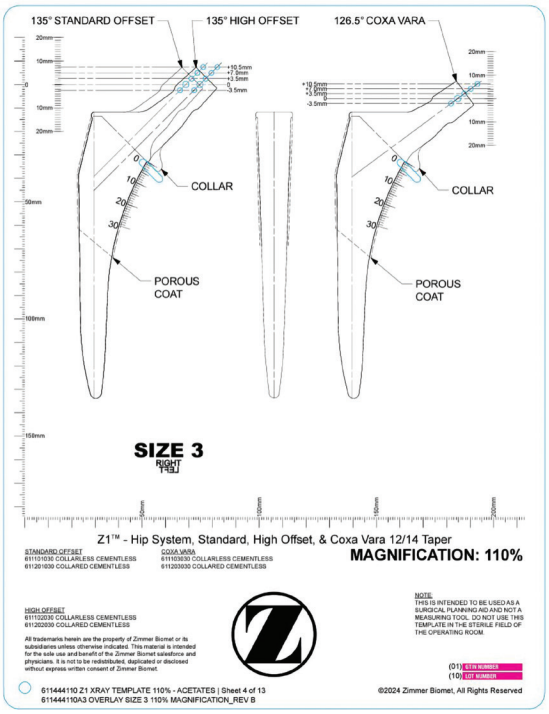


Figure 1

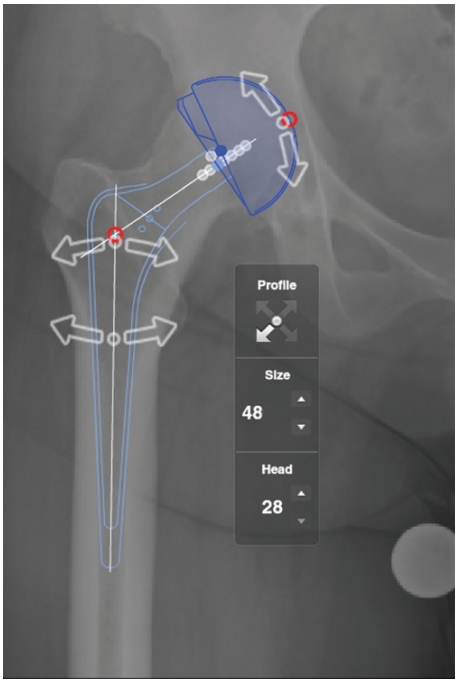


Figure 2

Pre-operative Planning

The objectives of pre-operative planning are to define:

- Pre-operative leg length
- Acetabular component size and position
- Femoral component size and neck variant
- Femoral offset and center of rotation

The Z1 Hip System provides X-ray templates with 100%, 110%, 115%, and 120% magnification (Figure 1). It is recommended to use a radiographic marker to assess the X-ray magnification and select the appropriate template. It is also recommended that templates are positioned over the AP X-rays to best decide the correct implant size and center of rotation.

Digital Pre-operative Planning

Z1 Hip System digital templates are available through various digital template providers. When using digital templating for a primary total or hemi hip arthroplasty, it is necessary to use a magnification marker with a known dimension. This is required to calculate the correct magnification.

Once the correct magnification has been established, the digital templating system can be used to determine the optimal implant size and center of rotation (Figure 2).

