LINK®

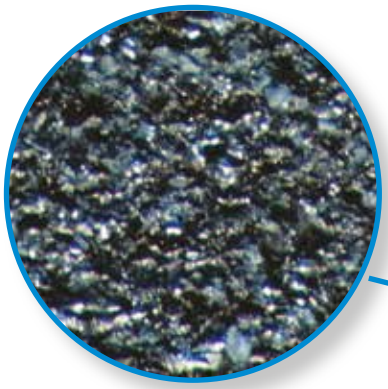
MP Reconstruction Prosthesis

Cementless

Product Rationale

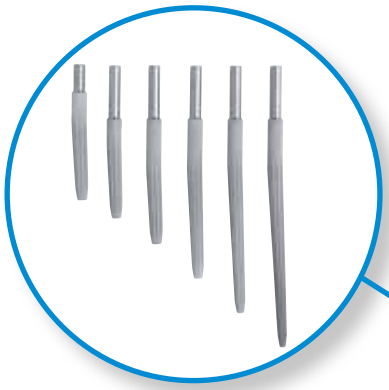
Design & Features

Proximal spacers for leg length adjustment
10 mm, 20 mm or 30 mm



PoroLink
Microporous surface
Distance of peaks ~160 µm*

6 Lengths
160 mm - 330 mm
7 Diameters
12 mm - 25 mm



3° kink
to accommodate the curvature of the femur

Cementless stem fixation
with 2° taper

Conical stem in LINK philosophy proven for more than 30 years

The better SOLUTION!

We believe that the use of a modular tapered fluted titanium stem offers an excellent option for the management of femora bone defects in revision total hip arthroplasty. Fixation is reproducibly achieved, with minimal subsidence. Femoral bone stock appears to be improved in many cases with no cases of severe stress shielding.[1]

“It is noteworthy that the modular junction of this implant performed well at this length of follow-up with no failures attributable to it. When the modular junctions were examined during the 3 re-revisions performed by us (2 for dislocations and 1 for cup revision), there was no evidence of corrosion or any damage to the modular junction.”[2]

Made in Germany

* Bobyns study revealed an optimal distance of peaks between 50 and 400µm (important for ossedintegration)

LINK MP: All the advantages of a modular stem without any of the disadvantages!

