CARES Technical Approval Report TA1-B 5103

Issue 1

Changzhou Jianlian Reinforcing Bar Conjunction Co., Ltd (JBCZ)

JBCZ Half Thread Half Extrusion Press Connection Coupler

Assessment of the JBCZ Half Thread Half Extrusion Press Connection Coupler Product and Quality System for Production

TECHNICAL APPROVAL 5103

0002

Validate with the CARES Cloud App

Product

JBCZ Half Thread Half Extrusion Press Connection Coupler for reinforcing steel

Product approval held by:

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1 Product Summary

JBCZ Half Thread Half Extrusion Press Connection Couplers in the size range 16mm - 32mm are for the mechanical connection of deformed high-yield carbon steel bars for the reinforcement of concrete complying with the requirements of BS4449 Grades B500B.

1.1 Scope of Application

JBCZ Standard Upset Forged Couplers in the size range of 16mm to 32mm have been evaluated for use as follows:

a) TA1-B: Eurocode 2 and BS 8110 for static applications in tension only with BS4449 Grade B500B reinforcement.

b) BS8597:2015 for mechanical splices in reinforced concrete structures under predominantly static loads in tension only using BS4449 Grade B500B reinforcement.

1.2 Design Considerations

BS 8110 Clause 3.12.8.9 Laps and Joints 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”. However, BS 8110 Clause 3.12.8.16.2 Bars in tension states “The only acceptable form of full-strength butt joint for a bar in tension comprises a mechanical coupler” satisfying specified slip and tensile strength criteria.

Eurocode 2, Clause 8.7 Laps and mechanical couplers 8.7.1 General (1)P "Forces are transmitted from one bar to another by:

- lapping of bars, with or without bends or hooks;
- welding;
- mechanical devices assuring load transfer in tension-compression or in compression only."

Clause 8.8 Additional rules for large diameter bars goes on to state that "Splitting forces are higher and dowel action is greater with the use of large diameter bars. Such bars should be anchored with mechanical devices."

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 complying with reinforcement of the relevant Grade in accordance with BS4449.

1.3 Conclusion

It is the opinion of CARES that JBCZ Half Thread Half Extrusion Press Connection Couplers in the size range 16mm to 32mm are satisfactory for use within the limits stated in paragraph 1.1 when applied and used in accordance with the manufacturer's instructions and the requirements of this certificate.

L. Brankley
Chief Executive Officer
December 2025

2 Technical Specification

2.1 General

The function of JBCZ Half Thread Half Extrusion Press Connection Couplers is to connect deformed steel reinforcing bars complying with BS4449 Grade B500B, and thereby create structural continuity of the reinforcing system.

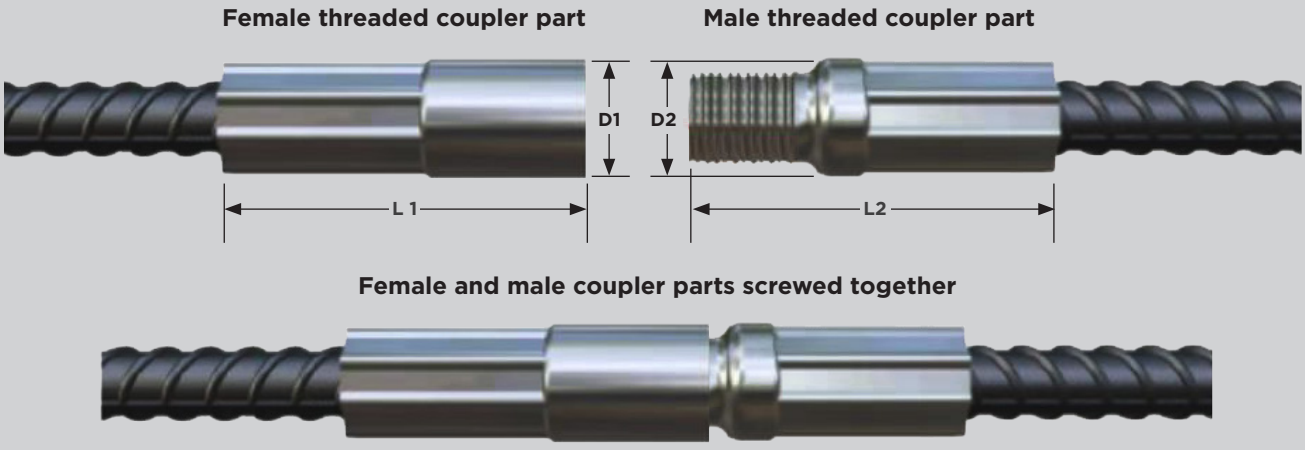
JBCZ Half Thread Half Extrusion Press Connection Couplers offer a full strength connection. The ends of the rebar to be connected are upset forged to allow for good thread formation and ultimate connection to the coupler.

