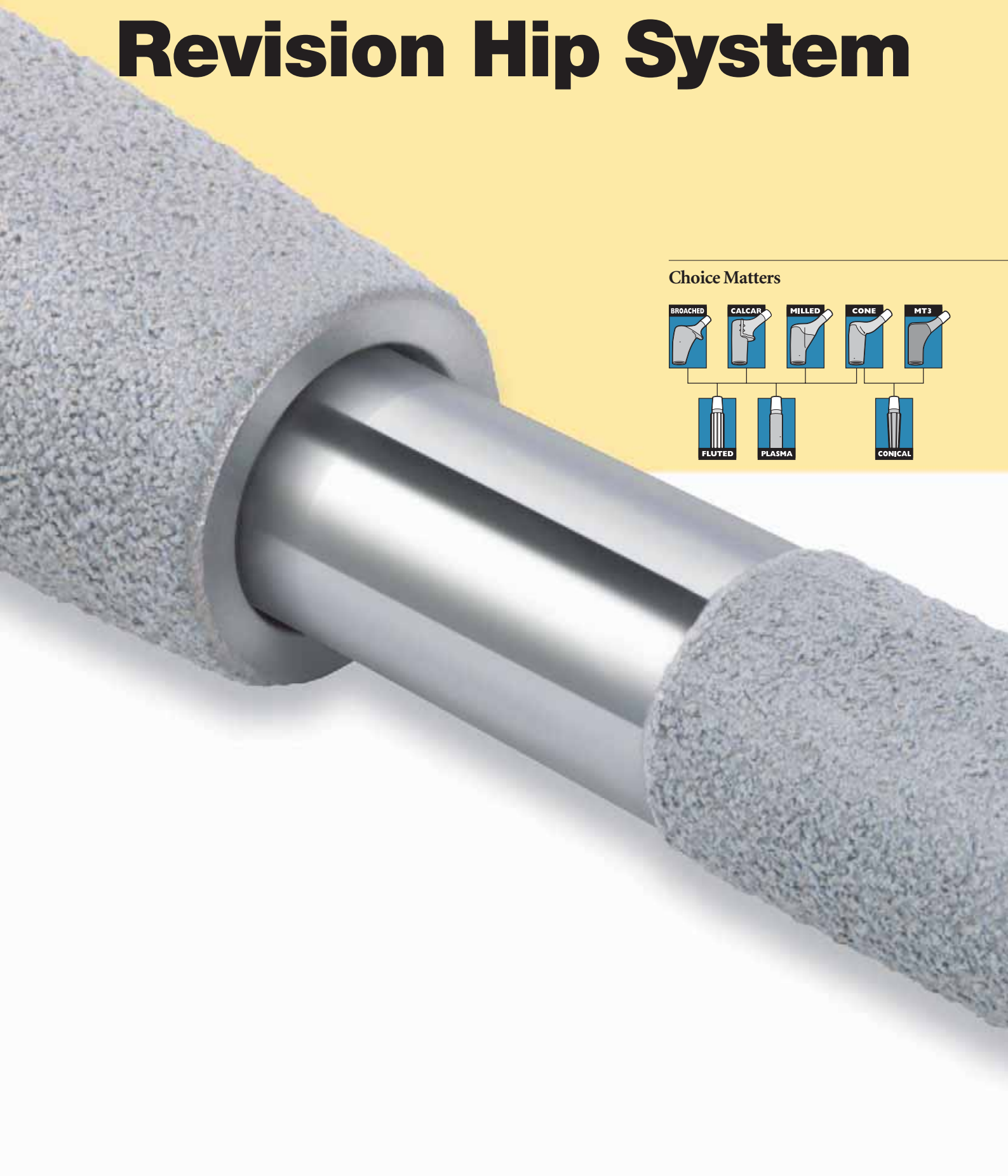
stryker®

Restoration® Modular Revision Hip System



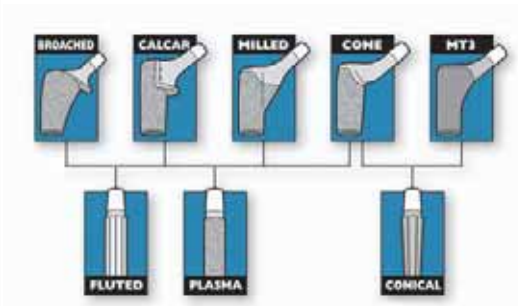
Choice Matters

Restoration® Modular Revision Hip System

The Restoration® Modular Revision Hip System combines successful designs with the latest technology to answer the many challenges of revision hip surgery. Restoration® Modular provides you with a variety of proximal and distal component options to help achieve implant stability, adjust soft-tissue tensioning and address leg length discrepancies. Restoration® Modular gives you the ability to apply various fixation strategies depending on your preference and patient needs, allowing you to choose from a range of options to restore hip biomechanics.

System Overview

- Built on the proven heritage of Stryker® products
- Developed in conjunction with leading surgeons
- Caters to implant design philosophy or preference
- Design goals focused on improving intraoperative efficiency and addressing the widest range of cases
- More than just stem revision – it helps to restore hip biomechanics



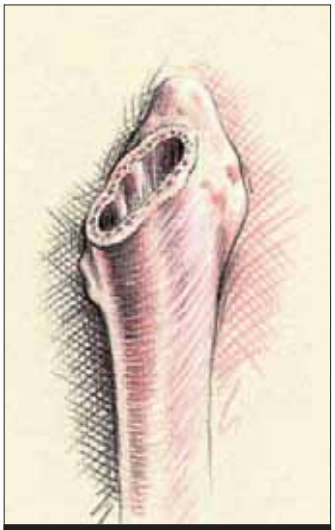
