

# Conformity™ Stem

Femoral Hip System



### ***Conformity Stem –***

The Conformity Stem platform provides a comprehensive stem solution to hip arthroplasty surgery. Following the classic concept of a fully-hydroxyapatite (HA) coating on the stem, multiple neck options, collared and collarless features, cementless and cemented options are available for surgeons to offer various solutions for clinical situations and to provide the implant that best meets the patient's needs. Optimized dimensional parameters are applied to the stem design to maximize the biomechanical advantages and to facilitate minimal invasive surgery.



# The Philosophy of Cancellous Bone Compaction



The fully-HA coated femoral stem is a classic design to maximize biological fixation. Despite of cortex engagement (taper stem) or canal fitting (cylindrical stem) technique, the Conformity Stem obeys the concept of cancellous bone compaction to preserve bioactive cancellous bone layer.

The design of broaching rasp is the key to preservation of cancellous bone. The broaching rasp of the Conformity Stem follows the cancellous bone compaction concept with blunt, rib-type teeth which minimize cancellous bone extraction during femoral canal preparation.

## Microstructure of hydroxyapatite coating<sup>[1]</sup>

The thick hydroxyapatite coating enables long-term osteoinduction effect when coating layer decay with time<sup>[2,3]</sup>. Adequate surficial microstructure promotes ideal osteoconduction after Conformity Stem insertion.

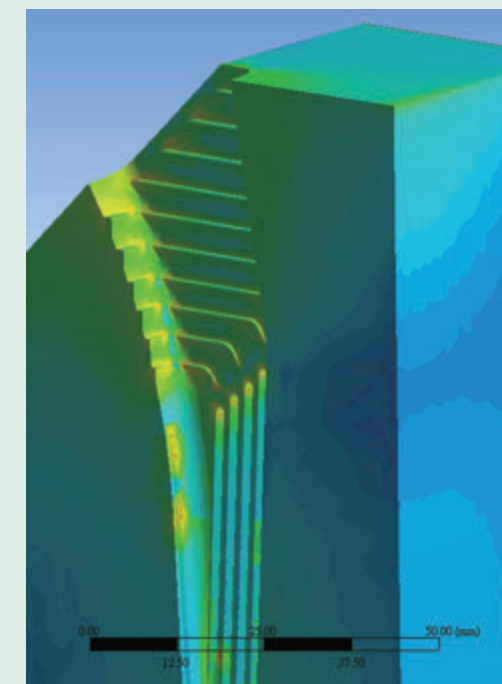
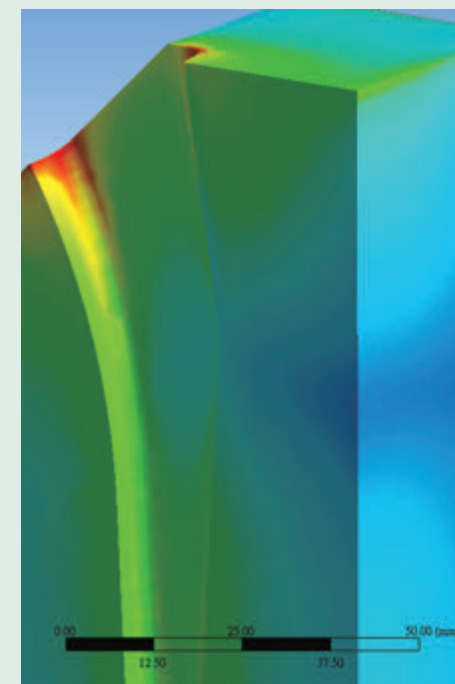
The converted compressive stress can also play an important role, the mechanical stimulants, for bone remodeling<sup>[4]</sup>.

An ideal biomechanical environment with sufficient osteointegration by the hydroxyapatite coating on the Conformity Stem are important factors for obtaining an efficient and stable femoral stem implantation.



## Structural Stability and Biomechanical Advantage

The medial step and horizontal grooves on the anterior-posterior proximal region of the Conformity Stem enable axial support against compressive load from the femoral head. By engaging the host bone with medial steps, the Conformity Stem is designed to reduce the possible hoop stress on peripheral bony structures to minimize the risk of periprosthetic fracture during stem impaction.



