

Orthopaedics

# Scorpio<sup>®</sup> ClassiQ Anterior Referencing Surgical Protocol

For use with Scorpio ClassiQ Instrument System



For use with Scorpio ClassiQ Single Radius Total Knee System



This document is intended to be used by healthcare professionals only.

#### **Table of Contents**

Introduction
Exposure
Femoral Preparation
Anterior Skim Cut
Distal Femoral Resection
Femoral Sizing
Femoral Anterior, Posterior and Chamfer Resections
Scorpio Universal Preparation Block
Notch Preparation
Saw Technique
Patella Recess Preparation:
Assessment of Fit
Downsizing the Femur
Tibial Preparation
Tibial External Alignment
Tibial Resection Level
Proximal Tibial Resection
DeltaFit Keel Preparation
Tibial Component Sizing
Tibial Component Alignment
Tibial Keel Punching
Tibial Bearing Insert Assembly
Femoral Component
Closure



#### Indications

General Total Knee Arthroplasty (TKR) Indications include:

- Painful, disabling joint disease of the knee resulting from: degenerative arthritis, rheumatoid arthritis or post-traumatic arthritis.
- Post-traumatic loss of knee joint configuration and function.
- Moderate varus, valgus, or flexion deformity in which the ligamentous structures can be returned to adequate function and stability.
- Revision of previous unsuccessful knee replacement or other procedure.

**Additional Indications for Posterior** Stabilized (PS):

- Ligamentous instability requiring implant bearing surface geometries with increased constraint.
- Absent or non-functioning posterior cruciate ligament.

#### *Contraindications*

- Any active or suspected latent infection in or about the knee joint. • Any mental or neuromuscular disorder
- which would create an unacceptable risk of prosthesis instability, prosthesis fixation failure, or complications in post-operative care.
- · Bone stock compromised by disease, infection or prior implantation which anot provide adequate support and/or fixation to the prosthesis.
  Skeletal immaturity.
  Severe instability of the knee joint secondary to the absence of collateral linear entities and for sticate.
- ligament integrity and function.
- Obesity. An overweight or obese patient can produce loads on the prosthesis which can lead to failure of the fixation of the device or to failure of the device itself.

#### Warnings and Precautions:

See package insert for warnings, precautions, adverse effects and other essential product information.

#### Introduction

Stryker A/R Instrumentation is designed for the surgeon who prefers anteriorly based femoral resections.

Stryker A/R Instruments are an organized and flexible set of surgical instruments designed to address patient variables and individual surgeon preferences. Femoral alignment and tibial alignment is based on extramedullary referencing. The order of femoral and tibial preparation is not critical. This surgical protocol depicts femoral preparation first, followed by tibial preparation. This order may be changed to address patient indications or to satisfy surgeon preference.

At various stages throughout the procedure optional alignment checks may be carried out to confirm instrument position, component orientation, and overall limb alignment.

Finally, several orthopaedic surgeons have added valuable input and guidance to the creation of these instruments and this surgical protocol.



#### Exposure

- A standard anterior midline incision is preferable (Figure 1); however, any previous incisions can be used or incorporated to decrease the risk of skin slough.
- The capsule is entered through a medial parapatellar approach approximately 1cm from the medial border of the patella (Figure 2).
- The quadriceps mechanism is incised longitudinally to allow adequate patellar eversion and sufficient knee flexion (Figure 3).







Figure 2

Figure 3





#### **Femoral Preparation**

- The intramedullary canal is accessed by drilling a hole in the center of the intercondylar notch using the 3/8" diameter starter drill (Figures 4, 5).
- Removal of osteophytes from the margins of the intercondylar notch may aid identification of landmarks.
- It is recommended that the drill hole be slightly enlarged. This can be accomplished by toggling the drill.

Figure 5

### **Scorpio ClassiQ**

### Anterior Referencing Surgical Protocol



T-Handle Rod

- The Femoral Alignment Guide is designed for use on either the left or right knee and can be set at 5 or 7 degrees of valgus. Place the 5/16" T-Handle Rod through the back of the Femoral Alignment Guide and set the instrument to the pre-operatively determined angle by pulling the knob on the Femoral Alignment Guide and locking it in the appropriate notch.
- Insert the Femoral Alignment Guide into the intramedullary hole (Figure 6), lining up the slots on the Femoral Alignment Guide with the epicondylar axis (Figure 7). Use two 1/8" diameter pins through the distal holes to secure the Femoral Alignment Guide to the distal femur.