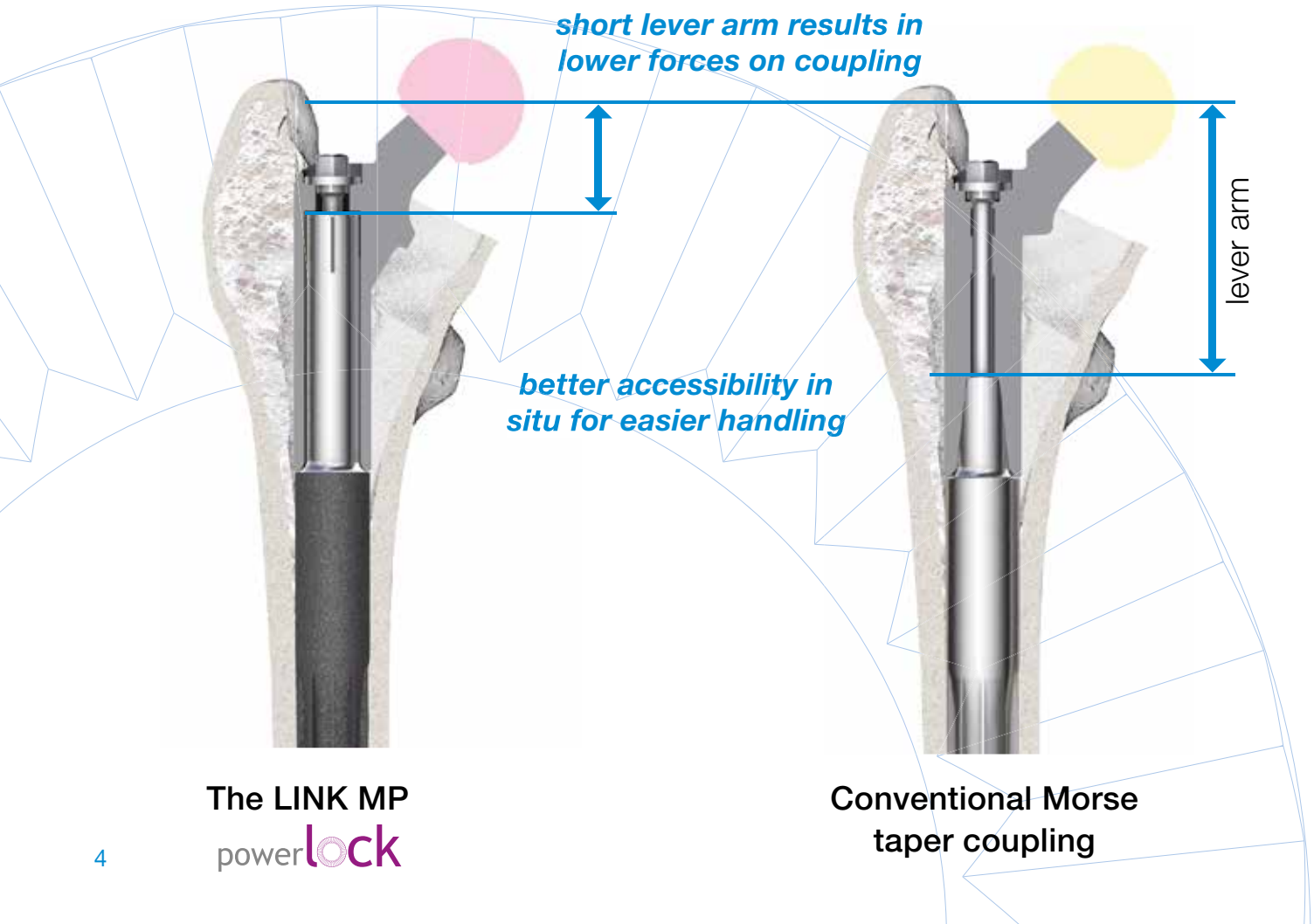
Clear Indication
"To our knowledge, there is no other modular, cementless, distally fixed implant for which in the face of deficient proximal support of the prosthesis is advocated by the manufacturer."[6]

Strength
Location of locking mechanism, not a morse taper design "[...] strongly suggest a structural benefit of the extreme length of the distal neck sleeve."[5]

Fully Proven
LINK MP testing data conclusion: "[...] the structural characteristics of the LINK MP Hip Stem are such that it offers the prospect of in vivo longevity."[5]

No reported junction fracture

Proximal junction guarantees a safer connection



The LINK MP powerlock

Conventional Morse taper coupling

Expansion Screw - the better solution

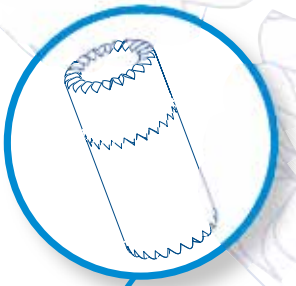
Expansion screws are commonly used in any heavy duty situation, such as engines and big machines, where dynamic forces and alternating stress occurs.

