



# **Echo® Bi-Metric® Hip Stem**

**Surgical Technique**

One Surgeon. One Patient.®

**Over 1 million times per year, Biomet helps one surgeon provide personalized care to one patient.**

The science and art of medical care is to provide the right solution for each individual patient. This requires clinical mastery, a human connection between the surgeon and the patient, and the right tools for each situation.

At Biomet, we strive to view our work through the eyes of one surgeon and one patient. We treat every solution we provide as if it's meant for a family member.

Our approach to innovation creates real solutions that assist each surgeon in the delivery of durable personalized care to each patient, whether that solution requires a minimally invasive surgical technique, advanced biomaterials or a patient-matched implant.

**When one surgeon connects with one patient to provide personalized care, the promise of medicine is fulfilled.**

# Echo® Bi-Metric® Hip Stem

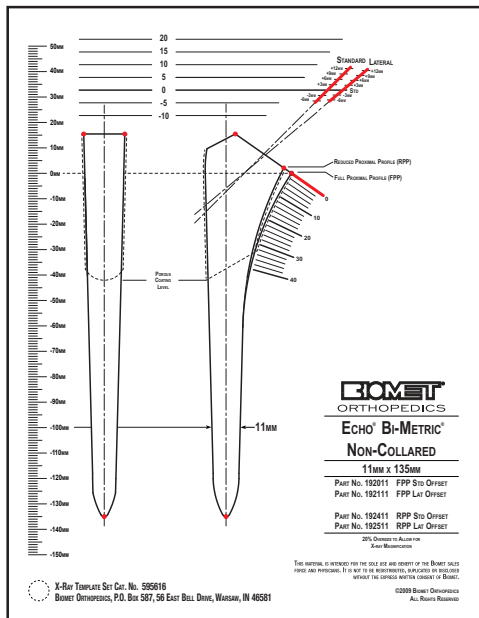


Figure 1



Figure 2

## Biomet's Echo® Hip System Offers Three Stem Variations

**Echo® FX Stem:** Forged cobalt chromium alloy, Interlok® grit-blasted, cemented or press-fit stem

**Echo® PF Stem:** Forged titanium alloy, Interlok® grit-blasted, press-fit stem

**Echo® Bi-Metric® Stem:** Forged titanium alloy, PPS® Porous Plasma Sprayed, press-fit stem

Any one of the Echo® Hip System components may be utilized in total or hemi hip arthroplasty.

The Echo® Bi-Metric® Hip System was designed and developed in conjunction with Michael Berend, M.D.; Philip Faris, M.D.; Kevin Garvin, M.D.; Douglas Jessup, M.D.; Michael Keating, M.D.; John Meding, M.D. and Jeffery Mokris, M.D.

This Echo® Bi-Metric® Hip System pre-operative planning and surgical technique is utilized by the surgeons listed above, Biomet, as the manufacturer of this device, does not practice medicine and does not recommend this device or technique. Each surgeon is responsible for determining the appropriate device and technique to utilize on each individual patient.

## Preoperative Planning

Preoperative templates are provided for determining optimal component size, femoral neck resection level and appropriate neck length (Figure 1). Radiographs should include a full A/P (anteroposterior) view of the pelvis including the proximal one-half of both femurs and a lateral view of the proximal half of the affected femur.

## Surgical Approach

The Echo® Hip System is designed to accommodate any standard approach based on the surgeon's experience or personal preference. Adequate exposure that allows bony landmark visualization, component alignment and thorough soft tissue assessment can contribute to more successful results (Figure 2).

# Echo® Bi-Metric® Hip Stem

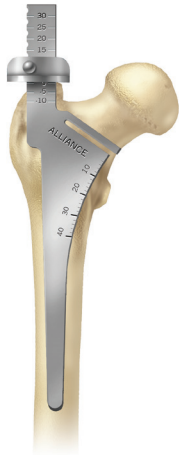


Figure 3



Figure 4



Figure 5

## Femoral Head Resection

Using the Echo Bi-Metric Exact™ templates, determine the height of the femoral neck resection above the lesser trochanter and the height of the tip of the greater trochanter relative to the shoulder of the femoral component. The Exact™ Alliance femoral neck resection guide references these measurements intraoperatively. Position the femoral neck resection guide parallel to the longitudinal axis of the femoral shaft. Confirm the height of the femoral neck resection above the lesser trochanter using the scale on the medial aspect of the resection guide relative to the preoperative templated X-ray. The vertical scale referenced to the greater trochanter is an additional confirmation of the resection level (Figure 3). Resect the femoral neck at this level to re-create the appropriate femoral neck length and offset.

## Accessing Femoral Canal

The Exact™ Offset Chisel is used to access the piriformis fossa and to clear a channel to accept the tapered reamers. The design provides for adequate visualization for a lateral pathway to avoid varus positioning (Figure 4).

A starter reamer on a T-handle may be used to identify the femoral canal (Figure 5).

