UNITED ORTHOPEDIC®

U2™ Revision Stem

Revision Femoral Hip System

Surgical Technique Guide

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Device Description

U2 Revision Stem –

The U2 Revision Stem is a monoblock fully Titanium Plasma Spray (TPS) coated cylindrical stem optimized for revision hip arthroplasty.

The design rationale of the U2 Revision Stem is based on primary U2 Hip stem. It has the basic neck geometry concept and also uses the tri-wedge geometry to achieve implant stability, similar to the primary system. However, the revision system offers a shorter neck offset design than the primary system to facilitate joint reduction in revision patients. 180 mm and 230 mm stem length options with Ø11 mm to Ø18 mm distal diameter are available to allow for treatment of patients with bone deficiency and anatomy variations.

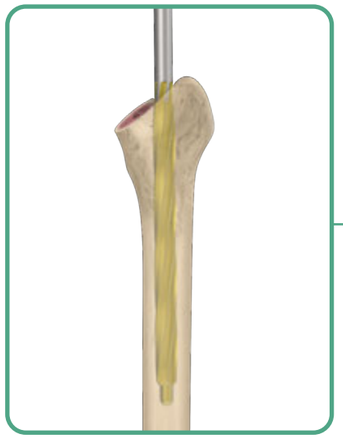
INDICATIONS

1. Non-inflammatory degenerative joint disease such as osteoarthritis, avascular necrosis, ankylosis, protrusio acetabuli, and painful hip dysplasia.
2. Inflammatory degenerative joint disease such as rheumatoid arthritis.
3. Correction of function deformity.
4. Revision procedures where other treatments or devices have failed.
5. Treatment of nonunion, femoral neck and trochanteric fractures of the proximal femur with head involvement that is unmanageable using other techniques

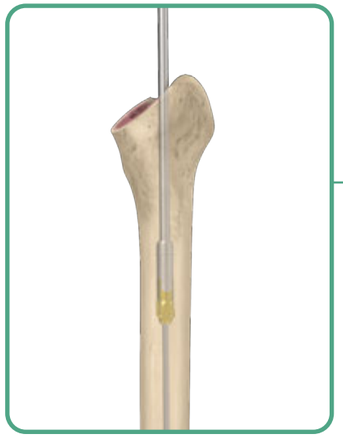
This device is a single use implant and intended for cementless use only.

Please refer to the package inserts for important product information, including, but not limited to contraindications, warnings, precautions, and adverse effects.

Surgical Overview



Straight stem

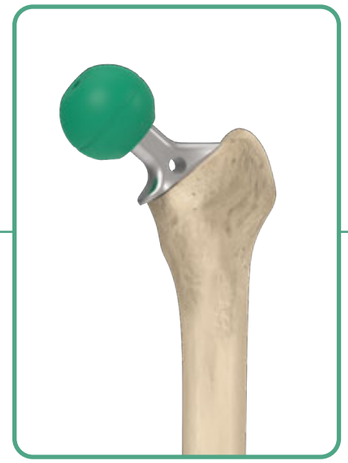


Curved stem

A. Canal Reaming

B. Canal Broaching

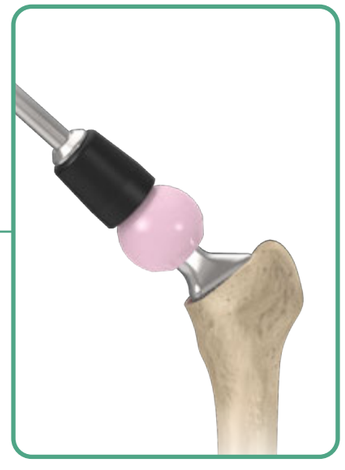
C. Calcar Preparation



D. Trial Reduction

E. Stem Insertion

F. Stem Impaction



G. Femoral Head Impaction

Preoperative Planning and Templating

Preoperative planning is essential for determining the optimal stem size and the appropriate femoral offset. If necessary, special needs such as allograft, wire, and plate fixation can be determined through a radiographic review. In addition, during radiographic assessment, any acetabular reconstruction may have to be considered.

