CARES Technical Approval Report TA1-F 5108

Issue 1

ANTEKY

Shandong Anteky Construction Materials Co., Ltd.

Standard Upset Parallel Thread Coupler

Assessment of the Anteky Standard Upset Parallel Thread Coupler Product and Quality System for Production

TECHNICAL APPROVAL 5108

0002

TO BE ISSUED ON CERTIFICATION

Validate with the CARES Cloud App

Product

Anteky Standard Upset Parallel Thread Coupler for reinforcing steel

Product approval held by:

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1 Product Summary

Anteky Standard Upset Parallel Thread Couplers in the size range 16mm to 40mm are for the mechanical connection of deformed high-yield carbon steel bars for the reinforcement of concrete complying with the requirements of BS4449 B500B and SS560 Grade B500B.

The coupler is parallel threaded on both ends.

By agreement, this Technical Approval is not valid in the United Kingdom, as it acknowledges that the UK Standards Committee rejected ISO15835:2018 during the public comment phase of its introduction.

The introduction of the TA1-F appendix by CARES is to facilitate a Technical Approval scheme incorporating a testing method for couplers in geographical areas where no national approval schemes currently exist.

1.1 Scope of Application

Anteky Standard Upset Parallel Thread Couplers in the size range 16mm to 40mm have been evaluated for use as follows:

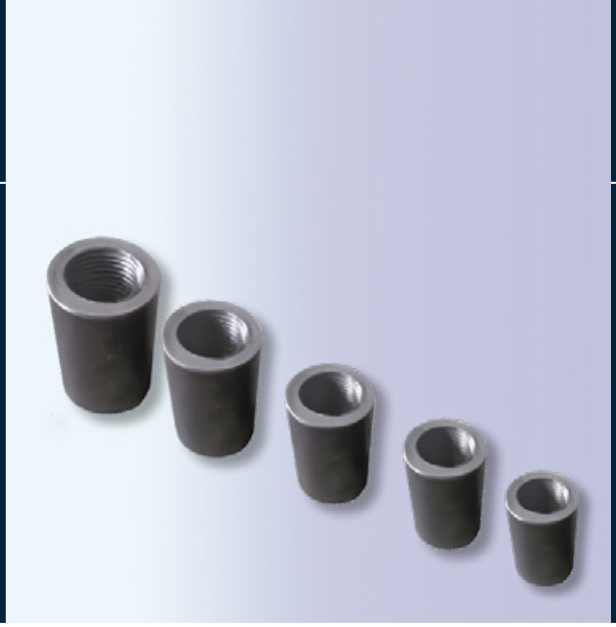
a) TA1-F: Eurocode 2 for static applications in tension only with BS4449 B500B and SS560 Grade B500B reinforcement.

b) ISO15835-1:2018 Steels for the reinforcement of concrete - Reinforcement couplers for mechanical splices of bars - requirements under predominantly static loads in tension only using BS4449 B500B and SS560 Grade B500B reinforcement.

1.2 Design Considerations

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. The coupler as detailed in table 1 has been designed with controlled mechanical properties to be compatible with reinforcing bars complying with BS4449 B500B and SS560 Grade B500B.

1.3 Conclusion

It is the opinion of CARES that Anteky Standard Upset Parallel Thread Couplers in the size range 16mm to 40mm 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
June 2026

2 Technical Specification

2.1 General

The function of the Anteky Standard Upset Parallel Thread Coupler is to connect deformed steel reinforcing bars complying with BS4449 B500B and SS560 Grade B500B, as appropriate, and thereby create structural continuity of the reinforcing system.