"To aid in setting my external rotation, and to provide a better visual, I mark a second line anterior and parallel to my initial epicondylar axis line using a one inch osteotome or some other straight instrument."

Saminathan Suresh Nathan, MD





Figure 8

- Place the 3 degree External Rotation Guide into the slots of the Femoral Alignment Guide taking care to assemble the guide in the appropriate left or right orientation. Use this guide to judge equal amounts of medial and lateral posterior condyle (Fig. 8). If the posterior condyles are a deficient reference due to bone deformity, the guide should be aligned with the epicondyle using the epicondylar referencing guide.
- Use two 1/8" diameter pins through the distal holes to secure the Femoral Alignment Guide to the distal femur. The External Rotation Guide may be removed.
- Two sets of holes are provided for use with small or large knees.





► The length of the stylus may be easily adjusted by sliding it to the appropriate point. The tip of the stylus indicates the exit point of the sawblade when the final femoral resections are made. Adjusting the tip of the stylus to reference off the high point of the anterior lateral cortex will result in a conservative anterior cut, eliminating the risk of notching the cortex (**Figure 10**).





Figure 11

- Prior to resection, check the saw exit level around the superomedial and superolateral sides of the anterior cortex with a sawblade or a Stryker Bladerunner (Figure 11).
- ▶ Tighten the side screw with the hex wrench to lock the resection guide in place (Figure 12). The stylus can be removed before the resection is made. Use a .050" (1.25mm) thick sawblade to make the resection (Figure 13).
- After the resection is completed, loosen the side screw and remove the Anterior Skim Resection Guide, leaving the Femoral Alignment Guide pinned in place.



Figure 12



#### **Distal Femoral Resection**

Assemble the 8mm Distal Resection Guide to the Distal Resection Guide Stand by placing the Guide over the pegs. These guides are magnetized to assure correct assembly. The resection guide may then be locked into place by pushing in and turning the locking knob 1/4 turn clockwise (Figure 14).

**Note:** The components shall be positioned to avoid excessive hyperextension. Excessive Femoral flexion and tibial slope should be avoided when implanting the components. Implant positioning resulting in excessive hyperextension may result in premature wear and damage to the implant.





Slide the assembly into the anterior holes of the Femoral Alignment Guide and lower the assembly down until the Distal Resection Guide sits flush on the anterior skim resection. Tighten the side screw to secure the guide (Figure 15).









#### Femoral Sizing

The sizing guide should be used to determine the appropriate size cutting block and femoral component. The size can be determined by placing the feet of the guide under the posterior femoral condyles. The top bar should be collapsed until it seats flush on the anterior skim resection. In the event of inbetween sizing, the smaller size should be selected (Figure 20).

Note: Scorpio ClassiQ comes in femoral sizes 3,5,7 & 9 only.

#### Femoral Anterior, Posterior and Chamfer Resections

Position the Femoral Cutting Guide on the distal femur. The anterior lip of the block should sit flush against the resected anterior femur (Figure 20). Using the pin driver and a mallet, drive the two serrated pins into the femur (Figure 21). Additional stability may be achieved by using towel clamps on the side of the blocks.



Figure 21

**Note:** The width of the Femoral Resection Guide accurately reflects the distal width of the femoral implant.

- Complete the remaining four femoral bone resections (Figure 22). The suggested order of the resections is:
  - 1. posterior condyles
  - 2. posterior chamfer
  - 3. anterior cortex
  - 4. anterior chamfer.





- This order of cuts optimizes the stability of the femoral cutting block. Making the posterior chamfer cut before the anterior chamfer maintains a larger surface of bone upon which to support the Femoral Cutting Guide. The resection slots are designed so all of the resections can be completed without having to remove the block.
- After the femur has been cut, release the towel clamps, if they were used and remove the guide.