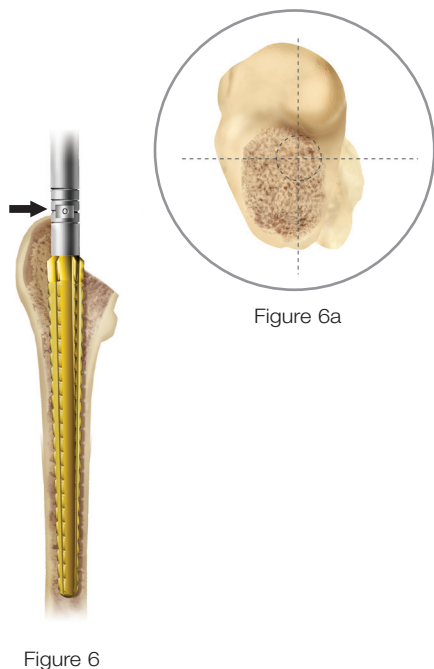


Figure 6

Figure 6a



Figure 7

## Reaming Femoral Canal

**Note:** If full toothed broaches are utilized femoral reaming is optional.

The Exact™ Alliance® Reamers are proportionally sized tapered reamers with blunt tips that are used to progressively enlarge the intramedullary canal to the size estimated by preoperative templating. In determining reamer depth, the proximal tip of the greater trochanter is used as a landmark for reference bands on the reamer shaft (Figure 6). Bands along the reamer shaft reference the vertical scale on the templates and the resection guide, which correspond to the center of the femoral head (Figure 7). For example, if the templated vertical scale is a +10, bury the reamer until the +10 mm mark on the reamer lines up with the top of the greater trochanter for accurate femoral depth.

If no preoperative templating was performed, bury the gold nitrided coating to the medial calcar. Begin with a canal reamer that is 3–4 mm smaller than the templated femoral component. Sequentially ream the femoral canal until cortical “chatter” is encountered, which determines stem size. It is important to stay lateral and posterior with the femoral reamers to ensure that the canal is being prepared in neutral alignment with the femoral axis (Figure 6a).

**Note:** It is important to be lateral in the greater trochanter when broaching and reaming. A trochanteric reamer is available to give additional lateralization if necessary.

# Echo® Bi-Metric® Hip Stem

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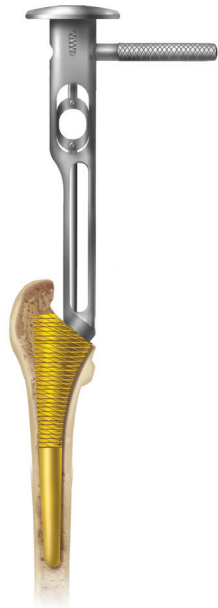


Figure 8



Figure 9

## Broaching Proximal Femur

Begin the broaching process with a broach at least 2–3 mm smaller than the largest reamer used. Attach the broach handle to the broach by pulling back on the trigger and locking it into place. It is important that the broach is oriented to produce the desired femoral anteversion. Sequentially increase the size of the broach until the templated size is reached or until the broach engages the medial cortex and cannot be placed deeper (Figure 8). With the properly sized broach in place, the calcar can be planed flush by using the retractable calcar planer.

The calcar planer is specially designed to reach the short broach post and prevent metal-to-metal wear of the post (Figure 9).

**Note:** When utilizing the Echo® Bi-Metric® full proximal profile stem option use the gold nitrided Exact™ Alliance® Full Proximal Profile (FPP) broaches (Figure 8 and 9). If using the Echo® Bi-Metric® reduced proximal profile stem the black nitrided Exact™ Alliance® Reduced Proximal Profile (RPP) broaches must be used.

Echo® Bi-Metric®  
FPP Standard



Echo® Bi-Metric®  
RPP Standard



Echo® Bi-Metric®  
FPP High Offset



Echo® Bi-Metric®  
RPP High Offset



Figure 10



Figure 11

## Trial Reduction

To perform the trial reduction with the final broach still in place, attach the appropriate Echo® Bi-Metric® neck trunnion over the extended broach post. The gold trunnion indicates standard offset, while the black trunnion represents high offset (Figure 10). The Echo® Bi-Metric® trunnions are sized to correspond to the

appropriate broach size with the stem size clearly marked on top of the trunnion. Select the trial femoral head of desired diameter and neck length (Figure 11). Reduce the hip to ensure that proper leg length and joint stability have been achieved. In performing the trial range of motion, ensure the absence of impingement of the femoral neck on the rim of the acetabular component or acetabular liner.

# Echo® Bi-Metric® Hip Stem

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Figure 12

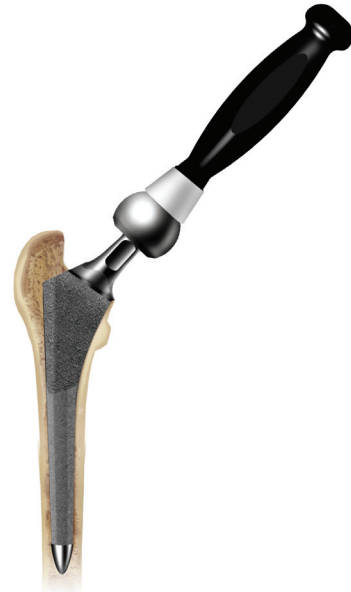


Figure 13

## Stem Insertion

Align the angled face of the Echo® Bi-Metric® stem inserter to the angled face of the implant that corresponds to the size of the final broach. Press firmly and turn the knob clockwise to tighten. Use this inserter to control rotation of the implant and allow the implant to be placed into the femoral envelope with the proper amount of anteversion (Figure 12). The stem should slide distally into the canal without much resistance until it is 5–10 mm proximal to the calcar. As resistance is met, gently tap the inserter until the implant is seated.

