

CARES Technical Approval Report TA1-B 5005

Issue 18



PARALLEL THREAD COUPLERS

DEXTRA GRIPTEC Extruded Coupler

Assessment of the Dextra
GRIPTEC Extruded Coupler
and Quality System for
Production



Product

Dextra GRIPTec standard, positional, transitional, positional-transitional, bridging and caging mechanical couplers for reinforcing steel.

Product approval held by:

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1 Product Summary

Dextra GRIPTec standard, positional, transitional, positional-transitional, bridging and caging mechanical couplers are for the mechanical connection of deformed high-yield carbon steel bars for the reinforcement of concrete complying with the requirements of BS4449 Grade B500C and BS4449 Grade B500B as indicated in tables 1 - 11.

1.1 Scope of Application

Dextra GRIPTec couplers have been evaluated for use as follows:

Static applications in reinforced concrete structures designed for EC2 and BS8110: Part 1, in accordance with CARES Appendix TA1-B.

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 BS4449 Grade B500C and BS4449 Grade B500B as indicated in tables 1 - 11.

1.3 Conclusion

It is the opinion of UK CARES that Dextra GRIPTEC standard, positional, transitional, positional-transitional, bridging and caging mechanical couplers 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

October 2019



2 Technical Specification

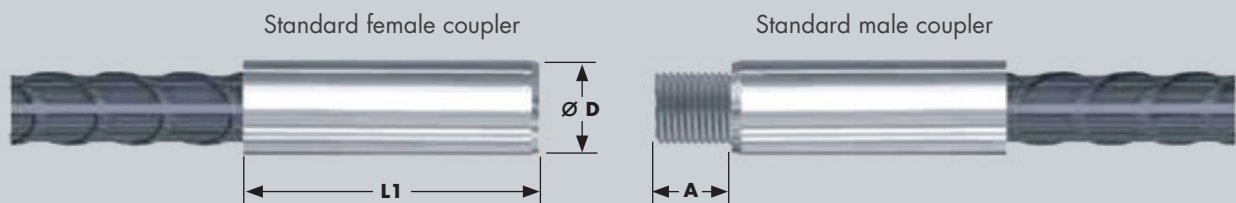
2.1 General

Dextra GRIPTEC standard, positional, transitional, positional-transitional, bridging and caging mechanical couplers are for joining deformed steel reinforcing bars complying with BS 4449 Grade B500C and BS4449 Grade B500B as detailed in tables 1-11. The couplers comprise two ends, extruded onto the reinforcing steel and joined by a parallel thread connection. The Dextra GRIPTEC extrusion machine automatically conducts systematic performance testing of every joint.

2.2 GRIPTEC Standard Range

The GRIPTEC standard coupler range is designed for use where one of the bars to be spliced can be rotated. It comprises two steel sleeves that are extruded onto the bar ends and have matching male and female parallel ISO threads which allow the two bars to be joined.

Standard Coupler



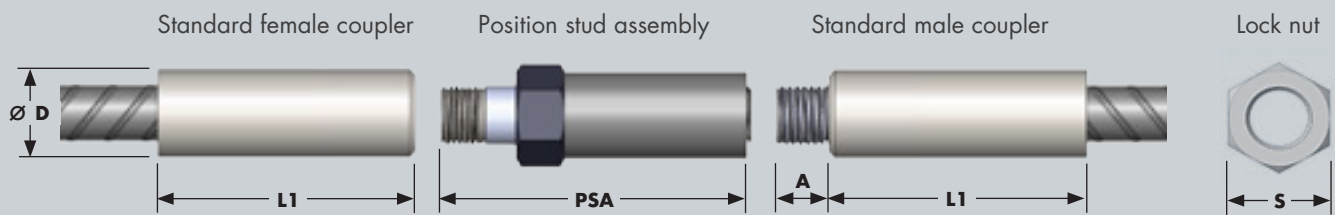
Size (mm)	Art No	D (mm)	L1 (mm)	A (mm)	Weight (kg)	Plastic protection colour	Reinforcing bar grade tension only	Reinforcing bar grade tension-compression
12	AG12	19 to 20	66 to 72	12	0.2	Yellow	B500C/B500B	B500C/B500B
14	AG14	21 to 22	85 to 88	14	0.4	Blue	B500C/B500B	B500C/B500B
16	AG16	25 to 26	99 to 103	16	0.5	White	B500C/B500B	B500C/B500B
20	AG20	32.5 to 35	114 to 132	20	1.1	Grey	B500C/B500B	B500C
20	AG20N	29.5 to 32	107 to 110	20	1.1	Grey	B500C/B500B	B500C
25	AG25	37 to 39	112 to 125	22	1.2	Red	B500C/B500B	B500C
32	AG32	46 to 48	137 to 150	28	2.1	Brown	B500C/B500B	B500C
32	AG32N	47 to 49	137 to 143	28	2.1	Brown	B500C/B500B	B500C
40	AG40	63 to 65	165 to 178	34	5.6	Green	B500C/B500B	B500C
40	AG40N	61 to 63	167 to 170	34	5.6	Green	B500C/B500B	B500C
50	AG50	74 to 76	195 to 210	47	8.6	Grey	B500C/B500B	-
50	AG50N	71 to 73	220 to 225	47	8.6	Grey	B500C	B500C

Table 1

2.3 GRIPTEC Positional Range

The GRIPTEC “AGPC” positional coupler range is designed for use where neither of the bars to be coupled can be rotated. The positional coupler comprises five components: the same male and female sleeves as in the standard coupler, plus a position stud (that screws itself into the female sleeve), a position nut (that screws itself onto the male sleeve), and a lock nut.