It is recommended to pre-operatively template the prosthesis size that best fits the metaphysis canal area. Templates show the neck length and offset for each of the head/neck combinations (-3 to +10 mm, depending on head material and diameter).
The final determination of implant choice should take into account the acetabular cup position, cup size, and hip center.

A. Canal Reaming

Canal Reaming for a Straight Stem:

After removal of the previous stem, cement, and debris, the femoral canal is gradually reamed by attaching the **T-handle** or power device to the **Straight Reamer**.

Based on the stem size determined preoperatively, start reaming with the smallest size or at least 2 mm smaller than predicted stem size until appropriate depth is obtained.

Offered reamer size increments are 0.5 mm in diameter. It is recommended that at least 0.5 mm press-fit is achieved for normal bone quality. Occasionally, line-to-line reaming may be required to attend to hard bone.

Instruments

T-Handle

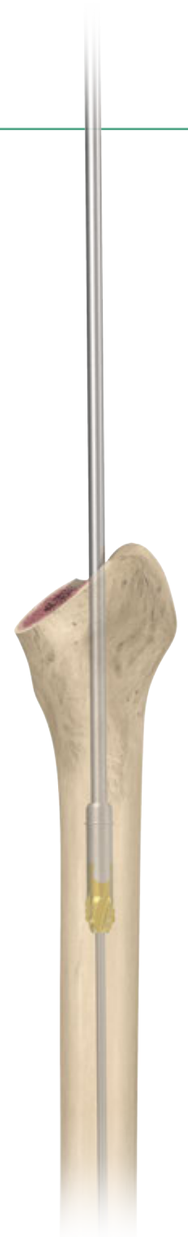
Revision Hip Stem Straight Reamer

A. Canal Reaming

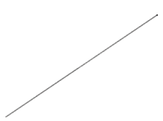
Canal Reaming for a Curved Stem:

When preparing the femoral canal for a 230 mm curved stem, utilize the flexible reaming assembly (**Guide Wire, Flexible Reamer Shaft** and **Flexible Reamer Head**) to follow the natural bow of the femur.

Advance the flexible reamer into the canal, making sure it passes through diaphysis. Fluoroscopy may be used to ensure the appropriate depth and direction during reaming process. Sequentially ream in 0.5 mm increments until the appropriate diameter and depth is achieved.



Instruments



Guide Wire

Flexible Reamer Shaft

Flexible Reamer Head

B. Canal Broaching

After reaming is completed, utilize the **Broach** that is 2 to 3 sizes smaller than the pre-determined implant size to shape the canal.

Sequentially enlarge the canal with **Broach** and assess the fit and determine whether broaching and reaming should be continued, or having some bone graft at proximal femur is needed. Continue the reaming and broaching process until the ideal size is achieved. It is important that the final broach should fill the prepared femoral canal.

