



KIERBECK:
Specialists in piling prefabrication
for over 15 years

Alongside its mainstream reinforcement operations, Kierbeck offers a broad range of facilities and options for pile cage prefabrication:

- High production capacity in 6 enclosed factory units
- CARES approved welding and prefabrication
- Factory-fitted helical and rings
- Factory-fitted tubes for sonic testing and base grouting
- In-house pipe cutting and threading
- Geothermal tubes factory-fitted and pressure tested before despatch
- Pile cap prefabrications
- Delivery using safety trailers or stillages
- Barge delivery options in London area from Kierbeck Wharf



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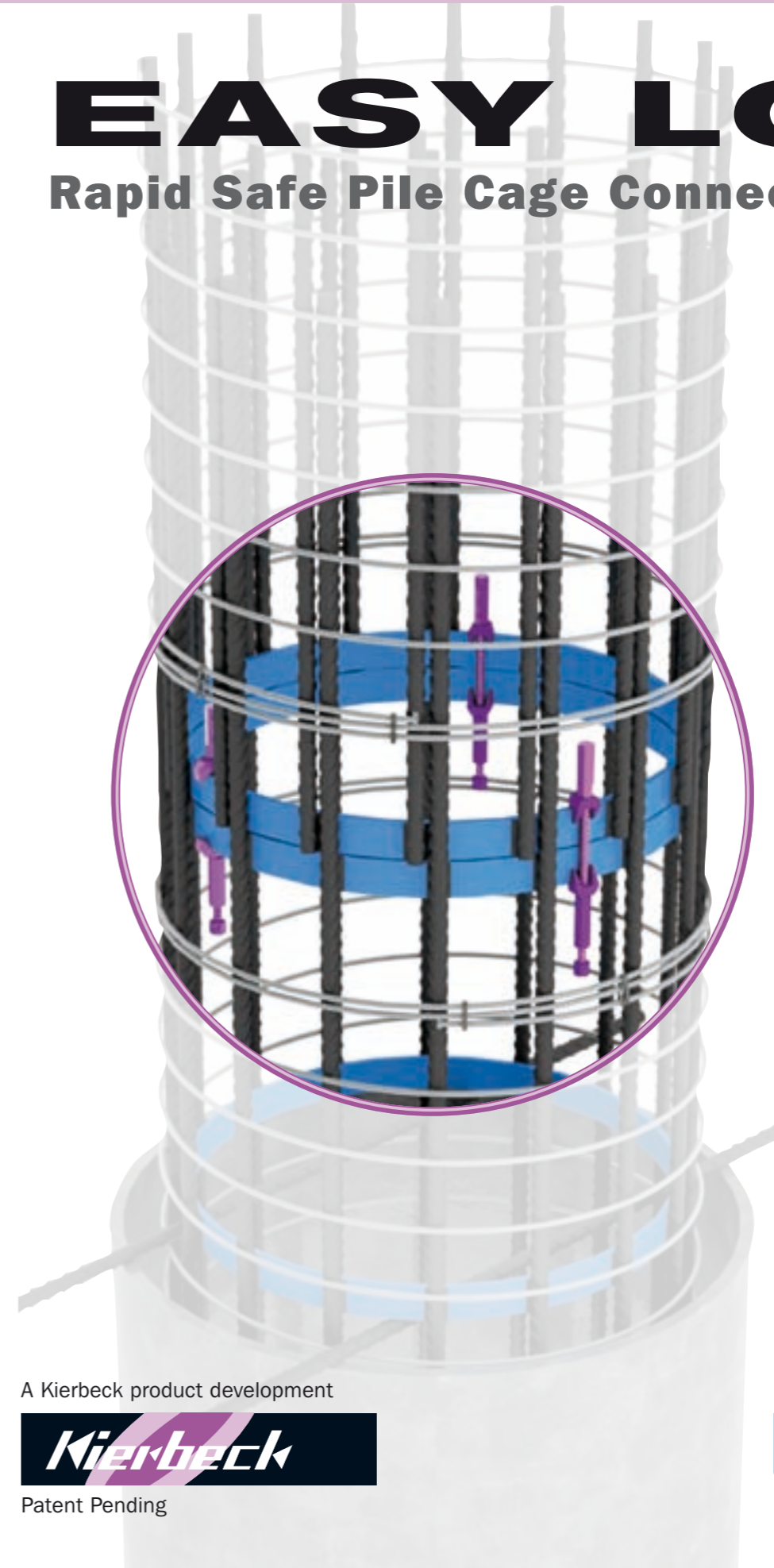
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EASY LOK™

Rapid Safe Pile Cage Connection System

by *Kierbeck*



A Kierbeck product development



Patent Pending

In collaboration with Lindapter





Introduction to EASY LOK™

Pile cages can be designed to virtually any length, normally to a maximum of around 50 metres. Due to the practicalities of manufacture, handling and transportation, it is necessary to prefabricate cages in sections not normally longer than a trailer length of approximately 12 metres.

