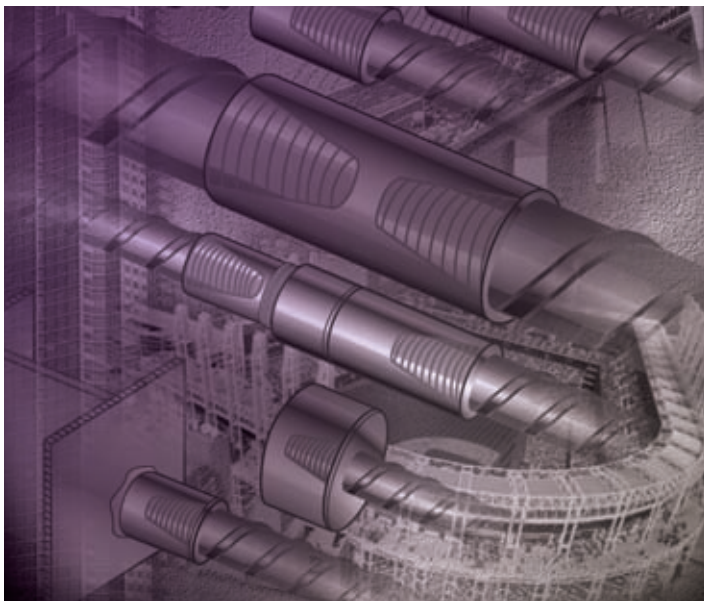


CARES Technical Approval Report TA1-B 5008

Assessment of the ERICO LENTON®
P13-35 and P13-45 Mechanical
Coupler Product and Quality System
for Production

***P13-35 and P13-45 mechanical
couplers for reinforcing steel***



ERICO®



Product

ERICO LENTON®
*P13-35 and P13-45
mechanical couplers for
reinforcing steel.*

Produced by:

ERICO,
Jules Verneweg 75,
5015 BG,
Tilburg,
The Netherlands

1 Product Summary

The products are for the mechanical connection of reinforcing cages fabricated from deformed high yield carbon steel bars for the reinforcement of concrete complying with the requirements of BS4449.

1.1 Scope of Application

ERICO LENTON® P13-35 and P13-45 mechanical couplers, in the size range 25mm - 50mm, have been evaluated for use as follows:

- Static tension or compression applications in reinforced concrete structures designed for BS8110: Part 1: 1997: Structural use of concrete, Code of practice for design and construction, in accordance with CARES Appendix TA1-B.

1.2 Design Considerations

BS 8110 Clause 3.12.8.9 states "Connections transferring stress may be lapped, welded or joined with mechanical devices. They should be placed, if possible, away from points of high stress and should preferably be staggered". BS 8110 Clause 3.12.8.16.2 states that a mechanical coupler satisfying the specified slip and tensile strength criteria is the only acceptable form of a full strength butt joint.

The specified cover for fire resistance and durability should be provided to the coupler sleeve. All couplers have been designed with controlled mechanical properties to be compatible with reinforcing bars to BS4449.

1.3 Conclusion

It is the opinion of UK CARES that ERICO LENTON® P13-35 and P13-45 mechanical couplers are satisfactory for use within the stated limits when applied and used in accordance with the manufacturer's instructions and the requirements of this certificate.



B. Bowsher
Executive Director

September 2004 (Amended July 2009)