Axial stability: the von Mises stress on bony structure comparison between press-fit and step support techniques<sup>[5]</sup>.



# Conform to Reality

## Reasonable Offset & Neck Length

Basing on anthropometric studies, the femoral head offset ranges for Conformity Stem series are 36.0~43.5 mm (standard / coxa vara standard) and 43.0~50.5 mm (high offset / coxa vara high offset). A even greater offset can be adjusted by using femoral head component with larger neck offset values. For smaller sized patients, shorter femoral head offset can be achieved by applying short neck stems (31.0~35.0 mm).

For fulfilling the femoral offset demand in anatomic perspective, reasonable stem length assignment is critical in clinical practice. The ideal definition to neck lengths of Conformity Stem system are :

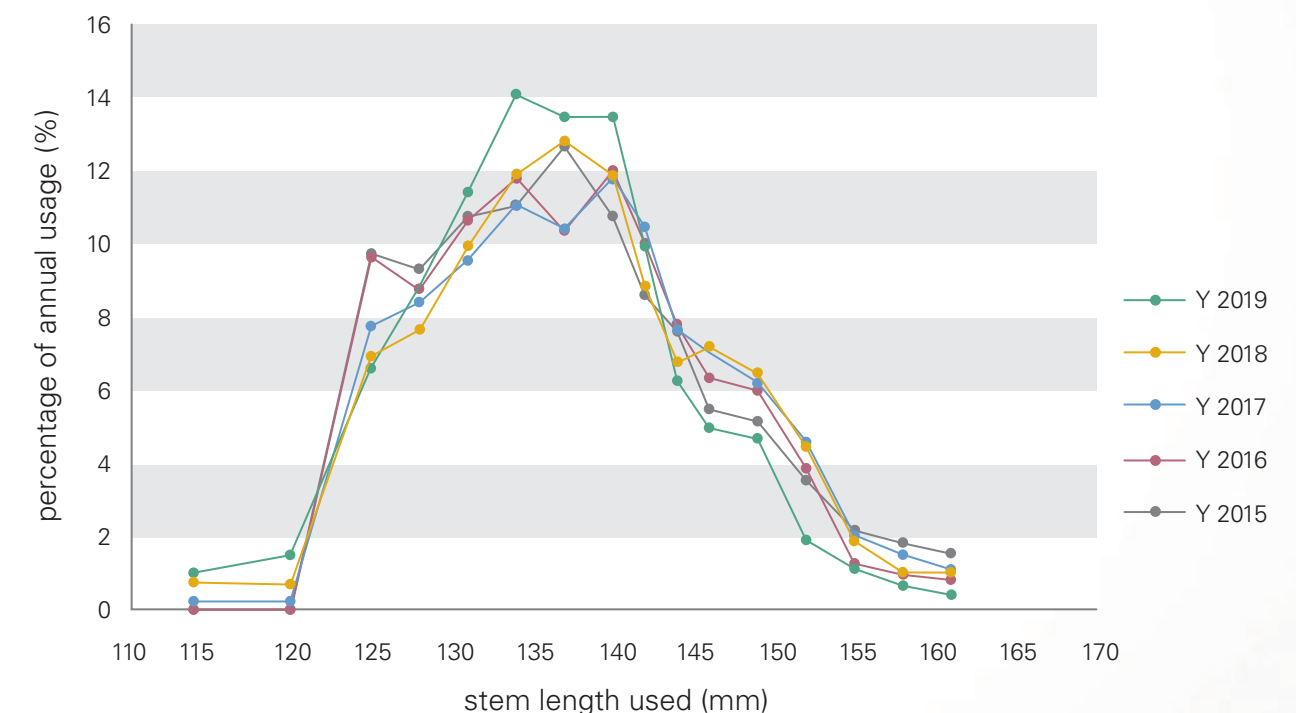
Standard : 35.5 mm  
 High Offset : 40.5 mm  
 Coxa Vara Standard : 32.5 mm  
 Coxa Vara High Offset : 37.5 mm  
 Short Neck : 28.5 mm