Positional Coupler



Size (mm)	Art No	D (mm) (Approx)	PSA (mm)	S (mm)	L1 (mm)	A (mm)	Weight (kg)	Plastic protection colour	Reinforcing bar grade tension only	Reinforcing bar grade compression
12	AGPC12	19 to 20	60	22	66 to 72	12	0.3	Yellow	B500C/B500B	-
16	AGPC16	25 to 26	77	27	99 to 103	16	0.7	White	B500C/B500B	-
20	AGPC20	32.5 to 35	94	32	114 to 132	20	1.5	Grey	B500C/B500B	-
25	AGPC25	37 to 39	107	41	112 to 125	22	2.0	Red	B500C/B500B	-
32	AGPC32	46 to 48	133	50	137 to 150	28	4.0	Brown	B500C/B500B	-
40	AGPC40	63 to 65	161	65	165 to 178	34	8.8	Green	B500C/B500B	-
50	AGPC50	74 to 76	213	80	195 to 210	47	16.9	Grey	B500C/B500B	-

Table 2

The GRIPTEC positional “AGP” coupler range has the same components as “AGPC” coupler range, but the design of a position stud has larger bear area of shoulder.

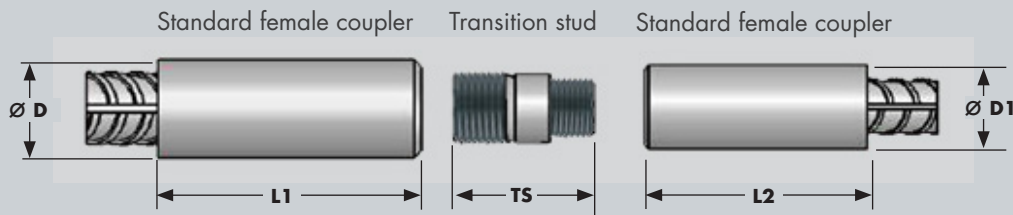
Size (mm)	Art No	D (mm) (Approx)	PSA (mm)	S (mm)	L1 (mm)	A (mm)	Weight (kg)	Plastic protection colour	Reinforcing bar grade tension only	Reinforcing bar grade compression
12	AGP12	19 to 20	60	22	66 to 72	12	0.3	Yellow	B500C	-
14	AGP14	21 to 22	69	24	85 to 88	14	0.5	Blue	B500C	-
16	AGP16	25 to 26	77	27	99 to 103	16	0.7	White	B500C	-
20	AGP20	29.5 to 32	94	32	107 to 110	20	1.5	Grey	B500C	B500C
25	AGP25	37 to 39	107	41	112 to 125	22	2.0	Red	B500C	B500C
32	AGP32	47 to 49	133	50	137 to 143	28	4.0	Brown	B500C	B500C
40	AGP40	61 to 63	161	65	167 to 170	34	8.8	Green	B500C	B500C

Table 3

2.4 GRIPTEC Transitional Range

The GRIPTEC transitional “AGT” coupler range is designed to splice reinforcing bars of different diameters. The transitional coupler comprises three components; two female GRIPTEC standard sleeves extruded onto the bar ends, connected by a steel stud.

Transitional Coupler



Size (mm)	Art No	D (mm)	D1 (mm)	L1 (mm)	L2 (mm)	TS (mm)	Weight (kg)	Plastic protection colour		Reinforcing bar grade tension only
12/16	AGT16/12	25 to 26	19 to 20	99 to 103	66 to 72	42	0.4	Yellow	White	B500C/B500B
16/20	AGT20/16	32.5 to 35	25 to 26	114 to 132	99 to 103	54	0.6	White	Grey	B500C/B500B
16/25	AGT25/16	37 to 39	25 to 26	112 to 125	99 to 103	60	0.9	White	Red	B500C/B500B
20/25	AGT25/20	37 to 39	32.5 to 35	112 to 125	114 to 132	64	1.0	Grey	Red	B500C/B500B
20/32	AGT32/20	46 to 48	32.5 to 35	137 to 150	114 to 132	65	1.5	Grey	Brown	B500C/B500B
25/32	AGT32/25	46 to 48	37 to 39	137 to 150	112 to 125	67	1.7	Red	Brown	B500C/B500B
25/40	AGT40/25	63 to 65	37 to 39	165 to 178	112 to 125	77	3.5	Red	Green	B500C/B500B
32/40	AGT40/32	63 to 65	46 to 48	165 to 178	137 to 150	83	4.0	Brown	Green	B500C/B500B
32/50	AGT50/32	74 to 76	46 to 48	195 to 210	137 to 150	101	6.9	Brown	Grey	B500C/B500B
40/50	AGT50/40	74 to 76	63 to 65	195 to 210	165 to 178	107	8.7	Green	Grey	B500C/B500B

Table 4

The GRIPTEC transitional “AGTS” coupler range has the same components as “AGT” coupler range, but the design of a transitional stud has larger bear area of shoulder.

