

Secur-Fit™ Max

Secur-Fit™ Plus Max

Surgical Protocol



CuttingEdge Advantage™
Hip Instrument System

Secur-Fit™ Max

Secur-Fit™ Plus Max

Secur-Fit™ Max Secur-Fit™ Plus Max Surgical Protocol

**CuttingEdge
Advantage™**
Hip Instrument
System

Table of Contents

Step 1 – Pre-Operative Planning and X-ray Templating	1	Step 6 – Broaching the Femur	3
Step 2 – Neck Resection	2	Optional Step – Calcar Planer	4
Optional Step – Box Chisel	2	Step 7 – Trial Reduction	4
Step 3 – Opening the Femoral Canal: Axial Starter Reamer	2	Step 8 – Femoral Stem Insertion	5
Step 4 – Trochanteric Reaming	2	Step 9 – Head Assembly	5
Step 5 – Tapered Reaming	3	Catalog Information	6
Cylindrical Reaming	3		

Introduction

The CuttingEdge Advantage™ Instrument System is versatile, offering surgeons great flexibility and ease of use in approaching the implantation of the Secur-Fit™ Max and Secur-Fit™ Plus Max Femoral Components. Each surgeon should use the surgical approach for total hip arthroplasty with which he/she is most familiar. Patient positioning, preparation and draping, skin incision, soft tissue dissection and hip dislocation should be performed according to the surgeon's preferred technique, making certain to adequately expose the acetabulum and the proximal femur.

1 Pre-Operative Planning and X-ray Templating

Pre-operative planning aids in the selection of the appropriate implant style and size for the patient's hip pathology. Optimal femoral stem fit, prosthetic neck length, and neck offset/angle should be evaluated during pre-operative X-ray analysis using provided templates (Figure 1). The appropriate proximal body and stem length should be assessed in the A/P view. Anatomic anomalies that could prevent the intra-operative achievement of the established pre-operative goals may also be detected through such planning. If needed, a lateral view may be taken to assess the femoral canal curvature.

1



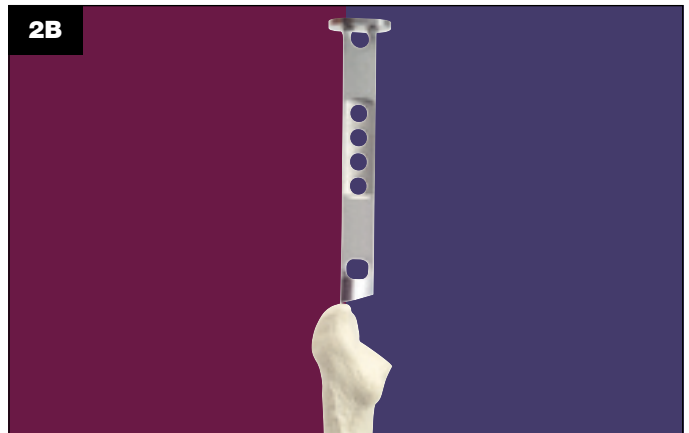
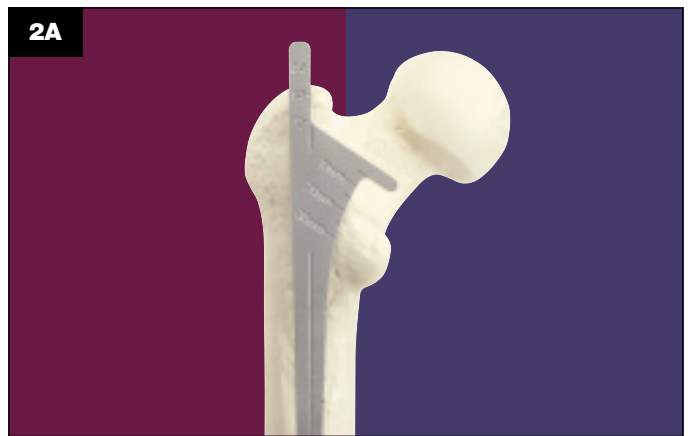
This publication sets forth detailed recommended procedures for using Stryker® Orthopaedics devices and instruments. It offers guidance that you should heed, but, as with any such technical guide, each surgeon must consider the particular needs of each patient and make appropriate adjustments when and as required.

