

EXACTECH | HIP

Operative Technique



NOVATION[®]
Comprehensive Hip System

**Tapered and
Splined Press-Fit Stems
Cemented Femoral Stems**

*Renewing Innovations.
Enduring Solutions.*



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INTRODUCTION

Like the art of fine woodworking, the Novation® Comprehensive Hip System design began with the end in mind. Before launching into development, Exactech's engineers and design team surgeons established a comprehensive plan. Their goal: to provide a system of femoral stems, acetabular components and surgical instrumentation that would address any situation encountered during primary total hip replacement.

They let science be their guide and conducted an extensive research review to identify the best of the best in design and materials. These proven features were blended with masterfully crafted innovations. The result: a comprehensive hip system that provides stable reconstruction of the widest range of anatomies, state-of-the-art bearing surfaces and low profile instrumentation and implants that are compatible with a multitude of surgical approaches.

DESIGN PHILOSOPHIES - SCIENCE FIRST

The Novation Comprehensive Hip System features both splined and tapered press-fit femoral stems as well as collared, matte finish cemented stems. All stems within the Novation high-demand, primary hip platform are available in a standard and extended offset.

UNIVERSAL FEATURES

All Novation high-demand femoral stems also share many mutual design features. The neck flats increase the range of motion of the stem before the potential for impingement and dislocation can occur. A 12/14 taper allows coupling with a wide range of bearing surfaces. The highly polished neck is intended to reduce the generation of polyethylene wear particles during incidental impingement.

PRESS-FIT STEMS

Novation tapered and splined designs are manufactured from a proprietary forged titanium alloy and are proximally coated with titanium plasma spray, which uses advanced manufacturing technologies.

The Novation Tapered stems share many attributes of other clinically successful tapered stems. Tapered stems rely on proximal fixation and three-point contact for initial stability. The dual-taper design, with a gradual 3-degree taper in the M/L plane and a more rapid transition (5-degree taper) in the A/P plane, accommodates the anterior bow of the femur while providing the wedge effect needed for stability.

The Novation Splined stems share the same proximal geometry as the Tapered stem. However, the distal portion of the stem incorporates a coronal slot and highly polished splines. The coronal slot increases stem flexibility while the splines add rotational stability when engaged with the diaphysis.

In addition to the standard distal geometry of the Splined stems, the Splined RDD (Reduced Distal Diameter) option allows the stem to be used with femoral anatomy exhibiting smaller diaphyseal canals, allowing the preservation of the diaphyseal cortices while maximizing the proximal fixation in the metaphysis.

CEMENTED STEMS

The Novation Cemented femoral stems are designed to utilize the same instruments used with the press-fit femoral stem preparation. This allows for simple preparation and ease of intra-operative transition to a cemented stem, should the need arise. Features such as the cobra flange, longitudinal grooves, medial collar and distal centralizer are designed to help optimize cement pressurization and stem placement. In addition, the offset and leg length of the corresponding press-fit stems are identical, allowing for accurate replication of leg length and offset following trial reduction.

PRE-OPERATIVE PLANNING

TOOLS

- A/P and lateral radiographs
- Pencil that will not damage radiograph
- Straight edge
- Novation templates with 120 percent magnification rule
- Goniometer/protractor

Traditional templating methods may be used. For an estimated determination of required offset, vertical limb length and stem size, the following detailed templating method may be used to help guide the surgeon in final implant choice.

Note: For digital templating, follow the software manufacturer's instructions for use while following the instructions regarding placement and implant fit.

ESTABLISHMENT OF REFERENCE POINTS

On the radiograph, a straight line is drawn across the bottom of the pelvis touching both ischial tuberosities equally. The line is extended far enough to reach each lesser trochanter. Such a line should be perpendicular to the vertically oriented pubic symphysis. If the line is not vertically oriented, it should be confirmed that the patient's pelvis was not tilted when the radiograph was taken. If the ischial tuberosities are poorly defined, the line should be drawn through the most inferior portion of both obturator foramina or the inferior aspect of both teardrops. Templating is recommended to determine the unique anatomic and mechanical features of the patient, and to establish pre-operative reference points that assist in the reconstruction of the patient's normal femoral anatomy.

DETERMINATION OF LIMB LENGTH

The Novation femoral template is positioned over the radiograph so that the central axis of the stem is in line with the central axis of the femoral canal.

The template should then be moved vertically until the desired neck length choice is approximately at the center of rotation of the templated acetabulum. **Note:** Most of the time the chosen prosthetic head (neck length) does not line up with the center of rotation of the acetabulum or even with a mark in the center of the femoral head. The appropriate lateral offset, either Standard or Extended, can be recorded at this time. The head usually is positioned proximal and medial to the center of rotation of the acetabulum. In effect, at the end of the operation the surgeon will be pulling on the limb and lifting the prosthetic femoral head into the acetabulum, thereby recreating the desired femoral offset and length.

When the template is in proper position, the level of the femoral neck cut is marked through the punch-outs provided on the template. The distance of the neck cut above the lesser trochanter can then be measured and recorded.

STEM SIZING

After placing the Novation templates on the radiograph over the proximal femur at the femoral height determined by the previous steps, the surgeon can choose a size that allows the desired canal fill. The template can now be used over the lateral radiograph to verify estimated size. In addition, notice that the broach cavity/cement mantle is indicated on the Cemented templates.

Note: Due to the Standard and Extended offset options and numerous neck lengths of the heads, final implant selection will be made intra-operatively.

The anticipated stem size can now be recorded.

