smith&nephew

TOEFIT-PLUS◇

Modular Replacement of the
First Metatarsophalangeal Joint

Product Information

The moving solution for hallux rigidus

An alternative to the fusion of the first metatarsophalangeal joint, for more motion and fewer restrictions in daily activities.

Titel

- Modular system for 1st MPJ replacement (hemi or total arthroplasty)
- Optimum material combinations: titanium alloy opposing bone, and PE-CoCr for the bearing surfaces of the total joint replacement
- Sound non-cemented fixation in corticocancellous bone, thanks to an innovative self-tapping threaded taper
- Easy-to-use, well thought-out instruments allow hemi or total joint replacement

Threaded taper (1)

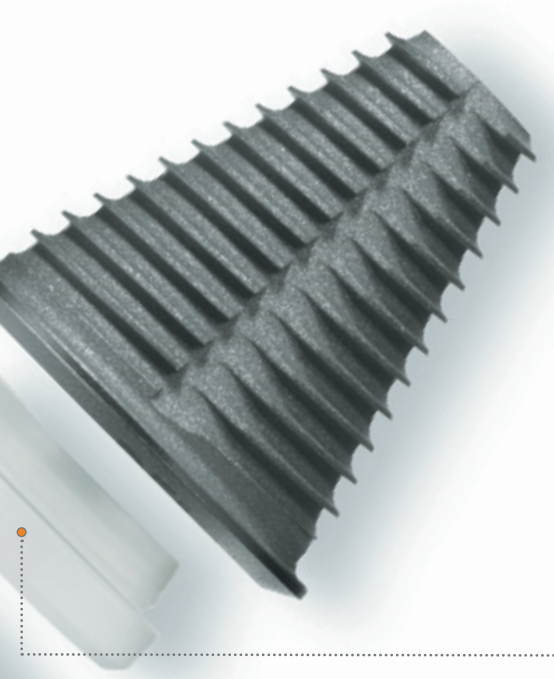
- non-cemented fixation, with good primary stability, in the corticocancellous bone of the first metatarsal and the proximal phalanx of the great toe
- no need for guided resection, since the implant does not rely on the resected surface for support
- large grit-blasted osteophilic surface stimulates osseointegration

Modular System (2)

- adapts to different anatomical patterns with minimal inventory
- allows intraoperative choice of hemi or total joint replacement (e.g. if metatarsal head necrosis or poor bone stock are present)
- nallows hemi-to-total conversion to be performed quickly and at minimal cost (leaving the phalangeal component in place, and changing the distal insert only)

Material combinations (3)

- all parts in contact with bone are made of titanium alloy
- hemiarthroplasty has CoCr insert articulating with the metatarsal head
- total joint replacement has CoCr metatarsal head insert articulating with a PE insert in the phalangeal component

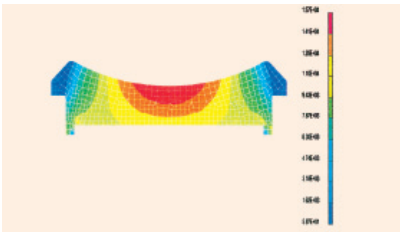


4 PE insert

The smaller component sizes are a particular challenge to the designer and developer of an implant, who must ensure that the interfaces between the different materials, and the fatigue strength of the components, are exactly right.

For the PE insert of the total joint replacement version, finite element analysis was used to optimize the PE employed in this application.

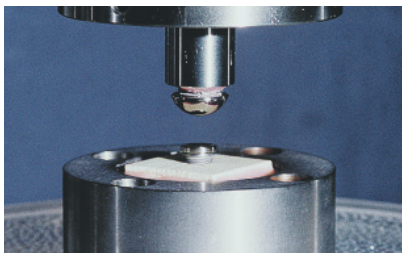
The design solution consists of a factory-assembled metal PE component.



Dimensions

The development of a new joint replacement involves an in-depth study of component sizes, implant fixation, range of motion, conditions to be managed, etc., in order to produce a design that will provide a solution to one of the more challenging problems in orthopaedic surgery. TOEFIT-PLUS is the result of many years of intensive research.

In order to establish the correct component sizes, the first-ray pattern was studied in 250 subjects, using DP and lateral radiographs.