2 Neck Resection

A proper neck resection level directly affects stem fit and placement. The resection should be made at a level determined during templating to restore proximal femoral head/neck length and offset. Using anatomic landmarks identified during templating, the Neck Resection Guide may be utilized for proper resection determination. The Neck Resection Guide is identical in profile to a Secur-Fit™ Max size #7 implant body, thus providing a means of simulating stem alignment. Care should be taken to align the axis line of the Neck Resection Guide to the center axis of the femoral shaft; the scales on the lateral flange or medial radius of the guide can be used to reference the greater or lesser trochanter respectively when making the final cut (**Figure 2A**).

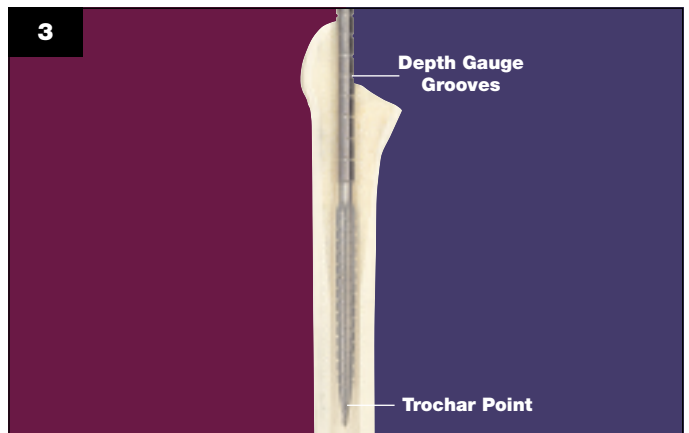
Optional Step Box Chisel

The Box Chisel removes bone from the proximal lateral portion of the resected femoral neck to allow access to the femoral medullary canal (**Figure 2B**).



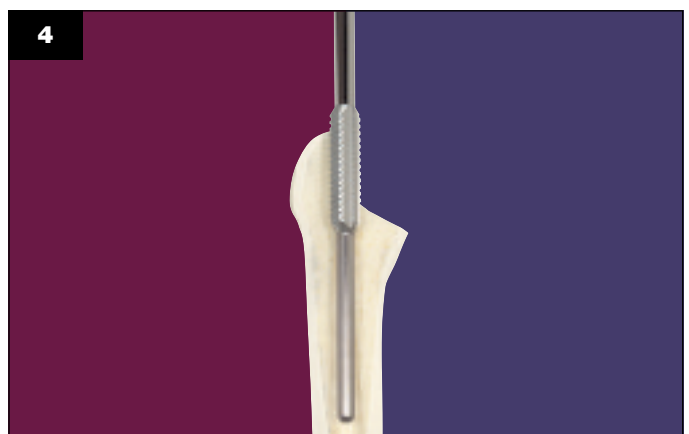
3 Opening the Femoral Canal: Axial Starter Reamer

The Axial Starter Reamer is used to enter the femoral medullary canal through the trochanteric fossa. The Starter Reamer has a trochar point to facilitate entry. It should be inserted to a depth such that the distal tip of the Starter Reamer is 1cm below the distal end of the final size broach. The groove, on the Starter Reamer shaft, is approximately in line with the intersection point of the femoral axis of the femur and the neck resection line (**Figure 3**).