CONTRAINDICATIONS FOR USE

Use of the Exactech Hip Systems is contraindicated in the following situations:

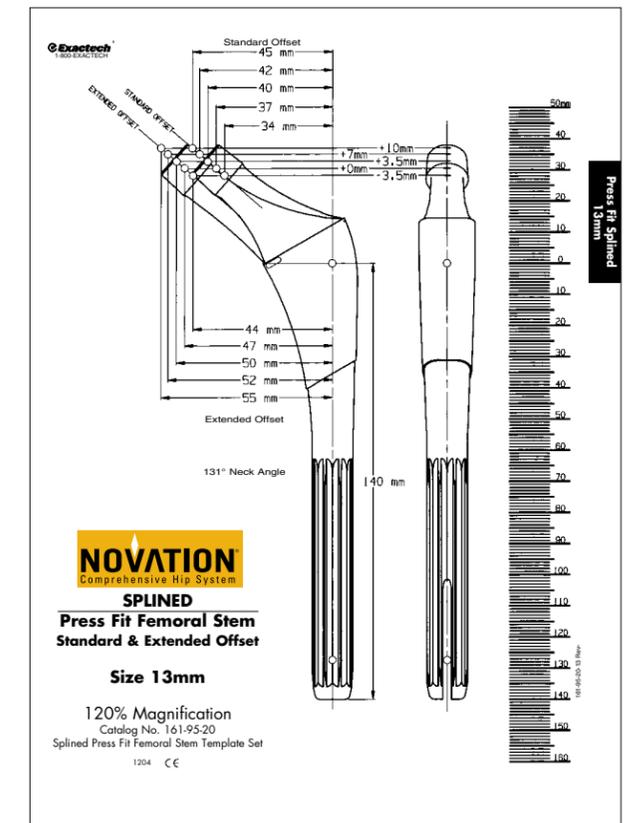
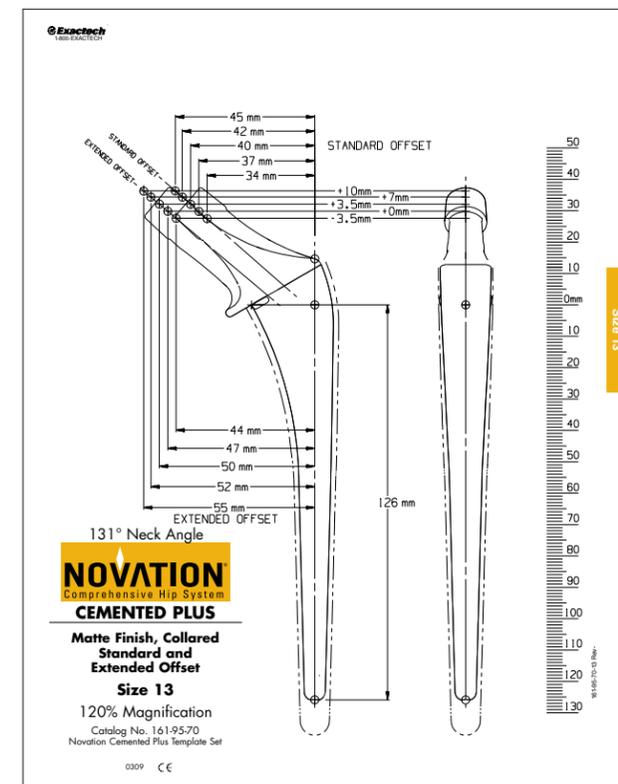
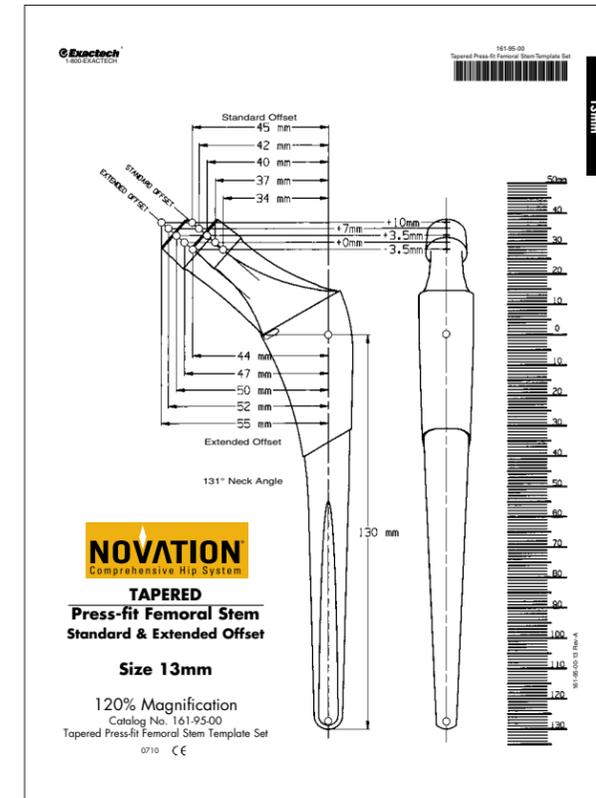
- Patients with suspected or confirmed systemic infection or a secondary remote infection.
- Patients with inadequate or malformed bone that precludes adequate insertion or fixation of the prosthesis.
- Patients with neuromuscular disorders that do not allow control of the joint.
- The unipolar and bipolar endoprotheses are also contraindicated for use in patients with evidence of degenerative changes in the acetabulum and/or pelvic fractures.
- Patient's age, weight or activity level would cause the surgeon to expect early failure of the system.

Note: For ceramic-on-ceramic articulation, please see additional package insert (700-096-070 Novation Ceramic AHS® System).

INDICATIONS FOR USE

All Exactech Hip Systems are indicated for use in skeletally mature individuals undergoing primary surgery for hip replacement due to osteoarthritis, rheumatoid arthritis, osteonecrosis, post-traumatic degenerative problems of the hip and for treatment of proximal femoral fractures where prosthetic replacement is determined by the surgeon as the preferred treatment. Components of Exactech Hip Systems are also potentially indicated for ankylosing spondylitis, congenital hip dysplasia, revision of failed previous reconstructions where sufficient bone stock is present and to restore mobility resulting from previous fusion.

- Cemented femoral stems and cemented acetabular cups are intended for cemented fixation only.
- Press-fit femoral stems and acetabular cups are intended for press-fit fixation.
- Femoral heads and endoprotheses are intended for use in cemented and press-fit applications.



