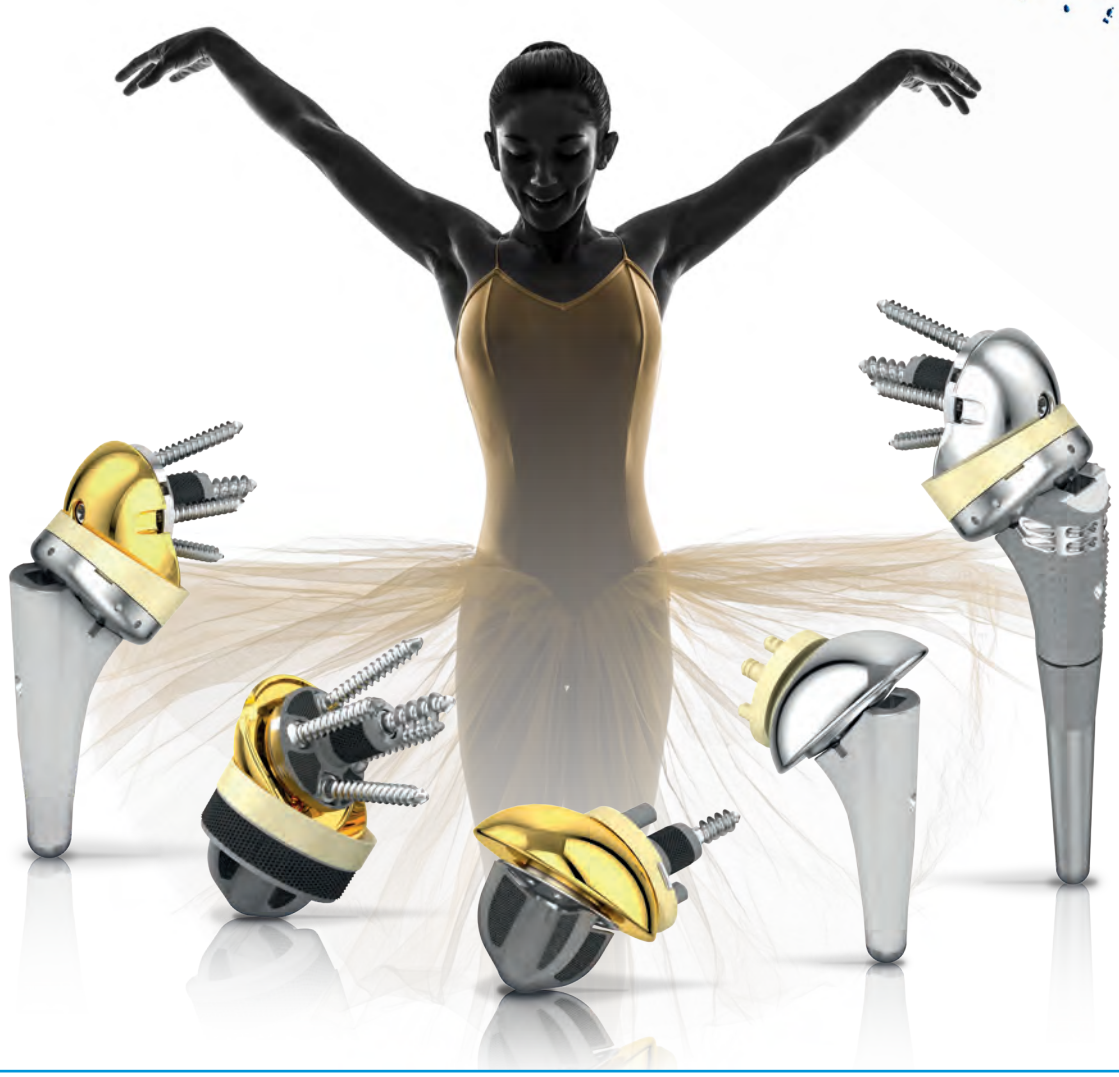
LINK®



LINK Embrace
Shoulder System

Product Rationale

LINK®

LINK Embrace

Shoulder System

CE 0482

Explanation of Pictograms			
[Manufacturer symbol]	Manufacturer	REF	Article number
MAT	Material (number)	CE	Product meets the applicable requirements, which are regulated in the EU harmonization legislation for the affixing of the CE marking.