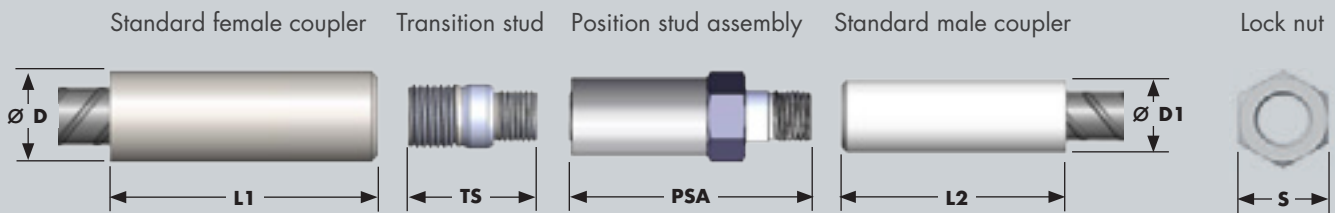
Size (mm)	Art No	D (mm)	D1 (mm)	L1 (mm)	L2 (mm)	TS (mm)	Weight (kg)	Plastic protection colour		Reinforcing bar grade tension-compression
16/20	AGTS20/16	29.5 to 32	25 to 26	107 to 110	99 to 103	47	0.6	White	Grey	B500C
20/25	AGTS25/20	37 to 39	29.5 to 32	112 to 125	107 to 110	56	1.0	Grey	Red	B500C
25/32	AGTS32/25	47 to 49	37 to 39	137 to 143	112 to 125	67	1.7	Red	Brown	B500C
25/40	AGTS40/25	61 to 63	37 to 39	167 to 170	112 to 125	77	3.5	Red	Green	B500C
32/40	AGTS40/32	61 to 63	47 to 49	167 to 170	137 to 143	83	4.0	Brown	Green	B500C
40/50	AGTS50/40	71 to 73	61 to 63	220 to 225	167 to 170	107	8.7	Green	Grey	B500C

Table 5

2.5 GRIPTEC Positional-Transitional Range

The GRIPTEC positional-transitional coupler range is designed to connect two bars of different diameter, neither of which can be rotated. It is a combination of the previous two. The positional-transitional coupler comprises six components: the same male and female sleeves as in the standard coupler, plus a transition stud, position stud, a position nut, and a lock nut.

Positional-Transitional Coupler



Size (mm)	Art No	D (mm)	D1 (mm)	TS (mm) (Approx)	PSA (mm) (Approx)	S (mm)	L1 (mm)	L2 (mm)	Weight (kg)	Plastic protection colour		Reinforcing bar grade tension only
12/16	AGPT16/12	25 to 26	19 to 20	42	58	22	99 to 103	66 to 72	0.5	Yellow	White	B500C/B500B
16/20	AGPT20/16	32.5 to 35	25 to 26	54	76	27	114 to 132	99 to 103	0.9	White	Grey	B500C/B500B
16/25	AGPT25/16	37 to 39	25 to 26	60	76	27	112 to 125	99 to 103	1.1	White	Red	B500C/B500B
20/25	AGPT25/20	37 to 39	32.5 to 35	64	94	32	112 to 125	114 to 132	1.6	Grey	Red	B500C/B500B
20/32	AGPT32/20	46 to 48	32.5 to 35	65	94	32	137 to 150	114 to 132	2.0	Grey	Brown	B500C/B500B
25/32	AGPT32/25	46 to 48	37 to 39	67	107	41	137 to 150	112 to 125	2.6	Red	Brown	B500C/B500B
25/40	AGPT40/25	63 to 65	37 to 39	77	107	41	165 to 178	112 to 125	4.4	Red	Green	B500C/B500B
32/40	AGPT40/32	63 to 65	46 to 48	83	124	50	165 to 178	137 to 150	5.4	Brown	Green	B500C/B500B

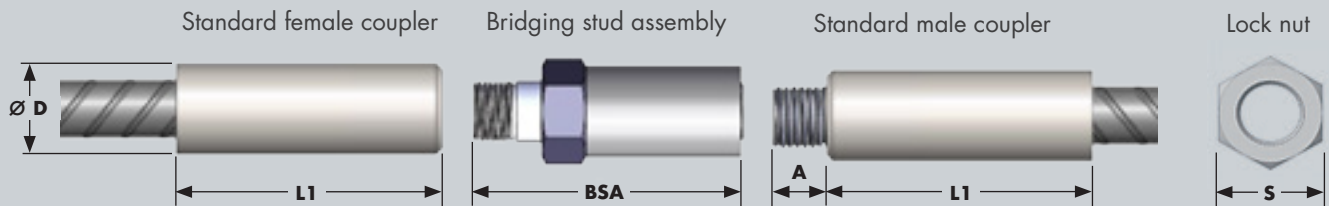
Table 6



2.6 GRIPTEC Bridging Range

The GRIPTEC bridging “AGPD” coupler range is designed for use where the bars cannot be brought butt to butt. It is similar to the positional coupler, the only difference being that the stud and the nut are longer, in order to cover a gap between the two bar ends.

Bridging Coupler



Size (mm)	Art No	D (mm)	BSA (mm)	S (mm)	L1 (mm)	A (mm) (Approx)	Weight (kg)	Plastic protection colour	Reinforcing bar grade tension only
16	AGPD16	25 to 26	114	27	99 to 103	16	0.8	White	B500C
20	AGPD20	32.5 to 35	130	32	114 to 132	20	1.5	Grey	B500C
25	AGPD25	37 to 39	151	41	112 to 125	22	1.9	Red	B500C
32	AGPD32	46 to 48	176	50	137 to 150	28	3.4	Brown	B500C
40	AGPD40	63 to 65	206	65	165 to 178	34	8.3	Green	B500C

Table 7

The GRIPTEC bridging “AGB” coupler range has the same components as “AGPD” coupler range, but the design of a bridging stud has larger bear area of shoulder.