4 Trochanteric Reaming

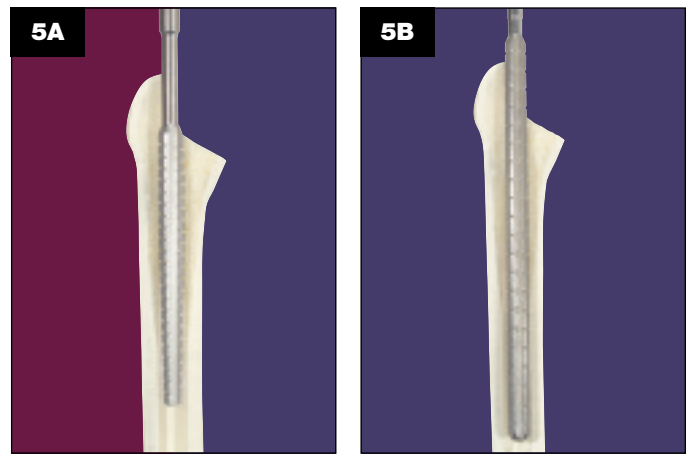
Insert the Trochanteric Reamer into the proximal area of the canal and bias the cutting teeth laterally to remove the desired amount of bone (**Figure 4**). Do not sink the reamer below the level of the trochanter. Performing this step can help facilitate the axial alignment of the broach so that it is not pushed into varus by an overhanging trochanter. Varus positioning of the implant may result in an improperly placed or potentially undersized implant.



5 Tapered Reaming

Starting one or two sizes smaller than the templated size, insert the reamers into the canal such that the most proximal levels of the cutting flutes are 1-2mm below the trochanteric fossa. Ream sequentially upward in size until the last Tapered Reamer achieves good contact with the cortical bone (**Figure 5A**).

Note: Though the fully toothed broaches may facilitate preparation of the femoral implant without the use of tapered reamers, a narrow/tight diaphyseal shaft (e.g. champagne flute femur) may result in broach resistance in the distal canal. If resistance is encountered, tapered reaming is recommended to minimize potential for distal femoral fractures. The option to skip any reaming step is at the discretion of the surgeon.



Cylindrical Reaming (for Secur-Fit™ Plus Max only)

Cylindrically reaming prepares the femoral canal to fit with the distal portion of the Secur-Fit™ Plus Max prosthesis. If a Secur-Fit™ Plus Max stem is selected, the size of the cylindrical portion of the stem is determined from pre-operative templating and is confirmed intra-operatively or by X-ray. It is important to position the reamer laterally so that it is not pushed into varus by an overhanging trochanter.

Cylindrical reaming proceeds in 0.5mm increments until endosteal contact is achieved. A choice can be made intra-operatively to under-ream by 0.5mm or to ream line-to-line with the chosen implant size depending upon surgeon preference and/or bone quality.

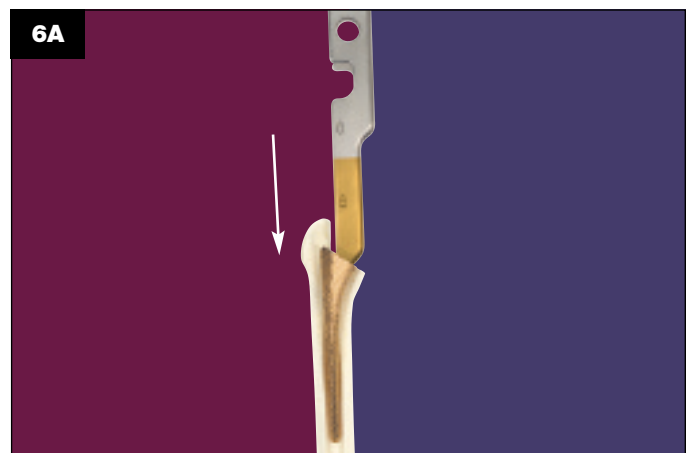
The Cylindrical Reamer is inserted such that the appropriate stem length marking intersects the most distal/medial point of the final neck resection level (**Figure 5B**). Reamers are marked in 10mm increments and should be inserted to a depth that matches or is 5mm deeper than the length of the chosen implant size (**Table 1**).