| Study                                 | Subject # | Database/Population | Head Offset (mm)           | Range (mm)        |
|---------------------------------------|-----------|---------------------|----------------------------|-------------------|
| Carmona et al. (2019) <sup>[6]</sup>  | 628       | SOMA                | 40.6 / 44.3 (female/male)  | –                 |
| de Sousa et al. (2010) <sup>[7]</sup> | 110       | Brazil              | 42.0 / 42.6 (left/right)   | 28.5~65.0         |
| Siwach (2018) <sup>[8]</sup>          | 150       | India               | 38                         | 29~47             |
| Rubin et al. (1992) <sup>[9]</sup>    | 32        | Caucasian           | 47                         | 33.2~62.8         |
| Noble et al. (1988) <sup>[10]</sup>   | 200       | Caucasian           | 43                         | 23.6~61           |
| Rawal et al. (2012) <sup>[11]</sup>   | 98        | India               | 37.4 / 42.83 (female/male) | 32~54             |
| Husmann et al. (1997) <sup>[12]</sup> | 310       | France              | 40.5                       | 23.4~60.8         |
| <b>Conformity Stem</b>                |           |                     | <b>43.8 (mid of range)</b> | <b>28.9~58.7*</b> |

\*range defined by U2 femoral head offset from -3 to +10 mm

## Evidence-Based Stem Length

Adequate stem length is important for implant stability. However, longer stems are associated with a higher incidence of periprosthetic fracture and thigh pain which may reduce the quality of postoperative outcomes<sup>[13]</sup>.



The successful experience of UTF Reduced Stem of United represents a normal distribution of stem length required in clinical practice<sup>[14]</sup>. The stem lengths assigned in Conformity Stem series (115~160 mm) can fulfill the major anatomical demand from various patients.



### 5 Options for Neck Restoration

- Standard
- High Offset
- Coxa Vara Standard
- Coxa Vara High Offset
- Short Neck