### Scorpio Universal Preparation Block

**The Scorpio Universal Preparation Block** Instrument is used after completion of the five femoral bone cuts.

- Select the appropriately sized Femoral Notch Block. The block sits on the anterior, anterior chamfer and distal cuts. The anterior geometry represents the left and right lateral flanges of the implant of the same size. The sides are marked LL and RL for left lateral and right lateral, respectively.
- Position the Notch Block on the prepared distal femur, (Figure 24). To further aid the positioning, note that the block is also the same width as the implant of its respective size.
- Once the Notch Block is seated flush against the anterior, anterior chamfer and distal cuts of the femur, place pins through the angled holes ("X") on the anterior and/or anterior chamfer surfaces of the block (4 "X" holes at 15° (Figure 25).
- When using the Size 3 Notch Block, pins should be placed through the anterior chamfer. DO NOT place pins through the anterior flange.
- Pins used with the size 3 and 5 Notch Blocks should be used with no more than one pin per side to avoid the potential for the pins intersecting with each other.
- Pins should be used on the contra-lateral side from each other. If a pin is placed through the medial anterior chamfer hole, a second pin should only be placed on the lateral side through either the chamfer or anterior flange hole.
- Towel clamps may be used for additional stability if necessary in the indicated holes on the distal plane.



Figure 26

#### Notch Preparation

#### Saw Technique

- Guide the pegs of the modular Notch Saw Guide into the anterior holes on the Notch Block (Figure 26).
- Use a narrow saw blade, osteotome, or doubleedged reciprocating saw blade and the Notch Saw Guide as a guide to cut distally through the entire depth of the intercondylar notch. (Figure 27).
- Using the inner walls of the Universal Notch Guide as a saw guide, lay the saw blade flat against the cutting guide and saw on it through the intercondylar notch both medially and laterally until the cut is complete (Figure 28).

**Note:** Even if the saw technique is used, you must still perform the Notch Compacting step to confirm that enough bone was removed to accommodate for the cam and post.









Figure 31



#### Assessment of Fit

#### **Femoral Component**

- Place femoral trial onto the prepared femur. The Starter Femoral Impactor is used to guide and position the femoral trial into proper orientation. The Starter Femoral Impactor allows for impaction within the trochlear groove to help control rotation and alignment of the femoral trial (Figure 31). The Femoral Impactor is then used for final femoral trial seating onto the prepared femoral bone (Figure 32).
- The components shall be positioned to avoid excessive hyperextension. Excessive femoral flexion and tibial slope should be avoided when implanting the components. Implant positioning resulting in excessive hyperextension may result in premature wear and damage to the implant.

#### Downsizing the Femur

▶ If a smaller femoral component is desired after the femur has already been cut for a specific size, simply assemble the next smaller size femoral cutting guide to the femur by driving the serrated pins into the same fixation holes used with the previous cutting guide. Towel clamps should be used to secure the block to the femur. Repeat the posterior, posterior chamfer, anterior and anterior chamfer resections.



#### Tibial Preparation Tibial External Alignment

- With the knee flexed, place the External Tibial Alignment Guide on the tibial shaft. Place the spring-loaded clamp around the distal tibia just above the malleoli.
- Place the head of the instrument over the tibial eminence. There should be a finger's breadth clearance between the proximal shaft of the alignment guide and the anterior cortex when the head is positioned properly. Center the proximal fixation pins over the tibial eminence and tap in the most posterior pin first to fix the A/P location of the head. Rotation is now adjusted, and then set, by anchoring the second pin. Tighten the vertical screw to secure the proximal shaft of the guide (Figure 33).

Figure 33

Axial alignment is achieved when the vertical shaft of the instrument parallels the long axis of the tibia in both the A/P and M/L views. Use the A/P and M/L adjustment thumbscrews to facilitate alignment (Figures 34, 35).









#### **Tibial Resection Level**

### The instrument system offers a Right and Left, 0 degree Tibial Resection Guide.

- The Tibial Stylus is assembled to the appropriate Tibial Resection Guide by depressing the button on the Tibial Stylus and then fully seating it in either the medial or lateral hole on the top of the resection guide. Release the button to lock the stylus in place (Figure 38).
- 0 degrees of posterior slope is recommended for use with the Scorpio ClassiQ PS femoral components.
- Assemble the Tibial Resection Guide/Tibial Stylus assembly to the External Tibial Alignment Guide by sliding it over the top of the proximal shaft, adjusting the stylus to reference the desired point on the tibial plateau (Figure 39).





