



Ancon[®]

CXL Parallel Thread Couplers

for the Construction Industry

Reinforcing Bar Couplers

Lapped joints are not always an appropriate means of connecting reinforcing bars. The use of laps can be time consuming in terms of design and installation and can lead to greater congestion within the concrete because of the increased amount of rebar used.

Ancon couplers can simplify the design and construction of reinforced concrete and reduce the amount of reinforcement required.

Lapped joints are dependent upon the concrete for load transfer. For this reason any degradation in the integrity of the concrete could significantly affect the performance of the joint. The strength of a mechanical splice is independent of the concrete in which it is located and will retain its strength despite loss of cover as a result of impact damage or seismic event.

The Ancon range of reinforcing bar couplers is the most comprehensive available and includes tapered threaded, parallel threaded, mechanically bolted and grouted couplers. Couplers for stainless steel and cryogenic-grade rebars complete the range.

Characteristic Strengths of High Yield Reinforcing Bar

Diameter (mm)	Area (mm ²)	Fy(kN) 500N/mm ²
12	113	56.5
16	201	100.5
20	314	157.0
22	380	190.0
25	491	245.5
28	616	307.8
32	804	402.1
36	1,018	509.0
40	1,256	628.3
50	1,963	981.7



Eurocode 2 compliant



Simplify design and construction



Reduce amount of reinforcement required



Dedicated sales support



Available through major rebar stockists and approved distributors



ISO 9001, ISO 14001, OHSAS 18001

CXL

CXL couplers produce a full strength joint yet they are among the smallest in the Ancon range, best suited to large scale projects requiring a high volume of couplers.



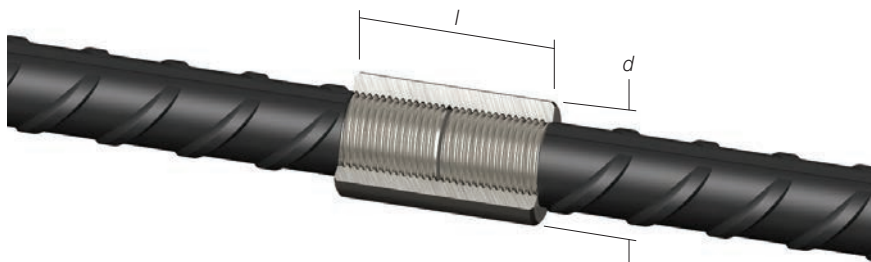
The end of each bar to be joined is cut square and enlarged by cold forging. This increases the core diameter of the bar to ensure that the joint is stronger than the bar.

Parallel metric threads are cut onto the enlarged ends. The threaded end is then proof tested to a force equal to the characteristic yield strength of the bar. A nominal allowance of +50mm per threaded bar end should be made for cutting square and cold forging.

The threaded ends of the bars are protected by an external plastic sheath. Couplers, which are usually supplied attached to the bar, have their internal threads protected by an internal plastic end cap. For certain applications, especially where CXL is being used in deep pours,

the coupler end caps may not prevent the ingress of concrete fines. For these applications, further protection may be required.

CXL couplers are also available to join bars of different diameters. For further information please contact Ancon Building Products.