Restoration® Modular is the result of a collaboration of leading surgeons and designers, utilizing proven design rationales, and an extensive femoral anatomy database to provide versatility, flexibility, and intraoperative efficiency.

Options Matter

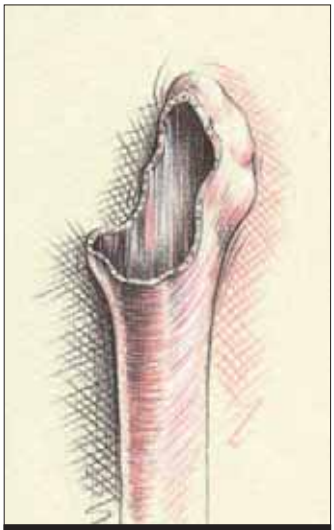
Since every revision surgery is unique, Restoration® Modular takes an individual approach to addressing revision surgeries. It allows you the flexibility to address a range of scenarios providing choices to determine the best approach to the specific case, depending on preference and patient requirements for:

- Surgical approach and technique
- Proximal or distal fixation
- Proximal size and distal diameter
- Construct length
- Offset
- Anteversion
- Acetabular components
- Instrumentation

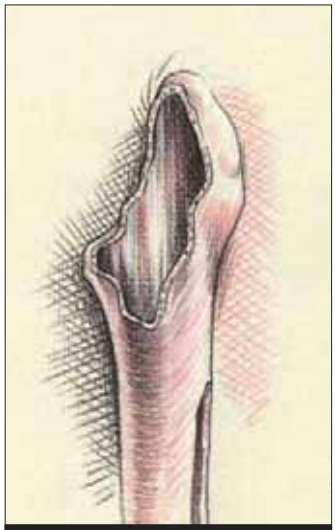
The result is an extremely effective system for addressing various types of revision cases – allowing immediate fixation and long term stability through the restoration of hip biomechanics.



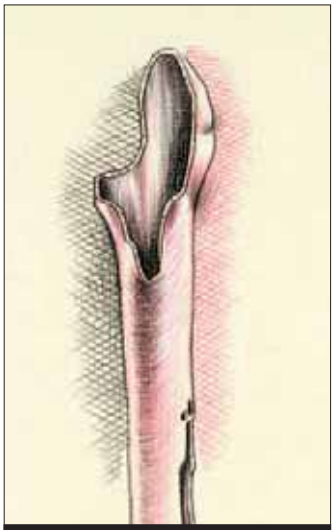
Type 1
Minor Bone Loss



Type 2
Significant Bone Loss



Type 3
Massive Bone Loss



Type 4
Massive Bone Loss

Stability

Crucial to the success of any surgery is the stability of the implant, and of the muscles surrounding the hip joint.