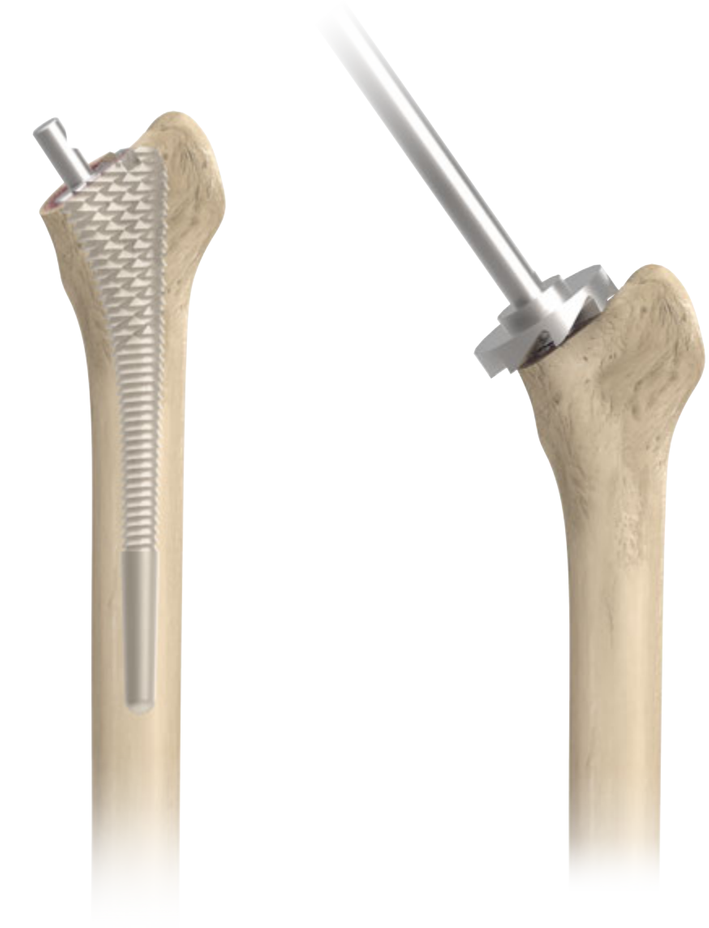
Instruments

Revision Hip Stem Broach

Broach Handle

C. Calcar Preparation

When the final broach is seated, utilize the **Calcar Reamer** and guide the reamer over the **Broach** trunnion ensuring that the **Calcar Reamer** is axially aligned with the trunnion and is stable.



Instruments

Revision Hip Stem Broach

Calcar Reamer

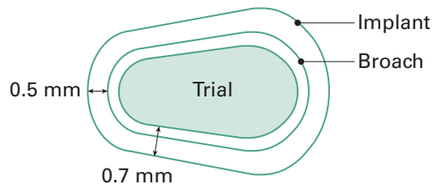
D. Trial Reduction

Select the appropriate **Stem Trial** for the preparation of femoral canal. If any resistance is felt during stem trial insertion, there may be a need for additional reaming or broaching to remove obstructing bone until the **Stem Trial** can be fully seated.
Perform the trial reduction using the **Femoral Head Trial** with desired diameter and neck length.
If required, any correction of selected implant size can be made during the reassessment of leg length and joint biomechanics.

Optionally, if a straight stem is selected, the surgeon may leave the final broach for trial reduction.

Note:
To prevent destruction of the press-fit mechanism, the dimension of stem trial is reduced by 0.2 mm in diameter when compared with the size matched broach. As shown below, the U2 revision hip instrumentation design provides a 0.5 mm interference between the real implant and the broach to enable stable initial fixation.

Size Comparison



Instruments

Revision Hip Stem Trial

Revision Hip Stem Broach

Neck Trial

Femoral Head Trial

E.Stem Insertion

After trial reduction, remove the head trial and stem trial and introduce the stem by using the **Quick Connect Holder**. Use the holder to firmly attach the stem via the insertion hole on the stem shoulder.

Gently tap the holder to achieve initial stem implantation into the medullary canal.

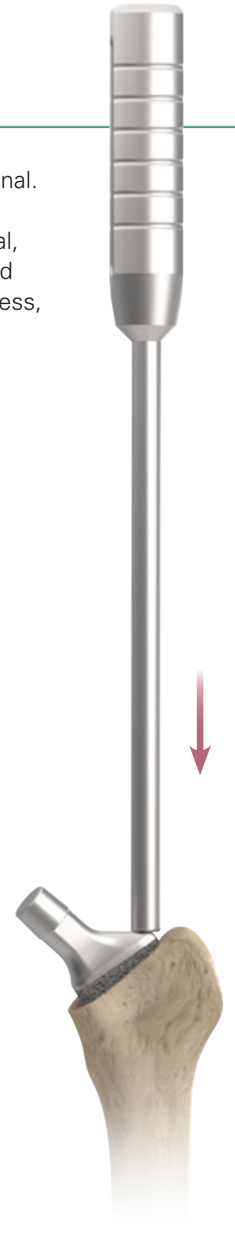
Note:
If utilizing a curved hip stem, make sure the selected implant is designated as a “Left” or “Right” indicated side. The mark on the top of the trunnion of the neck indicates a left or right stem style by “LT” or “RT”, respectively.