Table 1: Cylindrical Reamer Sizing (for Secur-Fit™ Plus Max only)

Stem Size	Distal Diameter (mm)	Final Cylindrical Reamer (mm)	Cylindrical Reamer Minimum Depth of Insertion (mm)
5	9	8.5 or 9.0	110
5	11	10.5 or 11.0	110
6	10	9.5 or 10.0	120
6	12	11.5 or 12.0	120
7	11	10.5 or 11.0	130
7	13	12.5 or 13.0	130
8	12	11.5 or 12.0	140
8	14	13.5 or 14.0	140
9	13	12.5 or 13.0	150
9	15	14.5 or 15.0	150
10	14	13.5 or 14.0	160
10	16	15.5 or 16.0	160
11	15	14.5 or 15.0	170
11	17	16.5 or 17.0	170
12	16	15.5 or 16.0	170
12	18	17.5 or 18.0	170
13	17	16.5 or 17.0	170
13	19	18.5 or 19.0	170
14	18	17.5 or 18.0	170
14	20	19.5 or 20.0	170

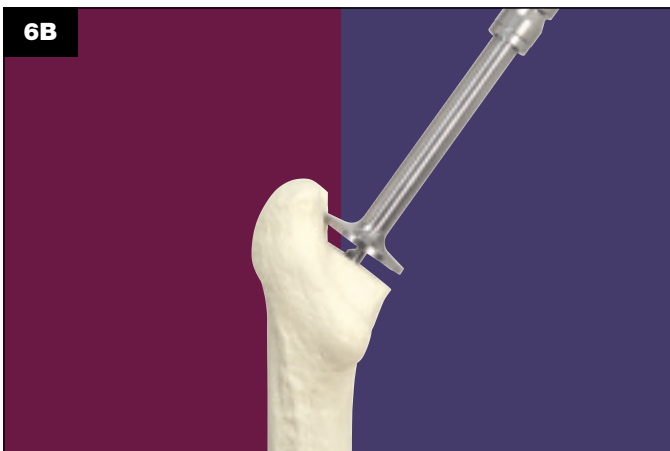
6 Broaching the Femur

Assemble the Broach to the Broach Handle (**Figure 6A**). Starting with the smallest Broach, advance sequentially upward approaching the templated size until a stable snug-fit is obtained. Care should be taken to lateralize the proximal portion of the Broach in order to maintain axial alignment of the Broach and implant.



Optional Step
Calcar Planer

Leaving the final Broach seated in the femoral canal (Figure 6B), gently guide the female bushing over the broach trunnion. The planer can be driven by hand or by power tool to achieve an accurate final neck resection level.



7 Trial Reduction

Using the Broach, Trial Neck and Trial Head assembly, perform a trial reduction to judge component positioning, leg length and hip stability (range of motion and laxity) before the final components are implanted. Select a CuttingEdge Advantage™ Trial Neck, 132° (Silver) or 127° (Gold), that has the same base neck length as the planned implant size (Table 2 and Figure 7A).

Table 2: Broach and Neck Trial Sizing

Stem Size	132° Neck Length*	127° Neck Length	Broach Size For Press-Fitting
4	25 mm	N/A	PF4
5	25 mm	25 mm**	PF5
6	25 mm	25 mm	PF6 / C4
7	30 mm	30 mm	PF7 / C5
8	30 mm	30 mm	PF8 / C6
9	35 mm	35 mm	PF9 / C7
10	35 mm	35 mm	PF10 / C8
11	40 mm	40 mm	PF11 / C9
12	40 mm	40 mm	PF12 / C10
13	40 mm	40 mm	PF13 / C11
14	40 mm	40 mm**	PF14 / C12

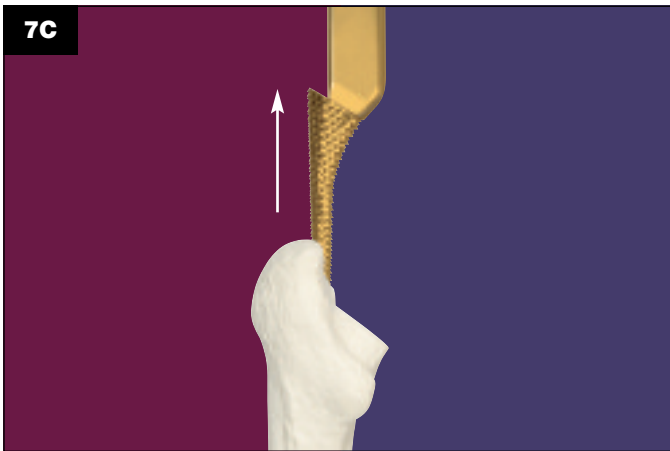
*Secur-Fit™ Plus Max is not available in 132° neck angle.
**Available on Secur-Fit™ Plus Max only.