OPERATIVE TECHNIQUE OVERVIEW



1
Osteotomy Guide
Placement and
Femoral Head
Resection



2
Opening of the
Proximal Femur
with Round
Osteotome



3
Entry into
Femoral
Canal



6
Broach Insertion



7
Calcar Planing



8
Neck and Head
Trial Placement



4
Lateralizing the
Femoral Canal
(Optional)



5a
Tapered Reaming of the Femoral Canal
(when using Novation Tapered)



5b
Straight Reaming of the
Femoral Canal (when
using Novation Splined)



9
Determining Canal Diameter with
Centralizer Sizer (when using
Novation Cemented Plus)



10
Femoral Stem Insertion
(Press-Fit shown)



11
Femoral Head Impaction

DETAILED OPERATIVE TECHNIQUE

APPROACH AND EXPOSURE

The Novation femoral stems are compatible with any standard surgical exposure. In this operative technique, the posterolateral approach is described.

DISLOCATION AND OSTEOTOMY

Hip Dislocation

The hip should be dislocated by flexion, adduction and internal rotation. Placing a bone hook around the femoral neck may help in difficult cases. Soft tissues along the intertrochanteric line to the proximal border of the lesser trochanter should be cleared. When tight, the gluteus maximus tendon may be released to improve exposure. The limb should be positioned at 90 degrees internal rotation of the hip.

Femoral Head Resection

The **12/14 Osteotomy Guide** is aligned with the femur by either palpating the femur through the muscles or directing the 12/14 Osteotomy Guide toward the center of the popliteal fossa.

The level of the femoral osteotomy site that was determined in pre-operative templating is marked (*Figure 1*). This mark is most often 5-20mm above the proximal border of the lesser trochanter. Natural varus hips tend to have low-neck cuts. The neck cut may be as low as the level of the lesser trochanter. Conversely, valgus hips tend to have higher neck cuts.

If additional mobilization of the femur is needed, an anterior capsulotomy may be performed at this point.

FEMORAL PREPARATION

Opening of the Femoral Canal

When using the posterolateral approach, the femur should be placed in 90 degrees of internal rotation and mild flexion. Retractors should be positioned to expose the proximal femur. The **Round Osteotome** is then used to create a portal into the femoral canal (*Figure 2*).

Initial entry into the femoral canal is made with the **T-Handle Starter Reamer** (*Figure 3*), which is inserted into the canal until the cutting edges begin to engage in the medial aspect of the greater trochanter.



Figure 1
Osteotomy Guide Placement
and Femoral Head Resection



Figure 2
Opening of the Proximal
Femur with Round
Osteotome



Figure 3
Entry into Femoral Canal



Figure 4
Lateralizing the Femoral
Canal
(Optional)

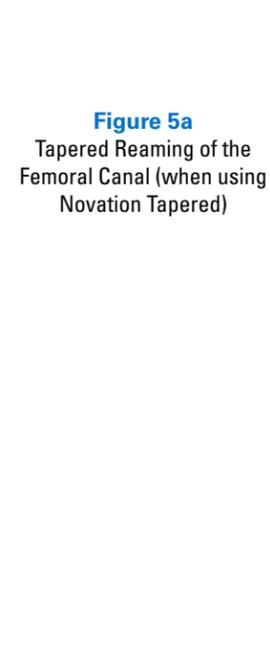


Figure 5a
Tapered Reaming of the
Femoral Canal (when using
Novation Tapered)

The T-Handle Starter Reamer is inserted into the canal until the cutting edges begin to engage in the medial aspect of the greater trochanter. Lateralizing the T-Handle Starter Reamer at this step assists in assuring neutral position in the femur. Alternatively, the **Straight End Cutting Starter Reamer** aids in opening of the femoral canal.

Lateralizing Reaming (Optional)

The **Novation Lateralizing Reamer** should be inserted into the canal until the appropriate markings are taken to the medial aspect of the osteotomy line to ensure that proper axial canal access is achieved during subsequent reaming and broaching (*Figure 4*). This lateralizing action assists in assuring neutral position in the femur. Note the stem size markings on the Novation Lateralizing Reamer correspond to the specific diameters of odd-sized Novation stems. If an even-sized Novation stem is templated, ream to the medial aspect of the osteotomy line stopping halfway between the two closest odd-sized markings. The blunt, non-cutting pilot of the instrument is designed to contact the inside of the femur without damaging or removing bone.

Tapered Reaming Technique (Suggested technique for Novation Tapered Stems)

It is recommended to use **Novation 3-Degree Tapered Reamers** when preparing the femur for Tapered femoral stems (*Figure 5a*). The tapered reaming step described here is performed prior to broaching. After initial entry into the femoral canal with the T-Handle Starter Reamer and lateralization, the Novation 3-Degree Tapered Reamers are used to identify and size the distal canal diameter. It is recommended that the Novation 3-Degree Tapered Reamers be used manually with the **Quick Release T-Handle**.

The markings on the Novation 3-Degree Tapered Reamer correspond to each specific Novation stem size. The bottom of the groove on the Novation 3-Degree Tapered Reamer shaft should be taken to the medial aspect of the osteotomy line to approximate correct reaming depth. **Proper alignment of the Novation 3-Degree Tapered Reamer along the long axis of the femur is important to ensure correct component positioning. Sequential tapered reaming is performed with progressive Novation 3-Degree Tapered Reamer sizes. Resistance and chatter from cortical engagement may be used as a signal to cease tapered reaming.**

**Straight Reaming Technique
(Suggested technique for Novation Splined Stems)**

It is recommended to straight ream and broach when preparing the femur for the Splined femoral stem. The straight reaming step described here is performed prior to broaching (Figure 5b). After initial entry into the femoral canal with the T-Handle Starter Reamer and lateralization, a **Straight Reamer** must be used to prepare for the cylindrical portion of the Novation Splined implants. It is recommended that the Straight Reamers be used manually with the Quick Release T-Handle.

Straight reaming is accomplished using the non-end cutting Straight Reamers ranging in diameter from 9.0mm to 18.5mm in 0.5mm increments. The markings on the Straight Reamer shaft should be taken to the medial aspect of the osteotomy line to approximate correct reaming depth. The markings are located at 130mm, 140mm, 150mm, 160mm and 200mm from the distal end of the Straight Reamer. Stem lengths can be found in *System Specifications*.