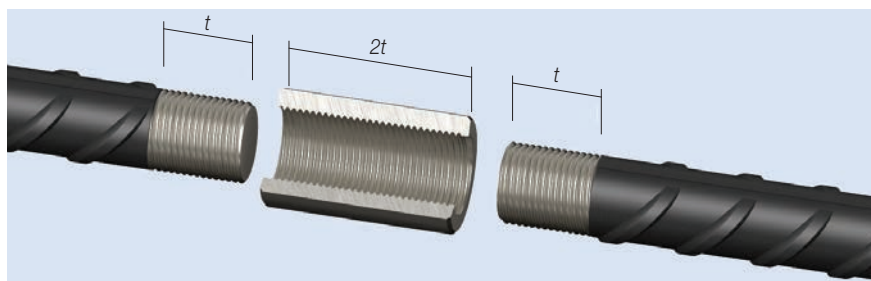


CXL Dimensions

Bar Diameter (mm)	12	16	20	22	25	28	32	36	40	50
External Dia. (mm) d	22	30	35	36	42	48	55	60	65	80
Coupler Length (mm) l	28	40	48	52	60	66	72	84	90	112
Thread Size (mm)	M16	M20	M24	M26	M30	M33	M36	M42	M45	M56
Thread Pitch	2.0	2.5	3.0	3.0	3.5	3.5	4.0	4.5	4.5	5.5
Weight (kg)	0.04	0.09	0.16	0.22	0.32	0.43	0.58	0.87	1.13	2.17
Part No Type A	CXL12/A	CXL16/A	CXL20/A	CXL22/A	CXL25/A	CXL28/A	CXL32/A	CXL36/A	CXL40/A	CXL50/A
Part No Type B	CXL12/B	CXL16/B	CXL20/B	CXL22/B	CXL25/B	CXL28/B	CXL32/B	CXL36/B	CXL40/B	CXL50/B
Part No Type C	-	CXL16/C	CXL20/C	CXL22/C	CXL25/C	CXL28/C	CXL32/C	CXL36/C	CXL40/C	CXL50/C

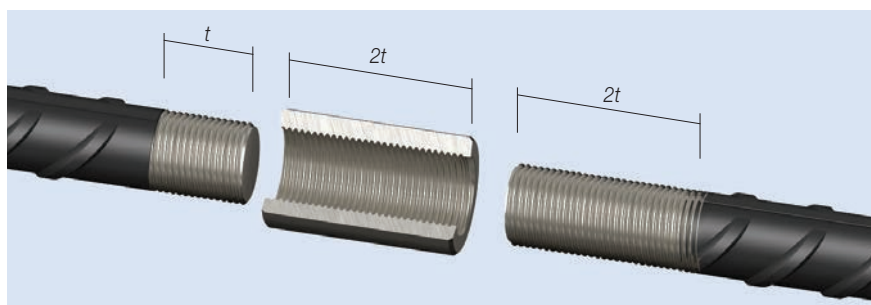
CXL Type A

The CXL Type A system utilises internally threaded couplers with a single right hand thread and is suitable for applications where the continuation bar can be rotated. The ends of the bars are upset and threaded for half the length of the coupler.



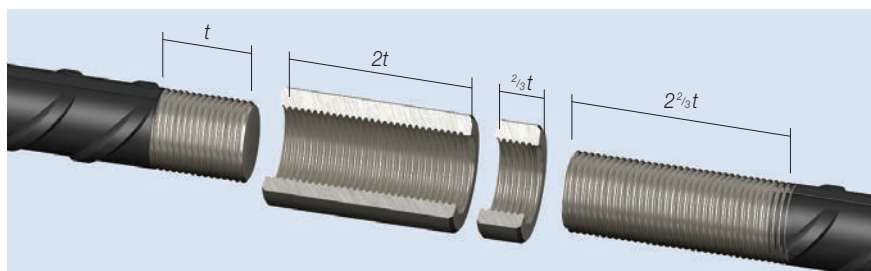
CXL Type B

The CXL Type B uses the same coupler as the Type A system, but one bar is threaded for a full coupler length. It is used for applications where it is difficult but not impossible to rotate the continuation bar.



CXL Type C

The CXL Type C system has an additional locknut and is used where the continuation bar cannot be rotated. The continuation bar is threaded for the full coupler length plus the length of the locknut.



Reinforcing Bar Couplers

Two Stage Construction

In two stage construction utilising Types B and C couplers, it is essential to form a pocket in the face of the first stage concrete. This will create the space for the coupler to run onto the thread of the fixed reinforcing bar.

A pocket former is screwed onto the end of the bar and cast flush with the face of the concrete.

Mobile Bar End Preparation Facility

CXL threading equipment is generally established in the rebar supplier's premises and couplers are usually supplied pre-fixed to the threaded bar ends.

On large contracts where bar end preparation can be carried out on site, equipment can be made available for hire. It should be noted that the hirer will need to provide sufficient power, air, rebar support tressles and crane handling facilities.



