

ഭരണ

Reinforcing Bar Couplers

Why use Couplers?

Reinforcing bar couplers have many advantages over lapped joints because they:

- allow coupled bars to perform as an integral unit
- minimise steel congestion, particularly when using large diameter bar
- reduce the tonnage of bar, which reduces the overall weight of the structure
- permit continuity of construction
- improve speed of construction
- are suitable for remedial / repair applications

Technical Requirements

Basic British Technical Requirements

- Limitation of the slip (permanent set) across the splice (0.1mm)
- Provision of adequate ratio between the splice tensile failure load and rebar characteristic yield load (f_y 500N/mm², UTS up to 575N/mm²)
- Resistance to cyclic loading – load reversal over a number of cycles, typically over 100 cycles at 5% - 90% f_y for nuclear structures
- Resistance to fatigue loading – normally a requirement for bridge structures

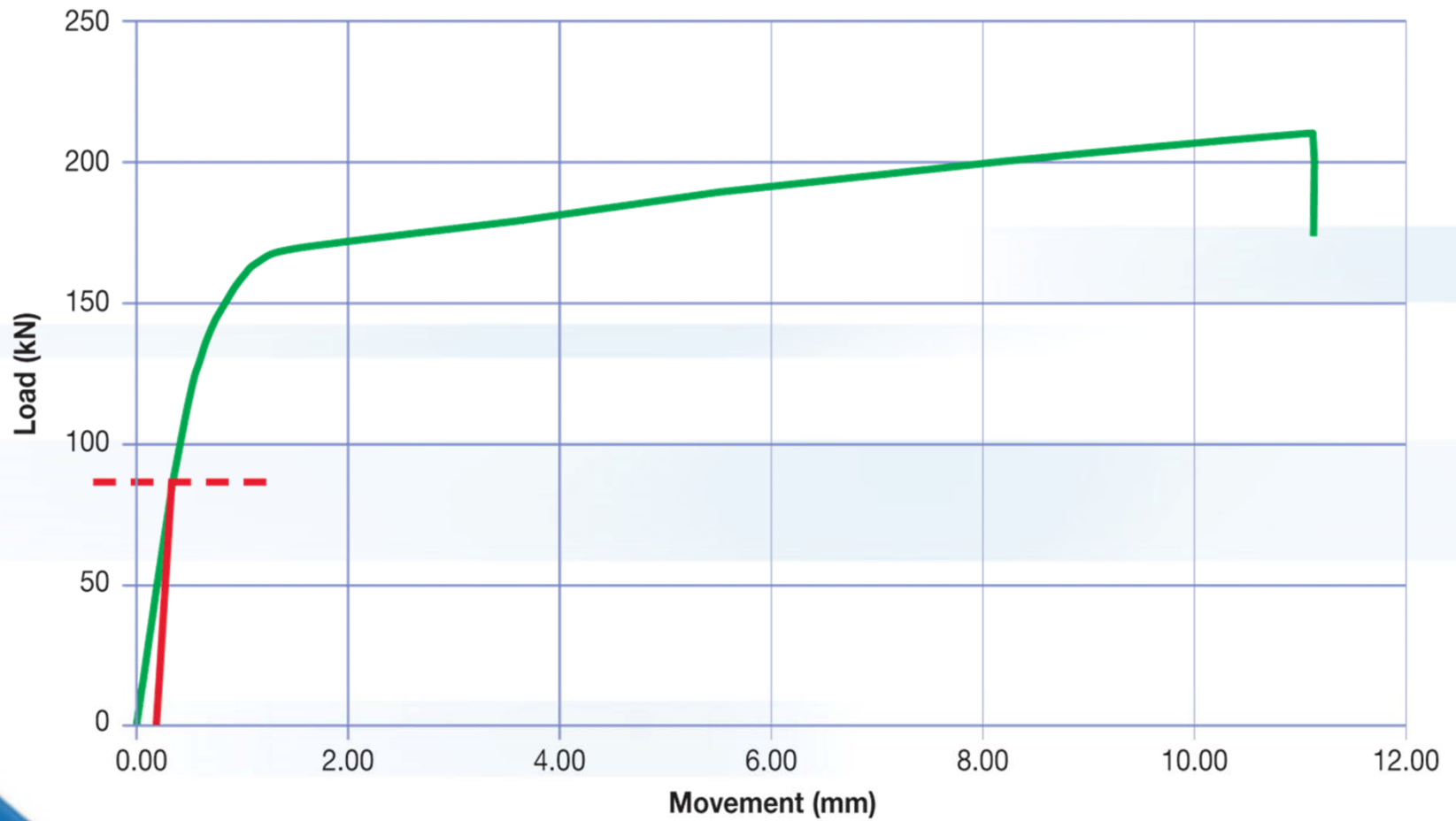
Basic American Code Requirements ACI 318