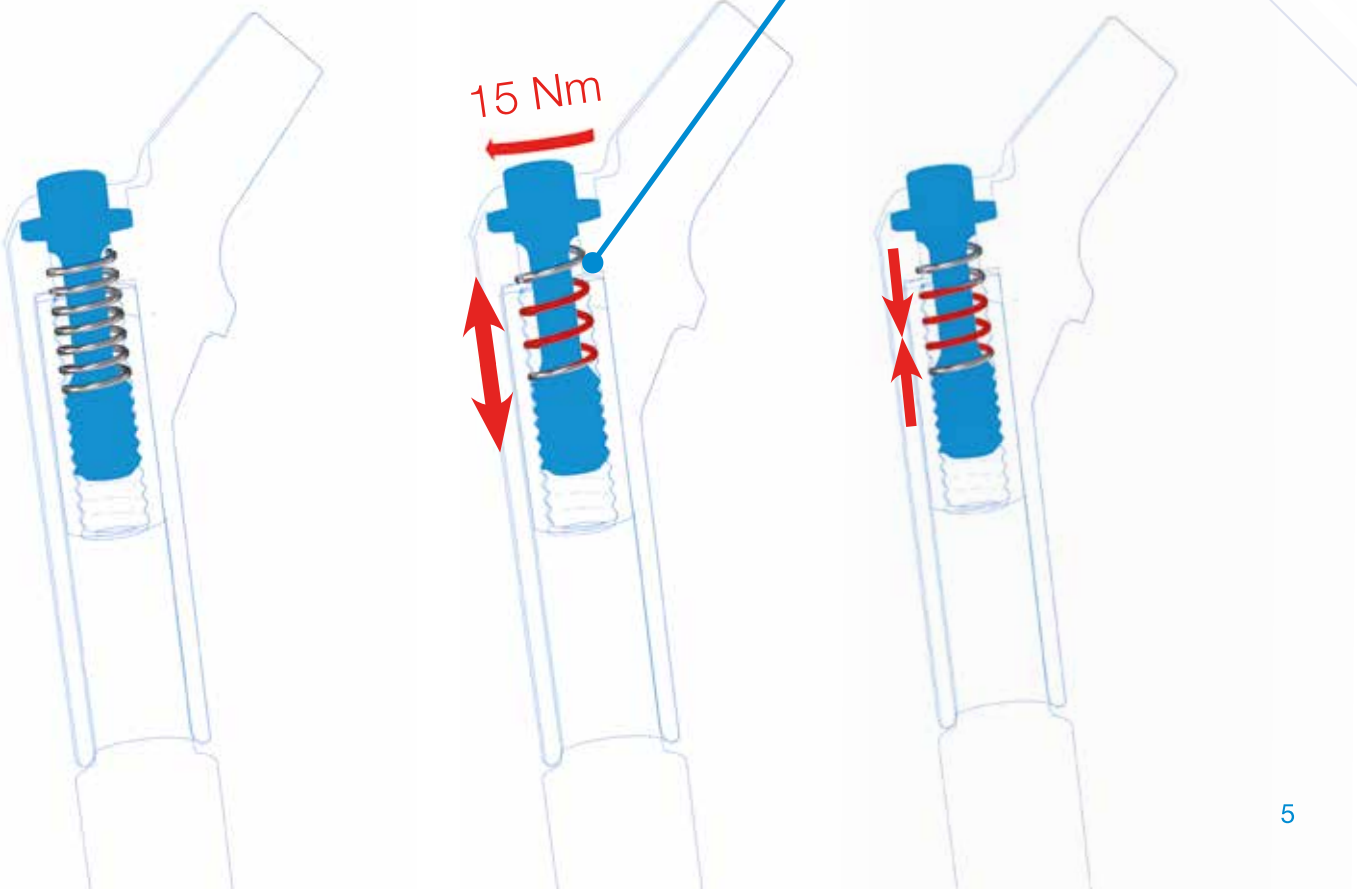
Due to the geometry in this slim midsection, the expansion screw is distinctly elastically stretchable (like a spring). When tightened with a defined torque, the expansion screw stretches until the desired retention force is reached. This force contracts and secures the neck segment and stem.

Why not just a regular screw?