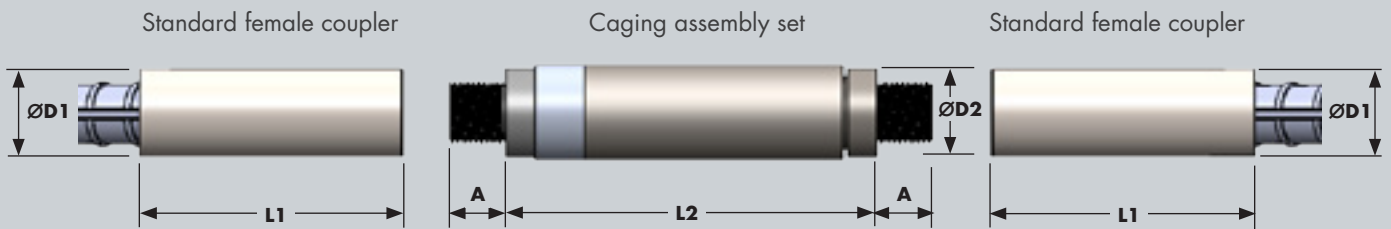
Size (mm)	Art No	D (mm)	BSA (mm)	S (mm)	L1 (mm)	A (mm)	Weight (kg) (Approx)	Plastic protection colour	Reinforcing bar grade tension only	Reinforcing bar grade compression
16	AGB16	25 to 26	114	27	90 to 103	16	0.9	White	B500C	-
20	AGB20	29.5 to 32	130	32	107 to 110	20	1.5	Grey	B500C/B500B	B500C/B500B
25	AGB25	37 to 39	151	41	112 to 125	22	1.9	Red	B500C/B500B	B500C/B500B
32	AGB32	47 to 49	176	50	137 to 143	28	3.4	Brown	B500C/B500B	B500C/B500B
40	AGB40	61 to 63	206	65	167 to 170	34	8.3	Green	B500C/B500B	B500C/B500B
50	AGB50	71 to 73	258	80	220 to 225	47	17.8	Grey	B500C	-

Table 8

2.7 GRIPTec Caging Range

The GRIPTec caging “GCA” coupler range is designed for use when the two bars are not well aligned (as it happens often in the manufacturing of reinforcement cages). This splice uses two standard GRIPTec female couplers that are connected by a GRIPTec “Caging assembly set”, which is constituted of a taper stud, a long caging stud, a caging nut and a lock-nut which are pre-assembled together. The tapered caging stud is screwed into a female sleeve (typically on the bottom bar), while, the set of a long caging stud, a caging nut and a lock-nut is screwed onto another female sleeve. Then, in order to accomplish the connection, the caging nut is screwed out of the caging stud and onto the tapered caging stud. The two bars do not need to be brought butt-to-butt: the GRIPTec caging splice system can bridge a gap between the bars.

Caging Coupler



Size (mm)	Art No	D1 (mm)	D2 (mm)	L1 (mm)	A (mm)	L2 (mm)	Weight (kg)	Plastic protection colour	Reinforcing bar grade tension only	Reinforcing bar grade compression
32	GCA32	47 to 49	50	137 to 143	28.5	226	3.7	Brown	B500C/B500B	B500C
40	GCA40	63 to 65	65	167 to 170	35	269	7.4	Green	B500C/B500B	B500C/B500B
50	GCA50	71 to 73	80	220 to 225	48	317	13.0	Grey	B500C	B500C

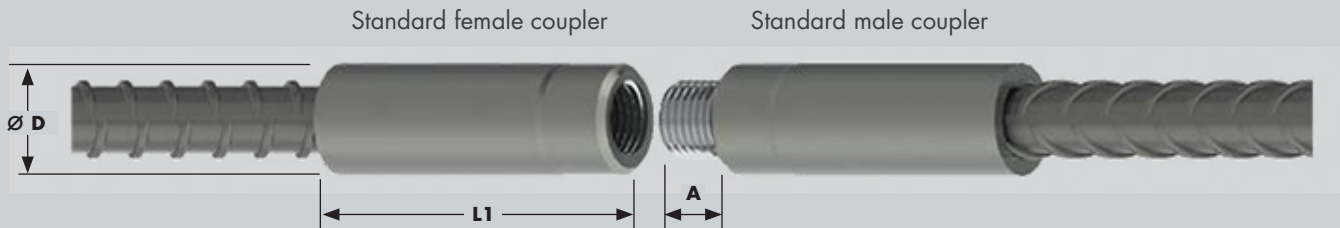
Table 9



2.8 GRIPTEC Standard G range coupler

The GRIPTEC standard "G" coupler range is designed for use where one of the bars to be spliced can be rotated. It comprises two steel sleeves that are extruded onto the bar ends and have matching male and female parallel ISO threads which allow the two bars to be joined.

Standard G Coupler



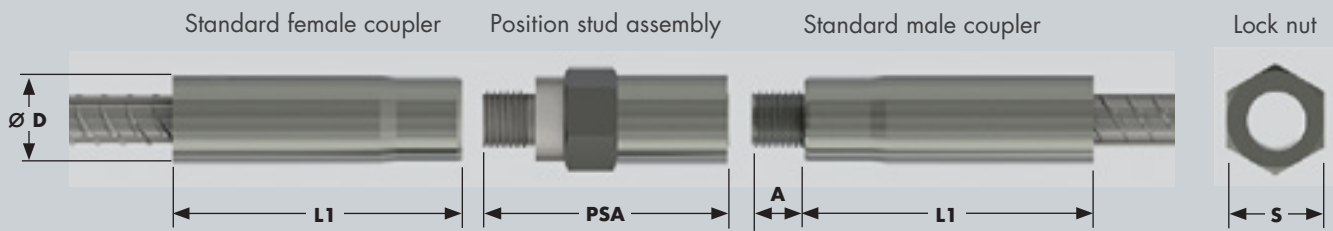
Size (mm)	Art No	D (mm)	L1 (mm)	A (mm)	Weight (kg)	Plastic protection colour	Reinforcing bar grade tension only
25	G25	37 to 39	118 to 131	28	1.4	Red	B500C
32	G32	47 to 49	141 to 147	35	2.7	Brown	B500C
40	G40	61 to 63	176 to 187	40	5.3	Green	B500C

Table 10

2.9 GRIPTEC GPA Positional range

The GRIPTEC "GPA" positional coupler range is designed for use where neither of the bars to be coupled can be rotated. The positional coupler comprises five components: the same male and female sleeves as in the standard coupler, plus a position stud (that screws itself into the female sleeve), a position nut (that screws itself onto the male sleeve), and a lock nut.