DESIGNED TO EMBRACE YOUR RANGE OF MOTION.

Many years of experience with successful implant systems and fixation concepts as well as the latest material and coating technologies have been taken into account and applied in the design of the LINK Embrace Shoulder System. Designed as a true platform system, it covers a broad range of indications from anatomic elective and fracture up to reverse treatment, conversion scenarios from anatomic to reverse (and back) as well as revision cases [1].

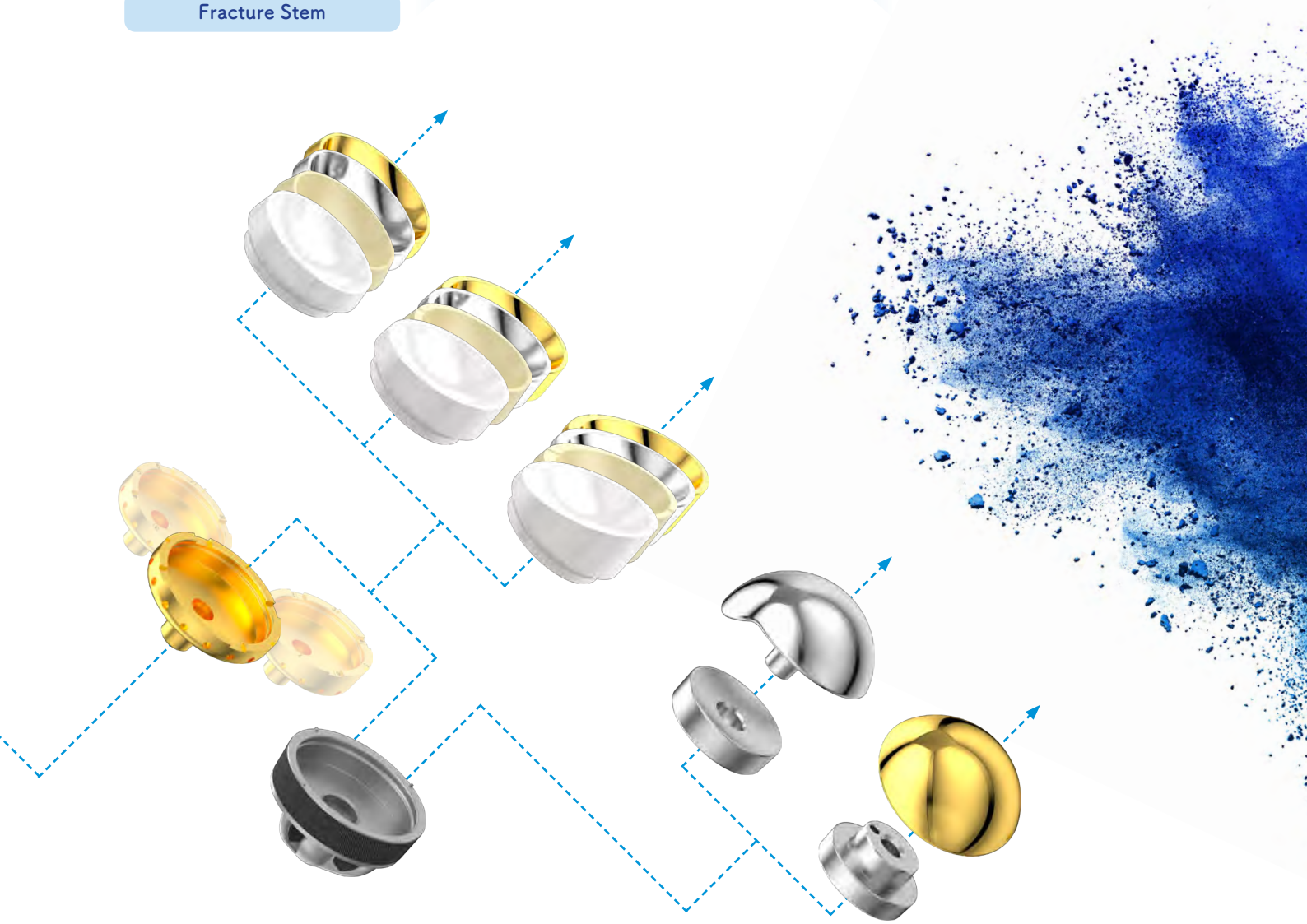
LINK Embrace
Shoulder System

Anatomic Design + Color Coding Instruments + Wide Range of Sizes + Multiple Options of Bone Screws + Material Selection

VARIETY OF CHOICES

The LINK Embrace Shoulder System offers diverse fixation options suitable for the majority of patient populations and indications. A wide range of stems in different configurations allows for cemented and cementless fixation, different types of Stemless Cages offer less invasive options with considerable bone preservation potential [1].