2.2 JBCZ Half Thread Half Extrusion Press Connection Coupler

JBCZ Half Thread Half Extrusion Press Connection Couplers are cold pressed onto the reinforcing steel and comprise of a male and female coupler which can then be connected without the need for any threading or preparation of the reinforcing steel bar.

The JBCZ Half Thread Half Extrusion Press Connection coupler is suitable for applications where the continuation bar can be rotated.

JBCZ Half Thread Half Extrusion Press Connection Coupler



Size (mm)	Coupler Part Female/Male	D1 (Ømm)	D2 (Ømm)	L1 (mm)	L2 (mm)	Weight (kg)	Total Weight (kg)	TA1B B500B Tension only
16	Female	28	28	77	77	0.2	0.42	✓
	Male	28	28	77	77	0.22		
20	Female	35	35	94	94	0.44	0.88	✓
	Male	35	35	94	94	0.44		
25	Female	45	45	114	114	0.85	1.69	✓
	Male	45	45	114	114	0.84		
32	Female	55	55	148	148	1.46	3.18	✓
	Male	55	55	148	148	1.72		

Table 1

3 Product Performance and Characteristics

Full destructive tests have been carried out to demonstrate compliance with the performance requirements defined in CARES Appendix TA1-B when used with reinforcing steel BS4449 grade B500B.

CARES APPENDIX TA1-B strength requirements

- Permanent deformation is less than 0.10mm after loading to $0.65f_y$ in tension with BS4449 grade B500B reinforcement.
- 99% characteristic tensile strength is greater than 540MPa with BS4449 grade B500B reinforcement.

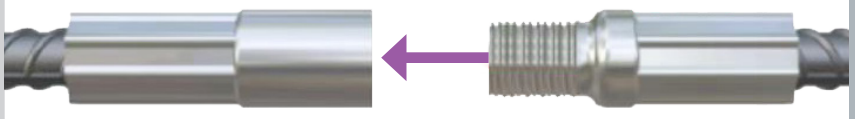
BS 8597:2015 requirements for slip and tensile strength

Tests verify compliance with Clause 5 of BS 8597;2015 for the following:

a) slip under static forces; and
b) tensile strength under static forces.

4 Installation

1



Female threaded coupler part

Male threaded coupler part

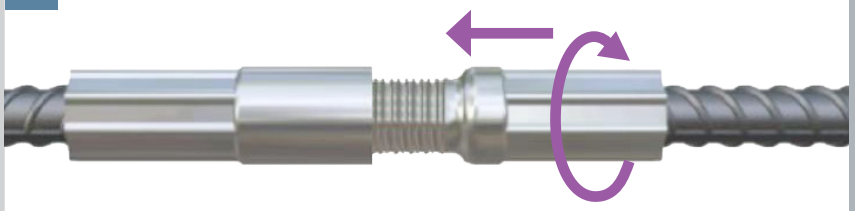
Locate the female and male threaded coupler parts.

Line them up straight ready for pre-assembled connection.

Do not align the rebar, align the couplers.

Both coupler parts must screw together without binding.

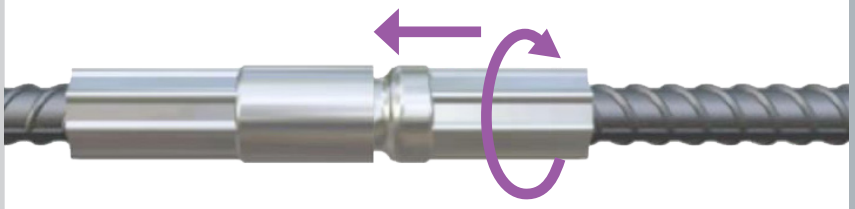
2



After the initial thread location, rotate the free rebar clockwise making sure the two coupler halves remain aligned.

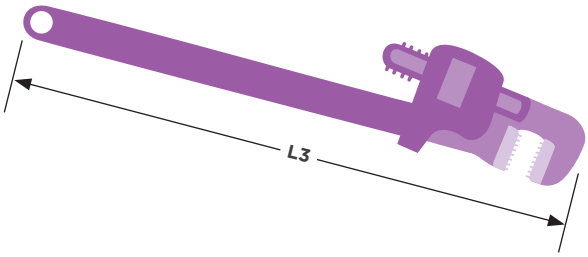
If you feel the threads starting to prematurely bind, do not force them. Shake the free end of the rebar while turning, allowing the free end of the rebar to rotate in its own natural circle with the coupler threads aligned.