- Type 1 Splice – min. tensile capacity 125% specified yield (520N/mm²)
- Type 2 Splice – min. tensile capacity 100% of specified UTS (620N/mm²)

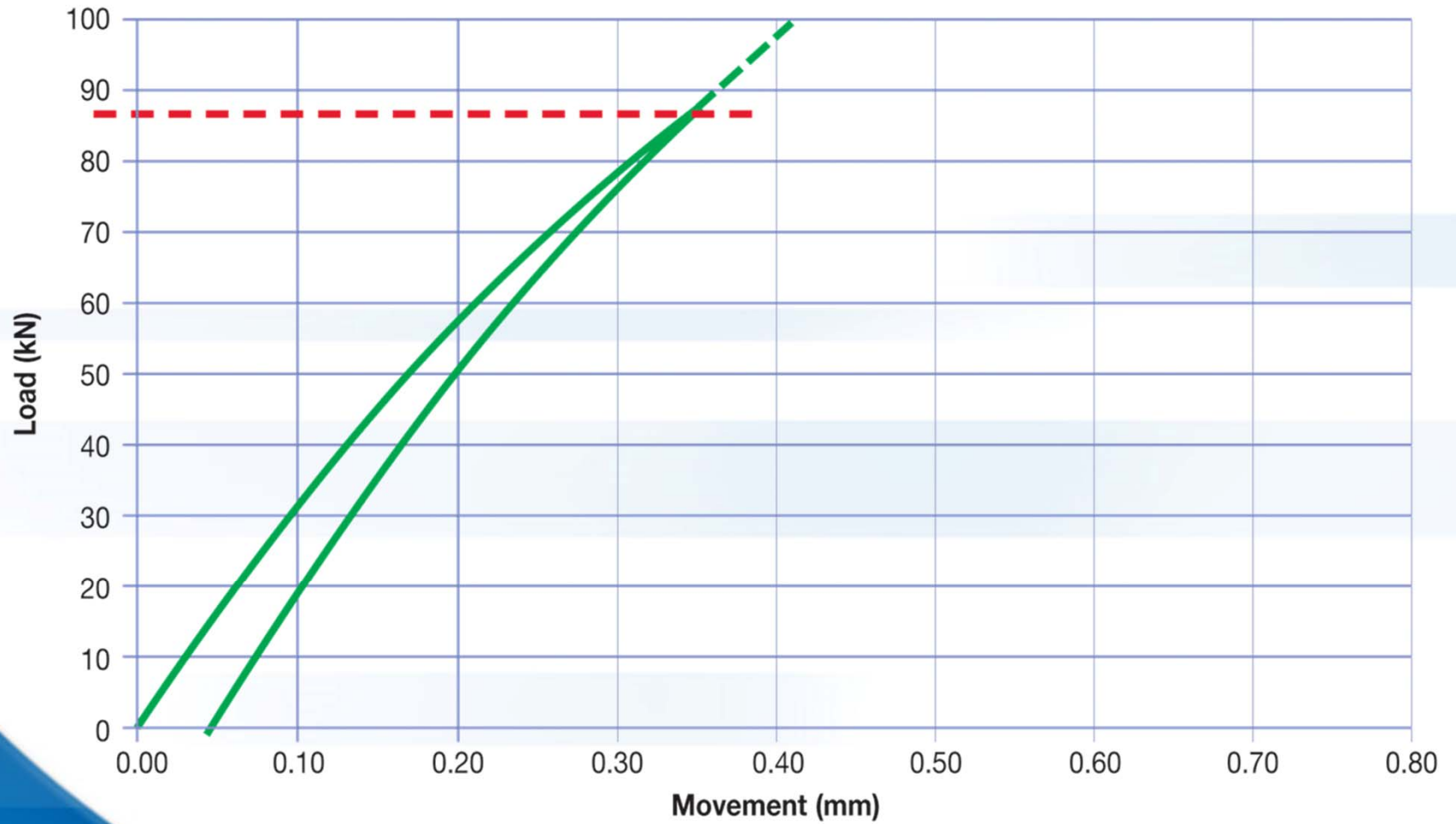
IBC, UBC and ICBO codes will extend the requirements of ACI 318