Popular site practice is to connect cage sections by splicing longitudinal reinforcement from one cage section to the next, using multiple 'bulldog clamps'. This is time consuming and requires workers to spend undesirably long amounts of time with their hands 'inside' the cage whilst 'trapped-off' above ground for multiple clamp connections to be made (before then lowering the connected cage section into the ground).

The EASY LOK system was developed to enable cage connections to be made very simply and quickly, by eliminating the need for bulldog clamps and absolutely minimising 'hand time' in and around the cage.

Instead of connecting the longitudinal reinforcement, EASY LOK utilises circumferential steel bands which are strategically and accurately factory-welded to the longitudinal reinforcement at cage intersections. Once each cage section is positioned and lapped, the steel bands of each section abut one another, and the appropriate number of EASY LOK fixings (specified by Kierbeck) then clamp each pair of bands together. At designated points around the circumference, Kierbeck paint-marks the upper bands to ensure correct clamping location on site.

EASY LOK™ components

EASY LOK utilises proprietary components which are trusted by the construction industry.

LINDAPTER® clamps are a key component, providing the claw action on the fixing bands. 'Tierod' (of the type normally used for connecting formwork panels) with its high-strength coarse thread provides the quick and easy adjustment.

All components are pre-assembled by Kierbeck to create a singular fixing unit which cannot be easily disassembled on site.