### Collared / Collarless Options

- Allows surgeon preference to meet patient's needs

### Medial Step Feature

- Designed to reduce hoop stress



### Fully HA Coated Surface

- The 155 µm HA coating allows for optimal osseointegration

### 12/14 Neck Taper

- Accommodates a complete selection of femoral heads

### Proximal Horizontal Grooves

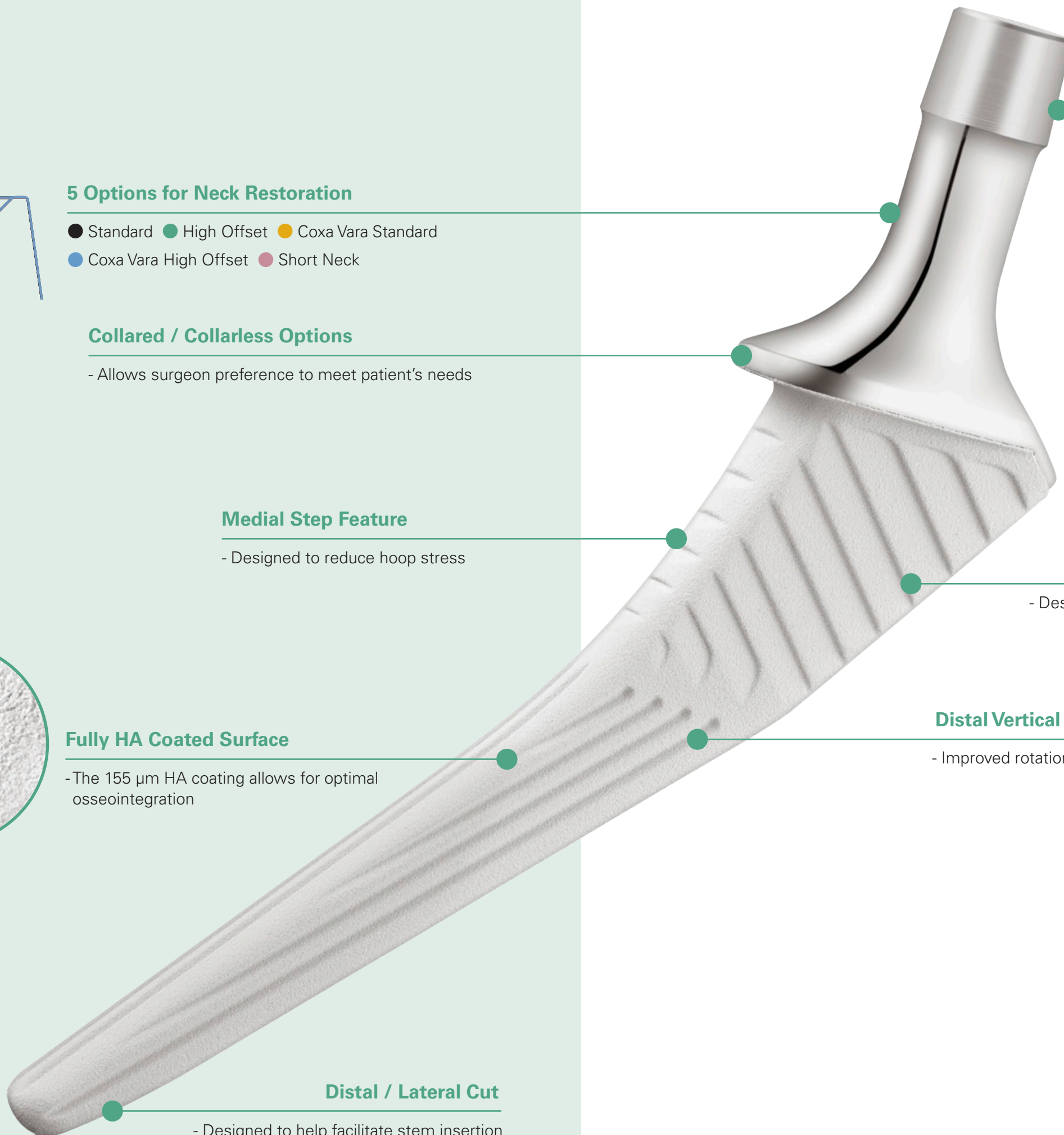
- Designed to help avoid stem subsidence

### Distal Vertical Grooves

- Improved rotational stability

### Distal / Lateral Cut

- Designed to help facilitate stem insertion





# Multiple Options Fulfilling Multiple Demands

**Standard, Collarless**



**High Offset, Collarless**



**Standard, Collared**



**High Offset, Collared**



**Coxa Vara Standard, Collared**



**Coxa Vara High offset, Collared**



**Short Neck, Collared**



**Standard, Cemented**



**High Offset, Cemented**



Basic stem design with standard and high offset options enable the surgeon to finely adjust the soft tissue tension to achieve joint stability.

The collared hip stem structure provides support at the medial calcar to help avoid stem subsidence after insertion<sup>[15,16]</sup>.

Offering solutions for lower neck-shaft angled or smaller sized patients with a shorter femoral neck from an anatomical perspective.

The backup solution when encountering poor bone quality, insufficient stability due to bone loss, or ambiguous canal geometry.

# Order Information

| Catalog Number | Description |
|----------------|-------------|
|----------------|-------------|

Conformity, Collared

Standard



High Offset



| Standard    | High Offset |      |
|-------------|-------------|------|
| 1110 - 1001 | 1110 - 1201 | # 1  |
| 1110 - 1002 | 1110 - 1202 | # 2  |
| 1110 - 1003 | 1110 - 1203 | # 3  |
| 1110 - 1004 | 1110 - 1204 | # 4  |
| 1110 - 1005 | 1110 - 1205 | # 5  |
| 1110 - 1006 | 1110 - 1206 | # 6  |
| 1110 - 1007 | 1110 - 1207 | # 7  |
| 1110 - 1008 | 1110 - 1208 | # 8  |
| 1110 - 1009 | 1110 - 1209 | # 9  |
| 1110 - 1010 | 1110 - 1210 | # 10 |
| 1110 - 1011 | 1110 - 1211 | # 11 |