Typical Tensile Test



Typical Slip (Permanent Set)



Ancon Reinforcing Bar Couplers



Tapered Thread

MBT

Bartec

Tapered Thread Couplers



Tapered Thread Couplers



Standard Range – to suit
12mm to 50mm diameter bars

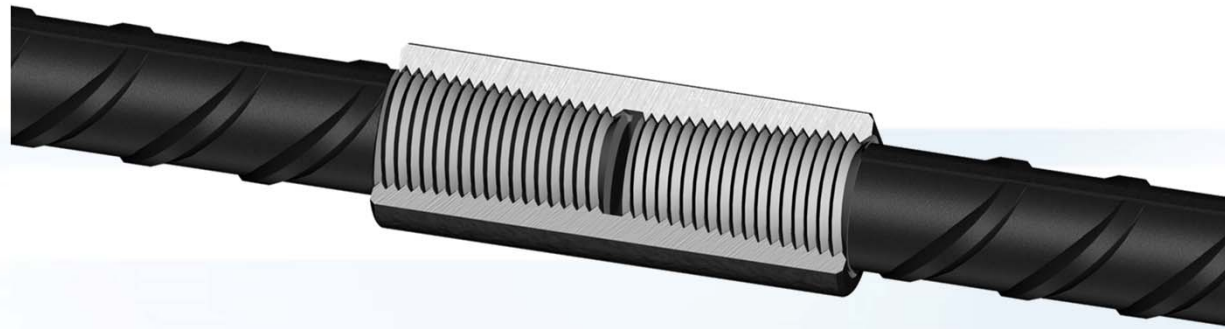
Transition Range – available in
sizes 12/16, 16/20, 20/25, 25/32,
32/40, & 40/50mm