#### **Proximal Tibial Resection**

- Secure the Tibial Resection Guide to the proximal tibia using two 1/8" Pins, place pins through the "0" holes.
- Loosen the thumbscrew that holds the Tibial Resection Guide to the External Tibial Alignment Guide.
- Loosen the vertical adjustment thumbscrew on the shaft of the alignment guide.
- Extract the two headed fixation pins on the top of the alignment guide from the proximal tibia.
- Remove the proximal shaft of the alignment guide by sliding it up through the top of the resection guide (Figure 42).
- Slide the Tibial Resection Guide posteriorly until it comes in contact with the anterior tibia.
- Placing a 1/8" Pin through the "X" pin hole will further secure the resection guide to the tibia.
- The Alignment Handle may be used with an Alignment Rod, referencing the same landmarks as outlined previously to verify proper alignment.
- Resect the plateau using a .050" (1.25mm) saw blade (Figure 43).
- The Tibial Resection Guide is removed by first sliding the guide off over the two 1/8" Pins and then removing the pins.
- If desired, 2mm or 4mm of additional bone may be resected by repositioning the guide over the pins through the +2 or + 4 holes respectively (Figure 44).

**Note:** If the "X" Pin hole is used, this pin must be removed prior to repositioning or removing the Tibial Resection Guide.

**Note:** The components shall be positioned to avoid excessive hyperextension. Excessive Femoral flexion and tibial slope should be avoided when implanting the components. Implant positioning resulting in excessive hyperextension may result in premature wear and damage to the implant.

# Scorpio ClassiQ

Anterior Referencing Surgical Protocol



### **DeltaFit Keel Preparation** *Tibial Component Sizing*

- ▶ Maximally flex the knee and deliver the tibia forward.
- ► Assemble a Tibial Trial Baseplate to the Alignment Handle and place it on the resected tibial plateau (Figure 45). Choose the size that best covers the tibial plateau.



#### **Tibial Component Alignment**

- Replace the Trial Femoral Component on the femur. Assemble a Tibial Bearing Insert Trial to the Tibial Trial Baseplate by first positioning it posteriorly on the baseplate and then fully seating it anteriorly (Figure 46). Reverse the steps to disassemble the insert trial from the baseplate.
- Position the assembled trial insert and baseplate on the tibial plateau and carry out a trial reduction. Assess overall component fit, ligament stability, and joint range of motion.
- As the joint is taken through flexion and extension, the femoral trial component helps position the tibial baseplate. Final position of the tibial trial is achieved when tibiofemoral articular contact is most congruent. This is best assessed when the knee is in extension.

24



### **Scorpio ClassiQ**

Anterior Referencing Surgical Protocol



#### Tibial Keel Punching

- Tibial Punches are identified by keel size (3/5, 7/9) and bone preparation ("Cement Keel" creates a cement mantle around the keel.
- The sequence of steps necessary to prepare the tibia for the Deltafit Keel may vary depending on the bone quality of the proximal tibia. In relatively soft bone (i.e., rheumatoid) only one punching step with the final tibial size/preparation punch may be required.
- Assemble the Tibial Punch Tower to the baseplate by placing the tower onto the two small locating pins on top of the baseplate. During the subsequent tibial punching, the tower is designed to maintain correct positioning of the punches.
- Place the appropriate Tibial Punch into the Tibial Punch Tower (Figure 50). Handles may be assembled to the tower to aid in maintaining position and stability of the tower/baseplate assembly during punching. A mallet may be used to impact the punch.
- Advance the punch until it seats fully on the baseplate. Take care to ensure the punch is vertical to the baseplate in both the coronal and sagittal plane while impacting the punch during extraction, take care to avoid toggle or angulation of the punch as this may distort the bone preparation.
- Once the final punch has been seated, tibial preparation is complete (Figure 51).

### **Tibial Punching Sequence**

Implant Size	Cement Keel
#3	Cement #3/#5
#5	Cement #3/#5
#7	Cement #3/#5 Cement #7/#9
#9	Cement #3/#5 Cement #7/#9

Figure 51 Completed Tibial Preparation



First engage posteriorly, then snap into place anteriorly.