Humeral Options	Configurations	Glenoid Options
Stemless Cage	HEMI	All-Poly Glenoid
Stemless Ring Cage	TSA	Convertible Glenoid
Short Stem	RSA	Reverse Glenoid Baseplates
Standard Stem	CTA	
Modular Stem		
Modular Revision Stem		
Fracture Stem		



LINK EMBRACE Humeral Options

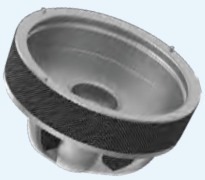
All humeral components are designed according to the “onlay” concept in which all meta- and epiphyseal parts are fixed on top of the humeral, intramedullary components. This allows for easy to apply, bone and soft-tissue sparing adaptions of the components to the desired configuration, aiming at reduced compromising or damaging the surrounding tissues [1].

Stemless Cage	Stemless Ring Cage	Short Stem	Standard Stem	Fracture Stem	Modular Stem	Modular Revision Stem

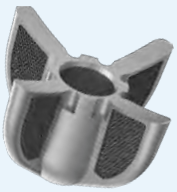
Stemless Cages & Humeral Short Stems

One of LINK’s major objectives in joint arthroplasty is the preservation of vital bone. In the LINK Embrace Shoulder System, Humeral Short Stems as well as Stemless Cages help to save valuable bone stock for possible future treatments and revisions. For stemless primary reverse arthroplasty, the LINK Embrace Shoulder System offers Stemless Ring Cages, designed for direct connection to the required Reverse Insert. Stemless Ring Cages may also be used for anatomic reconstruction with both Humeral Heads and CTA Heads by means of specific adapters. Bone contact areas of LINK Embrace Stemless Cages and Stemless Ring Cages are equipped with a TrabecuLink surface, aiming at good primary stability as well as fast and long lasting bony integration [1].

Humeral Short Stem



Stemless Ring Cage



Stemless Cage

Humeral Standard Stem

Humeral Standard Stem CaP-Coated

Humeral Stems

Humeral Stems are designed following a one-piece-concept (monoblock), comprising a proximal modular taper connection combined with components for anatomic or reverse reconstruction. Humeral Stems are available in Standard Stems and Short Stems with a broad size spectrum. Standard Stems are in non-coated and Calcium Phospate coated versions and Short Stems are only in Calcium Phospate coated version available [1].

FRACTURE AND REVISION TREATMENT

Modular Stems

For fracture and revision treatment, the system offers a set of modular Proximal Bodies in several sizes and heights to be paired with a broad range of Modular Stems, available in different diameters and lengths as well as different surface and options for cemented and cementless fixation.

The Proximal Bodies' spiked surface, together with m-l and a-p holes for suture fixation, allow for stable and physiological tuberosity reattachment.
The modular concept of the fracture components supports the surgeon in achieving adequate joint restoration even in cases with poor anatomical landmarks [1].

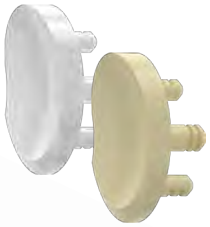
Fracture Stem

Proximal Body & Modular Stem

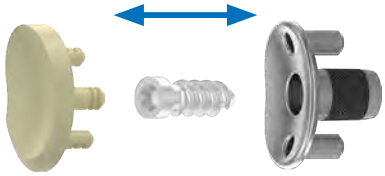
Modular Revision Stem Cementles & Cemented

LINK EMBRACE Glenoid Options

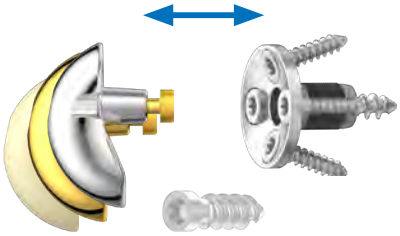
The glenoid components were designed specifically to address various treatment options depending on surgeons' choice.