Positional Range – to suit
12mm to 50mm diameter bars

Weldable Range - to suit 12mm
to 50mm diameter bars

Headed Anchor – to suit 12mm
to 40mm diameter bars

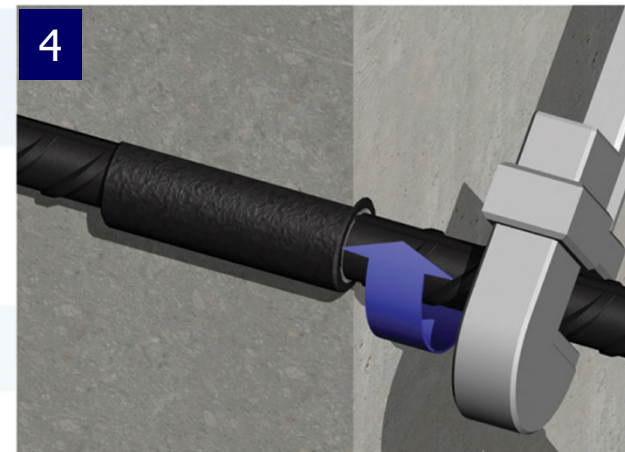
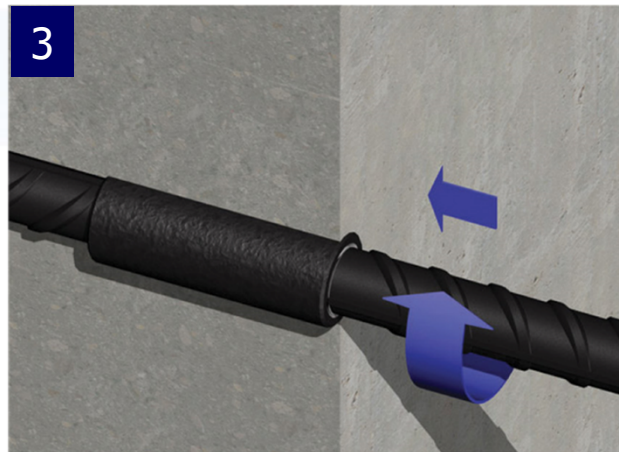
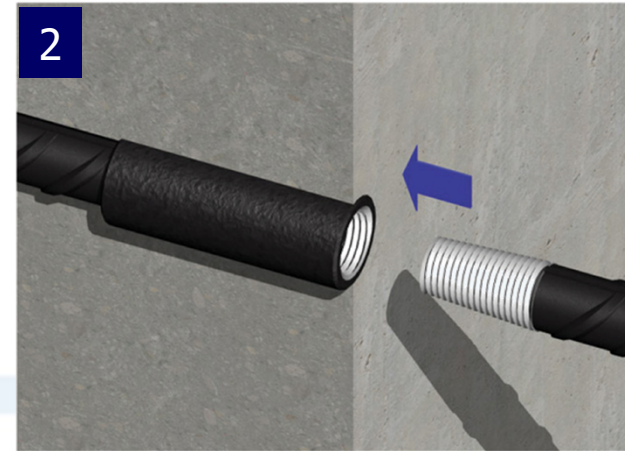
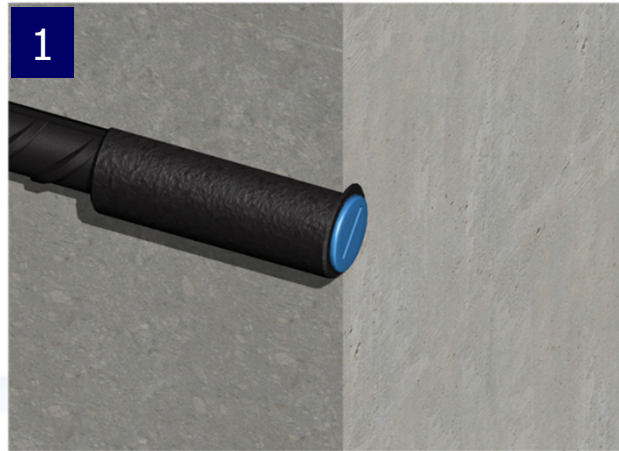
Standard Range



The two opposing bar ends are threaded with a right hand tapered thread and joined together using a taper thread coupler.

Used to join reinforcing bars of the same diameter where one or both of the bars can be rotated.

Standard Tapered Thread Installation



Standard Range Applications



Satisfies 80% of rebar joining applications.

