

Bixcut

IM Reamer System

Designed to reduce reaming pressure



Introduction / Features and Benefits

Stryker offers two types of flexible reamers:

- Fixed head reamers, with the reamer head fixed to the flexible shaft.
- Modular reamer heads, requiring intra-operative assembly onto the reamer shaft.

Versatility:

Fixed head reamers and modular reamer shafts are available with either AO Fitting or Modified Trinkle Fitting, to allow usage with different power tool adapters.

Design:

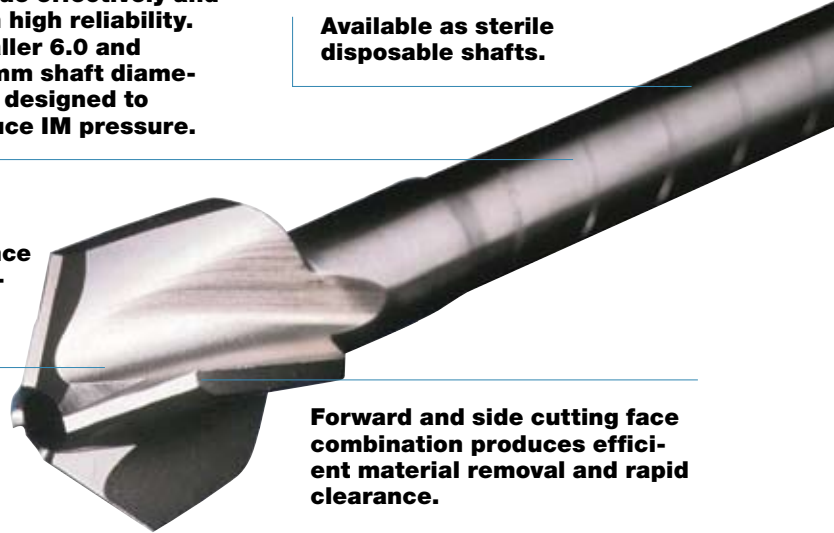
Effective relief of pressure and efficient removal of material as a result of reduced number of reamer blades and reduced length of reamer heads.

Double-wound shaft designed to transmit torque effectively and with high reliability. Smaller 6.0 and 8.0mm shaft diameters designed to reduce IM pressure.

Available as sterile disposable shafts.

Large clearance rate for effective relief of pressure.

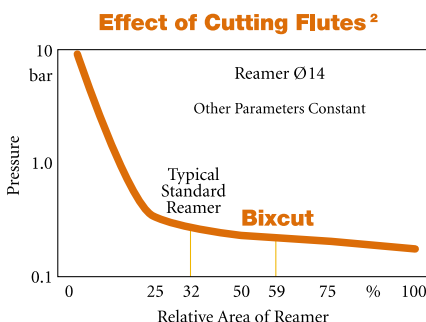
Forward and side cutting face combination produces efficient material removal and rapid clearance.



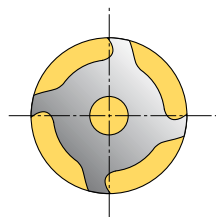
Reducing Reaming Pressure¹

Studies¹ have demonstrated that the pressures developed within the medullary cavity through the introduction of unreamed IM nails can be far greater than those developed during reaming - but this depends very much upon the design of the reamer.

After a three year development study³ involving several universities, the factors that determine the pressure and temperature developed during reaming were clearly established. These factors were applied to the development of advanced reamers that demonstrate significantly better performance than previous designs.

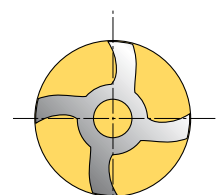


Typical Standard Reamer Ø14mm



Clearance area = 32% of cross section

Bixcut Reamer Ø14mm



Clearance area = 59% of cross section

Clinical References on Bixcut

1. Frölke, J.P., Intramedullary pressure in reamed femoral nailing with two different reamer designs, in: Intramedullary Reaming of long Bones, Ponsen & Looijen, Wageningen, 2001.
2. Speitling, A., Intramedullary Reamers White Paper, September 1999.
3. Mehdi, M. et al., Pressure Changes During Reaming with Different Parameters and Reamer Designs, Clinical Orthopaedics and Related Research, Number 373, pp. 295-303.