Next, select the appropriate plastic C-Taper Trial Head. Refer to Table 3 for head diameter and head offset combinations (Figure 7B).

Table 3: Head Diameters and Offsets

		C-Taper Trial Head Diameters				
		22mm	26mm	28mm	32mm	36mm
Trial Head Offsets	-5mm				X	X
	-3mm			X		
	-2.5mm			X	X	X
	0mm	X	X	X	X	X
	2.5mm	X	X	X	X	X
	5mm	X	X	X	X	X
	7.5mm		X	X	X	X
	10mm	X	X	X	X	X

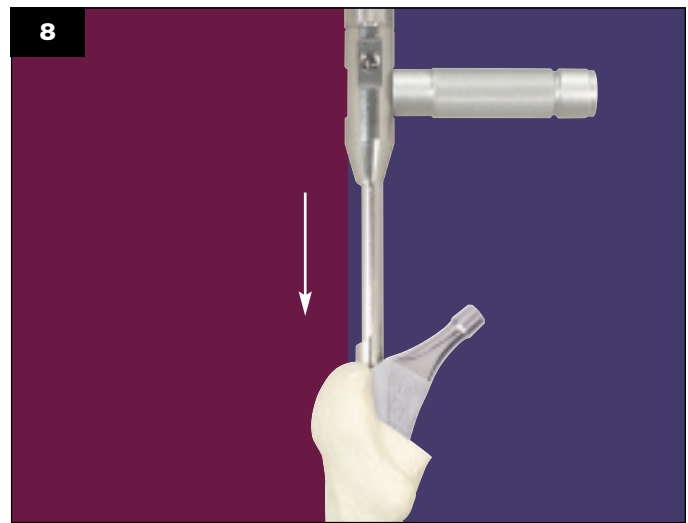
Head offset is adjusted until leg lengths are equal. Joint stability can be checked by telescoping the leg and performing a full range of motion. If the hip is unstable or dislocates, either a 127° or 132° (Secur-Fit™ Max only) hip implant can be considered to achieve adequate offset. Upon confirmation of the selected components, remove the Trial Head and Trial Neck, and reassemble the broach handle. Remove the Broach with the help of the Slotted Mallet to preserve the integrity of the established cavity (Figure 7C).



8 Femoral Stem Insertion

Introduce the stem into the femoral canal axially with a manual force until resistance is encountered. In order to assist in aligning and seating the stem, the threaded femoral impactor should be used. A mallet is then used to seat the hip stem into the canal (**Figure 8**) until a stable snug-fit is attained. If instrument impingement on the greater trochanter is evident, the bullet-tipped Femoral Stem Impactor may be used.

Note: The surgeon should NOT attempt to continue impacting the femoral component if visual and auditory clues indicate that the resting position of the femoral component has been reached. This is true even if the femoral component is proud in reference to the level of the Broach Trial.