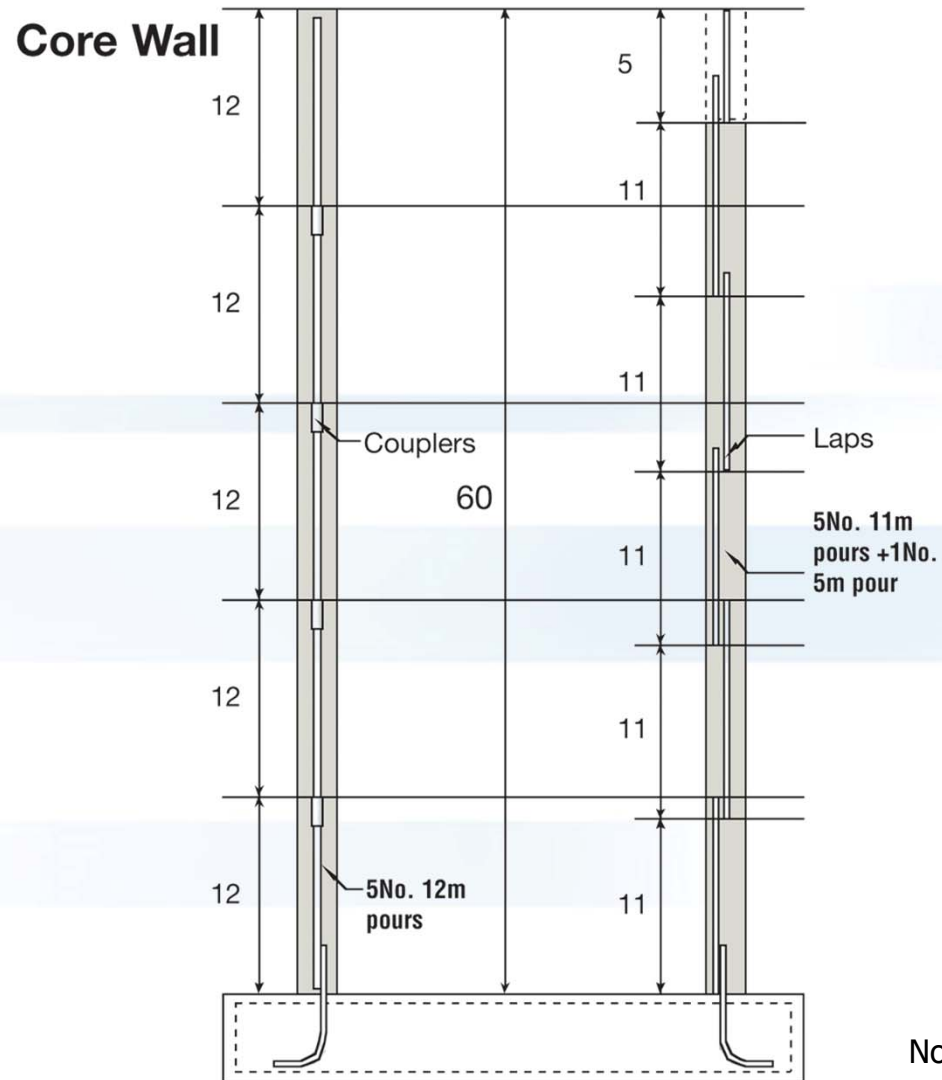
Allows continuity of construction.

Simplifies construction.