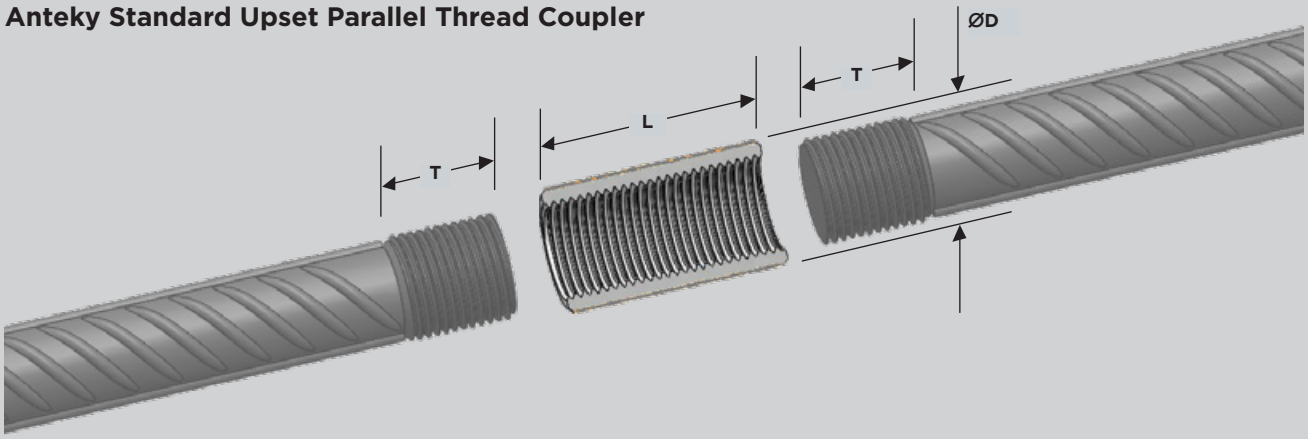
The Anteky Standard Upset Parallel Thread Couplers offer a full strength connection. Each end of the bar to be joined should be square and is enlarged using a cold forging process. The rebar ends need to be clean and square to allow for a close rebar to rebar connection within the coupler. If the end face is not square or even after upsetting, then the head shall need to be cut off and re-upset.

A parallel metric thread is then cut onto the enlarged bar end. The thread form is such that the cross sectional area of the bar ends is not reduced, thus ensuring the strength of the connection matches or exceeds that of the parent bars.

2.2 Anteky Standard Upset Parallel Thread Coupler

The Anteky Standard Upset Parallel Thread Couplers are designed for use where one of the bars to be spliced can be rotated. It comprises a steel sleeve with an internal parallel thread, the rebar then has a matching external parallel thread applied.

Anteky Standard Upset Parallel Thread Coupler



Bar Size (mm)	ØD (mm)	L (mm)	Thread Size (mm)	Thread Pitch (mm)	Thread Length T (mm)	Installation Torque (Nm)	Reinforcement Grade	Tension/ Compression
16	26.5	40	M20	2.5	20	≥100	B500B	Tension Only
20	32.5	48	M24	3.0	24	≥200	B500B	Tension Only
25	41	60	M30	3.5	30	≥260	B500B	Tension Only
32	51.5	72	M36	4.0	36	≥320	B500B	Tension Only
40	63.5	90	M45	4.5	45	≥360	B500B	Tension Only

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-F when used with reinforcing steel BS4449 B500B and SS560 Grade B500B.

CARES APPENDIX TA1-F strength requirements

- Permanent deformation is less than 0.10mm after loading to 60% of the specified characteristic yield strength value of the reinforcing bar in tension with BS4449 B500B and SS560 Grade B500B reinforcement, tested in accordance with option 2 of ISO15835-1 clause 5.4.1.
- The relaxed slip requirements for couplers longer than 100mm and calculation of slip as a median as defined in ISO 15835-1:2018 clause 5.4.2 is not be permitted for couplers approved under this TA1-F schedule.

ISO15835-1:2018 requirements for slip and tensile strength

Tests verify compliance with Clauses 5.3 and 5.4 of ISO15835-1:2018 for the following for a category “B” coupler as defined in table 2 of ISO15835-1:

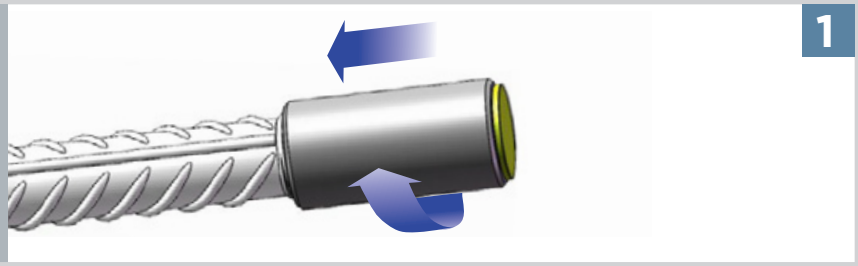
a) slip under static forces; and
b) tensile strength under static forces.