If desired, another trial reduction can be accomplished prior to selecting final head size and impacting the modular head onto the stem. Provisional heads in seven neck lengths allow an additional trial reduction using the actual implant to ensure proper leg length and stability. After fully seating the femoral component, impact the appropriate modular head onto the clean, dry taper (Figure 13).







# Echo® Bi-Metric® Hip Stem

## Implants

### Echo® Bi-Metric® Full Proximal Profile (FPP) – Standard 135° Neck Angle


Product	Part Number	Description	Size
	192007	Full Proximal Profile (FPP) - Standard	7 mm
	192008	Full Proximal Profile (FPP) - Standard	8 mm
	192009	Full Proximal Profile (FPP) - Standard	9 mm
	192010	Full Proximal Profile (FPP) - Standard	10 mm
	192011	Full Proximal Profile (FPP) - Standard	11 mm
	192012	Full Proximal Profile (FPP) - Standard	12 mm
	192013	Full Proximal Profile (FPP) - Standard	13 mm
	192014	Full Proximal Profile (FPP) - Standard	14 mm
	192015	Full Proximal Profile (FPP) - Standard	15 mm
	192016	Full Proximal Profile (FPP) - Standard	16 mm
	192017	Full Proximal Profile (FPP) - Standard	17 mm
	*192018	Full Proximal Profile (FPP) - Standard	18 mm
	*192019	Full Proximal Profile (FPP) - Standard	19 mm
	*192020	Full Proximal Profile (FPP) - Standard	20 mm
*192021	Full Proximal Profile (FPP) - Standard	21 mm	

### Echo® Bi-Metric® Full Proximal Profile (FPP) – High Offset 130° Neck Angle


Product	Part Number	Description	Size
	192107	Full Proximal Profile (FPP) - High Offset	7 mm
	192108	Full Proximal Profile (FPP) - High Offset	8 mm
	192109	Full Proximal Profile (FPP) - High Offset	9 mm
	192110	Full Proximal Profile (FPP) - High Offset	10 mm
	192111	Full Proximal Profile (FPP) - High Offset	11 mm
	192112	Full Proximal Profile (FPP) - High Offset	12 mm
	192113	Full Proximal Profile (FPP) - High Offset	13 mm
	192114	Full Proximal Profile (FPP) - High Offset	14 mm
	192115	Full Proximal Profile (FPP) - High Offset	15 mm
	192116	Full Proximal Profile (FPP) - High Offset	16 mm
	192117	Full Proximal Profile (FPP) - High Offset	17 mm
	*192118	Full Proximal Profile (FPP) - High Offset	18 mm
	*192119	Full Proximal Profile (FPP) - High Offset	19 mm
	*192120	Full Proximal Profile (FPP) - High Offset	20 mm
*192121	Full Proximal Profile (FPP) - High Offset	21 mm	

\* Only available as a macro set. Separate ordering is required.

### Echo® Bi-Metric® Reduced Proximal Profile (RPP) — Standard 135° Neck Angle

Product	Part Number	Description	Size
	192407	Reduced Proximal Profile (RPP) - Standard	7 mm
	192408	Reduced Proximal Profile (RPP) - Standard	8 mm
	192409	Reduced Proximal Profile (RPP) - Standard	9 mm
	192410	Reduced Proximal Profile (RPP) - Standard	10 mm
	192411	Reduced Proximal Profile (RPP) - Standard	11 mm
	192412	Reduced Proximal Profile (RPP) - Standard	12 mm
	192413	Reduced Proximal Profile (RPP) - Standard	13 mm
	192414	Reduced Proximal Profile (RPP) - Standard	14 mm
	192415	Reduced Proximal Profile (RPP) - Standard	15 mm
	192416	Reduced Proximal Profile (RPP) - Standard	16 mm
	192417	Reduced Proximal Profile (RPP) - Standard	17 mm
	*192418	Reduced Proximal Profile (RPP) - Standard	18 mm
	*192419	Reduced Proximal Profile (RPP) - Standard	19 mm
	*192420	Reduced Proximal Profile (RPP) - Standard	20 mm
*192421	Reduced Proximal Profile (RPP) - Standard	21 mm	


### Echo® Bi-Metric® Reduced Proximal Profile (RPP) — High Offset 130° Neck Angle






Product	Part Number	Description	Size
	192508	Reduced Proximal Profile (RPP) - High Offset	8 mm
	192509	Reduced Proximal Profile (RPP) - High Offset	9 mm
	192510	Reduced Proximal Profile (RPP) - High Offset	10 mm
	192511	Reduced Proximal Profile (RPP) - High Offset	11 mm
	192512	Reduced Proximal Profile (RPP) - High Offset	12 mm
	192513	Reduced Proximal Profile (RPP) - High Offset	13 mm
	192514	Reduced Proximal Profile (RPP) - High Offset	14 mm
	192515	Reduced Proximal Profile (RPP) - High Offset	15 mm
	192516	Reduced Proximal Profile (RPP) - High Offset	16 mm
	192517	Reduced Proximal Profile (RPP) - High Offset	17 mm
	*192518	Reduced Proximal Profile (RPP) - High Offset	18 mm
	*192519	Reduced Proximal Profile (RPP) - High Offset	19 mm
	*192520	Reduced Proximal Profile (RPP) - High Offset	20 mm
	*192521	Reduced Proximal Profile (RPP) - High Offset	21 mm

\* Only available as a macro set. Separate ordering is required.