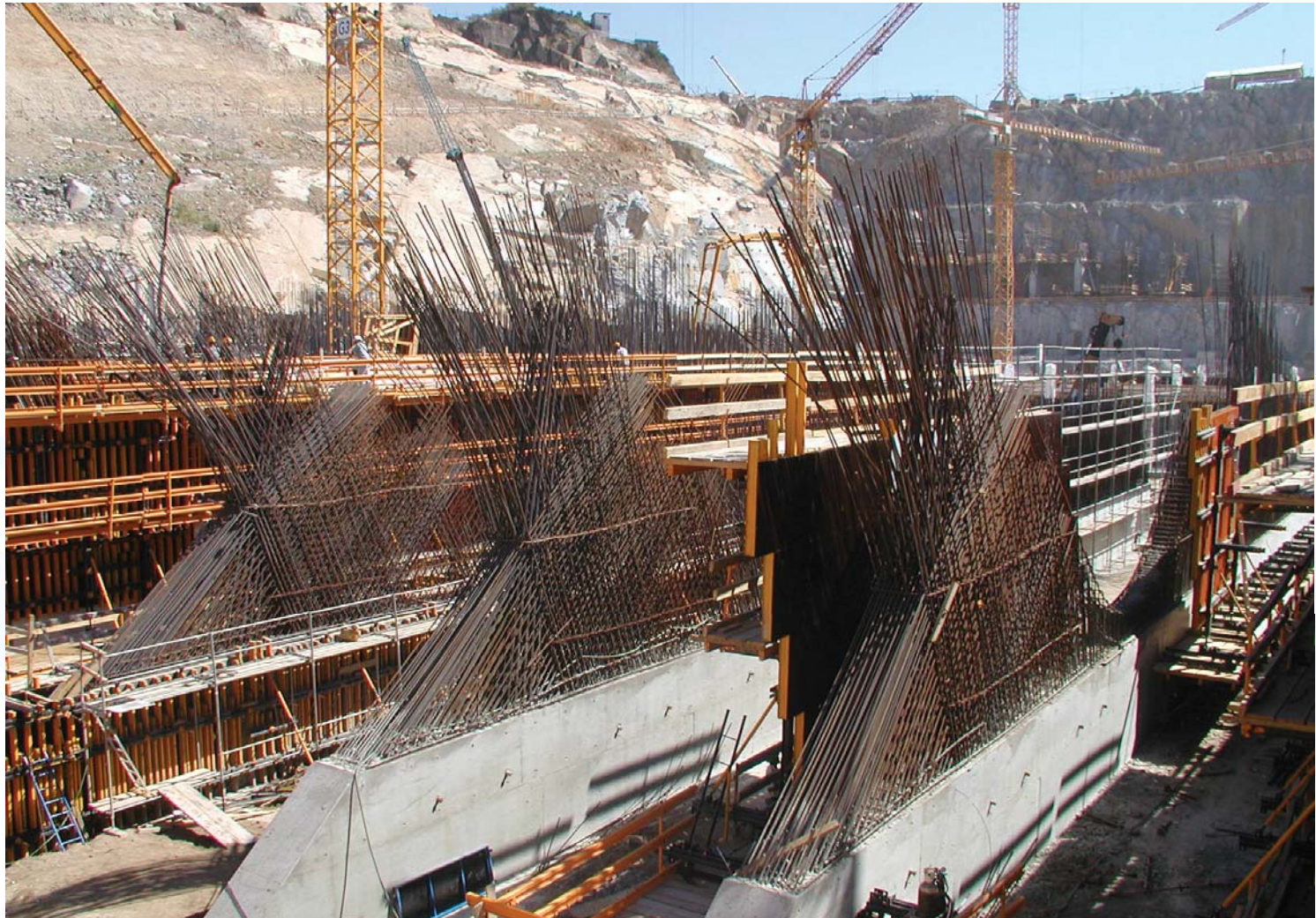
சென்னை

Rebar Couplers

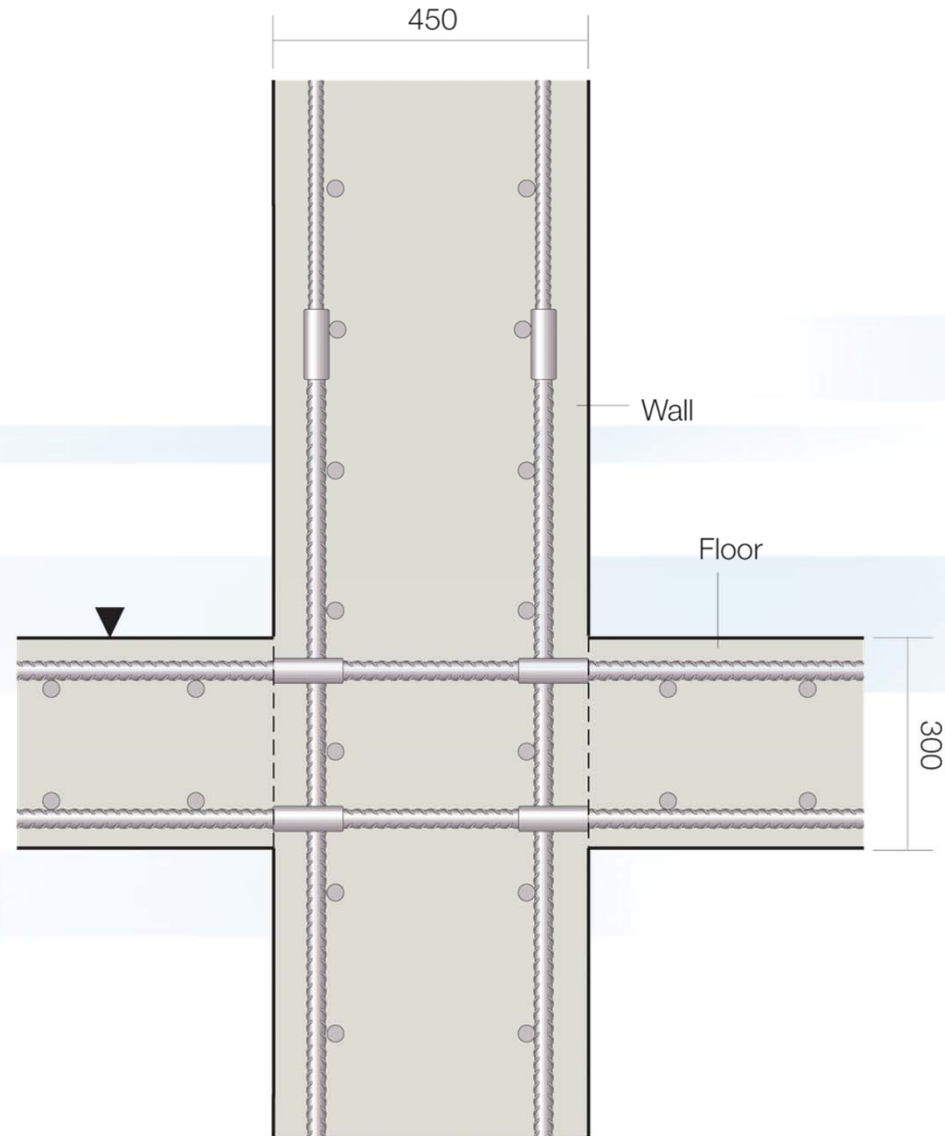




ଶୈଳ୍ୟ