4 Installation

4.1 Anteky Parallel Upset Thread Coupler Installation Sequence

Remove the plastic cap from one end of the coupler and screw the coupler onto the first threaded rebar.

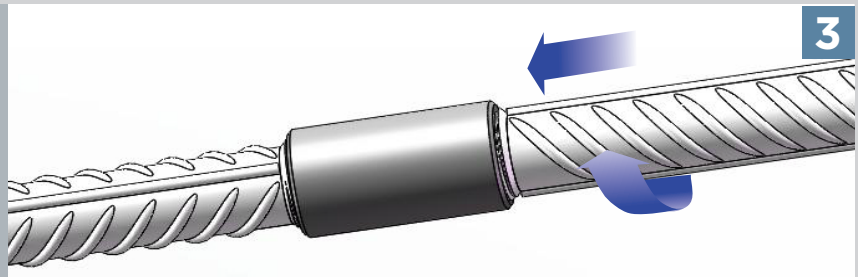
The rebar should be centered in the coupler/splice.



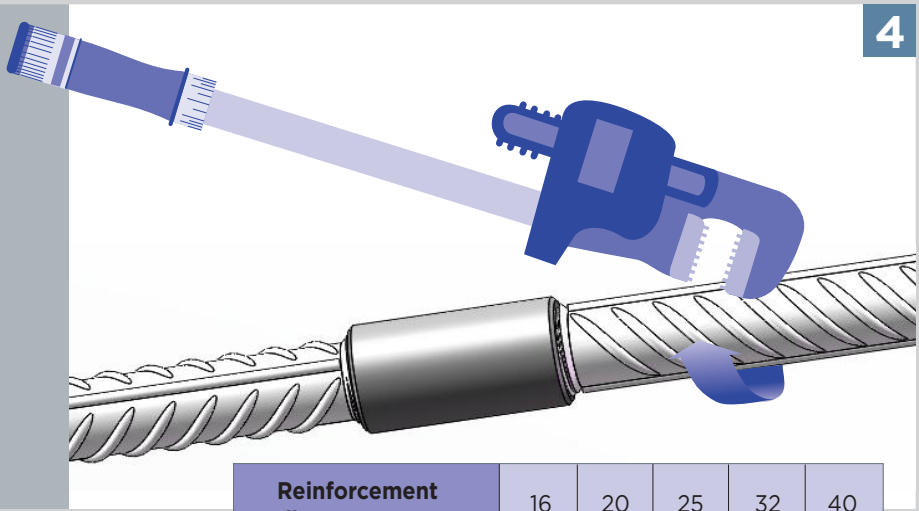
Remove the remaining plastic cap from the coupler.

Rotate the second continuation bar in the coupler up to the first fixed threaded bar.

The continuation bar should align in the center of the coupler.



Tighten the joint using a torque wrench on the continuation bar using the torque values given in Table 2 below.



Reinforcement diameter [mm]	16	20	25	32	40
Torque [Nm]	≥100	≥200	≥260	≥320	≥360

Table 2

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, upsetting and threading process.

6 Product Testing and Evaluation

Anteky Standard Upset Parallel Thread Couplers have been tested to satisfy the requirements of CARES Appendix TA1-F for Couplers with reinforcing bars to BS4449 B500B and SS560 Grade B500B.

The testing comprised the following elements:

- Tensile Strength
- Ductility
- Permanent deformation in tension

Tests verify compliance with Clauses 5.3 and 5.4 of ISO15835-1:2018 for tensile strength, ductility and slip under static forces.

7 Quality Assurance

Anteky Standard Upset Parallel Thread Couplers for reinforcing steel are produced under a BS 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 Materials and Workmanship

This technical approval gives assurance that the Anteky Standard Upset Parallel Thread Couplers to reinforcing steel comply with the material requirements of EC2.

9 References

- BS4449: 2005 Steel bars for the reinforcement of and use in concrete - Requirements and test methods.
- SS 560:2016+A1:2024 Specification for steel for the reinforcement of concrete – Weldable reinforcing steel – Bar, coil and decoiled product.
- ISO15835-1:2018 Steels for the reinforcement of concrete - Reinforcement couplers for mechanical splices of bars - Part 1: Requirements.
- 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-F: Quality and Operations Schedule for the Technical Approval of Couplers for high cycle fatigue and low cycle loading and static loading applications in tension.

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 Shandong Anteky Construction Materials 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 5108. 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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