Restoration® Modular is designed to help you achieve fixation in a range of revision scenarios and varying bone types. The system provides you with the unique ability to restore hip biomechanics, using a selection of options to address leg length, offset, range of motion, acetabular components, and anteversion.

Efficiency

Restoration® Modular is designed to enhance intraoperative efficiency in a number of ways. It provides the versatility to address intraoperative challenges including leg length discrepancies and soft-tissue tensioning, while catering to a variety of femoral anatomies, all at your surgical approach preference.

The intuitively designed instrumentation allows you to simply and effectively prepare the bone, accommodating a range of technique options and nuances.

The instrument designs are based upon familiar, proven techniques, speeding the mastery of surgical procedure.

The instrumentation is also designed to allow you to effectively implant the device to best restore hip biomechanics.

Restoration® Modular
Choice Matters

Choice Matters

Simply stated, in revision hip surgery you have many needs – so does your patient. Choices to answer these needs are the core benefit of the Restoration® Modular System. In fact, Restoration® Modular was engineered to offer more choices than any other revision hip system on the market. Restoration® Modular offers 78 proximal body options and 308 distal stem options, complemented by a host of acetabular options, all of which provide the first step to clinical success for you – and your patient.

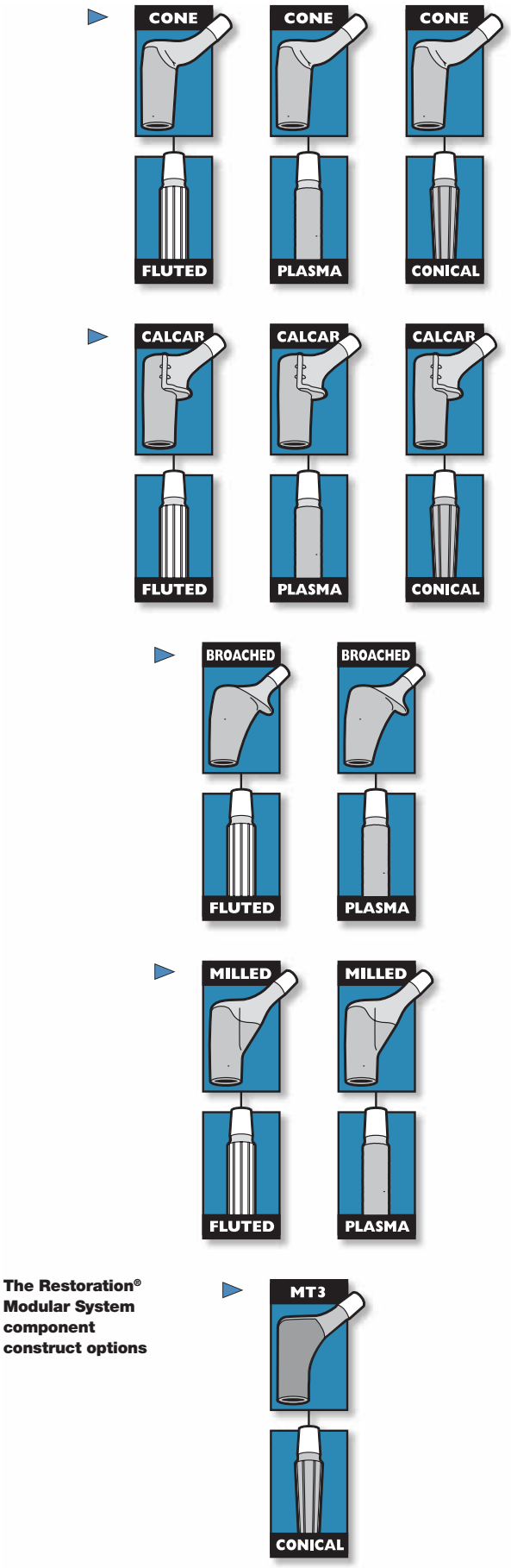
With a range of options to choose from, you can build the right construct that will best match the patient's needs.