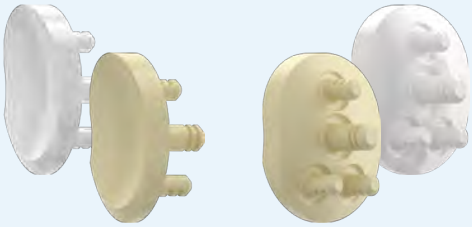
All-Poly Glenoid



Convertible Glenoid



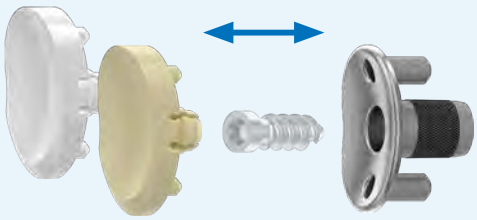
Reverse Glenoid Baseplates



All-Poly Glenoids

All-Poly Glenoid

For primary, anatomical reconstruction, a Cemented All Poly Glenoid in two different UHMWPE materials is available. With the widely accepted peg design applied, this component is the product of choice for cemented glenoid reconstruction [1]. Providing same back radius and same pin pattern across all All Poly Glenoid implants interchangeability up to the last step of surgery is ensured [2].



Convertible Metal-Back

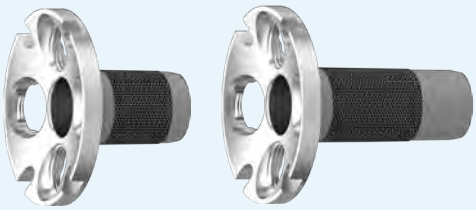
Convertible Glenoid

The Convertible Glenoid provides options in primary situations and prepares surgeons for future conversion from anatomic to reverse joint configurations [1] being just 1 mm thicker than the cemented All Poly Glenoid [2]. Produced with an in-house additive manufacturing process, its TrabecuLink structure on both the central pressfit peg and the overall backside is designed for fast and sustainable osseointegration. If indicated and well integrated, the Convertible Glenoid can be adapted to a reverse configuration by retrieving the snap-on UHMWPE Insert and replacing it with one of the LINK Embrace Glenospheres [1].

Both the All Poly Glenoids as well as the PE-Inserts of Convertible Glenoids have an integrated mismatch, allowing for physiological Humeral Head translation. Furthermore, all PE glenoid components have a chamfered inferior rim, which is intended to delay and to reduce a possible impingement of the proximal humerus to the glenoid during adduction and, thus, reducing the risk of wear debris generation [1].

Reverse Glenoid Baseplates

Depending on preference, the surgeon can choose from multiple options of the Reverse Glenoid Baseplate. Thanks to its elaborated design it can host a central Bone Screw and up to 4 peripheral Bone Screws. The surgeon can select from anglestable, polyaxial anglestable and standard screw fixation with cortical and cancellous thread design [1]. All Glenoid implants are designed with a curved back side resulting in bone sparing preparation and better fixation [7]. The long peged Baseplate is suitable for Glenoid reconstruction with grafting to address glenoid defects and glenoid bone loss [8].



Reverse Glenoid Baseplate Standard Peg

Reverse Glenoid Baseplate Long Peg

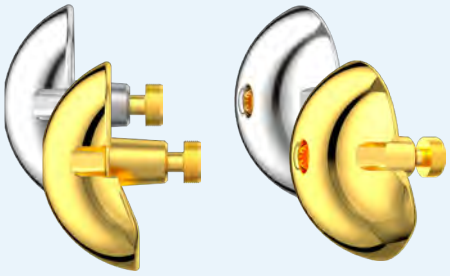
Bone Screws

Eccentric & Concentric Glenospheres

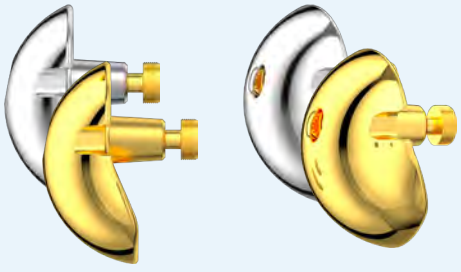
With respect to small anatomies, the LINK Embrace Shoulder System offers Glenospheres with diameters of 36 as well as 39 and 42 mm. The specific Glenosphere design, comprising both neutral as well as eccentric types, is optimized for easy implantation and aims at lowering the risk of scapular notching. LINK Embrace Glenospheres are safely connected to the Reverse Baseplate by means of an easy to engage taper and a pre-assembled locking screw [1].