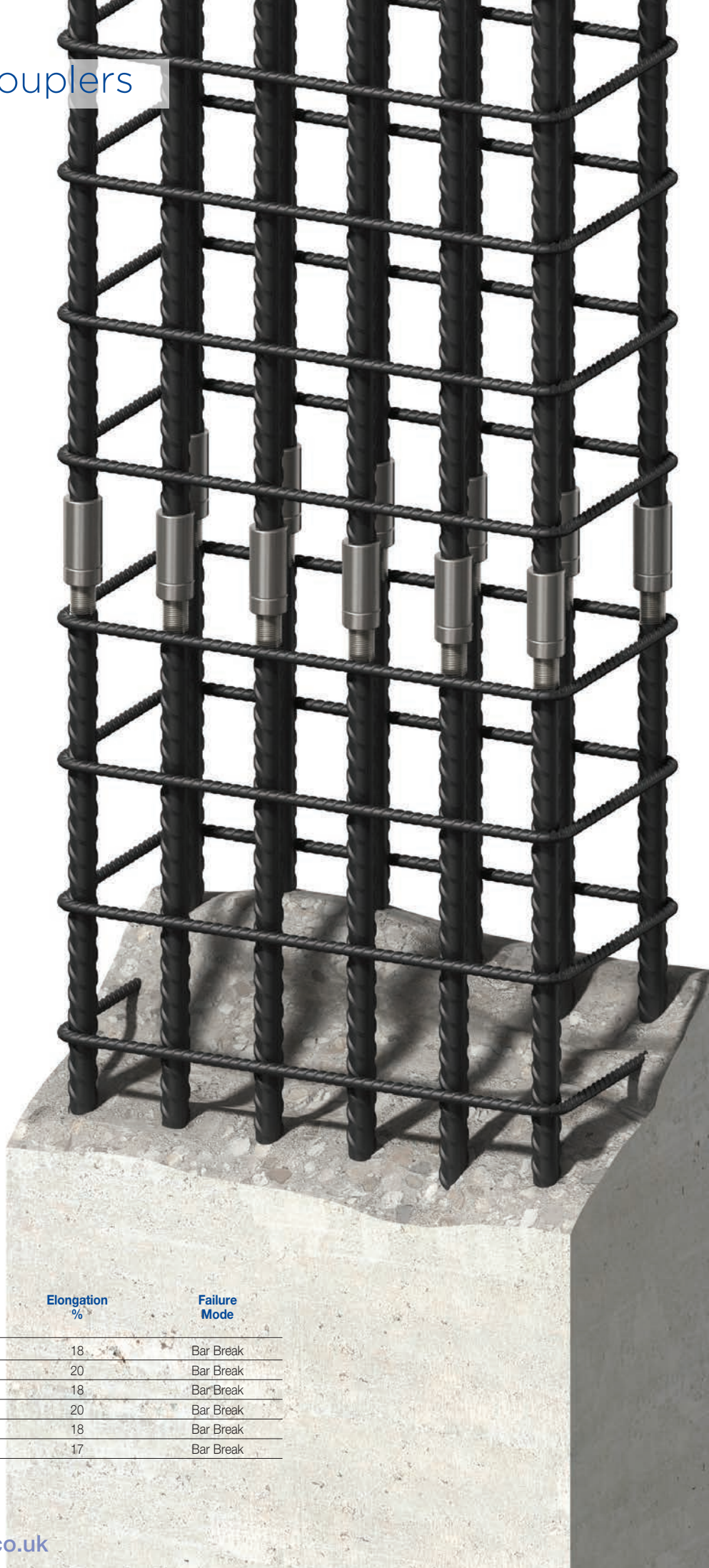
Testing & Approvals

CXL couplers are designed and manufactured in accordance with BS EN ISO 9001 and comply in all respects to BS EN 1992-1-1:2004 (Eurocode 2) and BS 8110 when used with reinforcing bar to BS 4449. Tests have been carried out to show compliance with Russia Code RD-EO 0657-2006 and independent approvals, ITB Approval No. AT-15-9037/2013, BRI NI SI EOOD Approval No. 118-2 14/09082011, DCL Approval No. TAC



Typical Test Results

Nominal Bar Size Dia. (mm)	Yield Stress (N/mm ²)	Ultimate Stress (N/mm ²)	Elongation %	Failure Mode
16	531	587	18	Bar Break
20	518	596	20	Bar Break
25	522	625	18	Bar Break
32	484	604	20	Bar Break
40	512	629	18	Bar Break
50	510	669	17	Bar Break

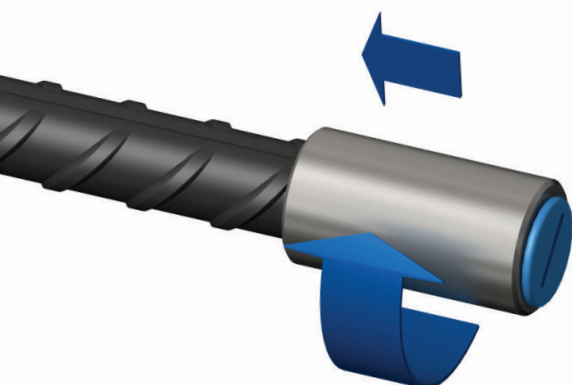


Installation

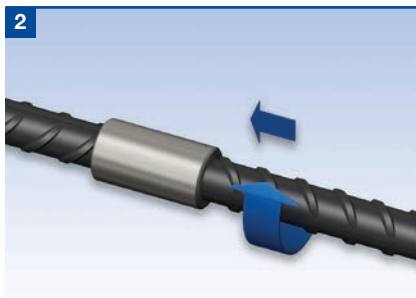
The CXL Type A System

1

Screw the coupler to the rear of the thread on the fixed bar and lock tight. The bar end should be central within the coupler.