Conformity, Collarless

Standard



High Offset



| Standard    | High Offset |      |
|-------------|-------------|------|
| 1110 - 3001 | 1110 - 3201 | # 1  |
| 1110 - 3002 | 1110 - 3202 | # 2  |
| 1110 - 3003 | 1110 - 3203 | # 3  |
| 1110 - 3004 | 1110 - 3204 | # 4  |
| 1110 - 3005 | 1110 - 3205 | # 5  |
| 1110 - 3006 | 1110 - 3206 | # 6  |
| 1110 - 3007 | 1110 - 3207 | # 7  |
| 1110 - 3008 | 1110 - 3208 | # 8  |
| 1110 - 3009 | 1110 - 3209 | # 9  |
| 1110 - 3010 | 1110 - 3210 | # 10 |
| 1110 - 3011 | 1110 - 3211 | # 11 |

Conformity, Coxa Vara

Standard



High Offset

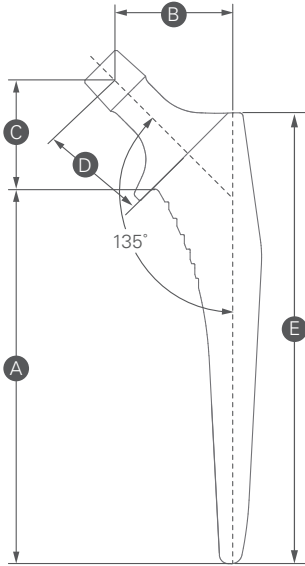
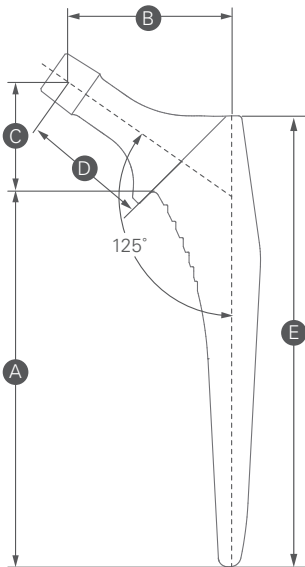
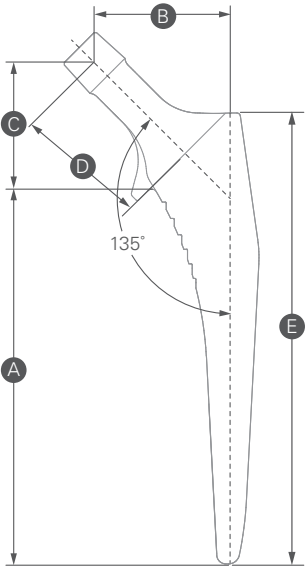


| Standard     | High Offset |             |
|--------------|-------------|-------------|
| 1110 - 5001* | # 1         |             |
| 1110 - 5002* | # 2         | 1110 - 5202 |
| 1110 - 5003* | # 3         | 1110 - 5203 |
| 1110 - 5004* | # 4         | 1110 - 5204 |
| 1110 - 5005* | # 5         | 1110 - 5205 |
| 1110 - 5006* | # 6         | 1110 - 5206 |
| 1110 - 5007* | # 7         | 1110 - 5207 |
|              |             | 1110 - 5208 |
|              |             | 1110 - 5209 |
|              |             | 1110 - 5210 |
|              |             | 1110 - 5211 |

Conformity, Short Neck



| Short Neck   |     |
|--------------|-----|
| 1110 - 1401  | # 1 |
| 1110 - 1402  | # 2 |
| 1110 - 1403  | # 3 |
| 1110 - 1404* | # 4 |
| 1110 - 1405* | # 5 |
| 1110 - 1406* | # 6 |
| 1110 - 1407* | # 7 |