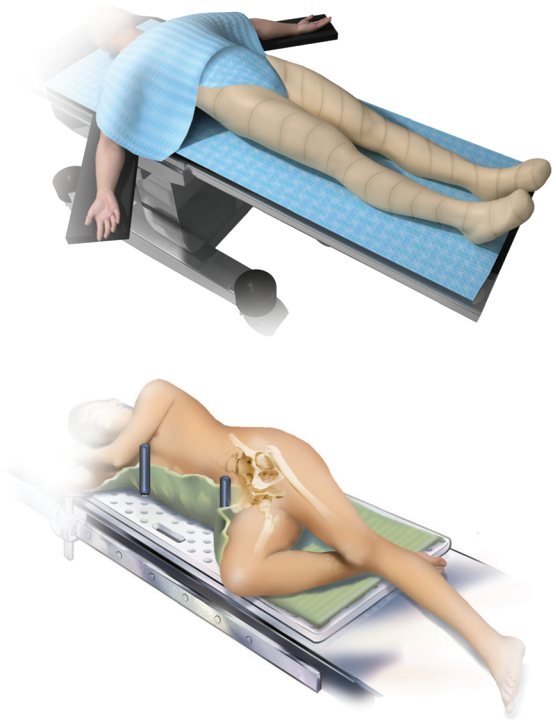


Figure 3

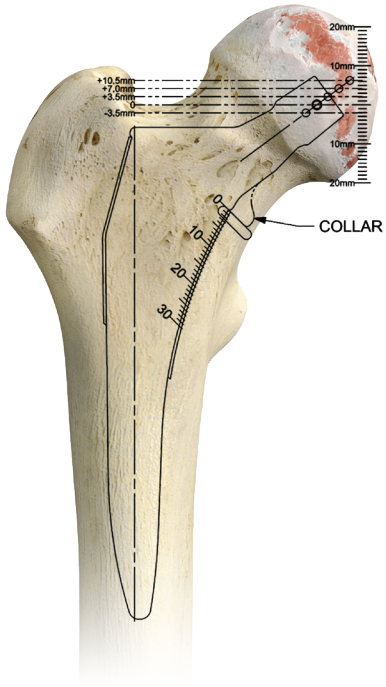


Figure 4

Patient Positioning/ Surgical Exposure

The Z1 Hip System femoral components can be implanted using any of the standard approaches for total or hemi hip replacement (Figure 3).

Femoral Neck Resection

Depending on the surgeon's preference and surgical approach, the neck cut can be made prior to or after dislocation. The neck cut can also be made at different heights in line with the surgeon's preoperative plan (Figure 4).

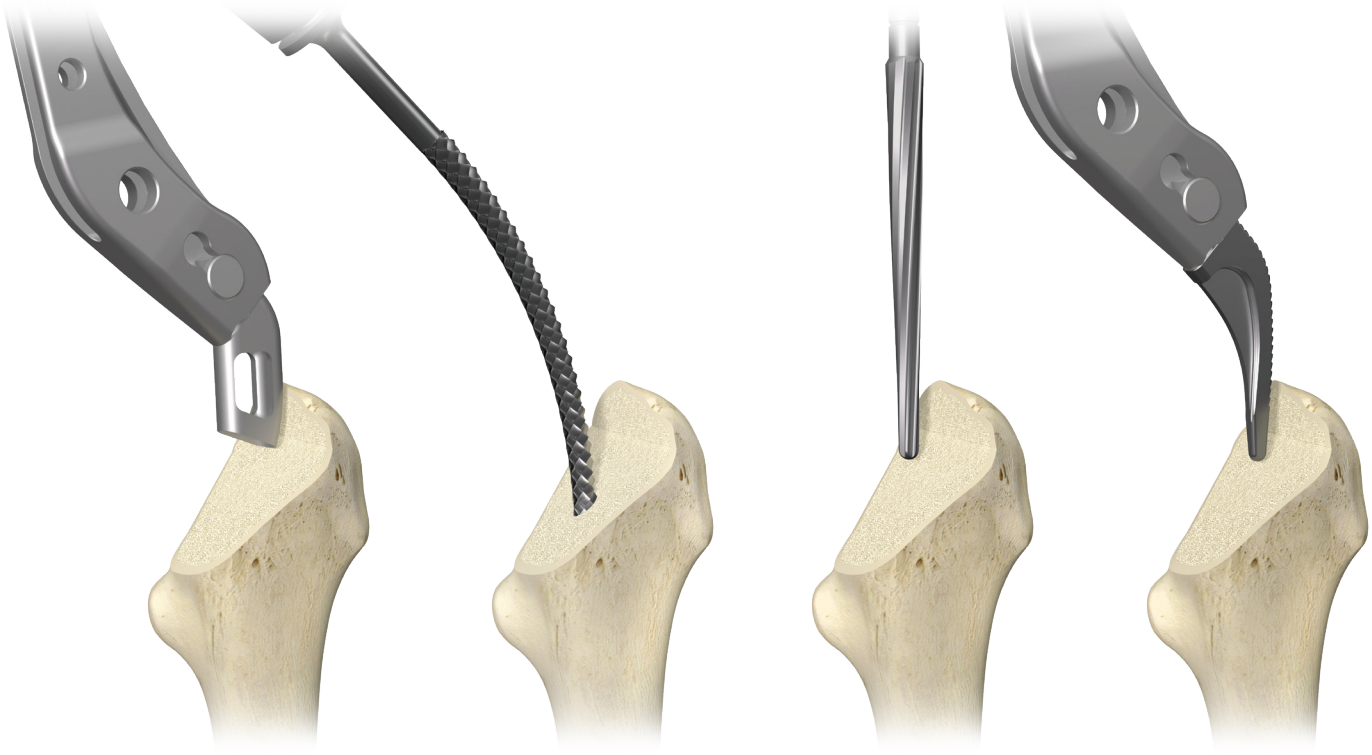


Figure 5 Figure 6 Figure 7 Figure 8

Femoral Canal Opening

Multiple instruments are available to initiate entry into the femoral canal including Modular Box Osteotome (Figure 5), Honey Badger Rasp (Figure 6), Starter Awl (Figure 7), and Reverse Toothed Rasp (Figure 8).