# Echo® Bi-Metric® Hip Stem

## Instruments

Product	Part Number	Description	Size
	X31-400027	Exact™ Alliance® Reamer	7 mm
	X31-400028	Exact™ Alliance® Reamer	8 mm
	X31-400029	Exact™ Alliance® Reamer	9 mm
	X31-400030	Exact™ Alliance® Reamer	10 mm
	X31-400031	Exact™ Alliance® Reamer	11 mm
	X31-400032	Exact™ Alliance® Reamer	12 mm
	X31-400033	Exact™ Alliance® Reamer	13 mm
	X31-400034	Exact™ Alliance® Reamer	14 mm
	X31-400035	Exact™ Alliance® Reamer	15 mm
	X31-400036	Exact™ Alliance® Reamer	16 mm
	X31-400037	Exact™ Alliance® Reamer	17 mm
	*X31-400038	Exact™ Alliance® Reamer	18 mm
	*X31-400039	Exact™ Alliance® Reamer	19 mm
	*X31-400040	Exact™ Alliance® Reamer	20 mm
*X31-400041	Exact™ Alliance® Reamer	21 mm	

Product	Part Number	Description	Size
	428195	R/B Starter Reamer Tapered	—
	31-112102	Impact Initial Canal Probe	—
	31-473192	Troch Reamer	—
	31-473190	Troch Router	—
	31-555583	Lateralizing Rasp Reamer	—



\* Only available as a macro set. Separate ordering is required.







Product	Part Number	Description	Size
	31-473620	Reamer T-Handle	—
	X31-400003	Resection Guide Alliance®	—
	X31-400006	Resection Guide Troch Stop	—
	31-555588	Hollow Chisel Attachment for Broach Handle	—
	31-400107	Exact™ Alliance® RPP Broach Full	7 mm
	31-400108	Exact™ Alliance® RPP Broach Full	8 mm
	31-400109	Exact™ Alliance® RPP Broach Full	9 mm
	31-400110	Exact™ Alliance® RPP Broach Full	10 mm
	31-400111	Exact™ Alliance® RPP Broach Full	11 mm
	31-400112	Exact™ Alliance® RPP Broach Full	12 mm
	31-400113	Exact™ Alliance® RPP Broach Full	13 mm
	31-400114	Exact™ Alliance® RPP Broach Full	14 mm
	31-400115	Exact™ Alliance® RPP Broach Full	15 mm
	31-400116	Exact™ Alliance® RPP Broach Full	16 mm
	31-400117	Exact™ Alliance® RPP Broach Full	17 mm
	*31-400118	Exact™ Alliance® RPP Broach Full	18 mm
*31-400119	Exact™ Alliance® RPP Broach Full	19 mm	
*31-400120	Exact™ Alliance® RPP Broach Full	20 mm	
*31-400121	Exact™ Alliance® RPP Broach Full	21 mm	

\* Only available as a macro set. Separate ordering is required.

# Echo® Bi-Metric® Hip Stem

## Instruments

Product	Part Number	Description	Size
	31-400307	Exact™ Alliance® RPP Broach Partial	7 mm
	31-400308	Exact™ Alliance® RPP Broach Partial	8 mm
	31-400309	Exact™ Alliance® RPP Broach Partial	9 mm
	31-400310	Exact™ Alliance® RPP Broach Partial	10 mm
	31-400311	Exact™ Alliance® RPP Broach Partial	11 mm
	31-400312	Exact™ Alliance® RPP Broach Partial	12 mm
	31-400313	Exact™ Alliance® RPP Broach Partial	13 mm
	31-400314	Exact™ Alliance® RPP Broach Partial	14 mm
	31-400315	Exact™ Alliance® RPP Broach Partial	15 mm
	31-400316	Exact™ Alliance® RPP Broach Partial	16 mm
	31-400317	Exact™ Alliance® RPP Broach Partial	17 mm
	31-400318	Exact™ Alliance® RPP Broach Partial	18 mm
	31-400319	Exact™ Alliance® RPP Broach Partial	19 mm
	31-400320	Exact™ Alliance® RPP Broach Partial	20 mm
31-400321	Exact™ Alliance® RPP Broach Partial	21 mm	
	X31-400007	Exact™ Alliance® FPP Broach Partial	7 mm
	X31-400008	Exact™ Alliance® FPP Broach Partial	8 mm
	X31-400009	Exact™ Alliance® FPP Broach Partial	9 mm
	X31-400010	Exact™ Alliance® FPP Broach Partial	10 mm
	X31-400011	Exact™ Alliance® FPP Broach Partial	11 mm
	X31-400012	Exact™ Alliance® FPP Broach Partial	12 mm
	X31-400013	Exact™ Alliance® FPP Broach Partial	13 mm
	X31-400014	Exact™ Alliance® FPP Broach Partial	14 mm
	X31-400015	Exact™ Alliance® FPP Broach Partial	15 mm
	X31-400016	Exact™ Alliance® FPP Broach Partial	16 mm
	X31-400017	Exact™ Alliance® FPP Broach Partial	17 mm
	X31-400018	Exact™ Alliance® FPP Broach Partial	18 mm
	X31-400019	Exact™ Alliance® FPP Broach Partial	19 mm
	X31-400020	Exact™ Alliance® FPP Broach Partial	20 mm
X31-400021	Exact™ Alliance® FPP Broach Partial	21 mm	