The splines on the final implant are 1mm larger than the nominal diameter of the Splined implants. For example, the nominal diameter of a standard 13mm Splined stem is 13mm, with the outer diameter measuring 14mm. This will enhance rotational stability of the final implant. The Novation Splined RDD has a nominal distal diameter that is 2mm smaller than the standard Splined femoral implants. The same amount of press fit due to the splines is still maintained as described above.

Straight ream sequentially, beginning with the smallest diameter reamer, until cortical contact is achieved. In order to prevent varus placement of the prosthesis, care should be taken to lateralize the Reamers proximally. Refer to (Table 1) to determine the final Straight Reamer/Novation Tapered Broach combination and final Splined implant selection.

Broach Technique and Broach Handle Assembly (Suggested technique for Novation Tapered, Splined and Cemented stems) (Figure 6).

The **Novation Broach Handle** is assembled to the Novation Tapered Broach by pulling back on the finger trigger, inserting the rectangular body of the Novation Broach Handle into the superior aspect of the Novation Tapered Broach and releasing the lever. Two Novation Broach Handles are available in order to assist in the procedure. Care should be taken to ensure that the assembly of the instruments is correct.



Figure 5b
Straight Reaming of the Femoral Canal (when using Novation Splined)

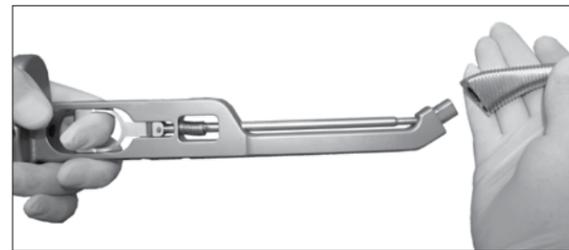


Figure 6
Broach and Broach Handle Assembly

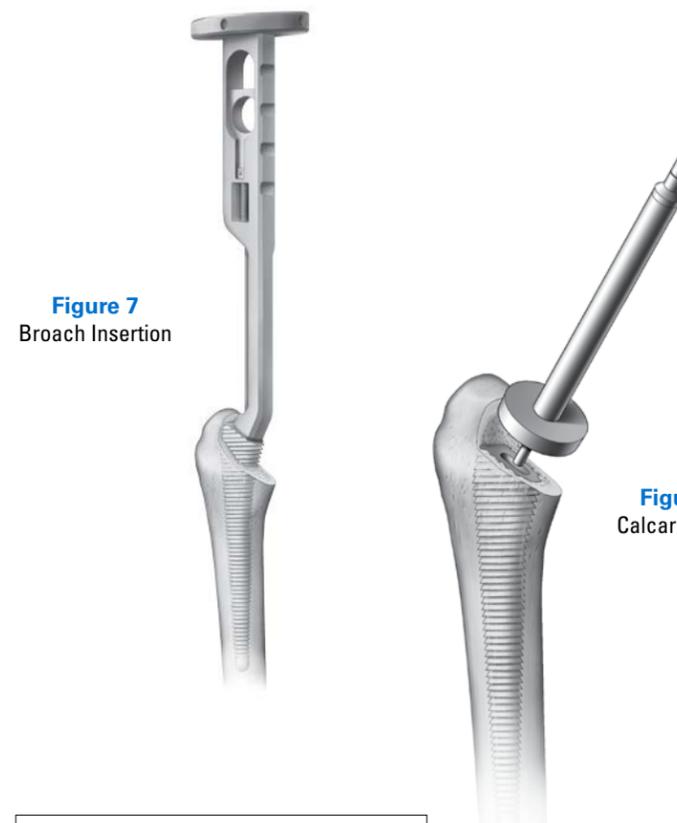


Figure 7
Broach Insertion

Figure 8
Calcar Planing

		Novation Tapered Broach										
		9	10	11	12	13	14	15	16	17	18	
Final Straight Reamer*	9.5	Splined 9		Splined RDD 11P/9D								
	10.5		Splined 10		Splined RDD 12P/10D							
	11.5			Splined 11		Splined RDD 13P/11D						
	12.5				Splined 12		Splined RDD 14P/12D					
	13.5					Splined 13		Splined RDD 15P/13D				
	14.5						Splined 14		Splined RDD 16P/14D			
	15.5							Splined 15		Splined RDD 17P/15D		
	16.5								Splined 16		Splined RDD 18P/16D	
	17.5									Splined 17		
	18.5										Splined 18	

Table 1
Use this table to determine which Novation Splined femoral implant is most appropriate based on the final Straight Reamer and Novation Tapered Broach chosen.

*Surgeons have found that reaming to 0.5mm greater than the minor diameter of the femoral stem facilitates insertion of the splined implant. This will still permit a slight press fit of the splines distally. Depending on bony anatomy and bone quality, the surgeon may choose to modify the straight reaming technique by 0.5mm more or less.

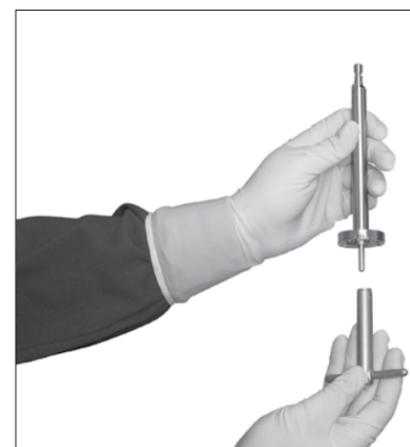


Figure 9
Calcar Planer Blade Replacement

The Novation Tapered Broach is inserted into the femoral canal in a few degrees of anteversion (Figure 7). Note that indicator markings have been placed on the strike platform of the Novation Broach Handle to aid in broach version. The surgeon should alternate impaction and withdrawal of the Novation Tapered Broach as the final size is approached. A **Slap Hammer** or mallet may be used to advance the Novation Tapered Broach.