Note: Use caution to not remove too much bone outside of the intended broach and implant envelope.

Figure 9

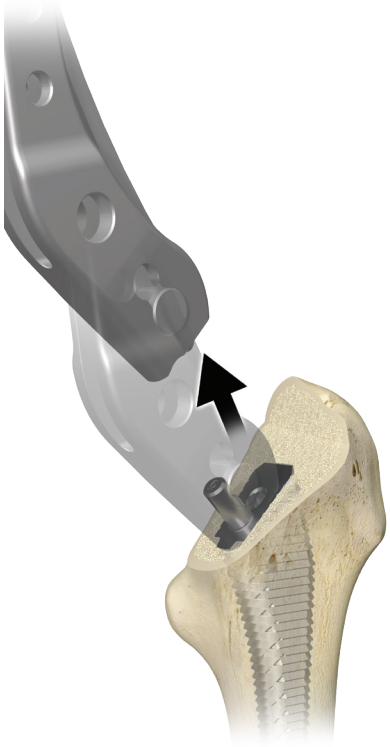


Figure 10

Figure 11

Femoral Canal Preparation

Begin femoral preparation with the Starter Broach paying attention to the native anteversion (Figure 9). Broach in sequential fashion and until stability is achieved (Figure 10). Avoid excessive rotation of the broach while entering and exiting the femoral canal in order to limit removing excessive anterior and posterior cancellous bone.

Calcar Preparation

A calcar planer is available for use. With the final broach fully seated, place the calcar planer over the broach post and advance it until reaching the broach face (Figure 11).

Note: Put the calcar planer in motion before engaging it with the bone. Advance the planer gently to avoid applying excessive force on the bone.

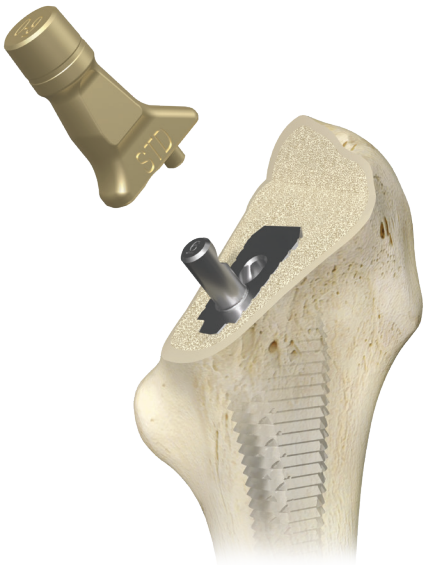


Figure 12

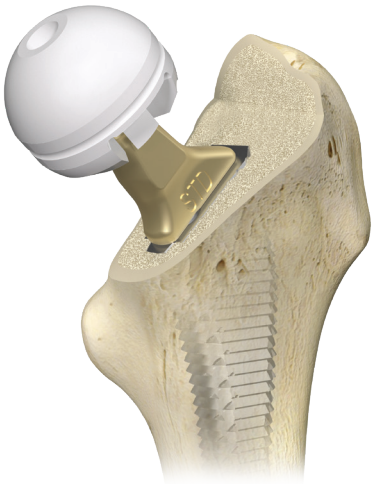
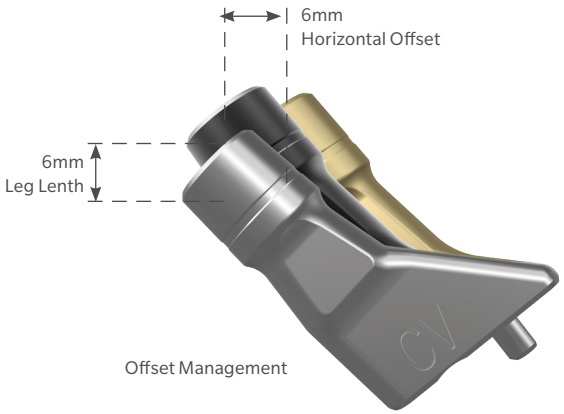


Figure 13

Trial Reduction

With the final broach in place, select the appropriate provisional neck (Standard Offset, High Offset or Coxa Vara) and assemble it onto the broach (Figure 12).