Product	Part Number	Description	Size
	31-480007	Exact™ Alliance® FPP Broach Full	7 mm
	31-480008	Exact™ Alliance® FPP Broach Full	8 mm
	31-480009	Exact™ Alliance® FPP Broach Full	9 mm
	31-480010	Exact™ Alliance® FPP Broach Full	10 mm
	31-480011	Exact™ Alliance® FPP Broach Full	11 mm
	31-480012	Exact™ Alliance® FPP Broach Full	12 mm
	31-480013	Exact™ Alliance® FPP Broach Full	13 mm
	31-480014	Exact™ Alliance® FPP Broach Full	14 mm
	31-480015	Exact™ Alliance® FPP Broach Full	15 mm
	31-480016	Exact™ Alliance® FPP Broach Full	16 mm
	31-480017	Exact™ Alliance® FPP Broach Full	17 mm
	*31-480018	Exact™ Alliance® FPP Broach Full	18 mm
	*31-480019	Exact™ Alliance® FPP Broach Full	19 mm
	*31-480020	Exact™ Alliance® FPP Broach Full	20 mm
*31-480021	Exact™ Alliance® FPP Broach Full	21 mm	
	31-555500	Exact™ Broach Handle	—
	31-555501	Exact™ Anterior Supine Broach Handle	—
	31-473794	Exact™ Modular Calcar Planer	42 mm
	406661	Exact™ Blades	38 mm
	406662	Exact™ Blades	42 mm
	406663	Exact™ Blades	46 mm
	31-473795	Exact™ Rasp Style Blade	38 mm
	31-473796	Exact™ Rasp Style Blade	42 mm
	31-473797	Exact™ Rasp Style Blade	46 mm

\* Only available as a macro set. Separate ordering is required.

# Echo® Bi-Metric® Hip Stem

## Instruments

Product	Part Number	Description	Size
	31-555619	Stem inserter handle	—
	31-399999	Ergonomic head driver	—
	31-162395	Standard Offset FPP Profile NC Trunnion Trial	7–10 mm
	31-162396	Standard Offset FPP Profile NC Trunnion Trial	11–14 mm
	31-162397	Standard Offset FPP Profile NC Trunnion Trial	15–21 mm
	31-162398	High Offset FPP Profile NC Trunnion Trial	7–10 mm
	31-162399	High Offset FPP Profile NC Trunnion Trial	11–14 mm
	31-162400	High Offset FPP Profile NC Trunnion Trial	15–21 mm
	31-162401	Standard Offset RPP Profile NC Trunnion Trial	7–10 mm
	31-162402	Standard Offset RPP Profile NC Trunnion Trial	11–14 mm
	31-162403	Standard Offset RPP Profile NC Trunnion Trial	15–21 mm
	31-162404	High Offset RPP Profile NC Trunnion Trial	8–10 mm
	31-162405	High Offset RPP Profile NC Trunnion Trial	11–14 mm
	31-162406	High Offset RPP Profile NC Trunnion Trial	15–21 mm



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## Head Options

Description	Size	Offset Options
Cobalt Chrome	22, 26, 32, 36, 38, 40 mm	-6, -3, Std., +3, +6, +9, +12 mm
BioloX® <i>delta</i> Ceramic	28 mm 32, 36 mm 38 mm	-3, Std., +3, +5 mm -3, Std., +3, +6 mm -6, -3, Std., +3, +6 mm