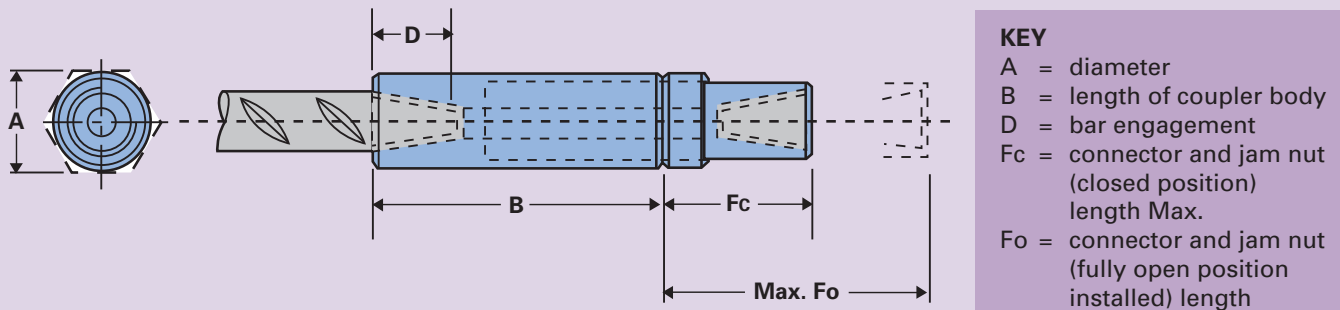
2 Technical Specification

2.1 General

ERICO LENTON® P13-35 and P13-45 taper threaded mechanical couplers are for joining deformed grade 500 steel reinforcing bars complying with BS 4449.

2.2 Types P13-35 and P13-45

The P13-35 and P13-45 three-piece positional couplers are for connecting reinforcing cages where neither of the bars to be coupled can be rotated and are restricted in their axial direction. The three components comprise male and female ends with internal taper threads, connected by a female and male parallel threads and locknut. The male section is circular cross section.



The dimensions for the P13-35 mechanical coupler are as follows:

Size mm	Part "A" No 'X' 'Y'	mm	"B" mm	"Fc" mm	"Fo" mm	"D" mm	Weight Kg
25	EL25P13-35	41	103	68	103	41	1.20
32	EL32P13-35	52	115	79	114	46	2.11
40	EL40P13-35	64	134	91	126	58	3.61

$$F_c + 35 = F_o$$

The dimensions for the P13-45 mechanical coupler are as follows:

Size mm	Part "A" No 'X' 'Y'	mm	"B" mm	"Fc" mm	"Fo" mm	"D" mm	Weight Kg
50	EL50P13-45	80	162	111	156	71	4.64

$$F_c + 45 = F_o$$

3 Product Performance and Characteristics

Historical test data and verification destructive tests have been carried out to demonstrate compliance with performance requirements defined in CARES Appendix TA1-B including the performance requirements of BS8110 when used with reinforcing bars to BS4449:

TA1-B

- Permanent deformation is less than 0.1mm at 300 MPa in tension.
- Permanent deformation is less than 0.1mm at 300 MPa in compression.
- Tensile strength is greater than 540MPa.
- Compressive strength is greater than 540MPa.



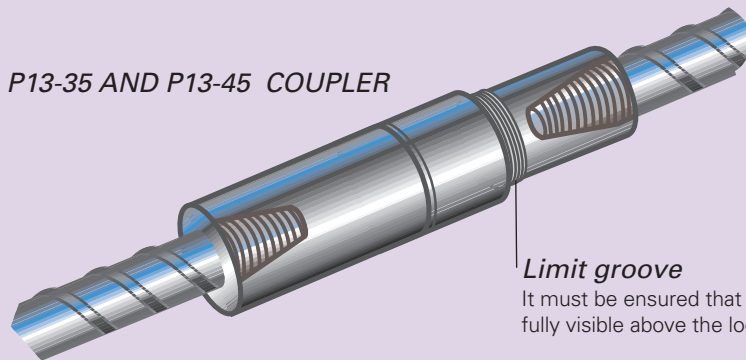
4 Installation

The bars to be threaded must be cut square and threaded, using ERICO LENTON® equipment and suitably trained and experienced operatives in accordance with LENTON® operating instructions. These operators will have an ERICO LENTON® Training Certificate.

It is essential that the joints be tightened to the correct torque mentioned in the installation manual, using the appropriate LENTON® torque wrench.

4.1 Type P13-35 and P13-45 Mechanical Coupler

These are for connecting cages, crowns of arches, or bars positioned and essentially unable to move. The P13-35 and P13-45 mechanical coupler can actually meet the connecting second bar . It must be ensured that the coupler is fully screwed together and tightened onto the first bar . The cage or other bar is brought into its final position ensuring that the gap between it and the coupler is not greater than 10-25 mm depending on the used size of rebar . The male part is screwed out to engage the tapered thread of the ongoing bar and then fully tightened. The lock nut is spun back and fully tightened against the body of coupler . It must be ensured that the limit groove is not fully visible above the lock nut.