GPA Positional Coupler



Size (mm)	Art No	D (mm)	PSA (mm)	S (mm)	L1 (mm)	A (mm)	Weight (kg)	Plastic protection colour	Reinforcing bar grade tension only
25	GPA25	37 to 39	137	41	118 to 131	28	2.5	Red	B500C
32	GPA32	47 to 49	171	50	141 to 147	35	4.3	Brown	B500C
40	GPA40	61 to 63	203	65	176 to 187	40	9.3	Green	B500C

Table 11

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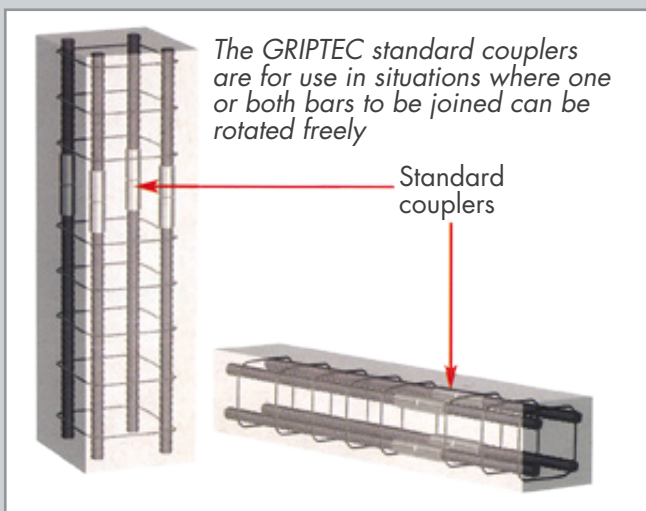


3 Product Performance and Characteristics

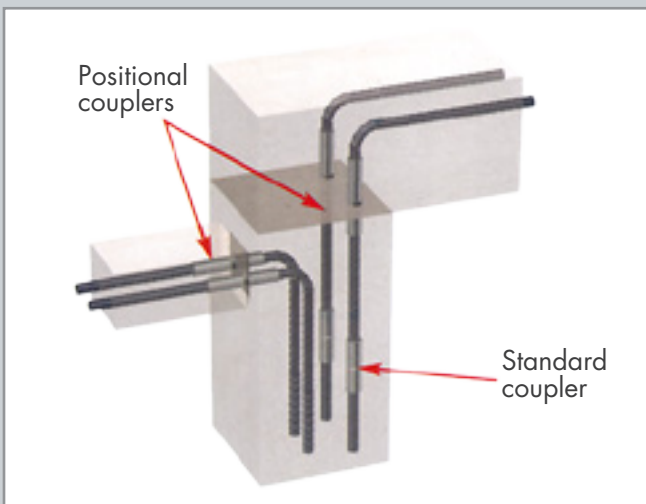
Full mechanical tests have been carried out to demonstrate compliance with performance requirements defined in CARES Appendix TA1-B including the performance requirements of EC2 and BS8110 when used with reinforcing bars to BS4449 Grade B500C and BS4449 Grade B500B:

TA1-B

- Permanent elongation is less than 0.10 mm or effective strain of less than 0.0016 at a load of $0.65f_y$ in tension or compression (see table 1 - 11 for details).
- Strength is greater than 575 MPa with grade B500C reinforcing steel and greater than 540MPa with grade B500B reinforcing steel in tension or compression (see tables 1 - 11 for details).



Typical application of GRIPTEC standard coupler



Typical application of GRIPTEC positional coupler

4 Installation

The bars to be spliced must be sheared with suitable shears that do not bend or deform the bar or leave a significant rag.



Griptec sleeve before extrusion



Griptec sleeve after extrusion

Sleeves must be extruded onto the bar ends exclusively using the Dextra GRIPTec extrusion machine operated by suitably trained staff in accordance with the Dextra operating manual. The parts are screwed together and tightened using a suitable tool/wrench. A torque wrench is not necessary.



Griptec extrusion machine

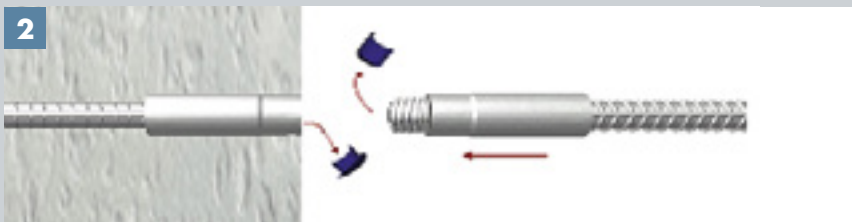
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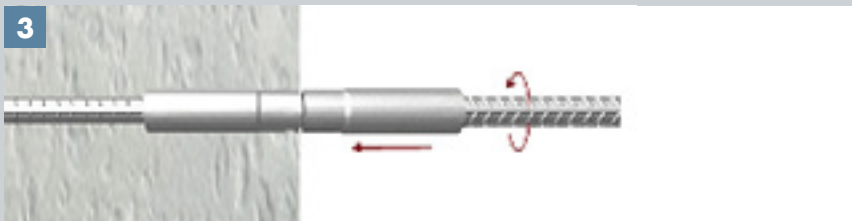
4.1 Standard Range