# Echo® Bi-Metric® Hip Stem

## Offsets and Neck Lengths

### Non-Collared Standard Offset Full Proximal Profile Echo® Bi-Metric® Stem

Size	Stem Length (mm)	Neck Angle	Horizontal Offset (mm)							Vertical Offset (mm)							Neck Length (mm)						
			-6	-3	STD	+3	+6	+9	+12	-6	-3	STD	+3	+6	+9	+12	-6	-3	STD	+3	+6	+9	+12
7	115	135	32.8	34.9	<b>37.0</b>	39.1	41.2	43.4	45.5	27.2	29.3	<b>31.4</b>	33.5	35.6	37.8	39.9	27.8	30.8	<b>33.8</b>	36.8	39.8	42.8	45.8
8	120	135	33.1	35.2	<b>37.3</b>	39.4	41.5	43.7	45.8	27.3	29.4	<b>31.5</b>	33.6	35.7	37.9	40.0	27.8	30.8	<b>33.8</b>	36.8	39.8	42.8	45.8
9	125	135	33.4	35.5	<b>37.6</b>	39.7	41.8	44.0	46.1	27.4	29.5	<b>31.6</b>	33.7	35.8	38.0	40.1	27.7	30.7	<b>33.7</b>	36.7	39.7	42.7	45.7
10	130	135	33.7	35.8	<b>37.9</b>	40.0	42.1	44.3	46.4	27.5	29.6	<b>31.7</b>	33.8	35.9	38.1	40.2	27.7	30.7	<b>33.7</b>	36.7	39.7	42.7	45.7
11	135	135	35.7	37.8	<b>39.9</b>	42.0	44.1	46.3	48.4	28.5	30.6	<b>32.7</b>	34.8	36.9	39.1	41.2	29.4	32.4	<b>35.4</b>	38.4	41.4	44.4	47.4
12	140	135	36.0	38.1	<b>40.2</b>	42.3	44.4	46.6	48.7	28.6	30.7	<b>32.8</b>	34.9	37.0	39.2	41.3	29.4	32.4	<b>35.4</b>	38.4	41.4	44.4	47.4
13	145	135	36.3	38.4	<b>40.5</b>	42.6	44.7	46.9	49.0	28.7	30.8	<b>32.9</b>	35.0	37.1	39.3	41.4	29.4	32.4	<b>35.4</b>	38.4	41.4	44.4	47.4
14	150	135	36.6	38.7	<b>40.8</b>	42.9	45.0	47.2	49.3	28.8	30.9	<b>33.0</b>	35.1	37.2	39.4	41.5	29.4	32.4	<b>35.4</b>	38.4	41.4	44.4	47.4
15	155	135	38.6	40.7	<b>42.8</b>	44.9	47.0	49.2	51.3	29.8	31.9	<b>34.0</b>	36.1	38.2	40.4	42.5	31.1	34.1	<b>37.1</b>	40.1	43.1	46.1	49.1
16	160	135	38.9	41.0	<b>43.1</b>	45.2	47.3	49.5	51.6	29.9	32.0	<b>34.1</b>	36.2	38.3	40.5	42.6	31.1	34.1	<b>37.1</b>	40.1	43.1	46.1	49.1
17	165	135	39.2	41.3	<b>43.4</b>	45.5	47.6	49.8	51.9	30.0	32.1	<b>34.2</b>	36.3	38.4	40.6	42.7	31.0	34.0	<b>37.0</b>	40.0	43.0	46.0	49.0
18	170	135	39.5	41.6	<b>43.7</b>	45.8	47.9	50.1	52.2	30.1	32.2	<b>34.3</b>	36.4	38.5	40.7	42.8	31.0	34.0	<b>37.0</b>	40.0	43.0	46.0	49.0
19	175	135	39.8	41.9	<b>44.0</b>	46.1	48.2	50.4	52.5	30.2	32.3	<b>34.4</b>	36.5	38.6	40.8	42.9	31.0	34.0	<b>37.0</b>	40.0	43.0	46.0	49.0
20	180	135	40.1	42.2	<b>44.3</b>	46.4	48.5	50.7	52.8	30.3	32.4	<b>34.5</b>	36.6	38.7	40.9	43.0	30.9	33.9	<b>36.9</b>	39.9	42.9	45.9	48.9
21	185	135	40.4	42.5	<b>44.6</b>	46.7	48.8	51.0	53.1	30.4	32.5	<b>34.6</b>	36.7	38.8	41.0	43.1	30.9	33.9	<b>36.9</b>	39.9	42.9	45.9	48.9

### Non-Collared High Offset Full Proximal Profile Echo® Bi-Metric® Stem

Size	Stem Length (mm)	Neck Angle	Horizontal Offset (mm)							Vertical Offset (mm)							Neck Length (mm)						
			-6	-3	STD	+3	+6	+9	+12	-6	-3	STD	+3	+6	+9	+12	-6	-3	STD	+3	+6	+9	+12
7	115	130	38.4	40.7	<b>43.0</b>	45.3	47.6	49.9	52.2	27.5	29.5	<b>31.4</b>	33.3	35.3	37.2	39.1	32.0	35.0	<b>38.0</b>	41.0	44.0	47.0	50.0
8	120	130	38.7	41.0	<b>43.3</b>	45.6	47.9	50.2	52.5	27.6	29.6	<b>31.5</b>	33.4	35.4	37.3	39.2	32.0	35.0	<b>38.0</b>	41.0	44.0	47.0	50.0
9	125	130	39.0	41.3	<b>43.6</b>	45.9	48.2	50.5	52.8	27.7	29.7	<b>31.6</b>	33.5	35.5	37.4	39.3	32.0	35.0	<b>38.0</b>	41.0	44.0	47.0	50.0
10	130	130	39.3	41.6	<b>43.9</b>	46.2	48.5	50.8	53.1	27.8	29.8	<b>31.7</b>	33.6	35.6	37.5	39.4	32.0	35.0	<b>38.0</b>	41.0	44.0	47.0	50.0
11	135	130	41.3	43.6	<b>45.9</b>	48.2	50.5	52.8	55.1	28.8	30.8	<b>32.7</b>	34.6	36.6	38.5	40.4	33.7	36.7	<b>39.7</b>	42.7	45.7	48.7	51.7
12	140	130	41.6	43.9	<b>46.2</b>	48.5	50.8	53.1	55.4	28.9	30.9	<b>32.8</b>	34.7	36.7	38.6	40.5	33.7	36.7	<b>39.7</b>	42.7	45.7	48.7	51.7
13	145	130	41.9	44.2	<b>46.5</b>	48.8	51.1	53.4	55.7	29.0	31.0	<b>32.9</b>	34.8	36.8	38.7	40.6	33.7	36.7	<b>39.7</b>	42.7	45.7	48.7	51.7
14	150	130	42.2	44.5	<b>46.8</b>	49.1	51.4	53.7	56.0	29.1	31.1	<b>33.0</b>	34.9	36.9	38.8	40.7	33.6	36.6	<b>39.6</b>	42.6	45.6	48.6	51.6
15	155	130	44.2	46.5	<b>48.8</b>	51.1	53.4	55.7	58.0	30.1	32.1	<b>34.0</b>	35.9	37.9	39.8	41.7	35.4	38.4	<b>41.4</b>	44.4	47.4	50.4	53.4
16	160	130	44.5	46.8	<b>49.1</b>	51.4	53.7	56.0	58.3	30.2	32.2	<b>34.1</b>	36.0	38.0	39.9	41.8	35.4	38.4	<b>41.4</b>	44.4	47.4	50.4	53.4
17	165	130	44.8	47.1	<b>49.4</b>	51.7	54.0	56.3	58.6	30.3	32.3	<b>34.2</b>	36.1	38.1	40.0	41.9	35.3	38.3	<b>41.3</b>	44.3	47.3	50.3	53.3
18	170	130	45.1	47.4	<b>49.7</b>	52.0	54.3	56.6	58.9	30.4	32.4	<b>34.3</b>	36.2	38.2	40.1	42.0	35.3	38.3	<b>41.3</b>	44.3	47.3	50.3	53.3
19	175	130	45.4	47.7	<b>50.0</b>	52.3	54.6	56.9	59.2	30.5	32.5	<b>34.4</b>	36.3	38.3	40.2	42.1	35.2	38.2	<b>41.2</b>	44.2	47.2	50.2	53.2
20	180	130	45.7	48.0	<b>50.3</b>	52.6	54.9	57.2	59.5	30.6	32.6	<b>34.5</b>	36.4	38.4	40.3	42.2	35.2	38.2	<b>41.2</b>	44.2	47.2	50.2	53.2
21	185	130	46.0	48.3	<b>50.6</b>	52.9	55.2	57.5	59.8	30.7	32.7	<b>34.6</b>	36.5	38.5	40.4	42.3	35.2	38.2	<b>41.2</b>	44.2	47.2	50.2	53.2