#### **Tibial Tray Insertion**

Introduce the tibial tray into the prepared tibia manually and impact it until fully seated. Clear all excess bone cement while maintaining position of the implant.

#### Tibial Bearing Insert Assembly

- Prior to assembly of the prosthetic UHMWPE bearing insert, the trial insert may be placed in the tibial tray to once more assess joint stability and range of motion.
- To assemble the prosthetic bearing insert, the tibial tray interior must first be free of all debris and soft tissue. After cleaning tray interior, distract the joint and angle the insert posteriorly into the tray. The posterior lips of the bearing insert must fit beneath the lips on the interior, posterior tray wall.
- Then snap the insert in place anteriorly (Figure 52). Hand pressure or a light tap with a mallet is required. The tibial bearing insert is fully seated once the metal retaining wire locks under the barbs on the anterior, interior surface of the tray wall.

#### Femoral Component

- Place the implant on the prepared femur and impact it until fully seated in the same manner as the femoral trial.
- Clear all excess bone cement while maintaining position of the implant.

**Note:** The components shall be positioned to avoid excessive hyperextension. Excessive Femoral flexion and tibial slope should be avoided when implanting the components. Implant positioning resulting in excessive hyperextension may result in premature wear and damage to the implant.

#### Closure

After cement polymerization, thoroughly irrigate the joint and place suction drains. Hemostasis is achieved after deflation of the tourniquet. Close soft tissues in the normal layered fashion.

Catalog #	Description			
Scorpio ClassiQ Instrument Part Numbers				
7650-1033	3/8" Starter Drill			
7650-1135	5/16" Diameter IM Rod			
7650-5901	AR Femoral Alignment Guide			
7650-5003-A	Anterior Skim Cutting Guide			
7650-5004	Anterior Stylus			
7650-5005-A	AR Distal Resection Stand			
7650-5008	8mm AR Distal Block			
7550-0018	Drill Starter Punch			
3180-1000	Alignment Handle			
7550-0016	Modified Fixation Pin - 2/pack (For AR Fem Cutting Guide)			
7650-5103	AR Femoral Cutting Guide 3			
7650-5105	AR Femoral Cutting Guide 5			
7650-5107	AR Femoral Cutting Guide 7			
7650-5109	AR Femoral Cutting Guide 9			
8000-3303	Pegless Universal Block, Size 3			
8000-3305	Pegless Universal Block, Size 5			
8000-3307	Pegless Universal Block, Size 7			
8000-3309	Pegless Universal Block, Size 9			
7650-3333	PS Notch Saw Guide, Size 3/5			
7650-3337	PS Notch Saw Guide, Size 7/9			
7650-3273	Patella Recess Punch, Size 3/5			
7650-3277	Patella Recess Punch, Size 7/9			
7650-3250	Impactor Handle			
T71-4003L	Scorpio PS Femoral Trial, 3 - Left			
T71-4003R	Scorpio PS Femoral Trial, 3 - Right			
T71-4005L	Scorpio PS Femoral Trial, 5 - Left			
T71-4005R	Scorpio PS Femoral Trial, 5 - Right			
T71-4007L	Scorpio PS Femoral Trial, 7 - Left			
T71-4007R	Scorpio PS Femoral Trial, 7 - Right			
T71-4009L	Scorpio PS Femoral Trial, 9 - Left			
T71-4009R	Scorpio PS Femoral Trial, 9 - Right			
7550-0017	A/P Sizing Guide			
7650-5002	3 Degree External Rotation Guide			

Continued

### Catalog # Description

Scorpio ClassiQ Instrument Part Numbers (Continued)