One of the latest improvements in addressing the presumable adverse consequences of scapular notching, is the inversion of Glenosphere and Reverse Insert materials. In addition to the standard set up, comprising CoCrMo Glenospheres and Reverse Inserts made of UHMWPE, the inverted set up employs PE-Glenospheres and Reverse Inserts made of CoCrMo. By doing so, the risk of possible generation of PE wear debris caused by impingement between Reverse

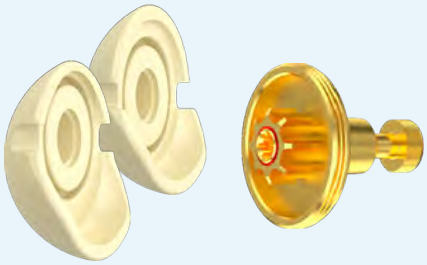
Insert and scapula, is greatly reduced. As PE debris is presumably a risk factor for aseptic loosening, this design aims at lowering the risk of component failure [1].



Neutral Glenospheres



Eccentric Glenospheres



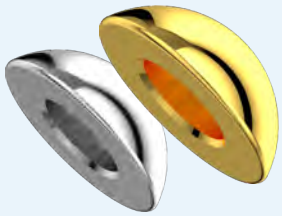
PE-Glenospheres and Metal Core

LINK EMBRACE Head Options

Modular Humeral Heads and Head Adapters

Embrace Modular Head Adapters with different offsets and a wide range of Humeral Heads with well defined diameters and heights enable the surgeon to restore the physiological morphology in an appropriate way [1].