P13-35 AND P13-45 COUPLER

Limit groove

It must be ensured that the limit groove is not fully visible above the lock-nut.

5 Safety Considerations

Care must be taken in handling and installing couplers. Weight of the containers is based on 25Kg per container. It is advisable to wear protective gloves during handling the containers, threaded bars and installing the couplers.

6 Product Testing and Evaluation

ERICO LENTON® taper threaded couplers have been tested to satisfy the requirements of BS8110, when used with reinforcing bars to BS4449. The testing comprised the following elements:

BS8110

- Compressive Strength
- Tensile Strength
- Permanent Deformation

Testing has been undertaken at Stanger Materials Science, the report numbers are listed in Section 9, References.

The products are subject to a programme of periodic testing to ensure that they remain within the performance limits of this technical approval.

7 Quality Assurance

ERICO LENTON® taper thread couplers are produced under an ISO9001: 2000 quality management system certified by CARES. The quality assurance scheme monitors the production of the couplers and ensures that materials and geometry remain within the limits of this technical approval.



8 Building Regulations

8.1 The Building Regulations (England and Wales)

Structure, Approved Document A

ERICO LENTON® P13-35 and P13-45 taper threaded mechanical couplers, when used in BS8110 based designs using the data contained within this technical approval, satisfy the relevant requirements of The Building Regulations 1991 (England and Wales), Approved Document A.

Materials and Workmanship, Approved Document, to support regulation 7

This technical approval gives assurance that the ERICO LENTON® P13-35 and P13-45 taper threaded mechanical couplers comply with the material requirements of BS8110.

8.2 The Building Regulations (Northern Ireland)

Part B, Materials and Workmanship

This technical approval gives assurance that ERICO LENTON® P13-35 and P13-45 taper threaded mechanical couplers comply with the

material requirements of BS8110 by virtue of regulation *B3, Deemed to satisfy provisions regarding the fitness of materials and workmanship.*

8.3 The Building Standards (Scotland) Regulations

Part B, Fitness of Materials

This technical approval gives assurance that ERICO LENTON® P13-35 and P13-45 taper threaded mechanical couplers comply with the material requirements of BS8110 by virtue of *Clause B2.1*

Part C, Structure

ERICO LENTON® P13-35 and P13-45 taper threaded mechanical couplers, when used in BS8110 based designs using the data contained within this technical approval, satisfy the requirements of *The Building Standards (Scotland) Regulations, Part C, C2.1 clause b. construction,ii.*

9 References

- BS 4449:1997 Specification for carbon steel bars for the reinforcement of concrete.
- BS 8110:Part 1:1997 Structural use of concrete, Code of practice for design and construction.
- BS EN ISO 9001: 2000 Quality management systems - Requirements.

Stanger Test Reports:

Historical data:

Tensile testing 207/416/00

Compression testing 0036/01

Supplementary tensile test reports:
31969/1, 31861/1, 31862/1.

10 Conditions

1. The quality of the materials and method of manufacture have been examined by CARES and found to be satisfactory . This technical approval will remain valid provided that:
 - a. The product design and specification is unchanged.
 - b. The materials and method of manufacture are unchanged.
 - c. The manufacturer complies with CARES regulations for technical approvals.
 - d. The manufacturer holds a valid CARES Certificate of Product Assessment.
 - e. The product is installed and used as described in this report.
2. CARES make no representation as to the presence or absence of patent rights subsisting in the product and/or the legal right of ERICO to market the product.
3. Any references to standards, codes or legislation are those which are in force at the date of this certificate.
4. Any recommendations relating to the safe use of this product are the minimum standards required when the product is used. These requirements do not purport to satisfy the requirements of the Health and Safety at Work act 1974 or any other relevant safety legislation.
5. CARES does not accept any responsibility for any loss or injury arising as a direct or indirect result of the use of this product.
6. This Technical Approval Report should be read in conjunction with CARES Certificate of Product Assessment No 5008. Confirmation that this technical approval is current can be obtained from UK CARES.





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