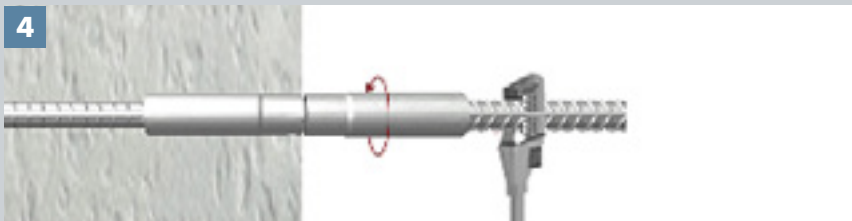
Position the 1st stage bar



Position the continuation bar
Remove caps



Screw in the continuation bar
A suitable tool/wrench maybe used to ensure no threaded portion is visible outside the coupler

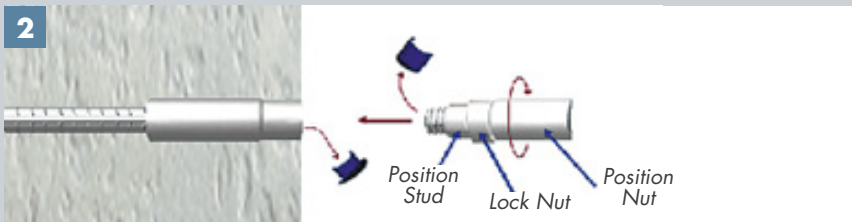


Lock the splice
Use a suitable tool/wrench on the continuation bar and tighten until the internal end faces of the couplers show close physical contact with each other

4.2 Positional Range



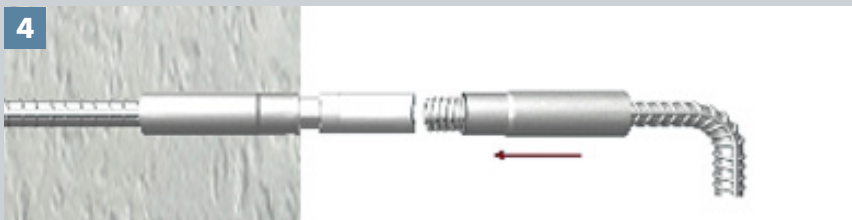
Position the 1st stage bar



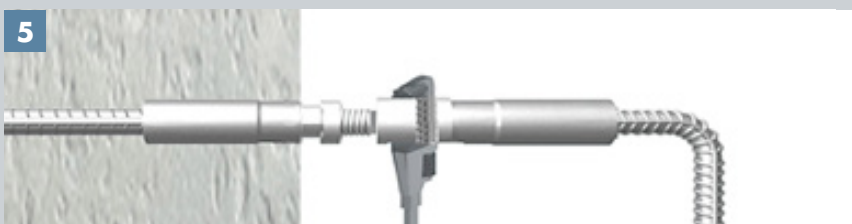
Remove caps and screw the position set into the female sleeve



Lock the position stud
Use a suitable tool/wrench to tighten the position stud



Position the continuation bar
Connect bar ends



Join the bars by rotating the position nut

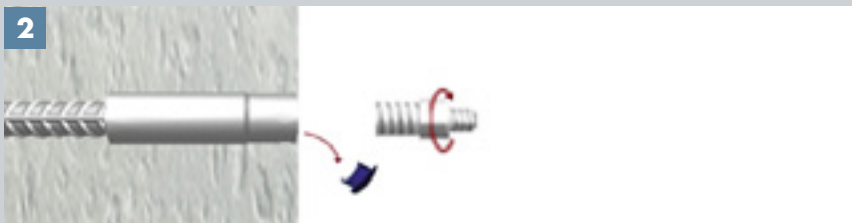


Lock the splice
Use a suitable tool/wrench on the continuation bar and tighten until the internal end faces of the couplers show close physical contact with each other

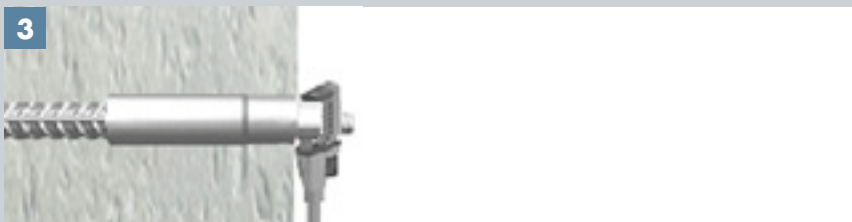
4.3 Transitional Range



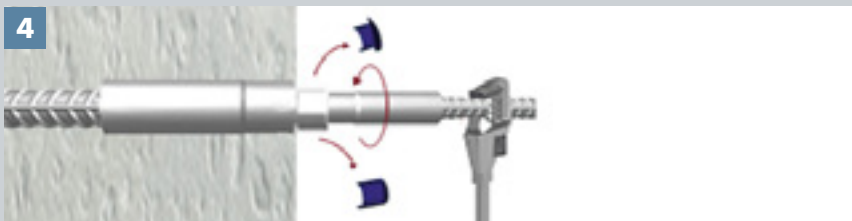
Position the 1st stage bar



Screw the transition stud into the female coupler
Remove the cap from the bar and screw in the transition stud