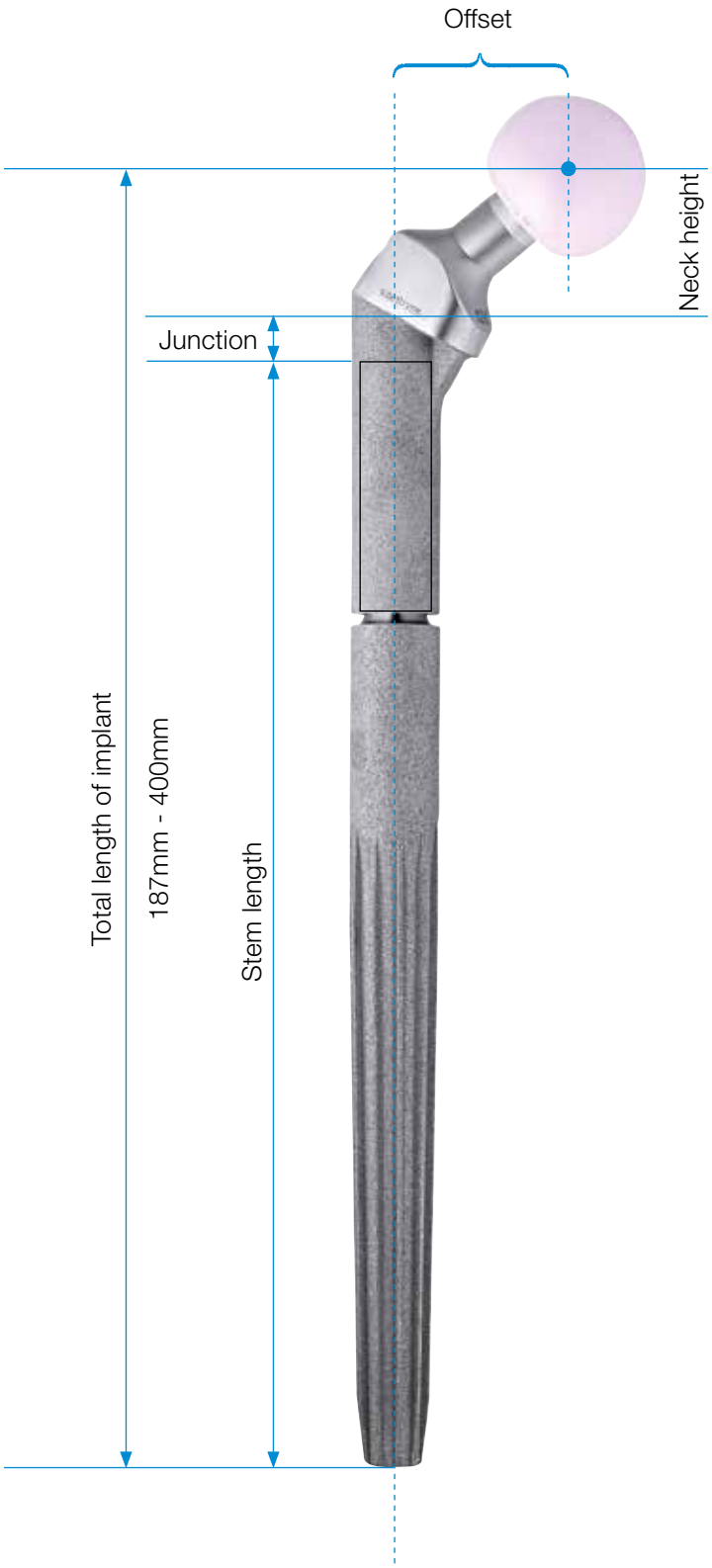
When two pieces are connected with a screw, after a while the material settles. Consecutively a ridged screw would protrude and the retention force automatically decreases. This leads to a loosening of the assembly.

An expansion screw is elastic in its elongation. It compensates the settlement of the connected components. As a result, it provides the desired retention force and ensures a safe connection.





Measurements of the LINK MP Reconstruction System



Total length of Implant = Stem length + Neck height + junction* (+ Spacer)

* Junction is always 5mm.

Total length of the implant in different combinations

Measured from centre of rotation to tip of the stem by using a ± 0mm head M (with Ø 28 - 40mm)

Stem length	Neck segment (126°)				Neck segment (135°)			
	Head Ø 28 - 40mm				Head Ø 28 - 40mm			
	Standard		XXL		Standard		XXL	
	35mm	65mm	35mm	65mm	35mm	65mm	35mm	65mm
160mm	187mm		194mm		189mm		200mm	
180mm	207mm		214mm		209mm		220mm	
210mm	237mm		244mm		239mm		250mm	
250mm	277mm		284mm		279mm		290mm	
290mm	317mm		324mm		319mm		330mm	
330mm	357mm		364mm		359mm		370mm	