When using a **press-fit stem**, begin broaching with a Novation Tapered Broach that is two sizes smaller than the last Reamer used. When the Novation Tapered Broach corresponding to the last Reamer used is in place, the final Novation Tapered Broach should be torque tested for rotational stability. If no perceived motion between the Novation Tapered Broach and the femur is identified, then the Novation Broach Handle is released from the Novation Tapered Broach for trialing. If the proximal fit of the Novation Tapered Broach is not adequate, the next larger Novation Tapered Broach is recommended. If an increase in Broach size is desired, an alternating ream then broach technique should be utilized until the Novation Tapered Broach that best fits the femur is determined.

When using a **cemented stem**, broaching is performed with progressive broach sizes, beginning with a smaller Novation Tapered Broach than the templated prosthesis; typically two sizes below the templated prosthesis.

Stem sizes and lengths can be found in *System Specifications*.

Calcar Planing
Calcar planing can be performed, if desired, in order to remove any bone that protrudes above the level of the impacted Novation Tapered Broach by guiding the **Universal Calcar Planer** into the hole on the superior surface of the Novation Tapered Broach (Figure 8).

Calcar Blade Replacement - If necessary, a **Replaceable Calcar Planer Blade** can be used to ensure proper removal of excess bone. Use the **Calcar Planer Blade Removal Tool** to remove the used Calcar Planer Blade, replace it with a new Calcar Planer Blade and tighten with the Calcar Planer Blade Removal Tool (Figure 9).

Note: While calcar planing, ensure that the calcar planer blade remains parallel to the face of the broach. Excessive bending forces applied to the calcar planer tip may cause it to fracture or wear.

TRIAL REDUCTION

Trial Component Insertion

The appropriate **Novation Offset Neck Trial** should be placed in the hole on the superior aspect of the Novation Tapered Broach. Be sure the correct size and offset (Standard or Extended) **Femoral Head Trial** is chosen. An appropriate Femoral Head Trial is selected and assembled for trial reduction (Figure 10).

Joint Stability Determination

Limb length can be assessed by evaluating the relationship of the level of the greater trochanter tip to the femoral head center of rotation. Limb length is also compared to the opposite limb by palpating the knees through the drapes. Other methods may also be used. The hip should be taken through a range of motion to assure stability. If required, neck length and/or offset chosen can be modified to alter the tension of the joint as well as leg length.

Trial Component Removal

After components are selected, the hip is dislocated and the Femoral Head Trial and Offset Neck Trial are removed. The Novation Broach Handle is reassembled to the Novation Tapered Broach and the Novation Tapered Broach is removed.

CEMENTED FEMORAL STEM PREPARATION

Trial Reduction Technique

The trial reduction that is performed as described in the previous steps will replicate that of the Cemented stem as well. Note that since there are fewer choices in the Novation Cemented Plus version, it is necessary to broach to a minimum of a size 10 Novation Tapered Broach. The corresponding implant is slightly down-sized to accommodate a cement mantle of the appropriate thickness. In addition, the corresponding Offset Neck Trial will also replicate the leg length and offset of the Cemented femoral stem.

For example, if the final Novation Tapered Broach used is a size 11, a size 11 Neck Trial (Standard or Extended offset) should be used during the trial reduction. A size 11 Novation Cemented Plus femoral stem (Standard or Extended offset) should then be selected. This stem will allow for a cement mantle as well as replicate the offset of the size 11 Neck Trial (Standard or Extended offset).*

Note: Novation Cemented Plus size 10 is only available in standard offset.

***Novation Cemented Note:** The only exception to the sizing rule noted above occurs when using a size 9 implant. When using a size 9, it is necessary to use a size 11 Broach with a size 9 Neck Trial.

Determining Canal Diameter with Centralizer Sizer

When it is desired to use the Novation Cemented Plus femoral stem, it is recommended to