Additional Reading Material

- Keating, J.F. et al. Locking Intramedullary Nailing with and without Reaming for Open Fractures of the Tibial Shaft, Journal of Bone and Joint Surgery Volume 79-A, N° 3 – March 1997 (p. 334–341).
- Tornetta P. et al. Reamed Versus Nonreamed Antegrade Femoral Nailing, Journal of Orthopaedic Trauma Volume 14, N° 1 – April 1999 (p.15–19).
- Bhandari, M. et al. Reamed versus nonreamed Intramedullary nailing of lower extremity long bone fracture: a systematic overview and meta-analysis, JOT 2000, 14: 2–8.

This publication sets forth detailed recommended procedures for using Stryker 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. A workshop training is required prior to first surgery.

Technical Details

Reaming of medullary canal:

For any reamed intramedullary nailing techniques, a Ball Tip Guide Wire is first inserted through the entry point and passed through the fracture site.

Warning:

- Flexible reamers should always be used over a Ball Tip Guide Wire. The Ball Tip at the end of the Guide Wire will prevent the reamer head to advance beyond the medullary canal (Fig. 1).
- When using modular reamer heads, the use of Ball Tip Guide Wire is mandatory for the connection of the reamer head to the shaft.



Fig. 1

The modular reamer head features a dovetail shape for a safe connection to the reamer shaft. In addition to this, at the dove tail connector to the reamer head, the flexible shaft features a countersink for the assembly of a grommet in order to avoid disconnection before insertion over Guide Wire (Fig. 2-4).

Note:

After each surgery remove the grommet from the reamer shaft using the grommet inserter/extractor (threaded tip (Fig. 5)).

Caution:

Use X-Ray control to verify correct placement of the Guide Wire in the centre of medullary canal.

Care must be taken with flexible reamers to ensure that the Guide Wire is not displaced laterally during reaming. This could lead to resection of more bone on the lateral side, which in turn would lead to an offset position of the nail, potentially leading to a fracture of the shaft.

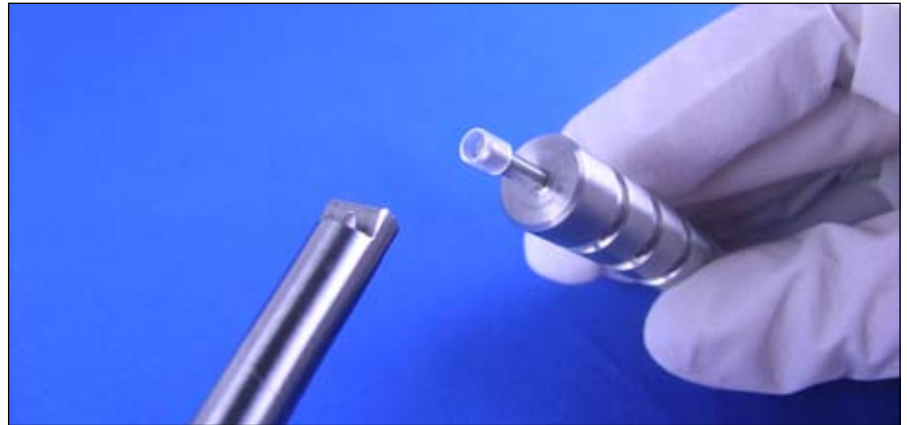


Fig. 2



Fig. 3



Fig. 4



Fig. 5

Technical Details

Reaming is commenced with the flexible shaft equipped with a small size Reamer Head. Continue the procedure in 0.5mm increments until cortical contact is appreciated.