How do you preoperatively plan?

Component placement critically affects the performance and longevity of total hip replacements. Because of the array of revision components available, limitations of observation imposed by anatomic orientation and radiographic techniques make preoperative planning a critical element of revision hip surgery. Selection of the correct size, and position of the acetabular and femoral components is best done through preoperative planning:

- Assess defect and anatomic landmarks
- Determine head center
- Determine offset
- Determine best articulating surface
- Determine appropriate geometry, length, and diameter of femoral component
- Assess intramedullary canal defects and leg length discrepancies
- Consider activity level and other environmental variables
- Select best prosthesis

All of these factors need to be considered, and often adjusted intraoperatively, in order to best match the patient's needs. Restoration® Modular, in combination with the Trident® Acetabular System, and the Dall-Miles® Cable System, provides you with a range of choices to address these variables, and cater to an array of revision scenarios.



The Restoration® Modular System component construct options

Strength Matters

Monolithic implants are limited in their capabilities to address proximal-distal mismatches, to control anteversion, or to adjust height – and are limited in their options for restoring natural hip biomechanics.

The strength of the modular taper junction is at the heart of the Restoration® Modular System. It enables a range of constructs to be created addressing proximal-distal mismatches, as well as bony defects, and provides the ability to reorient the proximal body for fine adjustments to anteversion, height, and offset.

Some modular systems cannot address all revision cases, as they are limited in construct type, fixation approach, and offset as well as version control.

With the Restoration® Modular System, the strength of the taper junction allows a range of constructs to address even the most severe cases.

The system gives you the ability to match any taper junction, allowing you to create the best construct for your patient's needs.

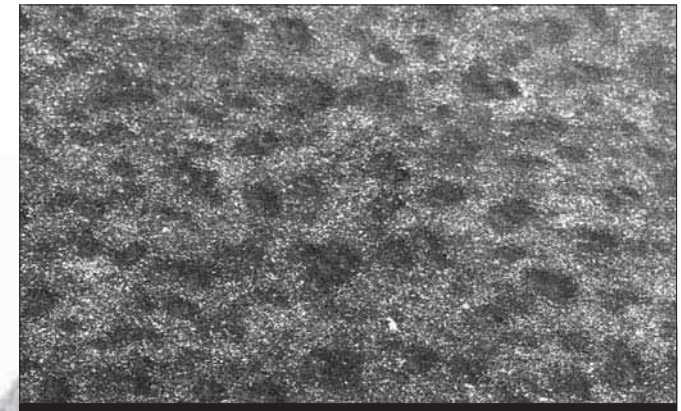


Figure 1
SEM images of modular taper junction at 500µm. The dimpled effect is a result of the shot peening process which hardens the taper junction through compression of surface molecules.

The strength of the modular taper junction is at the heart of the Restoration® Modular System