Figure 10
Neck and Head Trial Placement

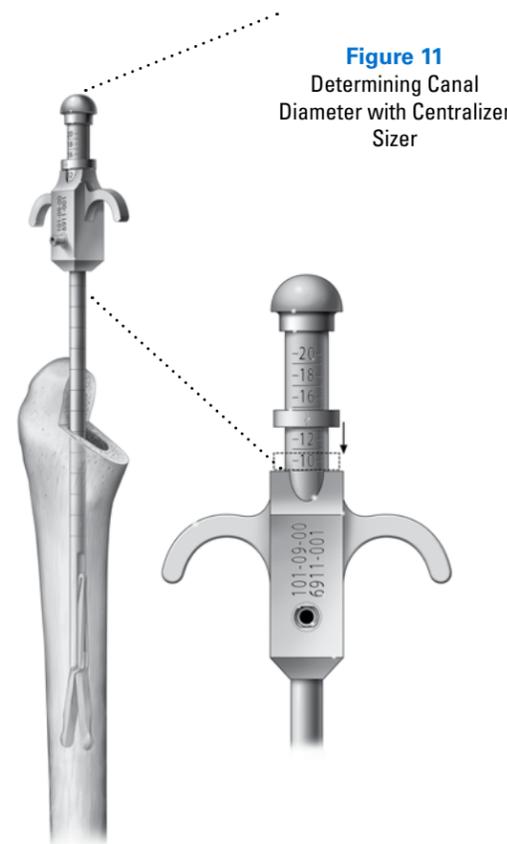


Figure 11
Determining Canal Diameter with Centralizer Sizer



Figure 12
Press-Fit Femoral Stem Insertion

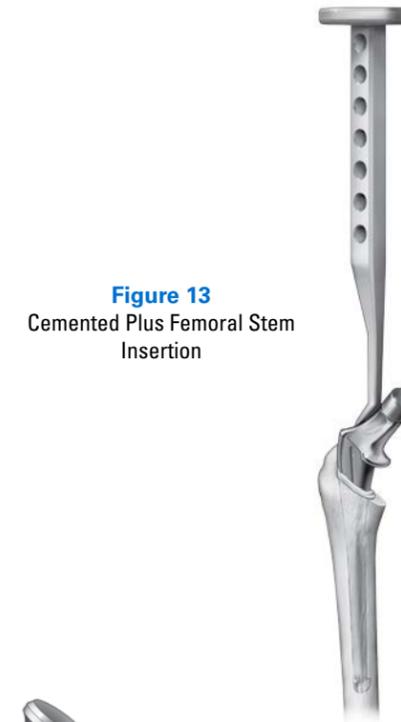


Figure 13
Cemented Plus Femoral Stem Insertion

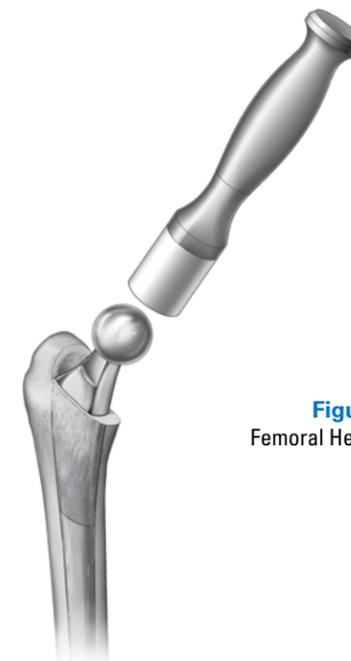


Figure 14
Femoral Head Impaction

measure the inner canal diameter in order to help with selection of the pre-formed PMMA Distal Centralizer. Refer to *Stem Specifications* for stem lengths of the Cemented femoral stems. Depth measurements are located on the **Centralizer Sizer** to define the depth at which the canal diameter is being measured (Figure 11). Insert the Centralizer Sizer to the appropriate depth and squeeze the actuator. The inner diameter of the femoral canal can be read on the proximal portion of the instrument. Remove the Centralizer Sizer, reset the ring and reinsert it into the femoral canal, rotated 90 degrees, in order to gain more information on the canal size. Read the measurement again and choose the smaller size to guide the selection of the Distal Centralizer.

FINAL REDUCTION

Final Stem Insertion – Press-Fit Femoral Stems

The appropriate femoral stem is chosen, inserted into the femoral canal by hand or assembled to the **Offset Stem Inserter**. The femoral stem is impacted, taking care to ensure correct rotational alignment and depth (Figure 12). It may be necessary to allow the bone to adapt to the implant as it is being impacted. Another trial reduction can be performed with the final femoral stem and Femoral Head Trial.

Final Stem Insertion – Cemented Plus Femoral Stems

The Distal Centralizer chosen in the previous steps is placed on the distal end of the appropriate sized femoral stem. Cement is inserted into the proximal femur by whichever cementing technique is desired. Inserting by hand or using the Offset Stem Inserter, place the femoral stem into the femur taking notice of femoral stem version (Figure 13). It is important not to move the stem in a retrograde fashion once insertion has begun as the distal centralizer can become disassociated from the femoral stem. Once the stem is in the desired position, remove the Offset Stem Inserter and allow the cement to cure.

Femoral Head Impaction

The taper of the femoral stem should be clean and dry. The selected femoral head component is placed onto the taper of the femoral stem and secured using the **12/14 Femoral Head Impactor** (Figure 14). Ceramic heads are placed by hand with a downward, twisting force and should not be impacted with a mallet.

Final Range of Motion

The hip should be reduced and a final check of the length, motion and stability should be made.

CLOSURE

The wound should be closed according to the method preferred by the surgeon.

SYSTEM SPECIFICATIONS AND IMPLANT ORDERING INFORMATION

Size (mm)	Stem Length (mm)**			Standard Lateral Offset with following head lengths (mm)					Extended Lateral Offset with following head lengths (mm)				
	Tapered*	Splined*	Cemented Plus	-3.5	+0	+3.5	+7	+10	-3.5	+0	+3.5	+7	+10
9	120	130	N/A	30	33	36	38	41	36	39	41	44	46
10	125	135	115	31	34	37	39	42	37	40	42	45	47
11	125	135	121	32	35	38	40	43	40	43	46	48	51
12	130	140	126	34	37	40	42	45	44	47	50	52	55
13	130	140	126	34	37	40	42	45	44	47	50	52	55
14	135	145	126	34	37	40	42	45	44	47	50	52	55
15	135	145	126	34	37	40	42	45	44	47	50	52	55
16	140	150	N/A	36	39	42	44	47	46	49	52	54	57
17	140	150	136	37	40	43	45	48	47	50	53	55	58
18	145	155	N/A	38	41	44	46	49	48	51	54	56	59
19	145	N/A	N/A	39	42	45	47	50	49	52	55	57	60
20	150	N/A	N/A	40	43	46	48	51	50	53	56	58	61

Note: For each change in head length, vertical leg length changes approximately 2.3mm.

FEMORAL HEAD ORDERING INFORMATION

Size (mm)	Neck Length				
	-3.5	+0	+3.5	+7	+10
22 [†]	N/A	142-22-00	142-22-03	142-22-07***	142-22-10***
28	140-28-93	140-28-00	140-28-03	N/A	N/A
	142-28-93	142-28-00	142-28-03	142-28-07	142-28-10***
	148-28-93	148-28-00	148-28-03	148-28-07***	148-28-10***
32	170-28-93	170-28-00	170-28-03	170-28-50 & 170-50-07 ^{††}	N/A
	140-32-93	140-32-00	140-32-03	N/A	N/A
	142-32-93	142-32-00	142-32-03	142-32-07	142-32-10***
	148-32-93	148-32-00	148-32-03	148-32-07***	148-32-10***
36	170-32-93	170-32-00	170-32-03	170-32-07	N/A
	140-36-93	140-36-00	140-36-03	N/A	N/A
	142-36-93	142-36-00	142-36-03	142-36-07	142-36-10
	148-36-93	148-36-00	148-36-03	148-36-07***	148-36-10***
170-36-93	170-36-00	170-36-03	170-36-07	N/A	

■ Alumina ■ CoCr ■ Zirconia ■ Delta

Note: For ceramic-on-ceramic articulation, please see additional package insert (700-096-070 Novation Ceramic AHS® System).