Humeral Head Adapters



Humeral Heads

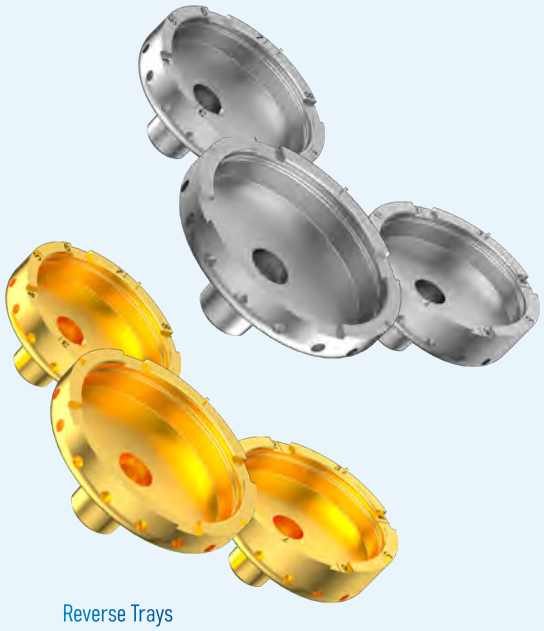
CTA-Heads

Reverse Trays & Reverse Inserts

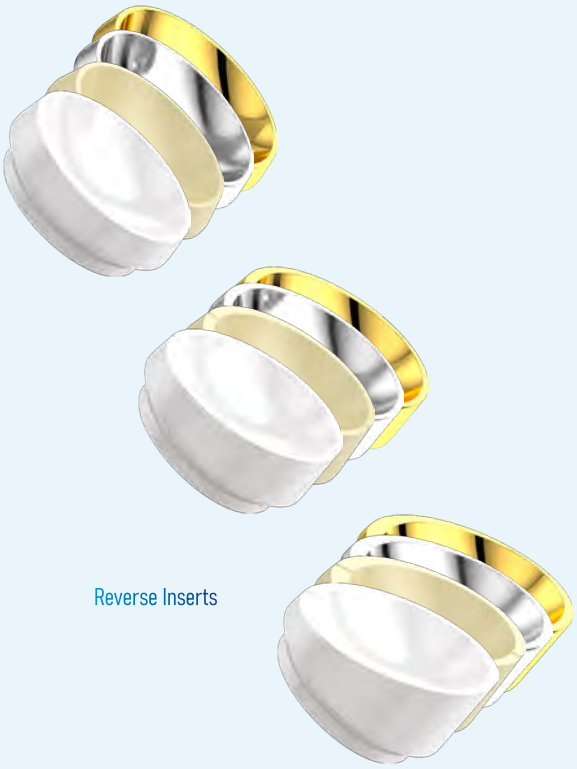
LINK Embrace Humeral Stems and Proximal Bodies come with a CCD angle of 135° which the surgeon may want to adapt depending on the patient's individual requirements. This is addressed by Reverse Trays in neutral, inclined and offset versions, which are combined with Reverse Inserts in neutral and 10° & 20° inclined versions, enabling the surgeon to adjust the mechanical parameters in different spatial planes (e.g. retroversion and inclination) independently from each other [1].

Different Insert heights and also a Humeral Extender with additional height allow for appropriate humerus distalisation and lateralization and, thus, adequate soft tissue tension. Thanks to the unique design of the humeral components' front face, CoCrMo inserts are available in -3 mm height, designed to support the surgeon in avoiding joint overstuffing [1].

Considering the many different demands in shoulder arthroplasty, the LINK Embrace Shoulder System offers several options to adapt the biomechanical joint configuration in revision and conversion scenarios [1].For Anatomical and Reverse Configuration the same resection plane inclination is used [2] wherefore surgery time is shortened and blood loss is reduced upon conversion to RSA [3, 4, 5]. To adjust joint stability in conversion or revision the retroversion and CCD angle can be adapted up to 30° [2]. To improve external and internal rotation in RSA configurations the humerus is lateralized and therefore the wrapping angle of the deltoideus is changed [6].