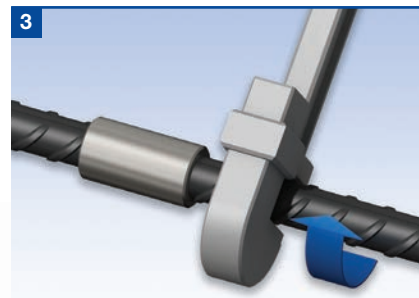


2



Remove the plastic cap from the coupler. Position and rotate the continuation bar in the coupler.

3

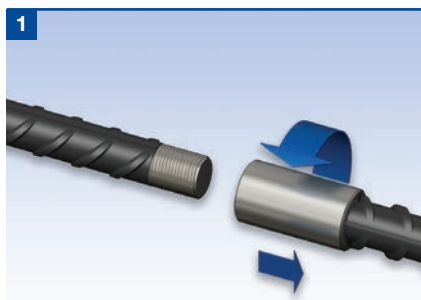


Tighten the joint using a wrench on the continuation bar. After tightening there should be no more than 2-4mm of thread exposed, depending on the diameter of the rebar.



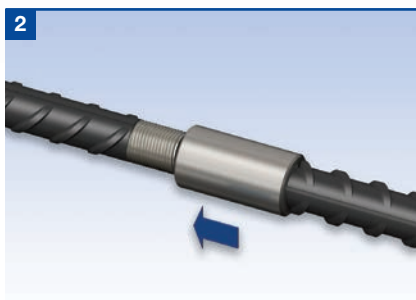
The CXL Type B System

1



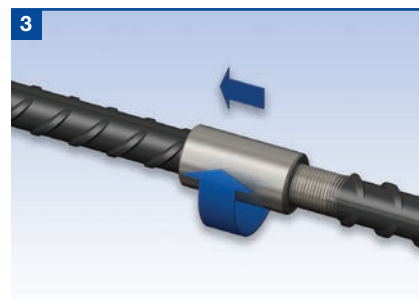
Screw the coupler to the rear of the thread on the continuation bar.

2



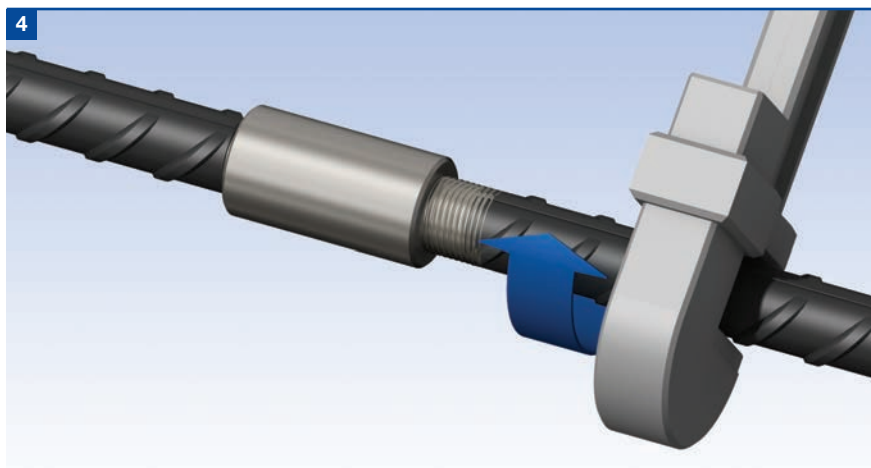
Position the continuation bar with the coupler against the end of the first bar.

3



Rotate the coupler from the continuation bar to engage against the rear of the thread on the opposing bar and lock tight.