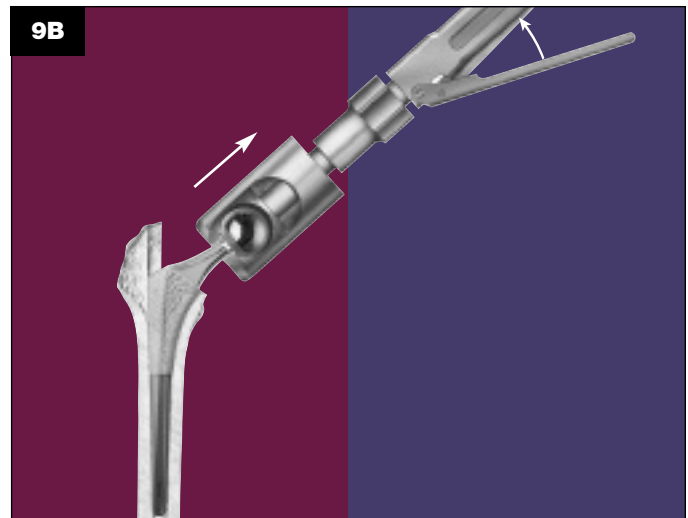
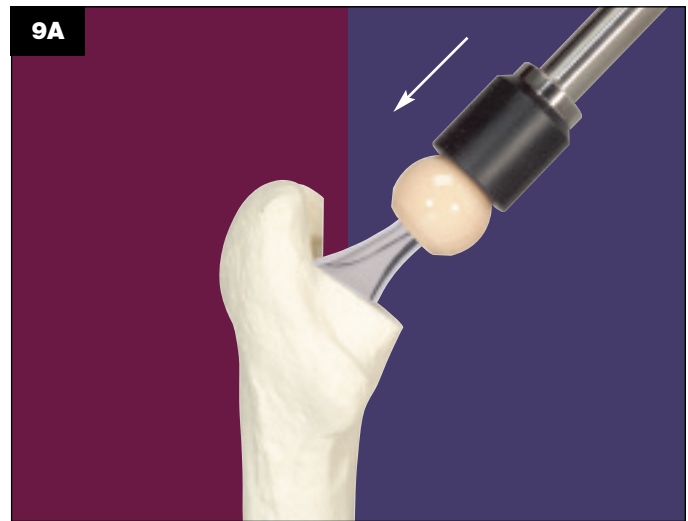


9 Head Assembly

Prior to head assembly, neck length selection may be re-evaluated using a Stryker® C-Taper Trial Head. Place the C-Taper Trial Head onto the stem neck taper and reduce the hip to verify that the mechanics have not been altered due to implant seating.

Remove the Trial Head and dry the implant trunnion with a laparotomy sponge or sterile towel.

Select the appropriate C-Taper Head size and place it onto the dry trunnion of the femoral stem with a slight twist. Impact the head with two moderate blows using the Stem Head Impactor (1104-1000) (**Figure 9A**). If necessary, the head can be removed utilizing the head disassembly instrument (**Figure 9B**).



Catalog Information

CuttingEdge Advantage™ General Instruments

Catalog Number	Part Description
1100-1225	127° C-Taper Trial Neck – 25mm
1100-1230	127° C-Taper Trial Neck – 30mm
1100-1235	127° C-Taper Trial Neck – 35mm
1100-1240	127° C-Taper Trial Neck – 40mm
1100-1325	132° C-Taper Trial Neck – 25mm
1100-1330	132° C-Taper Trial Neck – 30mm
1100-1335	132° C-Taper Trial Neck – 35mm
1100-1340	132° C-Taper Trial Neck – 40mm
1100-2200A	C-Taper 22mm Trial Head +0mm
1100-2225A	C-Taper 22mm Trial Head +2.5mm
1100-2205A	C-Taper 22mm Trial Head +5mm
1100-2210A	C-Taper 22mm Trial Head +10mm
1100-2600A	C-Taper 26mm Trial Head +0mm
1100-2625A	C-Taper 26mm Trial Head +2.5mm
1100-2605A	C-Taper 26mm Trial Head +5mm
1100-2675A	C-Taper 26mm Trial Head +7.5mm
1100-2610A	C-Taper 26mm Trial Head +10mm
1100-2898A	C-Taper 28mm Trial Head -3.0mm
1100-2897A	C-Taper 28mm Trial Head -2.5mm
1100-2800A	C-Taper 28mm Trial Head +0mm
1100-2825A	C-Taper 28mm Trial Head +2.5mm
1100-2805A	C-Taper 28mm Trial Head +5mm
1100-2875A	C-Taper 28mm Trial Head +7.5mm
1100-2810A	C-Taper 28mm Trial Head +10mm
1100-3299A	C-Taper 32mm Trial Head -5mm
1100-3297A	C-Taper 32mm Trial Head -2.5mm
1100-3200A	C-Taper 32mm Trial Head +0mm
1100-3225A	C-Taper 32mm Trial Head +2.5mm
1100-3205A	C-Taper 32mm Trial Head +5mm
1100-3275A	C-Taper 32mm Trial Head +7.5mm
1100-3210A	C-Taper 32mm Trial Head +10mm
1100-3699A	C-Taper 36mm Trial Head -5mm
1100-3697A	C-Taper 36mm Trial Head -2.5mm
1100-3600A	C-Taper 36mm Trial Head +0mm
1100-3625A	C-Taper 36mm Trial Head +2.5mm
1100-3605A	C-Taper 36mm Trial Head +5mm
1100-3675A	C-Taper 36mm Trial Head +7.5mm
1100-3610A	C-Taper 36mm Trial Head +10mm
1020-2700	Calcar Planer
1104-1000	Femoral Head Impactor
1100-1000	CuttingEdge Advantage™ Broach Handle
1120-1000	Slotted Mallet
1101-2100	T-Handle - Trigger Release
5900-0050	T-Handle - Small Trigger Release
1113-1001	Small Box Chisel
1113-1002	Medium Box Chisel
1113-1003	Large Box Chisel
1100-1500	CuttingEdge Advantage™ Neck Resection Guide