## Non-Collared Standard Offset Reduced Proximal Profile Echo® Bi-Metric® Stem

Size	Stem Length (mm)	Neck Angle	Horizontal Offset (mm)							Vertical Offset (mm)							Neck Length (mm)						
			-6	-3	STD	+3	+6	+9	+12	-6	-3	STD	+3	+6	+9	+12	-6	-3	STD	+3	+6	+9	+12
7	115	135	32.8	34.9	<b>37.0</b>	39.1	41.2	43.4	45.5	25.1	27.2	<b>29.3</b>	31.4	33.5	35.7	37.8	27.8	30.8	<b>33.8</b>	36.8	39.8	42.8	45.8
8	120	135	33.1	35.2	<b>37.3</b>	39.4	41.5	43.7	45.8	25.2	27.3	<b>29.4</b>	31.5	33.6	35.8	37.9	27.8	30.8	<b>33.8</b>	36.8	39.8	42.8	45.8
9	125	135	33.4	35.5	<b>37.6</b>	39.7	41.8	44.0	46.1	25.3	27.4	<b>29.5</b>	31.6	33.7	35.9	38.0	27.7	30.7	<b>33.7</b>	36.7	39.7	42.7	45.7
10	130	135	33.7	35.8	<b>37.9</b>	40.0	42.1	44.3	46.4	25.4	27.5	<b>29.6</b>	31.7	33.8	36.0	38.1	27.7	30.7	<b>33.7</b>	36.7	39.7	42.7	45.7
11	135	135	35.7	37.8	<b>39.9</b>	42.0	44.1	46.3	48.4	26.4	28.5	<b>30.6</b>	32.7	34.8	37.0	39.1	29.4	32.4	<b>35.4</b>	38.4	41.4	44.4	47.4
12	140	135	36.0	38.1	<b>40.2</b>	42.3	44.4	46.6	48.7	26.5	28.6	<b>30.7</b>	32.8	34.9	37.1	39.2	29.4	32.4	<b>35.4</b>	38.4	41.4	44.4	47.4
13	145	135	36.3	38.4	<b>40.5</b>	42.6	44.7	46.9	49.0	26.6	28.7	<b>30.8</b>	32.9	35.0	37.2	39.3	29.4	32.4	<b>35.4</b>	38.4	41.4	44.4	47.4
14	150	135	36.6	38.7	<b>40.8</b>	42.9	45.0	47.2	49.3	26.7	28.8	<b>30.9</b>	33.0	35.1	37.3	39.4	29.4	32.4	<b>35.4</b>	38.4	41.4	44.4	47.4
15	155	135	38.6	40.7	<b>42.8</b>	44.9	47.0	49.2	51.3	27.7	29.8	<b>31.9</b>	34.0	36.1	38.3	40.4	31.1	34.1	<b>37.1</b>	40.1	43.1	46.1	49.1
16	160	135	38.9	41.0	<b>43.1</b>	45.2	47.3	49.5	51.6	27.8	29.9	<b>32.0</b>	34.1	36.2	38.4	40.5	31.1	34.1	<b>37.1</b>	40.1	43.1	46.1	49.1
17	165	135	39.2	41.3	<b>43.4</b>	45.5	47.6	49.8	51.9	27.9	30.0	<b>32.1</b>	34.2	36.3	38.5	40.6	31.0	34.0	<b>37.0</b>	40.0	43.0	46.0	49.0
18	170	135	39.5	41.6	<b>43.7</b>	45.8	47.9	50.1	52.2	28.0	30.1	<b>32.2</b>	34.3	36.4	38.6	40.7	31.0	34.0	<b>37.0</b>	40.0	43.0	46.0	49.0
19	175	135	39.8	41.9	<b>44.0</b>	46.1	48.2	50.4	52.5	28.1	30.2	<b>32.3</b>	34.4	36.5	38.7	40.8	31.0	34.0	<b>37.0</b>	40.0	43.0	46.0	49.0
20	180	135	40.1	42.2	<b>44.3</b>	46.4	48.5	50.7	52.8	28.2	30.3	<b>32.4</b>	34.5	36.6	38.8	40.9	30.9	33.9	<b>36.9</b>	39.9	42.9	45.9	48.9
21	185	135	40.4	42.5	<b>44.6</b>	46.7	48.8	51.0	53.1	28.3	30.4	<b>32.5</b>	34.6	36.7	38.9	41.0	30.9	33.9	<b>36.9</b>	39.9	42.9	45.9	48.9