4

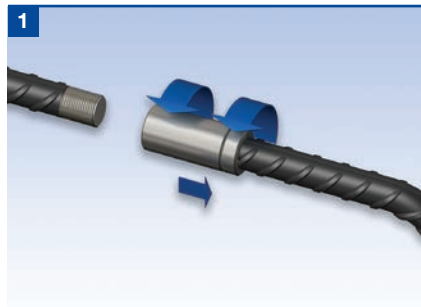


Using a wrench, rotate the continuation bar to lock the two bar ends against each other within the coupler. After tightening, the length of exposed thread should be no more than half of the coupler length plus 2-4mm depending on the diameter of the rebar.

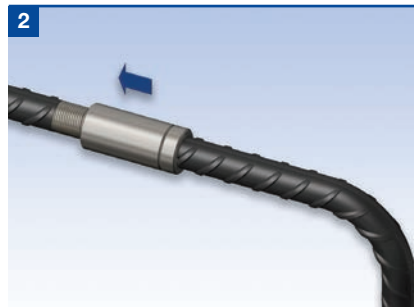


Reinforcing Bar Couplers

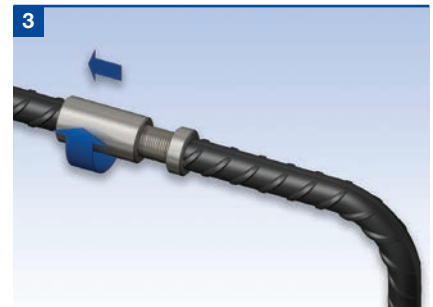
The CXL Type C System



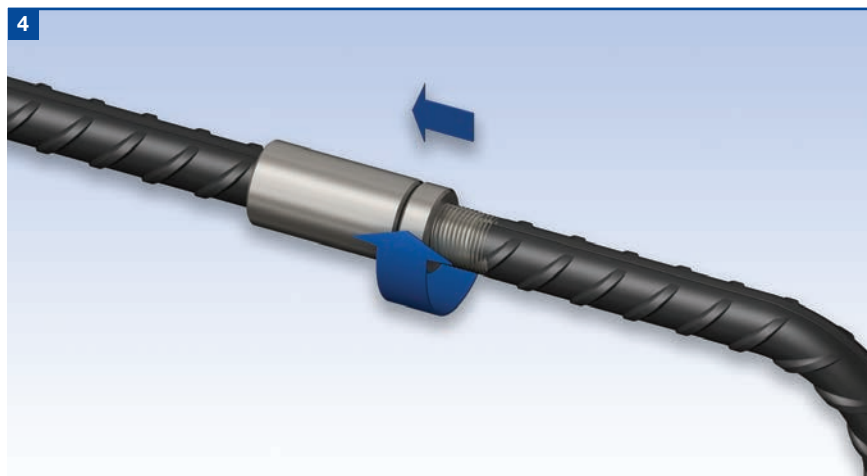
Screw the locknut followed by the coupler to the rear of the thread on the continuation bar.



Position the continuation bar with the coupler against the end of the first bar.



Rotate the coupler from the continuation bar to engage against the rear of the thread on the opposing bar and lock tight.