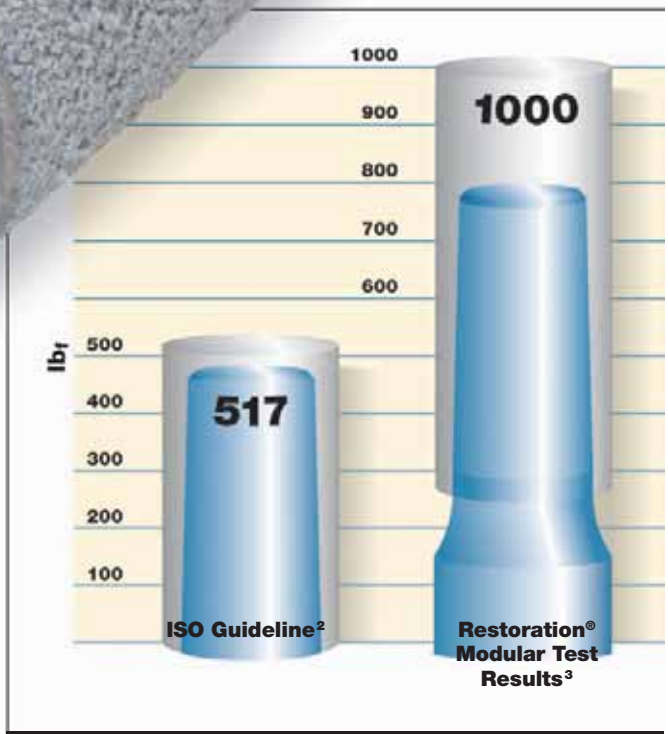


Figure 2
Results of ISO 7206-4 fatigue test configuration for the Restoration® Modular taper junction.[2]

Restoration® Modular
Restoring Hip Biomechanics

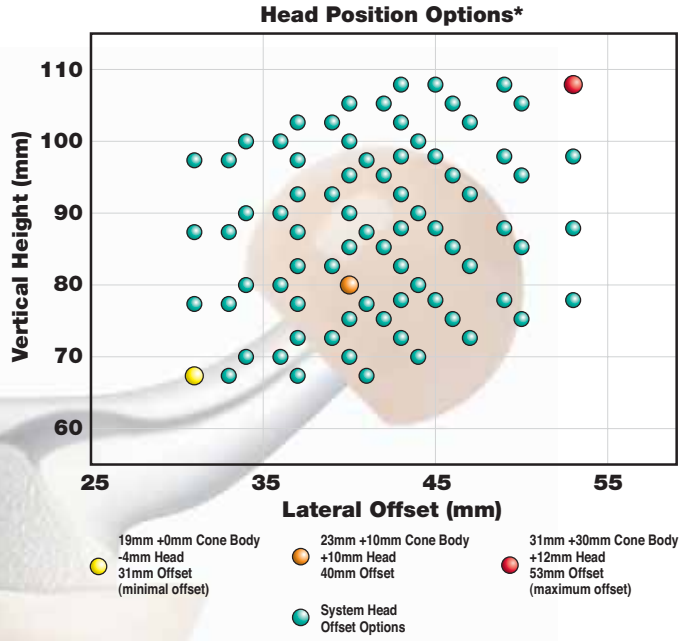
Immediate Stability

Revision surgery requires several key elements to be successful.
They include the ability to match various bone types with a variety of constructs, preparing the bone more effectively for implant insertion and gaining immediate fixation, and ensuring that the soft tissue tensioning facilitates range of motion without compromising stability.

Only the Restoration® Modular Revision Hip System provides these options for better patient matching, addressing femoral anatomies, and hip joint mechanics.

Restoration® Modular is the only system that offers proximally and distally coated implants with PureFix™ HA, featuring over 15 years of clinically proven success.[1]

Restoration of hip joint mechanics is critical to a long-term successful outcome. To achieve this, you must consider construct length, component anteversion, femoral head offset, along with placement and type of bearing surfaces. The Restoration® Modular System provides you with several combinations to fine tune hip joint mechanics – intraoperatively – with a range of options relative to leg length, lateral offset, proximal body anteversion, femoral head offset, and acetabular component.



*Graphic representation of Cone Body/Ceramic femoral head shown. Refer to surgical technique for sizing and compatibility options.

Your Choice of Proximal Body Solutions

Five proximal body options are available, providing you with choices to match your preference for approach and patient requirements including fixation philosophy, sizing, offset, and anteversion. All bodies accept V40™ CoCr or Alumina Ceramic Heads to match your preference of bearing technology.