CuttingEdge Advantage™ Primary Instruments

Catalog Number	Part Description
1110-0204	Secur-Fit™ / OmniFit® EON® Broach PF4
1110-0305	Secur-Fit™ / OmniFit® EON® Broach PF5
1110-0406	Secur-Fit™ / OmniFit® EON® Broach PF6/C4
1110-0507	Secur-Fit™ / OmniFit® EON® Broach PF7/C5
1110-0608	Secur-Fit™ / OmniFit® EON® Broach PF8/C6
1110-0709	Secur-Fit™ / OmniFit® EON® Broach PF9/C7
1110-0810	Secur-Fit™ / OmniFit® EON® Broach PF10/C8
1110-0911	Secur-Fit™ / OmniFit® EON® Broach PF11/C9
1110-1012	Secur-Fit™ / OmniFit® EON® Broach PF12/C10
1110-1113	Secur-Fit™ / OmniFit® EON® Broach PF13/C11
1110-1214	Secur-Fit™ / OmniFit® EON® Broach PF14/C12
1110-1001	Small Trochanteric Reamer
1110-1002	Medium Trochanteric Reamer
1110-1003	Large Trochanteric Reamer
1101-0304	Tapered Starter Reamer
1119-0000	Femoral Stem Impactor
1119-2100	Threaded Femoral Stem Impactor/Extractor
1119-3000	OmniFit® EON® Insertor
1119-3100	OmniFit® EON® Locking Insertor
1212-0008	Canal Sizer Trial Tip (8mm)
1212-0009	Canal Sizer Trial Tip (9mm)
1212-0010	Canal Sizer Trial Tip (10mm)
1212-0011	Canal Sizer Trial Tip (11mm)
1212-0012	Canal Sizer Trial Tip (12mm)
1212-0013	Canal Sizer Trial Tip (13mm)
1212-0014	Canal Sizer Trial Tip (14mm)
1212-0015	Canal Sizer Trial Tip (15mm)
1212-0016	Canal Sizer Trial Tip (16mm)
1212-0017	Canal Sizer Trial Tip (17mm)
1212-0018	Canal Sizer Trial Tip (18mm)
1212-0019	Canal Sizer Trial Tip (19mm)
1212-0020	Canal Sizer Trial Tip (20mm)
1212-0000	Depth Gauge Handle

CuttingEdge Advantage™ Optional Instruments

Catalog Number	Part Description
1100-1225S	Secur-Fit™ Max 127° C-Taper Trial Neck – 25mm
1100-1230S	Secur-Fit™ Max 127° C-Taper Trial Neck – 30mm
1100-1235S	Secur-Fit™ Max 127° C-Taper Trial Neck – 35mm
1100-1240S	Secur-Fit™ Max 127° C-Taper Trial Neck – 40mm
1100-1325S	Secur-Fit™ Max 132° C-Taper Trial Neck – 25mm
1100-1330S	Secur-Fit™ Max 132° C-Taper Trial Neck – 30mm
1100-1335S	Secur-Fit™ Max 132° C-Taper Trial Neck – 35mm
1100-1340S	Secur-Fit™ Max 132° C-Taper Trial Neck – 40mm