Instruments

U2 Quick Connect Holder

F.Stem Impaction

Use **Stem Impactor** to further advance the stem into the canal. Care should be taken to orient the stem with proper version during impacting. If it is difficult to impact the stem into canal, stop striking and remove the implant. Reassess the canal and remove additional bone by re-reaming and re-broaching process, and insert the stem again.



Instruments

Stem Impactor

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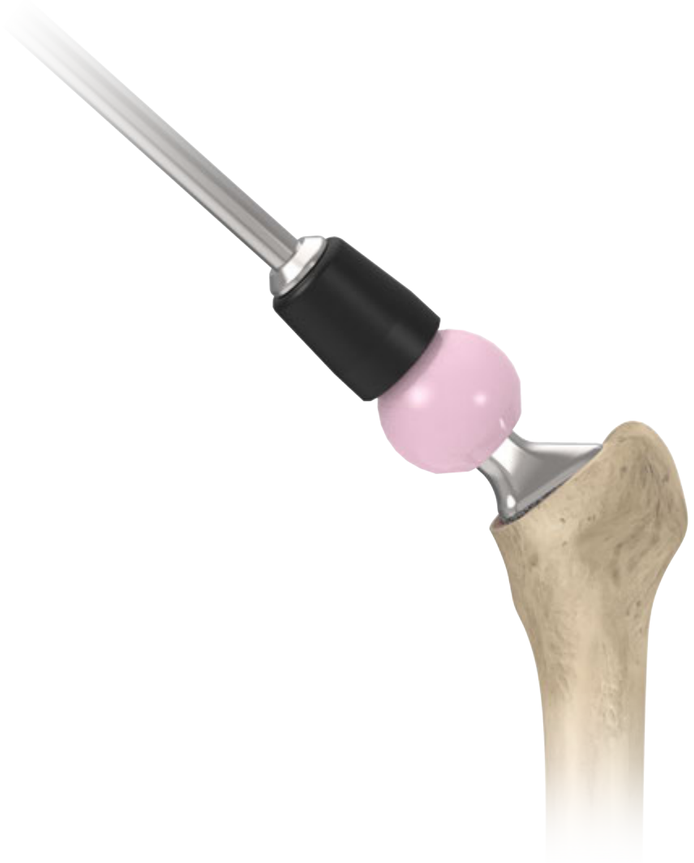
G.Femoral Head Impaction

Perform a final trial reduction to confirm stability and leg length by using the **Femoral Head Trials**. After the appropriate femoral head size has been determined, place it onto the cleaned and dried trunnion by hand.

Connect the **Femoral Head Impactor** and **Universal Handle** and moderately impact the femoral head until it is firmly seated.