Lock the transition stud

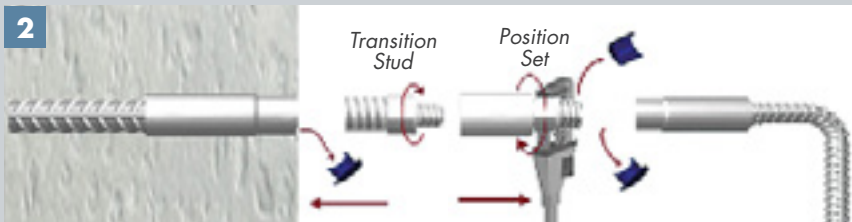


Screw the continuation bar
Remove the caps from the bar and the transition stud. Use a suitable tool/wrench on the continuation bar and tighten until the internal end faces of the couplers show close physical contact with each other

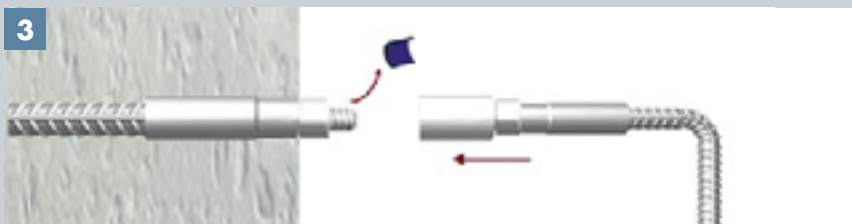
4.4 Positional-Transitional Range



Position the 1st stage bar



Screw the transition stud and position set into the female sleeves
 Use a suitable tool/wrench to tighten both studs into the female sleeves

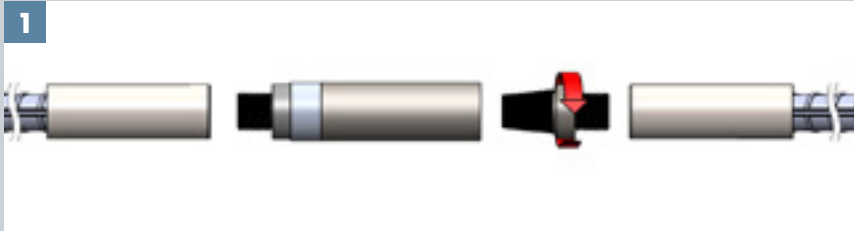


Position the continuation bar
 Remove the cap from the transition stud and connect the bar ends

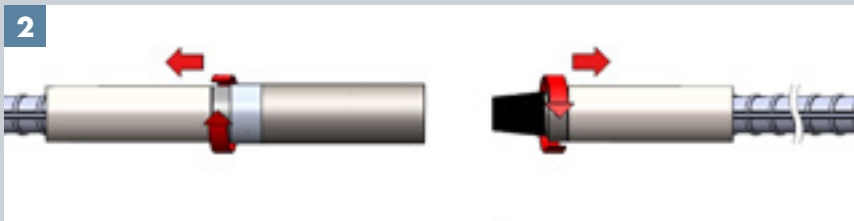


Join the bars by rotating the position nut and lock-nut
 Use a suitable tool/wrench on the continuation bar and tighten until the internal end faces of the couplers show close physical contact with each other

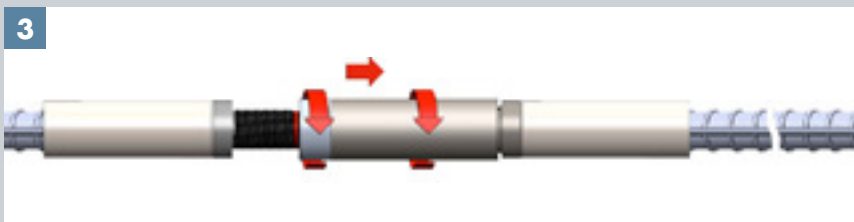
4.5 Caging Range



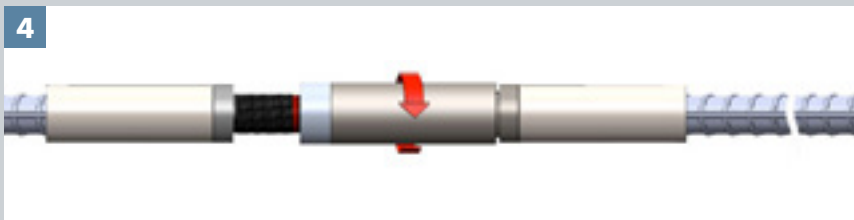
Remove the tapered caging stud from the Griptec caging assembly set



Screw the tapered caging stud into the female sleeve of one bar, and screw the Griptec caging assembly set into the female sleeve of the other bar



Assemble the splice by hand screwing the caging nut and lock nut onto the tapered caging stud



Use a torque wrench to tighten the caging nut onto the tapered caging stud. Adjust it to the torque value specified in the table below