Collared & Collarless

| Size | A<br>Medial Length | B<br>Offset |             | C<br>Vertical Height | D<br>Neck Length |             | E<br>Lateral Length |
|------|--------------------|-------------|-------------|----------------------|------------------|-------------|---------------------|
|      |                    | Standard    | High Offset |                      | Standard         | High Offset |                     |
| # 1  | 95.0               | 36.0        | 43.0        | 34.0                 | 35.5             | 40.5        | 115.0               |
| # 2  | 99.5               | 36.5        | 43.5        | 34.0                 | 35.5             | 40.5        | 119.5               |
| # 3  | 104.0              | 37.5        | 44.5        | 34.0                 | 35.5             | 40.5        | 124.0               |
| # 4  | 108.5              | 38.0        | 45.0        | 34.0                 | 35.5             | 40.5        | 128.5               |
| # 5  | 113.0              | 39.0        | 46.0        | 34.0                 | 35.5             | 40.5        | 133.0               |
| # 6  | 117.5              | 39.5        | 46.5        | 34.0                 | 35.5             | 40.5        | 137.5               |
| # 7  | 122.0              | 40.0        | 47.0        | 34.0                 | 35.5             | 40.5        | 142.0               |
| # 8  | 126.5              | 41.0        | 48.0        | 34.0                 | 35.5             | 40.5        | 146.5               |
| # 9  | 131.0              | 41.5        | 48.5        | 34.0                 | 35.5             | 40.5        | 151.0               |
| # 10 | 135.5              | 42.5        | 49.5        | 34.0                 | 35.5             | 40.5        | 155.5               |
| # 11 | 140.0              | 43.5        | 50.5        | 34.0                 | 35.5             | 40.5        | 160.0               |

Unit : mm

Coxa Vara, Standard & High Offset

| Size | A<br>Medial Length |             | B<br>Offset |             | C<br>Vertical Height |             | D<br>Neck Length |             | E<br>Lateral Length |             |
|------|--------------------|-------------|-------------|-------------|----------------------|-------------|------------------|-------------|---------------------|-------------|
|      | Standard           | High Offset | Standard    | High Offset | Standard             | High Offset | Standard         | High Offset | Standard            | High Offset |
| # 1  | 95.0               | -           | 36.0        | -           | 29.0                 | -           | 32.5             | -           | 115.0               | -           |
| # 2  | 99.5               | 99.5        | 36.5        | 43.5        | 29.0                 | 29.0        | 32.5             | 37.5        | 119.5               | 119.5       |
| # 3  | 104.0              | 104.0       | 37.5        | 44.5        | 29.0                 | 29.0        | 32.5             | 37.5        | 124.0               | 124.0       |
| # 4  | 108.5              | 108.5       | 38.0        | 45.0        | 29.0                 | 29.0        | 32.5             | 37.5        | 128.5               | 128.5       |
| # 5  | 113.0              | 113.0       | 39.0        | 46.0        | 29.0                 | 29.0        | 32.5             | 37.5        | 133.0               | 133.0       |
| # 6  | 117.5              | 117.5       | 39.5        | 46.5        | 29.0                 | 29.0        | 32.5             | 37.5        | 137.5               | 137.5       |
| # 7  | 122.0              | 122.0       | 40.0        | 47.0        | 29.0                 | 29.0        | 32.5             | 37.5        | 142.0               | 142.0       |
| # 8  | -                  | 126.5       | -           | 48.0        | -                    | 29.0        | -                | 37.5        | -                   | 146.5       |
| # 9  | -                  | 131.0       | -           | 48.5        | -                    | 29.0        | -                | 37.5        | -                   | 151.0       |
| # 10 | -                  | 135.5       | -           | 49.5        | -                    | 29.0        | -                | 37.5        | -                   | 155.5       |
| # 11 | -                  | 140.0       | -           | 50.5        | -                    | 29.0        | -                | 37.5        | -                   | 160.0       |

Unit : mm

Short Neck

| Size | A<br>Medial Length | B<br>Offset | C<br>Vertical Height | D<br>Neck Length | E<br>Lateral Length |
|------|--------------------|-------------|----------------------|------------------|---------------------|
| # 1  | 95.0               | 31.0        | 29.0                 | 28.5             | 115.0               |
| # 2  | 99.5               | 31.5        | 29.0                 | 28.5             | 119.5               |
| # 3  | 104.0              | 32.5        | 29.0                 | 28.5             | 124.0               |
| # 4  | 108.5              | 33.0        | 29.0                 | 28.5             | 128.5               |
| # 5  | 113.0              | 34.0        | 29.0                 | 28.5             | 133.0               |
| # 6  | 117.5              | 34.5        | 29.0                 | 28.5             | 137.5               |
| # 7  | 122.0              | 35.0        | 29.0                 | 28.5             | 142.0               |