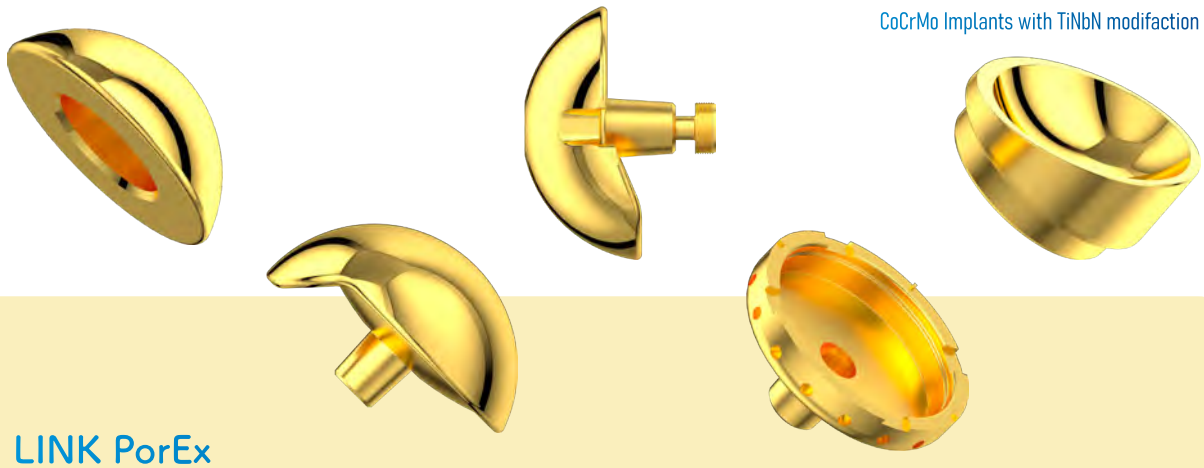
Reverse Trays



Reverse Inserts

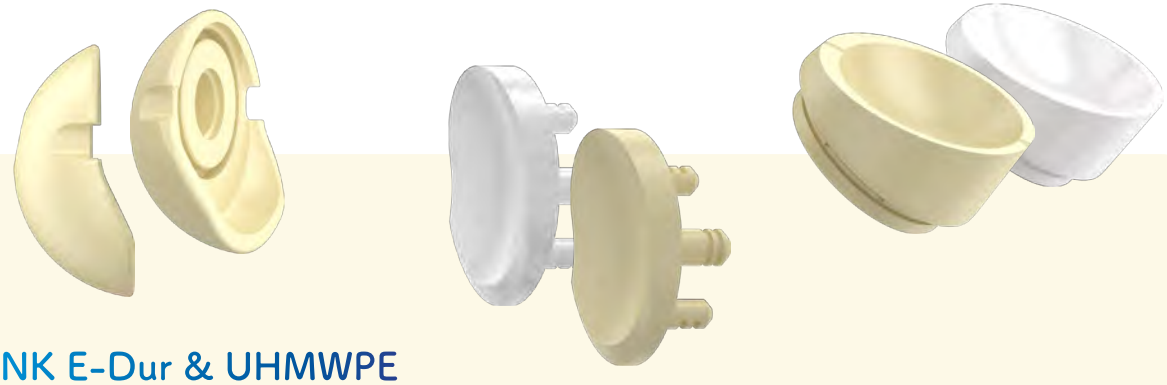
LINK EMBRACE Material Options

CoCrMo Implants with TiNbN modifaction



LINK PorEx

LINK is committed to provide surgeons with solutions for hypersensitive patients. In the LINK Embrace Shoulder System, all CoCrMo components are available without and with TiNbN modification, a thin layer all over the implant, reducing the diffusion of Nickle ions and, thus, helping to reduce the risk of adverse soft tissue reactions. [1]



LINK E-Dur & UHMWPE

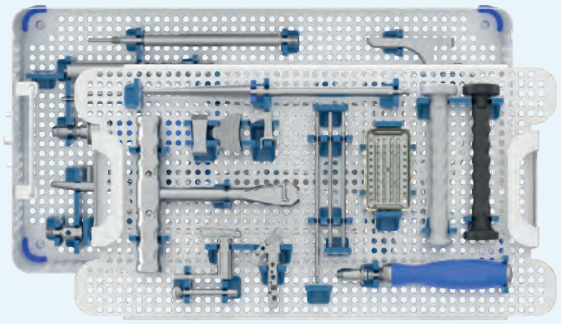
LINK is a leading German manufacturer of diverse joint arthroplasty systems with more than 70 years of experience. Cutting edge technologies and well proven materials are applied for casting, machining and coating of our products, helping us to maintain our high quality level.
In the LINK Embrace Shoulder System, we exclusively use our own specific CoCrMo alloy ENDOCAST SL® for articulating surfaces, combined with our well proven UHMWPE materials E-Dur*-, X-LINKed**- and Standard-UHMWPE. Metal humeral and glenoid components as well as bone screws are manufactured of Tilastan®, LINK's own Titanium alloy (TiAl6V4) [1].

* E-Dur UHMWPE is a highly crosslinked, Vitamine E infused UHMWPE
** X-LINKed UHMWPE is a highly crosslinked UHMWPE

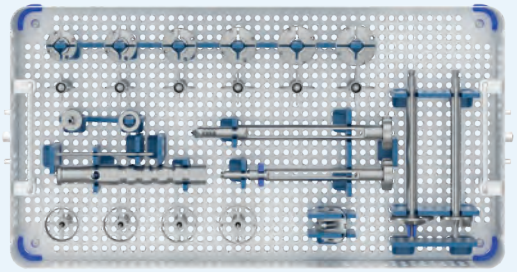
LINK EMBRACE Instruments

The LINK Embrace Shoulder System is implanted by means of a streamlined, lightweight and ergonomic instrument set, allowing for straightforward workflow and high reproducibility. Multi-purpose instruments and elaborated trial components help to reduce the amount of instruments and number of trays, thus enhancing the intra-operative handling and safety for both OR-staff, surgeon and patient [1].