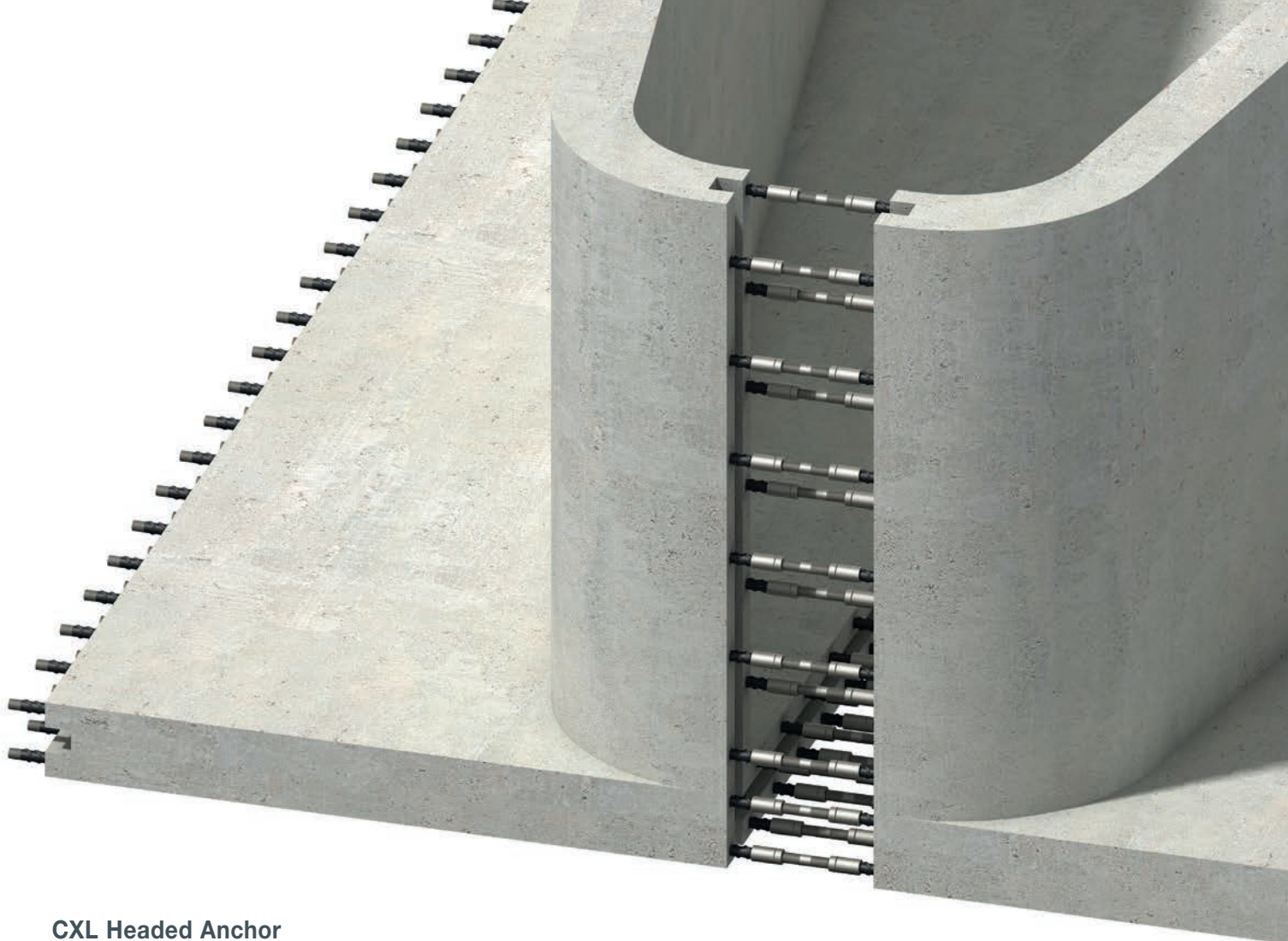
Rotate the locknut along the continuation bar to abut the coupler.



5

Hold the rebar in its required orientation and with a wrench tighten the locknut against the coupler.





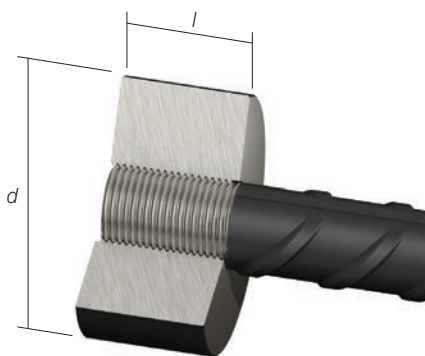
CXL Headed Anchor

The Ancon CXL Headed Anchor provides an effective and proven method of achieving rebar end anchorage within concrete.

Anchorage of reinforcement within a concrete section is traditionally achieved by means of creating a long hooked end to the bar. These hooks can lead to problems when positioning the bar and can increase congestion. This can ultimately result in larger than necessary concrete sections at the location of hooked ends.

The CXL Headed Anchor is essentially an oversized coupler capable of carrying the full tension load of the bar when it bears against the concrete in which it is cast. The Headed Anchor removes the need for the hooked rebar end and can subsequently reduce congestion, simplifying bar placement. This in turn increases the speed of construction and gives greater flexibility in design. Typical applications include pile caps and beam-to-column connections.

To attach the Headed Anchor to the rebar, it is first necessary to enlarge the bar end and then form the thread on the enlarged bar end using a thread cutting machine. As with the CXL coupler connection, the thread is such that the cross-sectional area of the bar end is not reduced, thus ensuring the tensile strength of the connection matches or exceeds that of the parent bar.



CXL Headed Anchor

Bar Diameter (mm)	16	20	25	32	40
External Diameter (mm) d	52	65	80	110	135
Anchor Thickness (mm) l	20	24	30	36	45
Thread Size	M20	M24	M30	M36	M45
Anchor Weight (kg)	0.27	0.56	1.03	2.43	4.55
Header Anchor Reference	CXL16HA	CXL20HA	CXL25HA	CXL32HA	CXL40HA

Other sizes are available on request. Contact Ancon for more details.