FEMORAL STEM ORDERING INFORMATION

Size (mm)	Tapered*				Cemented		Cemented Plus ^Δ	
	Standard Offset w/o HA	Standard Offset w/HA	Extended Offset w/o HA	Extended Offset w/HA	Standard Offset	Extended Offset	Standard Offset	Extended Offset
9	160-00-09	160-10-09	160-01-09	160-11-09	160-50-09	160-51-09	N/A	N/A
10	160-00-10	160-10-10	160-01-10	160-11-10	N/A	N/A	160-70-10	N/A
11	160-00-11	160-10-11	160-01-11	160-11-11	160-50-11	160-51-11	160-70-11	160-71-11
12	160-00-12	160-10-12	160-01-12	160-11-12	N/A	N/A	160-70-12	160-71-12
13	160-00-13	160-10-13	160-01-13	160-11-13	160-50-13	160-51-13	160-70-13	160-71-13
14	160-00-14	160-10-14	160-01-14	160-11-14	N/A	N/A	160-70-14	160-71-14
15	160-00-15	160-10-15	160-01-15	160-11-15	160-50-15	160-51-15	160-70-15	160-71-15
16	160-00-16	160-10-16	160-01-16	160-11-16	N/A	N/A	N/A	N/A
17	160-00-17	160-10-17	160-01-17	160-11-17	160-50-17	160-51-17	160-70-17	160-71-17
18	160-00-18	160-10-18	160-01-18	160-11-18	N/A	N/A	N/A	N/A
19 [†]	160-00-19 ^Δ	N/A	160-01-19 ^Δ	N/A	N/A	N/A	N/A	N/A
20 [†]	160-00-20 ^Δ	N/A	160-01-20 ^Δ	N/A	N/A	N/A	N/A	N/A

^Δ**Note:** Novation Tapered femoral stems in sizes 19 and 20, Novation Cemented Plus femoral stems and Splined RDD femoral stems are not approved for use with Novation Ceramic AHS.

DISTAL CENTRALIZER ORDERING INFORMATION

Sizes (mm)	Part Numbers
10	PC-10
11	PC-11
12	PC-12
13	PC-13
14	PC-14
15	PC-15
16	PC-16
17	PC-17

Size (mm)	Splined*				Splined RDD* ^Δ			
	Standard Offset w/o HA	Standard Offset w/HA	Extended Offset w/o HA	Extended Offset w/HA	Standard Offset w/o HA	Standard Offset w/HA	Extended Offset w/o HA	Extended Offset w/HA
9	160-20-09	160-30-09	160-21-09	160-31-09	N/A	N/A	N/A	N/A
10	160-20-10	160-30-10	160-21-10	160-31-10	N/A	N/A	N/A	N/A
11	160-20-11	160-30-11	160-21-11	160-31-11	160-22-11	160-32-11	160-23-11	160-33-11
12	160-20-12	160-30-12	160-21-12	160-31-12	160-22-12	160-32-12	160-23-12	160-33-12
13	160-20-13	160-30-13	160-21-13	160-31-13	160-22-13	160-32-13	160-23-13	160-33-13
14	160-20-14	160-30-14	160-21-14	160-31-14	160-22-14	160-32-14	160-23-14	160-33-14
15	160-20-15	160-30-15	160-21-15	160-31-15	160-22-15	160-32-15	160-23-15	160-33-15
16	160-20-16	160-30-16	160-21-16	160-31-16	160-22-16	160-32-16	160-23-16	160-33-16
17	160-20-17	160-30-17	160-21-17	160-31-17	160-22-17	160-32-17	160-23-17	160-33-17
18	160-20-18	160-30-18	160-21-18	160-31-18	160-22-18	160-32-18	160-23-18	160-33-18

INSTRUMENT LISTING

Catalog Number Part Description

161-31-00 Novation Core Instrument Case

101-09-00* Centralizer Sizer

101-14-00 Quick Release T-Handle

109-00-00 Universal Femoral Stem Extractor

113-03-03 Slap Hammer

113-03-04 T-Handle Starter Reamer

151-00-01 Round Osteotome

151-10-01 Straight End Cutting Starter Reamer, 8mm

153-00-02 12/14 Femoral Head Impactor

161-00-03 12/14 Osteotomy Guide



Catalog Number Part Description

161-00-06 Slap Hammer Adapter

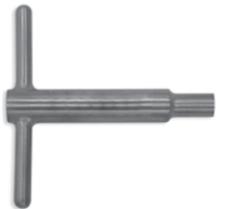
161-00-07 Replaceable Calcar Planer Blade, 1.5"

161-00-24 Universal Calcar Planer, 1.5"

161-00-25 Calcar Planer Blade Removal Tool

161-00-30 Novation Calcar Planer GuideTip, 5mm diam.