Broached Body

- Anthropometrically shaped proximal body
- Circumferentially plasma sprayed
- PureFix™ HA coated

Calcar Body

- Calcar flanges provide a variety of means of achieving trochanteric reattachment
- PureFix™ HA coated
- Cobalt chrome bushings in vertical flanges capture beaded cables and are angled upward and outward to allow cabling to pass through or around the greater trochanter†

Milled Body

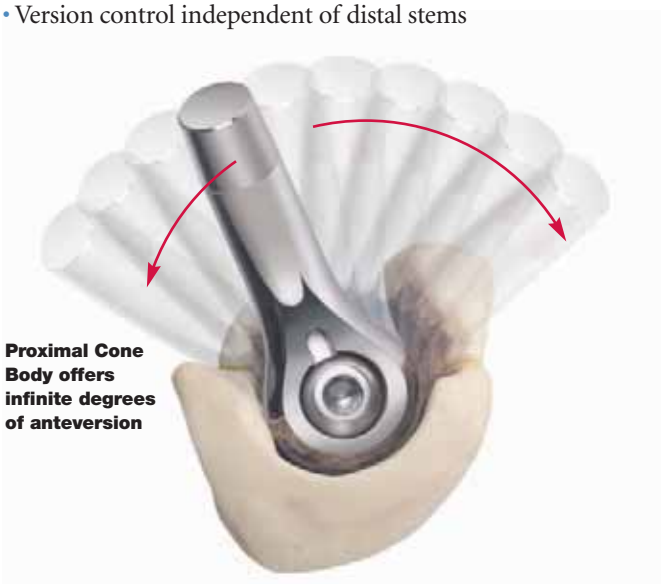
- Milled Body design helps maintain axial and rotational stability
- Independent proximal body and distal stem sizing
- Version control independent of distal stems
- PureFix™ HA coated

Cone Body

- Cone Body geometry helps maintain axial and rotational stability
- Independent proximal body heights and lateral offsets
- Version control independent of distal stems
- PureFix™ HA coated

MT3 Body

- Four body heights for restoration of leg length
- Version control independent of distal stems



Proximal Cone Body offers infinite degrees of anteversion

†Do not use Non-Beaded Cables with the Calcar Body. A 2.0mm Beaded Cable is required for each hole used. Cables should NEVER be wrapped around the implant or neck.

Your Choice of Distal Stem Solutions

Three Distal Stem options are available addressing distal fixation; distal diameter, construct length, and stability. All stem designs, regardless of stem length, allow for insertion of the distal stems independent of the proximal body.

The Distal Stem designs are the foundation for restoring hip joint mechanics – combined with a variety of proximal geometries to help you establish the balance between motion and stability.

Fluted Distal Stem

- Highly-polished Fluted Distal Stem is designed to provide immediate diaphyseal rotational control
- Distal Tri-Slot enhances stem flexibility
- Independent proximal body and distal stem sizing
- Available in bowed and straight stem designs