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Typical Arrangement

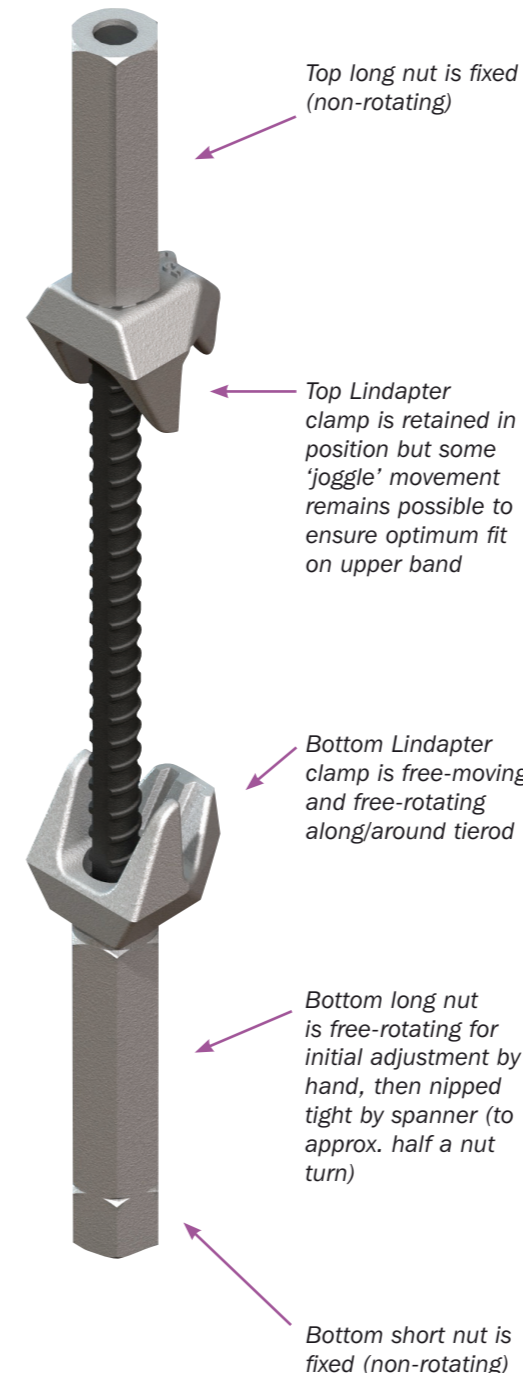
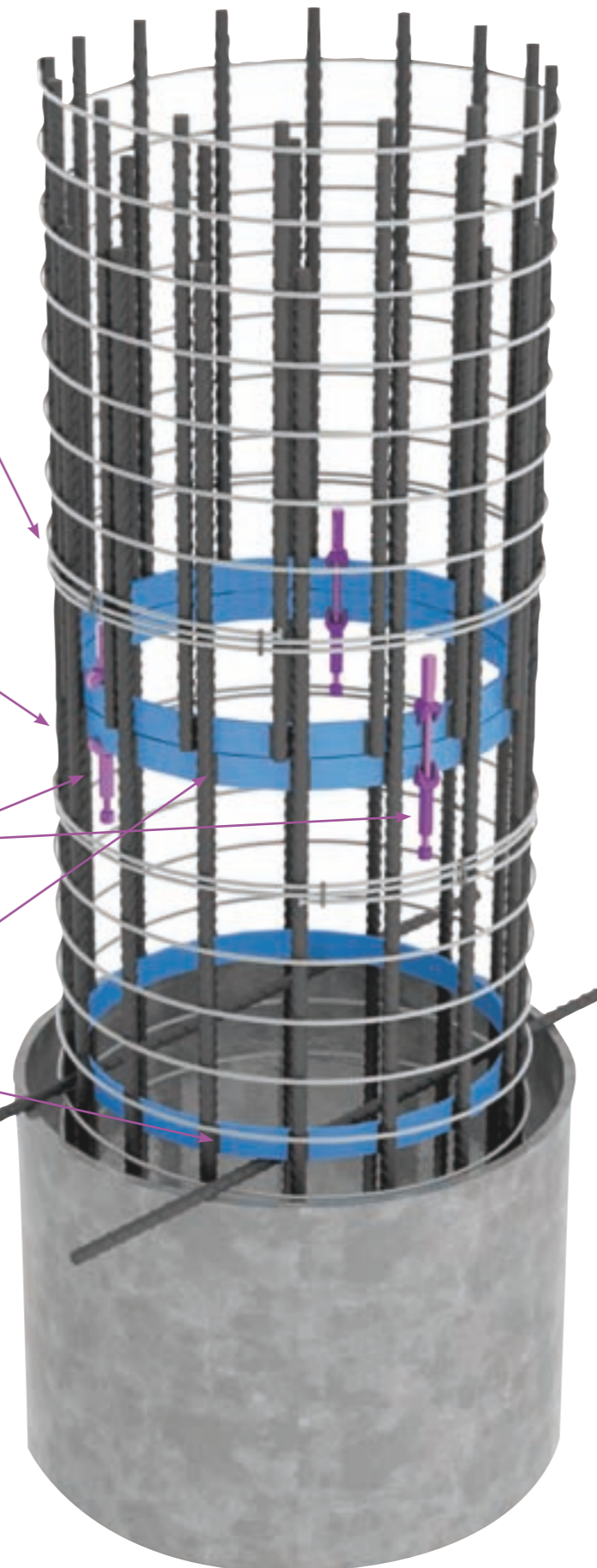
Helical is stopped short above and below circumferential bands to accommodate EASY LOK fixing units

2 no. shear rings are supplied loose-fitted to cage (to be tied on site in helical-free zone after positioning of EASY LOK fixing units)

EASY LOK fixing units can be positioned inside or outside of bands (as long as remaining in line with paint-marked locations)

Longitudinal bars are strategically welded to bands, allowing for bar splicing/lapping at cage intersections

Trapping-off bars positioned between metal pile casing and trapping-off band



EASY LOK™ Testing

Preliminary component testing was conducted by Lloyds British, where several different configurations were trialled (e.g. varying band sections, tierod, component types and clamp sizes) before deciding upon the optimum fixing and component arrangement.

lindapter®
Established 1934

In collaboration with LINDAPTER®, full-scale cage trials were then simulated (in the Lindapter test laboratory), using several prefabricated cage sections (as shown above and below). The EASY LOK fixing units were deliberately tightened to a low torque of 240 Nm, simulating the effect of a 'nip-tight' fixing (of around half a nut turn), easily achieved on site without need for a torque wrench.



In a series of controlled tests, ultimate loads were very consistent and averaged 70 kN per fixing. Following Lindapter standard practice, a 5:1 safety factor is utilised in Kierbeck calculations, i.e. 14 kN safe working load per fixing. To prevent any prospect of 'rocking', a minimum of 3 no. EASY LOK fixing units are specified for any cage weight. Kierbeck then calculates the progressive load of jointed cage sections, specifying additional circumferential fixings as dictated by the load.