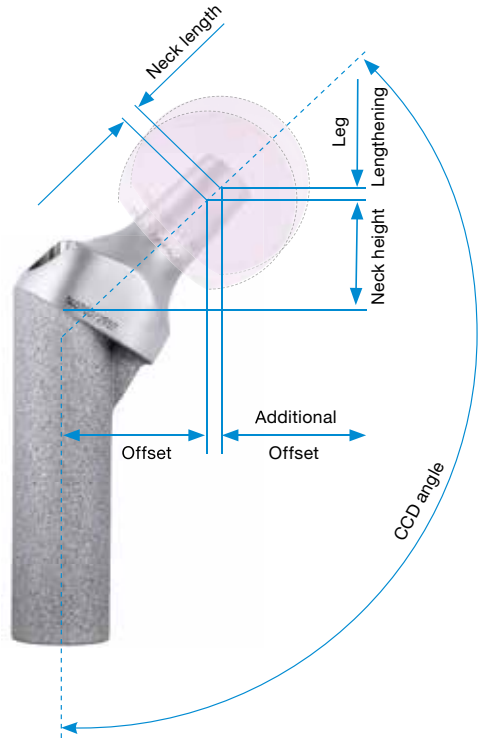
Shortest combination

126° CCD

Longest combination

135° CCD

Offset- and length values using different necksegments and heads



	CCD angle 126°		CCD angle 135°	
	Head Ø 28 - 40mm, size M		Head Ø 28mm - 40mm, size M	
	Standard	XXL	Standard	XXL
Offset	31mm	40mm	29mm	40mm
Neck height	22mm	29mm	24mm	35mm

Additional offset and leg lengthening by using different prosthesis heads

	CCD angle 126°							
	Head Ø 28mm				Head Ø 32mm - 36mm			
	S	M	L	XL	S	M	L	XL
Additional offset	-3mm	0mm	+3mm	+9mm	-3mm	0mm	+3mm	+7mm
Leg lengthening	-2mm	0mm	+2mm	+6mm	-2mm	0mm	+2mm	+5mm

	CCD angle 135°							
	Head Ø 28mm				Head Ø 32mm - 36mm			
	S	M	L	XL	S	M	L	XL
Additional offset	-3mm	0mm	+3mm	+7mm	-3mm	0mm	+3mm	+6mm
Leg lengthening								

Surgical Technique - Summary

1.

Distal reaming

2.

Impaction of the stem

3.

Proximal reaming

5.

Final assembly

4.

Trial reduction

Simple and precise surgical technique

Low risk of stem subsidence

Features

Strong primary stability

Trial implants to ensure join stability

Fewer instrument trays

Quotes

In our opinion, the MP reconstruction stem offers a variety of advantages in direct comparison with non-modular revision implants. These include distal fixation without further cementing; adjustment of the femoral neck; variable offset and rotation, and, furthermore, related adjustments of the soft tissue.[3]

In this study, radiographic evidence of osseointegration (involving the “distal segment” of the implant) was seen in all stems, and there were no cases of progressive subsidence or subsidence beyond 10mm. […] in conclusion, the “LINK MP stem” achieved reproducible and durable implant fixation, as well as restoration of clinical function in femoral revision with bone-loss.[2]

At final follow-up, all patients had stable implants and all acute fractures were healed. Marked reconstruction of proximal femoral bone stock was observes consistently. […] the preliminary result of this method show a high rate of stable implant fixation and fracture healing with preservation and reconstitution of the host femur.[4]

[1] Rodriguez et al. – two-year to five-year follow-up of femoral defects in femoral Revision treated with the LINK® MP® Modular stem, The Journal of Arthroplasty Vol. 24 No. 5 2009
[2] Rodriguez et al. – Reproducible fixation with a tapered, fluted, modular, titanium stem in revision hip arthroplasy at 8-15 years follow-up, The Journal of Arthroplasty 29 Suppl. 2 (2014) 214-218
[3] Klauser et al. - Medium-term Follow-Up of a Modular Tapered Noncemented Titanium Stem in Revision Total Hip Arthroplasty, The Journal of Arthroplasty Vol 28 No. 1, 2013, 84–89
[4] Berry –Treatment of Vancouver B3 Periprosthetic Femur Fractures With a Fluted Tapered Stem, Clinical Orthopaedics and related research Number 417, pp 224-231
[5] Postak PD, Greenwald AS: The Influence of Modularity on the Endurance Performance of the LINK® MP® Hip Stem. Orthopaedic Research Laboratories, Cleveland, OH, 2001 - Note: Depicted expansion bolts not cleared for sale in the U.S.A.
[6] Kwong LM, Miller JA, Lubinus P: A Modular Distal Fixation Option for Proximal Bone Loss in Revision Total Hip Arthroplasty. J Arthroplasty Vol. 18 No. 3 Suppl. 1 2003

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