Caution:

Where the bone is comminuted, reaming should be stopped at the fracture site and the reamers advanced with the power drill off.

For T2/S2 Nailing Systems, final reaming should be 1-1.5mm larger than the diameter of the nail to be used (2mm larger for Gamma3/T2 Recon Long Nails).

T2/S2 Nails with diameters larger than/equal to 9mm do not require Guide Wire exchange. These nails can be inserted over the Ball Tip Guide Wire (Gamma3 Nails as well).

Note:

Use the following Guide Wires with Stryker Nailing Systems:

- T2/S2 Tibia (Fig. 6):
Ball Tip Guide Wire,
3x800mm, sterile
(1806-0080S)
- T2 Humerus/PHN (Fig. 7):
Ball Tip Guide Wire,
2.5x800mm, sterile
(1806-0083S)
- T2/S2 Femur, T2 Recon,
Gamma3 (Fig. 8):
Ball Tip Guide Wire,
3x1000mm, sterile
(1806-0085S)

Retrograde reaming of the femur (Fig. 8):

Thoroughly irrigate the knee joint after retrograde reaming of the femur, to remove any debris.

Warning:

- 8mm T2 Femoral and Tibial Nails cannot be inserted over the 3mm Ball Tip Guide Wire. The Ball Tip Guide Wire must be exchanged for the 3x800mm Smooth Tip Guide Wire (1806-0090S) prior to nail insertion.
- All T2 Humeral/PHN Nails require the exchange of the 2.5x800mm Ball Tip Guide Wire with a Smooth Tip Guide Wire, 2.2x800mm (1806-0093S) for the guide wire exchange.
- Use the Teflon Tube (1806-0073S) for Guide Wire exchange.



Fig. 6

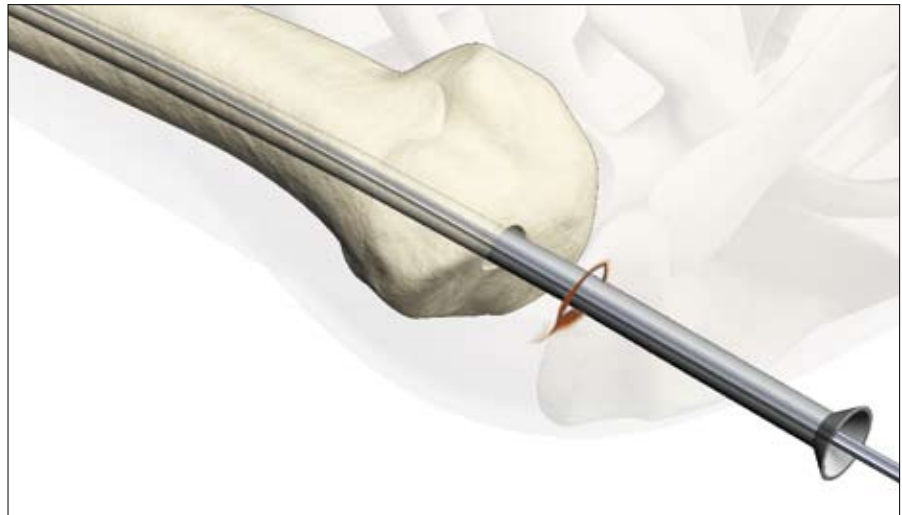


Fig. 7



Fig. 8

Technical Details

Description

Modular Head Kits



Modular Head Reamer Kits to free up space in the Hospital shelves and Operating Rooms

- Mini Kit, Ø9.0-18.0mm (0225-6025)
- Large Kit, Ø9.0-28.0mm (0225-6035)

Sterile Disposable Shafts (1, 2, 3)



- Length 284mm, sterile or non-sterile, connection to Modified Trinkle or AO
- Length 448mm, sterile or non-sterile, connection to Modified Trinkle or AO
- Length 510mm, sterile or non-sterile, connection to Modified Trinkle
- Length 885mm, sterile, connection to Modified Trinkle

Modular Reamer Head



Modular Head Reamer Tray can stock:

- Optional instruments (upper layer)
- Modular head reamers from Ø9.0-26.0mm split on two removable containers (Ø9.0-18.00mm and Ø18.5-26.0mm)
- Fixed head reamers from Ø6.0-8.5mm (AO or Modified Trinkle fitting)
- Two of each modular reamer shafts sizes (460 & 240mm)

Fixed Head Reamers



Fixed Head Reamers to match surgeon preferences⁴.