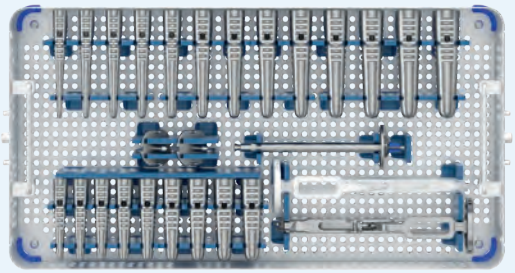
General Set



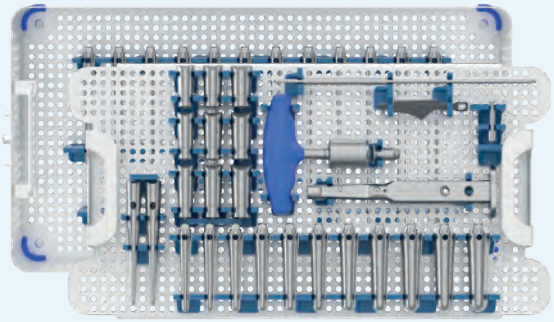
Stemless Set



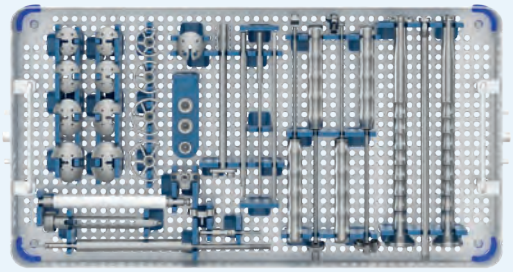
Short & Standard Stem Set



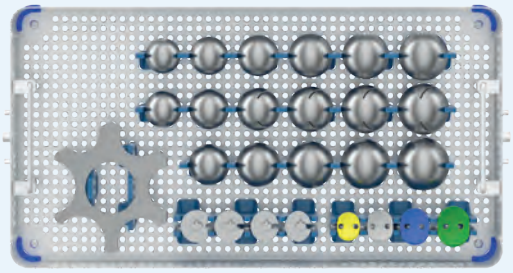
Modular Stem & Modular Revision Stem Set



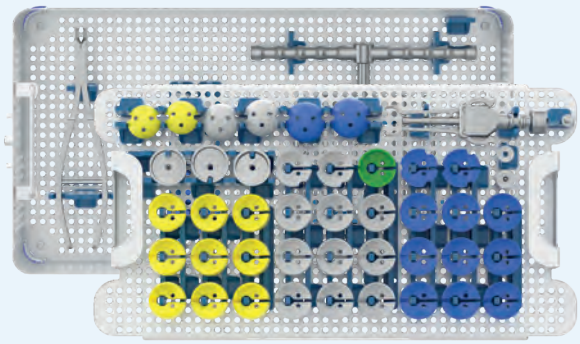
Glenoid Set



Anatomical Set



Reverse Set



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1 Sales Text Product Description, DOC-11035, V 2.0 (released)

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Please note the following regarding the use of our implants:

1. **Choosing the right implant is very important.**
   The size and shape of the human bone determines the size and shape of the implant and also limits the load capacity. Implants are not designed to withstand unlimited physical stress. Demands should not exceed normal functional loads.

2. **Correct handling of the implant is very important.**
   Under no circumstances should the shape of a finished implant be altered, as this shortens its life span. Our implants must not be combined with implants from other manufacturers. The instruments indicated in the Surgical Technique must be used to ensure safe implantation of the components.

3. **Implants must not be reused.**
   Implants are supplied sterile and are intended for single use only. Used implants must not be used again.

4. **After-treatment is also very important.**
   The patient must be informed of the limitations of the implant. The load capacity of an implant cannot compare with that of healthy bone!

5. **Unless otherwise indicated, implants are supplied in sterile packaging.**
   Note the following conditions for storage of packaged implants:
- Avoid extreme or sudden changes in temperature.
- Sterile implants in their original, intact protective packaging may be stored in permanent buildings up until the “Use by” date indicated on the packaging.
- They must not be exposed to frost, dampness or direct sunlight, or mechanical damage.
- Implants may be stored in their original packaging for up to 5 years after the date of manufacture. The “Use by” date is indicated on the product label.
- Do not use an implant if the packaging is damaged.

6. **Traceability is important.**
   Please use the documentation stickers provided to ensure traceability.

7. **Further information** on the material composition is available on request from the manufacturer.

Follow the instructions for use!

Waldemar Link GmbH & Co. KG, Hamburg

Don´t fight the change.

Embrace it!

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