Concrete Strength

When the above sizes of CXL Headed Anchors are used, the compressive strength of the concrete shall not be less than strength grade C32/40 (cylinder/cube). Where a lower concrete stress is required, Headed Anchors can be supplied to a larger diameter to suit the specific application.

Reinforcing Bar Couplers

CXL Welded Couplers

CXL welded couplers provide a convenient means of connecting reinforcing bars to structural steel plates or sections. One end is internally threaded with the CXL thread form; the other end is prepared for welding to the steel.

The coupler is suitable for welding to structural steels EN BS 10025, Grade S275 (43A) or Grade S355 (Grade 50B), however the load conditions at the connection must be determined by the designer responsible for the structural element, along with the type and size of weld required.

Other important considerations include the type of electrode to be used, which must be matched to the properties of the plate and tube, and to the site conditions under which the welding will be undertaken. Welders should be qualified for the type of weld required.

As a minimum standard, welding of the couplers shall be in accordance with the guidance provided in the following documents:

BS EN ISO 15614-1:2004+A2:2012 Specification and qualification of welding procedures for metallic materials. Welding procedure test. Arc and gas welding of steels and arc welding of nickel and nickel alloys

BS EN 287-1 Qualification testing of welders, fusion welding, steels

BS EN 9606-1:2013 Qualification testing of welders, fusion welding, steels

BS EN ISO 15607:2003 Specification and qualification of welding procedures for metallic materials. General rules BS EN ISO 15609-1:2004 Specification and qualification of welding procedures for metallic materials. Welding procedure specification. Arc welding

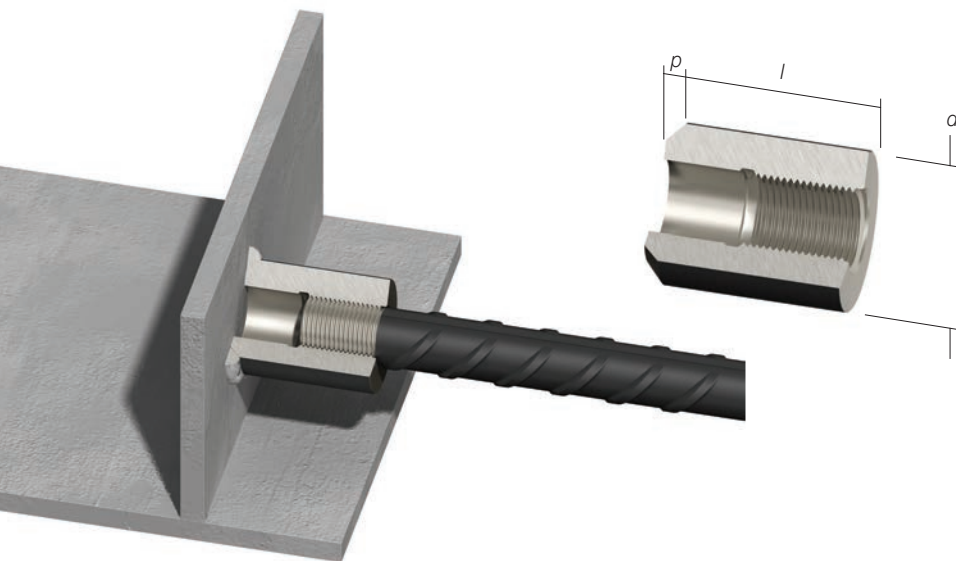
BS EN 1011-1:2009 Welding. Recommendations for welding of metallic materials. General guidance for arc welding

BS EN 1011-2:2001 Welding. Recommendations for welding of metallic materials. Arc welding of ferritic steels

CXL Welded Couplers are manufactured from either Steel Grade 1045 to ASTM A576 or Steel Grade C45R to EN10083.