Unit : mm

\* Items not commercially available in EU market under regulatory of CE MDR

# Order Information

| Catalog Number | Description |
|----------------|-------------|
|----------------|-------------|

Conformity, Cemented

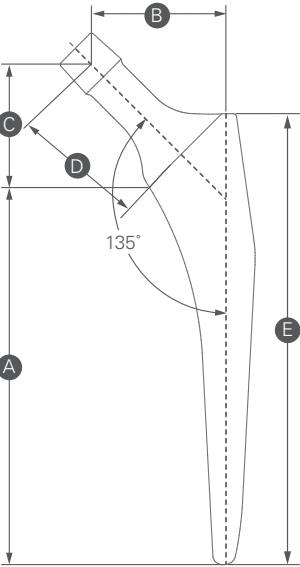
Standard



High Offset



| Standard    | High Offset |      |
|-------------|-------------|------|
| 1110 - 7001 | 1110 - 7201 | # 1  |
| 1110 - 7002 | 1110 - 7202 | # 2  |
| 1110 - 7003 | 1110 - 7203 | # 3  |
| 1110 - 7004 | 1110 - 7204 | # 4  |
| 1110 - 7005 | 1110 - 7205 | # 5  |
| 1110 - 7006 | 1110 - 7206 | # 6  |
| 1110 - 7007 | 1110 - 7207 | # 7  |
| 1110 - 7008 | 1110 - 7208 | # 8  |
| 1110 - 7009 | 1110 - 7209 | # 9  |
| 1110 - 7010 | 1110 - 7210 | # 10 |



| Size | A<br>Medial Length | B<br>Offset |             | C<br>Vertical Height | D<br>Neck Length |             | E<br>Lateral Length |
|------|--------------------|-------------|-------------|----------------------|------------------|-------------|---------------------|
|      |                    | Standard    | High Offset |                      | Standard         | High Offset |                     |
| # 1  | 95.0               | 36.0        | 43.0        | 34.0                 | 35.5             | 40.5        | 115.0               |
| # 2  | 99.5               | 36.5        | 43.5        | 34.0                 | 35.5             | 40.5        | 119.5               |
| # 3  | 104.0              | 37.5        | 44.5        | 34.0                 | 35.5             | 40.5        | 124.0               |
| # 4  | 108.5              | 38.0        | 45.0        | 34.0                 | 35.5             | 40.5        | 128.5               |
| # 5  | 113.0              | 39.0        | 46.0        | 34.0                 | 35.5             | 40.5        | 133.0               |
| # 6  | 117.5              | 39.5        | 46.5        | 34.0                 | 35.5             | 40.5        | 137.5               |
| # 7  | 122.0              | 40.0        | 47.0        | 34.0                 | 35.5             | 40.5        | 142.0               |
| # 8  | 126.5              | 41.0        | 48.0        | 34.0                 | 35.5             | 40.5        | 146.5               |
| # 9  | 131.0              | 41.5        | 48.5        | 34.0                 | 35.5             | 40.5        | 151.0               |
| # 10 | 135.5              | 42.5        | 49.5        | 34.0                 | 35.5             | 40.5        | 155.5               |

Unit : mm

# Order Information

| Catalog Number | Size | Canal Size (mm) |
|----------------|------|-----------------|
|----------------|------|-----------------|

Cement Restrictor, I-Type



|             |      |         |
|-------------|------|---------|
| 1907 - 1008 | # 8  | 8 - 9   |
| 1907 - 1010 | # 10 | 10 - 11 |
| 1907 - 1012 | # 12 | 12 - 13 |
| 1907 - 1014 | # 14 | 14 - 15 |
| 1907 - 1016 | # 16 | 16 - 17 |
| 1907 - 1018 | # 18 | 18 - 19 |

## Reference

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[16] Cementless lateralized stems in primary THA: Mid-term survival and risk factors for failure in 172 stems . Courtin C, Viste A, Subtil F, Cantin O, Desmarchelier R, Fessy MH. Orthop Traumatol Surg Res 2017;103:15–19.



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