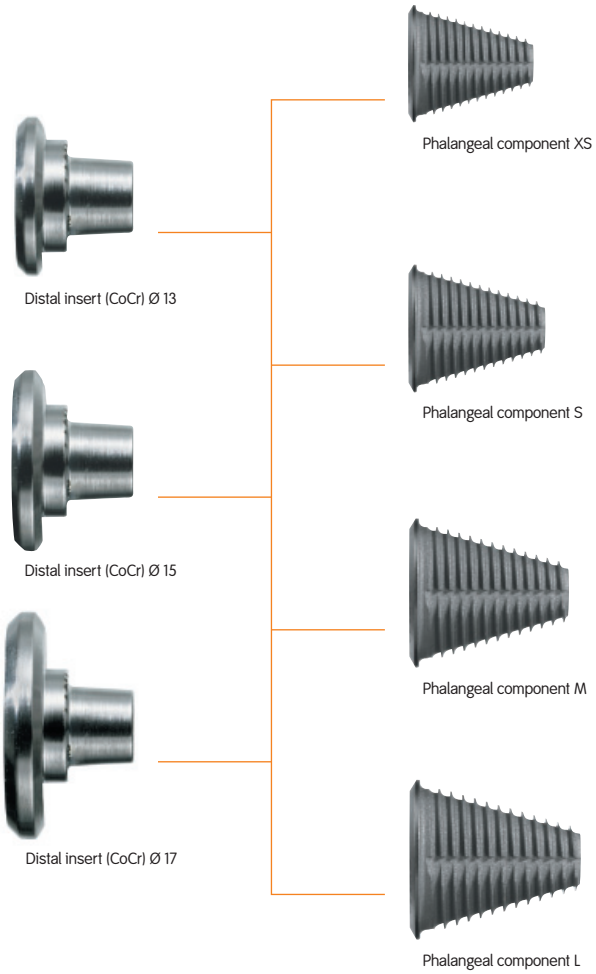


Rigorous tests passed with success

Throughout their development, the implants were rigorously tested at load levels several times higher than those likely to be encountered in actual use. The results of these tests were continually inputted into the development process. Thanks to these efforts, the implant successfully passed all the required strength tests, and withstood fatigue tests applying more than 5 million load cycles.components became loose after 5 million cycles.

Product Range

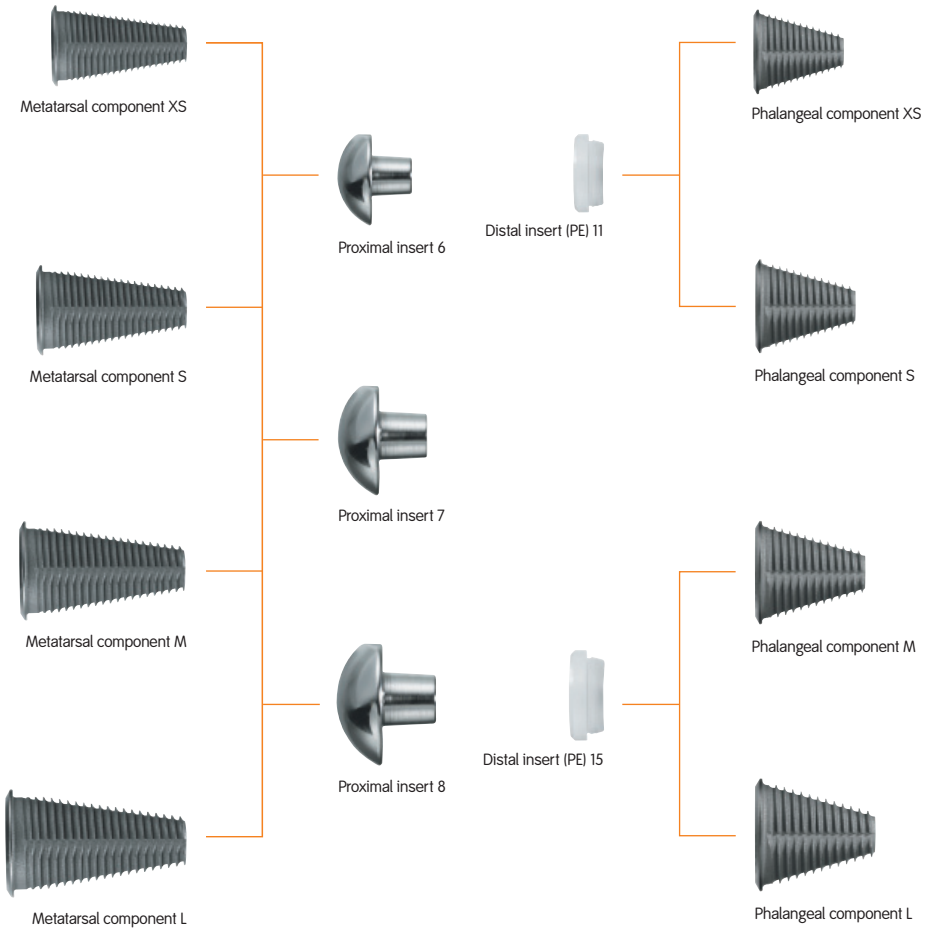
Hemiarthroplasty



The components required for hemiarthroplasty and total joint replacement have been designed for maximum modularity and compatibility. This principle makes for simpler inventories in the operating room, and enhances the adaptability of the TOEFIT-PLUS® system to a wide variety of anatomical patterns.

Hemiarthroplasty	Size/Ø mm
Distal insert (CoCr)	13
	15
	17
Phalangeal component	XS
	S
	M
	L

Total joint replacement



Total joint replacement	Size/Ø mm
Metatarsal component	XS
	S
	M
	L
Proximal insert	6
	7
	8

Total joint replacement	Size/Ø mm
Distal insert (PE)	11
	15
Phalangeal component	XS
	S
	M
	L

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For further information please
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