Carbon Equivalent Value - The Carbon Equivalent value of these couplers may typically vary between 0.50 - 0.75, where the carbon equivalent value is given by

$$CEV = C + (Mn)/6 + (Ni+Cu)/15 + (Cr+Mo+V)/5$$

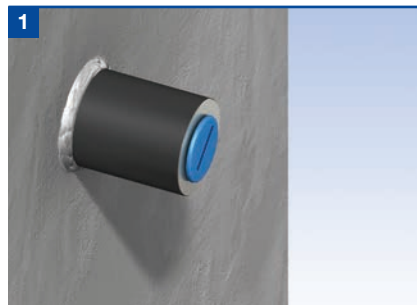


CXL Weldable Couplers

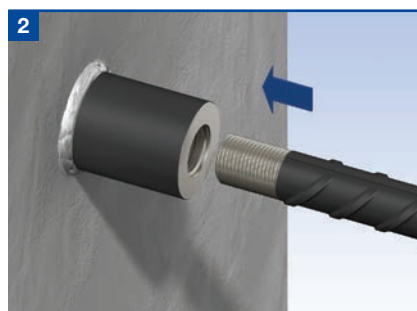
Bar Diameter (mm)		16	20	25	32	40
Coupler Diameter (mm)	<i>d</i>	33	38	48	57	72
Coupler Length (mm)	<i>l</i>	40	48	60	72	90
Thread Size		M20	M24	M30	M36	M45
Weld Preparation (mm)	<i>p</i>	5.5	5.0	5.5	11.0	12.5
Coupler Weight (kg)		0.18	0.30	0.58	0.96	1.91
Coupler Reference		CXL16W	CXL20W	CXL25W	CXL32W	CXL40W

Installation

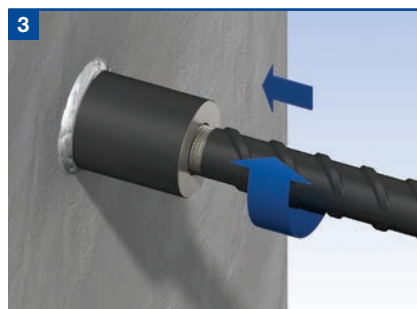
CXL Weldable Couplers



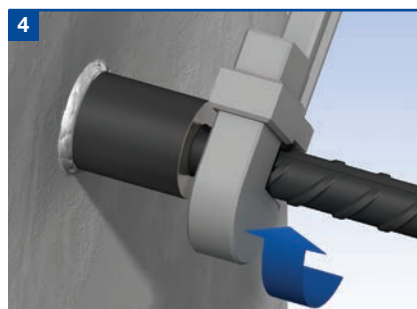
The coupler must first be welded to the steelwork.



When ready to extend, remove the plastic end cap and position the continuation bar into the sleeve.



Rotate the bar into the coupler until tight.



Tighten the continuation bar using a wrench.

Other Ancon Products

Reinforcement Continuity Systems

Reinforcement Continuity Systems are an increasingly popular means of maintaining continuity of reinforcement at construction joints in concrete. The Ancon Eazistrip re-bend system is approved by UK CARES and consists of pre-bent bars housed within a galvanised steel casing. Once installed, the bars are straightened ready for lapping with slab reinforcement. Ancon KSN Anchors and Ancon Starter Bars are cast into a concrete wall and accept threaded continuation bars. They easily accommodate long EC2 lap lengths and eliminate the need for on-site bar straightening. KSN Anchors minimise rebar congestion in the wall.



Shear Load Connectors

Ancon DSD and ESD Shear Load Connectors are used to transfer shear across expansion and contraction joints in concrete. They are more effective at transferring load and allowing movement to take place than standard dowels. The range features rectangular box section sleeves to allow lateral movement in addition to longitudinal movement. A range of Lockable Dowels is available for temporary movement joints in post-tensioned concrete.



Channel and Bolt Fixings

Ancon offers a wide range of channels and bolts in order to fix stainless steel masonry support, restraints and windposts to structural frames. Cast-in channels and expansion bolts are used for fixing to the edges of concrete floors and beams.



Punching Shear Reinforcement

Ancon Shearfix is used within a slab to provide additional reinforcement from punching shear around columns. The system is approved by UK CARES and consists of double-headed steel studs welded to flat rails. Shearfix is designed to suit the load conditions and slab depth at each column using free calculation software from Ancon.



Insulated Balcony Connections

Ancon's thermally insulated connectors minimise heat loss at balcony locations while maintaining structural integrity. They provide a thermal break and, as a critical structural component, transfer moment, shear, tension and compression forces. Standard solutions are available for concrete-to-concrete, steel-to-concrete and steel-to-steel interfaces.



Masonry Support Systems

Lintels

Masonry Reinforcement

Windposts and Parapet Posts

Wall Ties and Restraint Fixings

Channel and Bolt Fixings

Tension and Compression Systems

Insulated Balcony Connectors

Shear Load Connectors

Punching Shear Reinforcement

Reinforcing Bar Couplers

Reinforcement Continuity Systems

Stainless Steel Fabrications

Flooring and Formed Sections

Refractory Fixings



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