CuttingEdge Advantage™ Instrument Cases

Catalog Number	Part Description
1440-0001	Single Layer Outer Case
1100-1400	CuttingEdge Advantage™ General Instruments Tray
1100-1402	CuttingEdge Advantage™ Primary Instruments Tray
1100-1403	CuttingEdge Advantage™ Tapered Reamer Tray
1100-1404	Cylindrical Reamer Tray (8.0-14.5mm)
1100-1405	Cylindrical Reamer Tray (15.0-20.0mm)

Ancillary Instruments

Catalog Number	Part Description
HISH-3	3lb. Slide Hammer Handle
HISH-SHAFT	Slide Shaft
1118-6000	Head Disassembly Instrument

Catalog Information

Secur-Fit™ Max Hip Stems 127° Neck Angle

Catalog Number	Stem Size	Neck Length (mm)	Base Offset (mm)	Stem Length (mm)	Distal Tip Diameter (mm)
6052-0625S	#6	25	33	120	9.6
6052-0730S	#7	30	39	130	10.4
6052-0830S	#8	30	40	140	11.2
6052-0935S	#9	35	45	150	11.9
6052-1035S	#10	35	46	160	12.7
6052-1140S	#11	40	51	170	13.5
6052-1240S	#12	40	52	170	14.7
6052-1340S	#13	40	53	170	16

132° Neck Angle

Catalog Number	Stem Size	Neck Length (mm)	Base Offset (mm)	Stem Length (mm)	Distal Tip Diameter (mm)
6051-0425S	#4	25	29	100	8.1
6051-0525S	#5	25	29	110	8.9
6051-0625S	#6	25	30	120	9.6
6051-0730S	#7	30	35	130	10.4
6051-0830S	#8	30	36	140	11.2
6051-0935S	#9	35	41	150	11.9
6051-1035S	#10	35	42	160	12.7
6051-1140S	#11	40	47	170	13.5
6051-1240S	#12	40	47	170	14.7
6051-1340S	#13	40	48	170	16
6051-1440S	#14	40	49	170	17.2

Secur-Fit™ Plus Max Hip Stems 127° Neck Angle

Catalog Number	Stem Size	Base Neck Length (mm)	Base Offset (mm)	Stem Length (mm)	Distal Diameter (mm)
6054-0509S	#5	25	32	110	9
6054-0511S	#5	25	32	110	11
6054-0610S	#6	25	33	120	10
6054-0612S	#6	25	33	120	12
6054-0711S	#7	30	39	130	11
6054-0713S	#7	30	39	130	13
6054-0812S	#8	30	40	140	12
6054-0814S	#8	30	40	140	14
6054-0913S	#9	35	45	150	13
6054-0915S	#9	35	45	150	15
6054-1014S	#10	35	46	160	14
6054-1016S	#10	35	46	160	16
6054-1115S	#11	40	51	170	15
6054-1117S	#11	40	51	170	17
6054-1216S	#12	40	52	170	16
6054-1218S	#12	40	52	170	18
6054-1317S	#13	40	53	170	17
6054-1319S	#13	40	53	170	19
6054-1418S	#14	40	54	170	18
6054-1420S	#14	40	54	170	20

stryker®

Joint Replacements

Trauma

Spine

Micro Implants

Orthobiologics

Instruments

Interventional Pain

Navigation

Endoscopy

Communications

Imaging

Patient Handling Equipment

EMS Equipment

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

www.stryker.com

The information presented in this material 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.

The marks bearing the symbol ™ are trademarks of Stryker.
The marks bearing the symbol ® are registered trademarks of Stryker.

Literature Number: LSP47M
TG/TTP 3M 6/05 8393

Copyright © Stryker 2005
Printed in USA.