8000-1040	EM Tibial Ankle Clamp
8000-1056	Spiked Proximal Rod
7650-1060L	Tibial Resection Guide - 0 Degrees, Left
7650-1060R	Tibial Resection Guide - 0 Degrees, Right
7650-1072	Tibial Stylus - 2mm/8mm
3750-0003-A	Tibial Template, Size 3
3750-0005-A	Tibial Template, Size 5
3750-0007-A	Tibial Template, Size 7
3750-0009-A	Tibial Template, Size 9
3180-2000	Alignment Rods (2/pack)
7650-1136	Headed Fixation Pins, 1" (2/pack)
3761-0305	Cemented Tibial Punch, Size 3/5
3761-0709	Cemented Tibial Punch, Size 7/9
T72-3-0308M	Size 3 PS Insert Trial, 8mm
T72-3-0310M	Size 3 PS Insert Trial, 10mm
T72-3-0312M	Size 3 PS Insert Trial, 12mm
T72-3-0315M	Size 3 PS Insert Trial, 15mm
T72-3-0508M	Size 5 PS Insert Trial, 8mm
T72-3-0510M	Size 5 PS Insert Trial, 10mm
T72-3-0512M	Size 5 PS Insert Trial, 12mm
T72-3-0515M	Size 5 PS Insert Trial, 15mm
T72-3-0708M	Size 7 PS Insert Trial, 8mm
T72-3-0710M	Size 7 PS Insert Trial, 10mm
T72-3-0712M	Size 7 PS Insert Trial, 12mm
T72-3-0715M	Size 7 PS Insert Trial, 15mm
T72-3-0908M	Size 9 PS Insert Trial, 8mm
T72-3-0910M	Size 9 PS Insert Trial, 10mm
T72-3-0912M	Size 9 PS Insert Trial, 12mm
T72-3-0915M	Size 9 PS Insert Trial, 15mm
3179-0000	Femoral Impactor
8050-2000	Femoral IC Notch Impactor
7551-0000	Bladerunner
7650-1038	Headless Pins (4/pack)
8000-1089	Tibial Punch Tower

PS Cemented Femur	Cemented Baseplate	PS Insert
Scorpio ClassiQ Com	ponent Part Numbers	
	View	
26-3003L	2525-0003	25-10-0308
26-3005L	2525-0005	25-10-0310
26-3007L	2525-0007	25-10-0312
26-3009L	2525-0009	25-10-0315
26-3003R		25-10-0508
26-3005R		25-10-0510
26-3007R		25-10-0512
26-3009R		25-10-0515
		25-10-0708
		25-10-0710
		25-10-0712
		25-10-0715
		25-10-0908
		25-10-0910
		25-10-0912
		25-10-0915

### Catalog # Description

#### Scorpio ClassiQ Instrument Tray Part Numbers

25-4001T	ClassiQ Tibial Preparation and Trialing – Lower Tray
25-4002T	ClassiQ Tibial Preparation and Trialing – Upper Tray
25-4003T	ClassiQ Femoral and Miscellaneous – Lower Tray
25-4004T	ClassiQ Femoral and Miscellaneous – Upper Tray
5900-8114	Outer Case with Lid

### stryker

#### Reconstructive

#### Hips Knees

Trauma & Extremities Joint Preservation Orthobiologics

#### Medical & Surgical

Power Tools & Surgical Accessories Image Guided Navigation Endoscopy & Arthroscopy Integrated Communications Beds, Stretchers & EMS Sustainability Solutions

#### Neurotechnology & Spine

Craniomaxillofacial Interventional Spine Neurosurgical, Spine & ENT Neurovascular Spinal Implants

325 Corporate Drive Mahwah, NJ 07430 **t: 201 831 5000** 

www.stryker.com

A surgeon must always rely on his or her own professional clinical judgment when deciding whether to use a particular product when treating a particular patient. Stryker does not dispense medical advice and recommends that surgeons be trained in the use of any particular product before using it in surgery.

The information presented is intended to demonstrate the breadth of Stryker product offerings. A surgeon must always refer to the package insert, product label and/or instructions for use before using any Stryker product. Products may not be available in all markets because product availability is subject to the regulatory and/or medical practices in individual markets. Please contact your Stryker representative if you have questions about the availability of Stryker products in your area.

Stryker Corporation or its divisions or other corporate affiliated entities own, use or have applied for the following trademarks or service marks: Scorpio, Stryker. All other trademarks are trademarks of their respective owners or holders.

The products listed above are CE marked according to the Medical Device Directive 93/42/EEC. Products may not be available in all markets because product availability is subject to the regulatory and/or medical practices in individual markets. Please contact your Stryker representative if you have questions about the availability of Stryker products in your area.

Literature Number: **LSKP53 Rev. 2** MS/GS 3/12

Copyright © 2012 Stryker Printed in USA