Plasma Distal Stem

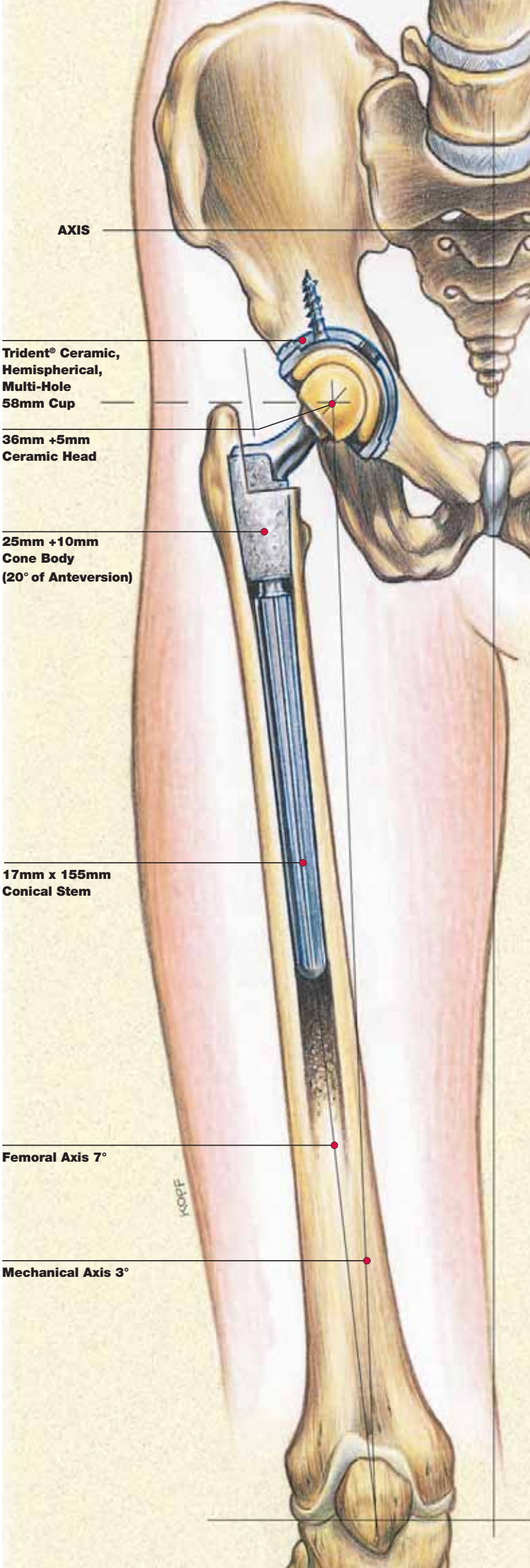
- Plasma Distal Stem is designed to provide immediate fixation and rotational control
- Circumferentially plasma-sprayed
- PureFix™ HA coated
- Independent proximal body and distal stem sizing
- Available in bowed and straight stem designs

Conical Stem

- Designed to provide immediate diaphyseal fixation and rotational stability
- Independent proximal body and distal stem sizing
- Heavy grit-blasted surface
- Available in bowed and straight stem designs

Photo of actual Wagner stem retrieval (cross-section) at 5.5 months after implantation, 65 year old, 85kg patient.††

††R.K. Schenk, U. Wehrli; On the reaction of the bone to a cementless SL femur revision prosthesis; Orthopade (1989) 18; 454-462.



Restoration® Modular
Building Confidence and Efficiency

Confidence

The system is designed and engineered to help provide confidence by assuring performance with each step of your procedure, case after case.

- Intraoperative efficiencies through a variety of implant constructs
- Clearly marked, intuitive instruments
- All instruments and implants based upon proven techniques and fixation philosophies
- Unique instruments designed to simplify technique and provide advantage in revision cases

Efficiency

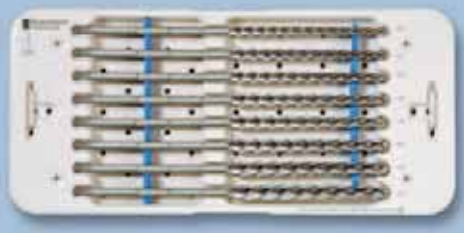
At Stryker®, we believe surgical approach and technique are equally as important as implant type, size, and surface enhancements to ensure successful results. Technique can affect soft-tissue tensioning as well as implant positioning, range of motion, and bone loss. That's why we designed the Restoration® Modular implants and instruments to enhance your ability to quickly gain a mastery of the system.

- One set of instruments addresses a wide range of revision scenarios, and facilitates canal preparation
- Instrumentation is clearly marked for quick identification in the operating room
- Visual, audible, and tactile indicators

Restoration® Modular is the one system that is designed to meet your revision needs, addressing the challenges that you face preoperatively, intraoperatively, and postoperatively. Restoration® Modular incorporates an array of options to address a range of revision scenarios – from simple to the most complex – all in one simple, versatile, and efficient system.