- Ø6.0-7.0 mm Length 400mm Modified Trinkle or AO
- Ø7.5-18.0mm Length 480mm Modified Trinkle or AO

Optional Instruments



- Hand Reamers, 6.0-9.0mm (1mm increments) with connection to T-Handle
- Hand Reamers, 6.0-9.0mm (1mm increments) with connection to Modified Trinkle
- T-Handle, N/A with connection to Modified Trinkle
- Curved Reduction Rod, diameter 8.5mm, with connection to Modified Trinkle

Optional instruments can be stored on the upper layer of the Modular Reamer Tray (0225-6001).

Grommets/Grommet Inserter



A grommet can be assembled into the dovetail connector of the non-sterile flexible shaft to hold the reamer head in place (see next page, ordering information).

- Grommet (pack of 25 pcs.)⁵
- Grommet inserter/extractor
- Grommet case

¹ Non-Sterile shafts supplied without grommet. Use new grommet for each surgery. See Shaft Accessories.

² Sterile shafts supplied with grommet pre-assembled.

³ For Non-Sterile leave "S" off the REF Number when ordering (510 and 885mm available as sterile only with Modified Trinkle Fitting).

⁴ Fixed head reamer storage tray diameter 8.0-18.0mm available separately (0225-8000).

⁵ Non-Sterile

Ordering Information – Instruments

Bixcut Fixed-Head System - AO Fitting**

REF	Diameter mm	Length mm
0225-5060	6.0*	400
0225-5065	6.5*	400
0225-5070	7.0*	400
0225-6075	7.5	480
0225-6080	8.0	480
0225-6085	8.5	480
0225-6090	9.0	480
0225-6095	9.5	480
0225-6100	10.0	480
0225-6105	10.5	480
0225-6110	11.0	480
0225-8115	11.5	480
0225-8120	12.0	480
0225-8125	12.5	480
0225-8130	13.0	480
0225-8135	13.5	480
0225-8140	14.0	480
0225-8145	14.5	480
0225-8150	15.0	480
0225-8155	15.5	480
0225-8160	16.0	480
0225-8165	16.5	480
0225-8170	17.0	480
0225-8175	17.5	480
0225-8180	18.0	480

Bixcut Fixed-Head System - Modified Trinkle Fitting**

REF	Diameter mm	Length mm
0227-5060	6.0*	400
0227-5065	6.5*	400
0227-5070	7.0*	400
0227-6075	7.5	480
0227-6080	8.0	480
0227-6085	8.5	480
0227-6090	9.0	480
0227-6095	9.5	480
0227-6100	10.0	480
0227-6105	10.5	480
0227-6110	11.0	480
0227-8115	11.5	480
0227-8120	12.0	480
0227-8125	12.5	480
0227-8130	13.0	480
0227-8135	13.5	480
0227-8140	14.0	480
0227-8145	14.5	480
0227-8150	15.0	480
0227-8155	15.5	480
0227-8160	16.0	480
0227-8165	16.5	480
0227-8170	17.0	480
0227-8175	17.5	480
0227-8180	18.0	480

Shafts** (sterile 1, 2, 3, 4) and Shaft Accessories

REF	Description
0227-8240S	Modified Trinkle, Length 284mm
0227-3000S	Modified Trinkle, Length 448mm
0227-8510S	Modified Trinkle, Length 510mm
0227-8885S	Modified Trinkle, Length 885mm
0226-8240S	AO, Length 284mm
0226-3000S	AO, Length 448mm
3212-0-210	Grommet (pack of 25)
3212-0-220	Grommet inserter/extractor
0225-6010	Grommet Case