3



Continue to rotate until fully engaged with no threads showing.

4

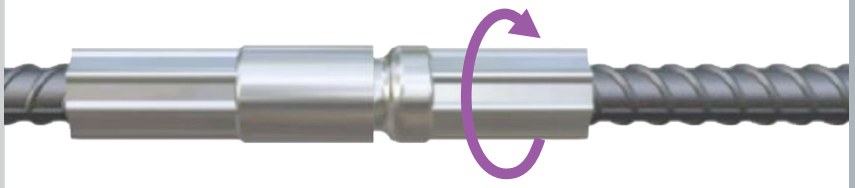


Use a wrench to tighten the coupler parts.

See table 2 for minmum wrench sizes.

Rebar Ø 16mm-20mm:	L3 ≥ 460mm
Rebar Ø 25mm-32mm:	L3 ≥ 640mm

Table 2



5

Finished coupler.

5 Safety Considerations

Couplers are supplied in cartons weighting up to 25kg, which may be handled manually with care. Heavier cases require the use of mechanical handling equipment. It is advisable to wear suitable protective gloves during handling the cartons, couplers and implementation, as well as during the cutting and pressing process.

6 Product Testing and Evaluation

JBCZ Half Thread Half Extrusion Press Connection Couplers have been tested to satisfy the requirements of CARES Appendix TA1-B for Couplers with reinforcing bars to BS4449 Grade B500B. The testing comprised the following elements:

- Tensile Strength
- Permanent deformation in tension

Tests verify compliance with Clause 5 of BS 8597;2015 for both slip under static forces and tensile strength under static forces.

7 Quality Assurance

JBCZ Half Thread Half Extrusion Press Connection Couplers for reinforcing steel are produced under an EN ISO 9001 quality management system certified by CARES at locations agreed with CARES.

The quality management system scheme monitors the production of the Standard Couplers and ensures that materials and geometry remain within the limits of this technical approval.

The products are subject to a programme of periodic testing to ensure continued compliance.

8 Building Regulations

8.1 The Building Regulations (England and Wales)

JBCZ Half Thread Half Extrusion Press Connection Couplers, when used in EC2 based designs using the data contained within this technical approval, satisfy the relevant requirements of The Building Regulations (England and Wales), Approved Document A.

Materials and Workmanship, Approved Document

This technical approval gives assurance that the JBCZ Half Thread Half Extrusion Press Connection Couplers comply with the material requirements of EC2.

8.2 The Building Regulations (Northern Ireland)

Materials and Workmanship

This technical approval gives assurance that JBCZ Half Thread Half Extrusion Press Connection Couplers comply with the material requirements of EC2 by virtue of regulation *23, Deemed to satisfy provisions regarding the fitness of materials and workmanship.*

8.3 The Building Standards (Scotland)

Fitness of Materials

This technical approval gives assurance that JBCZ Half Thread Half Extrusion Press Connection Couplers comply with the material requirements of EC2 by virtue of *Clause 0.8*.

Structure

JBCZ Half Thread Half Extrusion Press Connection Couplers, when used in EC2 based designs using the data contained within this technical approval, satisfy the requirements of *The Building Standards (Scotland) clause 1.*

9 References

- BS4449: 2005 Steel bars for the reinforcement of and use in concrete - Requirements and test methods.
- BS8110: Part 1: 1997: Structural Use of Concrete, Code of Practice for Design & Construction
- BS 8597:2015 Steels for the reinforcement of concrete – Reinforcement couplers – Requirements and test methods.
- BS EN 1992-1-1:2004 Eurocode 2 Design of concrete structures - General rules for buildings.
- BS EN ISO 9001: Quality management systems - Requirements.
- CARES Appendix TA1-B: Quality and Operations Schedule for the Technical Approval of Couplers for Reinforcing Steel and Reinforcement Anchors For BS8110 and EN1992-1-1 Static Loading in Tension or Tension and Compression.

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 are unchanged.
   b. The materials, method of manufacture and location 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 Changzhou Jianlian Reinforcing Bar Conjunction Co., Ltd 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 etc 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 5103. Confirmation that this technical approval is current can be obtained from CARES.

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Independent Product Assessments for the Construction Industry

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