Clearly marked trays and cases

1 Starting Tray

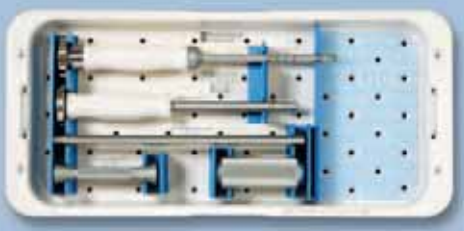


2 Distal Reaming Tray

3 Proximal Reaming Tray

4 Body Trial Tray

5 Finishing Tray 1



6 Finishing Tray 2

The Restoration® Modular instrument trays are designed to follow the sequence of surgical procedure (depicted is the Proximal Cone Body/Conical Distal Stem construct tray sequence)

The Restoration® Modular Version Control Stem Inserter allows for version adjustment separate from stem placement and has a removable sleeve which can be used for distal stem impaction alone or with body and stem together

The Restoration® Modular Calcar Body featuring Dall-Miles® Beaded Cable and sleeve application

Restoration® Modular
Enhancing Your Ability

In revision hip surgery, a few things are certain – you never know what you will face and it will not be easy. Restoration® Modular was designed and engineered for these reasons – to help your surgical procedure and to provide you with confidence in achieving the correct solution for your patient.

Case 1

- Paprosky Type II femur
- Extended trochanteric osteotomy
- Stem loosening
- Cement removal

- Cone Body
- Conical Stem

Case 2

- Paprosky Type I femur
- Proximal/distal femoral mismatch
- Cup loosening

- Broached Body
- Plasma Stem

Case 3

- DDH patient
- Leg length/offset issues

- Cone Body
- Plasma Stem
- Ceramic-on-Ceramic bearing

Case 4

- Paprosky Type II femur
- Calcar deficiency
- Cement removal/ETO

- Calcar Body
- Bowed Plasma Stem

Results

Speak Louder Than Words

At Stryker®, we believe results speak louder than words. Since the company's founding in 1941, that philosophy has made us a leader in the worldwide orthopaedic market and placed us at the forefront of medicine's most promising solutions. Today, we are one of the preeminent medical products and services companies in the world.

Stryker® is world renowned for its development of leading orthopaedic solutions, including the world's most successful cemented hip stem – Exeter™, over 40 years of clinical success with Simplex™ P Bone Cement, the unprecedented results of PureFix™ HA, and the revolutionary Trident® Ceramic-On-Ceramic Acetabular System. Restoration® Modular Revision Hip System builds upon this heritage, providing surgeons with a unique system for addressing the challenges of revision total hip arthroplasty.

We continually strive to achieve superior clinical results. We push the frontiers of medical research while maintaining uncompromising clinical integrity.

We succeed when our customers succeed. We put their interests first in everything we do. We not only give them responsive, timely service, we also help to make them more efficient.

Most importantly, we measure our success by our ability to partner with respected medical professionals – to help millions of people, around the world, lead more active and more satisfying lives.

At Stryker®, we don't just make promises, we deliver results.

stryker®

Joint Replacements

Trauma, Extremities & Deformities

Craniomaxillofacial

Spine

Biologics

Surgical Products

Neuro & ENT

Interventional Pain

Navigation

Endoscopy

Communications

Imaging

Patient Handling Equipment

EMS Equipment

1. Capello WN, D'Antonio JA, et al., HA Femoral Stems for Total Hip Arthroplasty 10-13 Year Follow-up. *CORR.* December 2001.
2. ISO 7206-4 Implants for Surgery – Partial and Total Hip Joint Prostheses – Part 4: Determination of Endurance Properties of Stemmed Femoral Components.
3. Stryker H.O. Allendale, ATG Group, Technical Report No. MT03051, 2002.
4. D'Antonio JA, Capello WN, Manley MT, Geesink R. Hydroxyapatite Femoral Stems for Total Hip Arthroplasty, *Clinical Orthopaedics & Related Research*, Vol. 393, December 2001.

This document is intended solely for the use of healthcare professionals.

The information presented in this brochure is intended to demonstrate the breadth of Stryker product offerings. Always refer to the package insert, product label and/or user instructions before using any Stryker product. Surgeons must always rely on their own clinical judgment when deciding which treatments and procedures to use with patients. Products may not be available in all markets. Product availability is subject to the regulatory or medical practices that govern individual markets. Please contact your Stryker representative if you have questions about the availability of Stryker products in your area.

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