Bixcut Modular System - Modular Heads

REF	Diameter mm
0226-3090	9.0
0226-3095	9.5
0226-3100	10.0
0226-3105	10.5
0226-3110	11.0
0226-3115	11.5
0226-3120	12.0
0226-3125	12.5
0226-3130	13.0
0226-3135	13.5
0226-3140	14.0
0226-3145	14.5
0226-3150	15.0
0226-3155	15.5
0226-3160	16.0
0226-3165	16.5
0226-3170	17.0
0226-3175	17.5
0226-3180	18.0
0226-4185	18.5
0226-4190	19.0
0226-4195	19.5
0226-4200	20.0
0226-4205	20.5
0226-4210	21.0
0226-4215	21.5
0226-4220	22.0
0226-4225	22.5
0226-4230	23.0
0226-4235	23.5
0226-4240	24.0
0226-4245	24.5
0226-4250	25.0
0226-4255	25.5
0226-4260	26.0
0226-4265	26.5
0226-4270	27.0
0226-4275	27.5
0226-4280	28.0

* Use with 2.2x800mm Smooth Tip and 2.5x800mm Ball Tip Guide Wires only

** Use with Stryker Power Equipment

¹ Non-Sterile shafts supplied without grommet. Use new grommet for each surgery. See Shaft Accessories.

² Sterile shafts supplied with grommet pre-assembled.

³ For Non-Sterile leave "S" off the REF Number when ordering (510 and 885mm available as sterile only with Modified Trinkle Fitting).

⁴ Non-Sterile, AO Fitting Shafts in 510 and 885 mm are available as build to order items:

- CM810921 AO Fitting Shaft, length 510mm
- CM810923 AO Fitting Shaft, length 885mm

Ordering Information – Instruments

REF	Description
Optional Instruments	
0227-0060	Hand Reamer, 6.0mm, w/Mod Trinkle connection
0227-0070	Hand Reamer, 7.0mm, w/Mod Trinkle connection
0227-0080	Hand Reamer, 8.0mm, w/Mod Trinkle connection
0227-0090	Hand Reamer, 9.0mm, w/Mod Trinkle connection
1806-6520	Curved Reduction Rod 8.5mm, w/Mod Trinkle connection
1806-6500	T-Handle, w/Mod Trinkle connection
0225-6001	Storage Tray, empty, Full Bixcut Kit (for REF 0225-6600)
0225-6005	Storage Tray Lid - Full Bixcut Kit (for REF 0225-6600)
0225-6045	Storage Tray, empty, Mini Modular Kit (for REF 0225-6025)
0225-6055	Storage Tray, empty, Large Modular Kit (for REF 0225-6035)
0225-6020	Reamer Tray, Modular Head Kit, Diameter 9.0-18.0mm (for REF 0225-6025 & 0225-6035)
0225-6030	Reamer Tray, Modular Head Kit, Diameter 18.5-28.0mm (for REF 0225-6035)

REF	Description
Kits and Trays	
0225-6025	Modular Head Kit, mini, includes Diameter 9-18mm Modular Heads
0225-6035	Modular Head Kit, large, includes Diameter 9-28mm Modular Heads
0225-6600	Full Bixcut Kit, Includes: <ul style="list-style-type: none">• Diameter 6-8.5mm Fixed Heads w/Modified Trinkle Fittings• Diameter 9-22mm Modular Heads• 284 & 448mm Modular Shafts with Trinkle Fittings (non-sterile)• Grommets (25 pcs), Grommet inserter, Grommet Case
0225-6001	Modular Reamer Storage Tray, empty
0225-8000	Fixed Head Reamer Storage Tray, empty <ul style="list-style-type: none">• Fits sizes Diameter 8-18mm

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