161-06-00* Novation Lateralizing Reamer



161-32-00 Novation Straight Femoral Reamer Instrument Case

161-10-01 Straight Reamer, 9mm

161-10-02 Straight Reamer, 9.5mm

161-10-03 Straight Reamer, 10mm

161-10-04 Straight Reamer, 10.5mm

161-10-05 Straight Reamer, 11mm

161-10-06 Straight Reamer, 11.5mm

161-10-07 Straight Reamer, 12mm

161-10-08 Straight Reamer, 12.5mm

161-10-09 Straight Reamer, 13mm

161-10-10 Straight Reamer, 13.5mm

161-10-11 Straight Reamer, 14mm

161-10-12 Straight Reamer, 14.5mm

161-10-13 Straight Reamer, 15mm

161-10-14 Straight Reamer, 15.5mm

161-10-15 Straight Reamer, 16mm

161-10-16 Straight Reamer, 16.5mm

161-10-17 Straight Reamer, 17mm

161-10-18 Straight Reamer, 17.5mm

161-10-19 Straight Reamer, 18mm

161-10-20 Straight Reamer, 18.5mm



INSTRUMENT LISTING

Catalog Number	Part Description
161-33-00	Novation Femoral Broach/Trial Instrument Case
141-22-00*	22mm Femoral Head Trial, 12/14, 0mm
141-22-03*	22mm Femoral Head Trial, 12/14, +3.5mm
141-22-07*	22mm Femoral Head Trial, 12/14, +7mm
141-22-10*	22mm Femoral Head Trial, 12/14, +10mm
143-28-93	28mm Femoral Head Trial, 12/14, O-Ring, -3.5mm
143-28-00	28mm Femoral Head Trial, 12/14, O-Ring, +0mm
143-28-03	28mm Femoral Head Trial, 12/14, O-Ring, +3.5mm
143-28-07	28mm Femoral Head Trial, 12/14, O-Ring, +7mm
143-28-10	28mm Femoral Head Trial, 12/14, O-Ring, +10mm
143-32-93	32mm Femoral Head Trial, 12/14, O-Ring, -3.5mm
143-32-00	32mm Femoral Head Trial, 12/14, O-Ring, +0mm
143-32-03	32mm Femoral Head Trial, 12/14, O-Ring, +3.5mm
143-32-07	32mm Femoral Head Trial, 12/14, O-Ring, +7mm
143-32-10	32mm Femoral Head Trial, 12/14, O-Ring, +10mm
143-36-93	36mm Femoral Head Trial, 12/14, O-Ring, -3.5mm
143-36-00	36mm Femoral Head Trial, 12/14, O-Ring, +0mm
143-36-03	36mm Femoral Head Trial, 12/14, O-Ring, +3.5mm
143-36-07	36mm Femoral Head Trial, 12/14, O-Ring, +7mm
143-36-10	36mm Femoral Head Trial, 12/14, O-Ring, +10mm
143-40-93	40mm Femoral Head Trial, 12/14, O-Ring, -3.5mm
143-40-00	40mm Femoral Head Trial, 12/14, O-Ring, +0mm
143-40-03	40mm Femoral Head Trial, 12/14, O-Ring, +3.5mm
143-40-07	40mm Femoral Head Trial, 12/14, O-Ring, +7mm
143-40-10	40mm Femoral Head Trial, 12/14, O-Ring, +10mm
161-01-01	Offset Stem Inserter
161-02-00	Novation Broach Handle
161-02-09	Novation Tapered Broach, Size 9
161-02-10	Novation Tapered Broach, Size 10
161-02-11	Novation Tapered Broach, Size 11
161-02-12	Novation Tapered Broach, Size 12
161-02-13	Novation Tapered Broach, Size 13
161-02-14	Novation Tapered Broach, Size 14
161-02-15	Novation Tapered Broach, Size 15
161-02-16	Novation Tapered Broach, Size 16
161-02-17	Novation Tapered Broach, Size 17
161-02-18	Novation Tapered Broach, Size 18
161-02-19*	Novation Tapered Broach, Size 19
161-02-20*	Novation Tapered Broach, Size 20



Catalog Number	Part Description
161-22-09	Standard Offset Neck Trial, Size 9
161-22-10	Standard Offset Neck Trial, Size 10
161-22-11	Standard Offset Neck Trial, Size 11
161-22-12	Standard Offset Neck Trial, Size 12-15
161-22-16	Standard Offset Neck Trial, Size 16
161-22-17	Standard Offset Neck Trial, Size 17
161-22-18	Standard Offset Neck Trial, Size 18
161-22-19*	Standard Offset Neck Trial, Size 19
161-22-20*	Standard Offset Neck Trial, Size 20
161-23-09	Extended Offset Neck Trial, Size 9
161-23-10	Extended Offset Neck Trial, Size 10
161-23-11	Extended Offset Neck Trial, Size 11
161-23-12	Extended Offset Neck Trial, Size 12-15
161-23-16	Extended Offset Neck Trial, Size 16
161-23-17	Extended Offset Neck Trial, Size 17
161-23-18	Extended Offset Neck Trial, Size 18
161-23-19*	Extended Offset Neck Trial, Size 19
161-23-20*	Extended Offset Neck Trial, Size 20
161-37-00	Novation Tapered Reamer Case
161-08-09	Novation 3-Degree Tapered Reamer, Hudson Connection, Size 9
161-08-10	Novation 3-Degree Tapered Reamer, Hudson Connection, Size 10
161-08-11	Novation 3-Degree Tapered Reamer, Hudson Connection, Size 11
161-08-12	Novation 3-Degree Tapered Reamer, Hudson Connection, Size 12
161-08-13	Novation 3-Degree Tapered Reamer, Hudson Connection, Size 13
161-08-14	Novation 3-Degree Tapered Reamer, Hudson Connection, Size 14
161-08-15	Novation 3-Degree Tapered Reamer, Hudson Connection, Size 15
161-08-16	Novation 3-Degree Tapered Reamer, Hudson Connection, Size 16
161-08-17	Novation 3-Degree Tapered Reamer, Hudson Connection, Size 17
161-08-18	Novation 3-Degree Tapered Reamer, Hudson Connection, Size 18
161-08-06*	Novation 3-Degree Tapered Reamer, Hudson Connection, Size 19/20
170-28-00	BIOLOX [®] delta Femoral Head, 28mm, +0mm
170-28-03	BIOLOX [®] delta Femoral Head, 28mm, +3.5mm
170-28-93	BIOLOX [®] delta Femoral Head, 28mm, -3.5mm
170-32-00	BIOLOX [®] delta Femoral Head, 32mm, +0mm
170-32-03	BIOLOX [®] delta Femoral Head, 32mm, +3.5mm
170-32-07	BIOLOX [®] delta Femoral Head, 32mm, +7mm
170-32-93	BIOLOX [®] delta Femoral Head, 32mm, -3.5mm
170-36-00	BIOLOX [®] delta Femoral Head, 36mm, +0mm
170-36-03	BIOLOX [®] delta Femoral Head, 36mm, +3.5mm
170-36-07	BIOLOX [®] delta Femoral Head, 36mm, +7.5mm
170-36-93	BIOLOX [®] delta Femoral Head, 36mm, -3.5mm
170-28-50	BIOLOX [®] delta OPTION Femoral Head, 28mm
170-32-50	BIOLOX [®] delta OPTION Femoral Head, 32mm
170-36-50	BIOLOX [®] delta OPTION Femoral Head, 36mm
170-50-00	BIOLOX [®] delta OPTION Sleeve, +0mm
170-50-03	BIOLOX [®] delta OPTION Sleeve, +3.5mm
170-50-07	BIOLOX [®] delta OPTION Sleeve, +7mm
170-50-93	BIOLOX [®] delta OPTION Sleeve, -3.5mm



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