Bar Size	Torque (Nm)
32	350
40	500
50	650

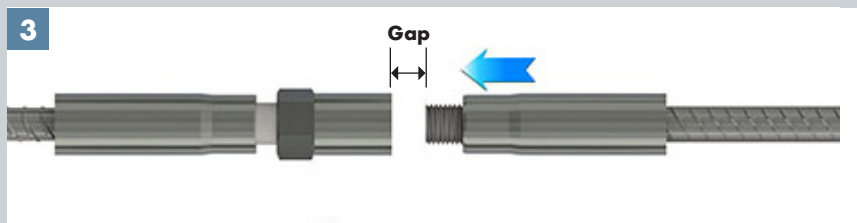
4.6 GPA Positional Range



Prepare the Griptec GPA Positional assembly set

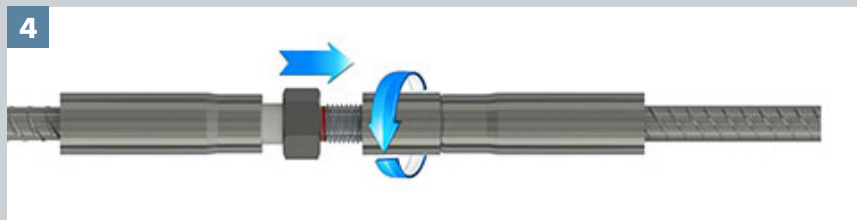


Screw the GPA positional set into the female sleeve

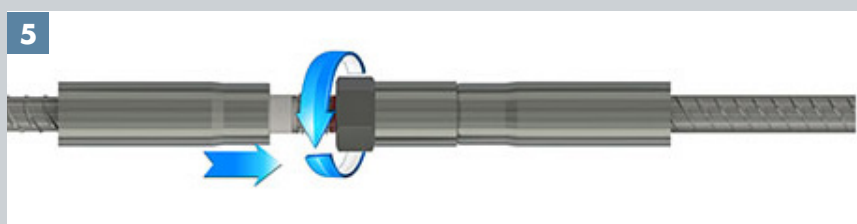


Position the continuation bar
 Check that the gap between two bar ends does not exceed the value in the table below

Bar Size	Max Gap (mm)
25	20
32	25
40	25



Join the bars by rotating the position nut onto the male sleeve



Hand screw the lock nuts until contact is made with the position nuts, and the lock splice
 Use a suitable tool/wrench on the continuation bar and tighten until the internal end faces of the couplers show close physical contact with each other

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5 Safety Considerations

Couplers are supplied in wooden containers which have a maximum weight of 2500 kg and must be handled with appropriate lifting equipment. It is advisable to wear protective gloves during handling the containers, couplers and reinforcement; during the extrusion process and during coupler installation.

6 Product Testing and Evaluation

Dextra GRIPTEC extruded couplers have been tested to satisfy the requirements of EC2 and BS8110 when used with reinforcing bars to BS4449 Grade B500C and BS4449 Grade B500B. The testing comprised the following elements:

TA1-B, BS8110 and EC2

- Tensile Strength
- Permanent Deformation

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

Dextra GRIPTEC extruded couplers are produced under an BS EN ISO9001 quality assurance 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

Dextra GRIPTec parallel extruded couplers, when used in EC2 based designs using the data contained within this technical approval, satisfy the relevant requirements of The Building Regulations, Approved Document A.

Materials and Workmanship, Approved Document

This technical approval gives assurance that the Dextra GRIPTec parallel extruded couplers comply with the material requirements of EC2.

8.2 The Building Regulations (Northern Ireland)

Materials and Workmanship

This technical approval gives assurance that Dextra GRIPTec parallel extruded 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 Dextra GRIPTec parallel extruded couplers comply with the material requirements of EC2 by virtue of *Clause 0.8.*

Structure

Dextra GRIPTec parallel extruded 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

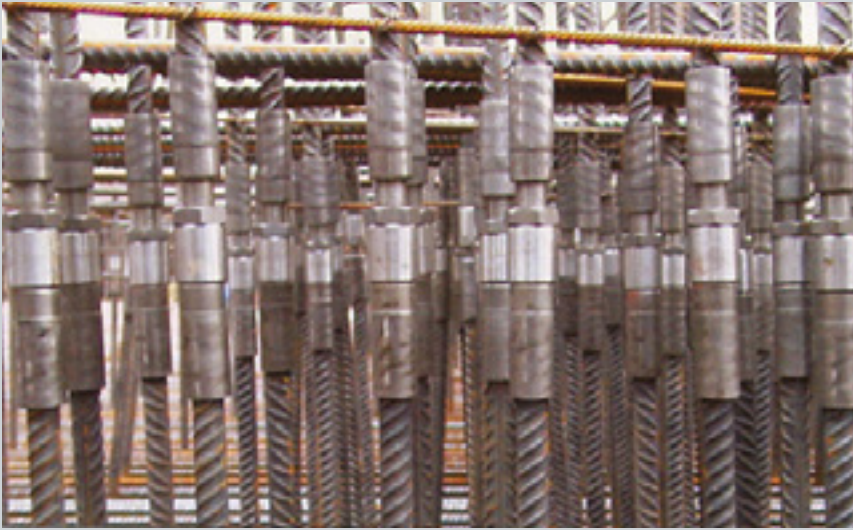
- BS 4449:2005 Steel for the reinforcement of concrete - Weldable reinforcing steel - Bar, coil and decoiled product - Specification.
- BS 8110:Part 1:1997 (amended 2007) Structural use of concrete, Code of practice for design and construction.
- BS EN 1992-1-1:2004 Eurocode 2 Design of concrete structures - General rules for buildings
- BS EN ISO 9001: Quality Systems. Model for quality assurance in production, installation and servicing.
- TA1-B Quality and Operations Schedule for the Technical Approval of Couplers for Reinforcing Steel For BS8110 and EN1992-1-1 Applications for 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 DEXTRA 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 5005. Confirmation that this technical approval is current can be obtained from UK CARES.



GRIPTEC Coupler Applications



The use of GRIPTEC couplers allows the design and installation of reinforcement in congested areas or where the continuation bars cannot be rotated.



GRIPTEC couplers allow reinforcing bars to be butt jointed.



Griptec bar end preparation takes about 30 seconds.



GRIPTec standard coupler



GRIPTec positional coupler



GRIPTec transitional coupler



GRIPTec positional-transitional coupler

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