Color Coding – Stem Variant	
Gold	Standard Offset (STD) (135˚)
Black	High Offset (HO) (135˚)
Silver	Coxa Vara (CV) (126.5˚)



Offset Management

Once the provisional neck is in place, select the correct provisional head size and position it onto the provisional neck (Figure 13). Perform the trial reduction and if necessary, repeat the procedure with different head offsets.

Note: There is a 3.5 mm increase in neck lengths between the core sizes (0 to 9) and macro sizes (10 to 12).

- Horizontal offset: 6 mm shift between STD and HO or Coxa Vara.
- Vertical offset: 6 mm shift between STD and HO or Coxa Vara.

Note: Assemble the provisional head by hand. Do not use an impaction force to seat the provisional head onto the provisional neck.

Figure 14a

Figure 14b

Cementless Femoral Implant Insertion

The definitive implant must correspond to the last broach used. Start inserting the femoral component into the femoral canal by hand, and finish seating with the preferred stem impactor (Figures 14a and 14b).

Make sure to drive the final implant into the femur following the path of the prepared canal, using the preferred stem impactor until the stem is fully seated.

Figure 15

Figure 16

Cementless Femoral Implant Insertion (cont.)

If desired, a further trial reduction can be completed after implantation of the definitive femoral stem (Figure 15).

Note: Assemble the provisional head by hand. Do not use an impaction force to seat the provisional head onto the stem during the trial reduction.

Head Impaction

Before impacting the final femoral head, carefully clean and dry the taper of the stem.

Fully seat the modular head by means of firm axial impaction utilizing the femoral head impactor and mallet (Figure 16).

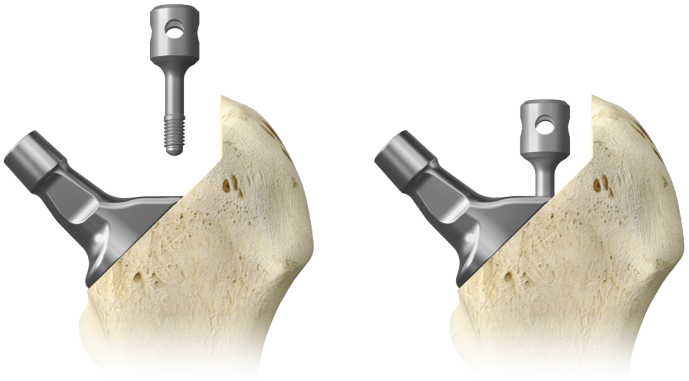


Figure 17a

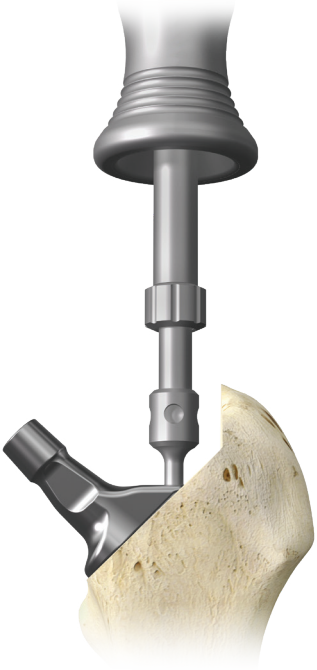


Figure 17b

Intraoperative Stem Repositioning or Removal

Should a stem require intra-operative removal for re-implantation, only extraction instruments that engage the M6 thread should be used.

To do this, assemble the M6 Extractor with Hex to the slap hammer and the implant (Figure 17a). Pull out the stem in line with the femoral axis by using the slap hammer (Figure 17b).

Generic acetabular screw forceps and a 3.5 mm hex driver can be used to aid in assembling the extractor adapter to a stem.

Notes

This material is intended for health care professionals. Distribution to any other recipient is prohibited.

For product information, including indications, contraindications, warnings, precautions, potential adverse effects and patient counseling information, see the package insert and www.zimmerbiomet.com.

Please refer to the Instructions for Use and the package insert to the products to be used with this Surgical Technique.

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Caution: Federal (USA) law restricts this device to sale by or on the order of a physician. Rx only.

For Ordering Information please refer to document 4740.X-US-en.

ZIMMER BIOMET

EC REP **Legal Manufacturer**
Zimmer, Inc.
1800 West Center Street
Warsaw, Indiana 46580
USA

Distributed by
Zimmer, Inc.
1800 West Center Street
Warsaw, Indiana 46580
USA

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