## Non-Collared High Offset Reduced Proximal Profile Echo® Bi-Metric® Stem

Size	Stem Length (mm)	Neck Angle	Horizontal Offset (mm)							Vertical Offset (mm)							Neck Length (mm)						
			-6	-3	STD	+3	+6	+9	+12	-6	-3	STD	+3	+6	+9	+12	-6	-3	STD	+3	+6	+9	+12
8	120	130	38.7	41.0	<b>43.3</b>	45.6	47.9	50.2	52.5	25.5	27.5	<b>29.4</b>	31.3	33.3	35.2	37.1	32.0	35.0	<b>38.0</b>	41.0	44.0	47.0	50.0
9	125	130	39.0	41.3	<b>43.6</b>	45.9	48.2	50.5	52.8	25.6	27.6	<b>29.5</b>	31.4	33.4	35.3	37.2	32.0	35.0	<b>38.0</b>	41.0	44.0	47.0	50.0
10	130	130	39.3	41.6	<b>43.9</b>	46.2	48.5	50.8	53.1	25.7	27.7	<b>29.6</b>	31.5	33.5	35.4	37.3	32.0	35.0	<b>38.0</b>	41.0	44.0	47.0	50.0
11	135	130	41.3	43.6	<b>45.9</b>	48.2	50.5	52.8	55.1	26.7	28.7	<b>30.6</b>	32.5	34.5	36.4	38.3	33.7	36.7	<b>39.7</b>	42.7	45.7	48.7	51.7
12	140	130	41.6	43.9	<b>46.2</b>	48.5	50.8	53.1	55.4	26.8	28.8	<b>30.7</b>	32.6	34.6	36.5	38.4	33.7	36.7	<b>39.7</b>	42.7	45.7	48.7	51.7
13	145	130	41.9	44.2	<b>46.5</b>	48.8	51.1	53.4	55.7	26.9	28.9	<b>30.8</b>	32.7	34.7	36.6	38.5	33.7	36.7	<b>39.7</b>	42.7	45.7	48.7	51.7
14	150	130	42.2	44.5	<b>46.8</b>	49.1	51.4	53.7	56.0	27.0	29.0	<b>30.9</b>	32.8	34.8	36.7	38.6	33.6	36.6	<b>39.6</b>	42.6	45.6	48.6	51.6
15	155	130	44.2	46.5	<b>48.8</b>	51.1	53.4	55.7	58.0	28.0	30.0	<b>31.9</b>	33.8	35.8	37.7	39.6	35.4	38.4	<b>41.4</b>	44.4	47.4	50.4	53.4
16	160	130	44.5	46.8	<b>49.1</b>	51.4	53.7	56.0	58.3	28.1	30.1	<b>32.0</b>	33.9	35.9	37.8	39.7	35.3	38.3	<b>41.3</b>	44.3	47.3	50.3	53.3
17	165	130	44.8	47.1	<b>49.4</b>	51.7	54.0	56.3	58.6	28.2	30.2	<b>32.1</b>	34.0	36.0	37.9	39.8	35.3	38.3	<b>41.3</b>	44.3	47.3	50.3	53.3
18	170	130	45.1	47.4	<b>49.7</b>	52.0	54.3	56.6	58.9	28.3	30.3	<b>32.2</b>	34.1	36.1	38.0	39.9	35.3	38.3	<b>41.3</b>	44.3	47.3	50.3	53.3
19	175	130	45.4	47.7	<b>50.0</b>	52.3	54.6	56.9	59.2	28.4	30.4	<b>32.3</b>	34.2	36.2	38.1	40.0	35.2	38.2	<b>41.2</b>	44.2	47.2	50.2	53.2
20	180	130	45.7	48.0	<b>50.3</b>	52.6	54.9	57.2	59.5	28.5	30.5	<b>32.4</b>	34.3	36.3	38.2	40.1	35.2	38.2	<b>41.2</b>	44.2	47.2	50.2	53.2
21	185	130	46.0	48.3	<b>50.6</b>	52.9	55.2	57.5	59.8	28.6	30.6	<b>32.5</b>	34.4	36.4	38.3	40.2	35.2	38.2	<b>41.2</b>	44.2	47.2	50.2	53.2


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