Instruments

Femoral Head Trial

Femoral Head Impactor

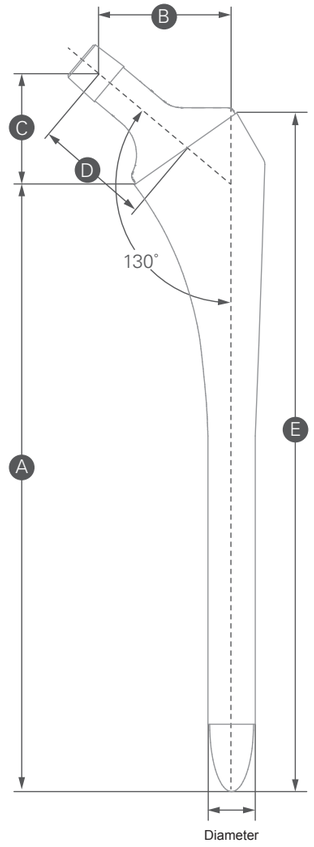
Universal Handle

Each Step
We Care

Order Information

U2 Revision Stem

Catalog Number		Description
Straight		
1104 - 1611		Ø 11
1104 - 1612		Ø 12
1104 - 1613		Ø 13
1104 - 1614		Ø 14
1104 - 1615		Ø 15
1104 - 1616		Ø 16.5
1104 - 1618		Ø 18
Curved		
Left	Right	
1104 - 1711	1104 - 1811	Ø 11
1104 - 1712	1104 - 1812	Ø 12
1104 - 1713	1104 - 1813	Ø 13
1104 - 1714	1104 - 1814	Ø 14
1104 - 1715	1104 - 1815	Ø 15
1104 - 1716	1104 - 1816	Ø 16.5
1104 - 1718	1104 - 1818	Ø 18



Diameter	A Medial Length	B Offset	C Vertical Height	D Neck Length	E Lateral Length
Straight					
Ø11	180	35	24.6	27	199
Ø12	180	35	25.6	27	200
Ø13	180	40	31.5	35	200
Ø14	180	40	32.9	35	203
Ø15	180	40	33.4	35	204
Ø16.5	180	45	37.0	41	204
Ø18	180	45	36.7	41	205
Curved					
Ø11	230	35	24.6	27	249
Ø12	230	35	25.6	27	250
Ø13	230	40	31.5	35	250
Ø14	230	40	32.9	35	252
Ø15	230	40	33.4	35	254
Ø16.5	230	45	37.0	41	254
Ø18	230	45	36.7	41	254

Unit: mm

Femoral Head

	Catalog Number	Description (mm)	
U2 Femoral Head	1206 - 1122	* Ø 22	+ 0
	1206 - 1322	* Ø 22	+ 3
	1206 - 1522	* Ø 22	+ 6
	1206 - 1722	* Ø 22	+ 9
	1206 - 1026	Ø 26	- 2
	1206 - 1126	Ø 26	+ 0
	1206 - 1326	Ø 26	+ 3
	1206 - 1526	Ø 26	+ 6
	1206 - 1726	Ø 26	+ 9
	1206 - 1028	Ø 28	- 3
	1206 - 1128	Ø 28	+ 0
	1206 - 1228	Ø 28	+ 2.5
	1206 - 1428	Ø 28	+ 5
	1206 - 1628	Ø 28	+ 7.5
	1206 - 1828	Ø 28	+ 10
	1206 - 1032	Ø 32	- 3
	1206 - 1132	Ø 32	+ 0
	1206 - 1232	Ø 32	+ 2.5
	1206 - 1432	Ø 32	+ 5
	1206 - 1632	Ø 32	+ 7.5
	1206 - 1832	Ø 32	+ 10
	1206 - 1036	Ø 36	- 3
	1206 - 1136	Ø 36	+ 0
	1206 - 1236	Ø 36	+ 2.5
	1206 - 1436	Ø 36	+ 5
	1206 - 1636	Ø 36	+ 7.5
	1206 - 1836	Ø 36	+ 10

* The actual spherical diameter of a 22 mm metal head is 22.2 mm.

Femoral Head

	Catalog Number	Description (mm)		
BIOLOX® *delta* Ceramic Head	1203 - 5028	Ø 28	S	- 2.5
	1203 - 5228	Ø 28	M	+ 1
	1203 - 5428	Ø 28	L	+ 4
	1203 - 5032	Ø 32	S	- 3
	1203 - 5232	Ø 32	M	+ 1
	1203 - 5432	Ø 32	L	+ 5
	1203 - 5632	Ø 32	XL	+ 8
	1203 - 5036	Ø 36	S	- 3
	1203 - 5236	Ø 36	M	+ 1
	1203 - 5436	Ø 36	L	+ 5
	1203 - 5636	Ø 36	XL	+ 9
	1203 - 5040	Ø 40	S	- 3
	1203 - 5240	Ø 40	M	+ 1
	1203 - 5440	Ø 40	L	+ 5
	1203 - 5640	Ø 40	XL	+ 9

*BIOLOX® is a registered trademark of the CeramTec Group, Germany

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