Wall/Slab Detail





ഭരണ

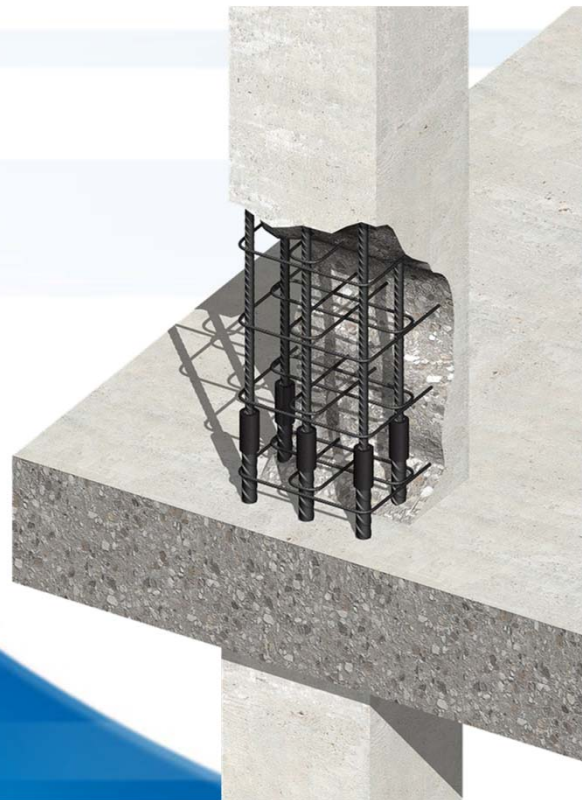
Transition Range



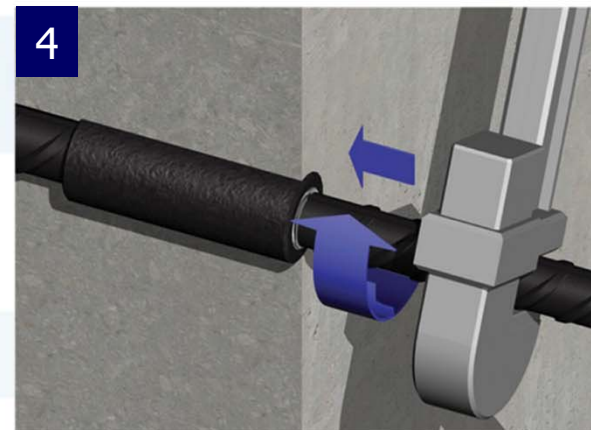
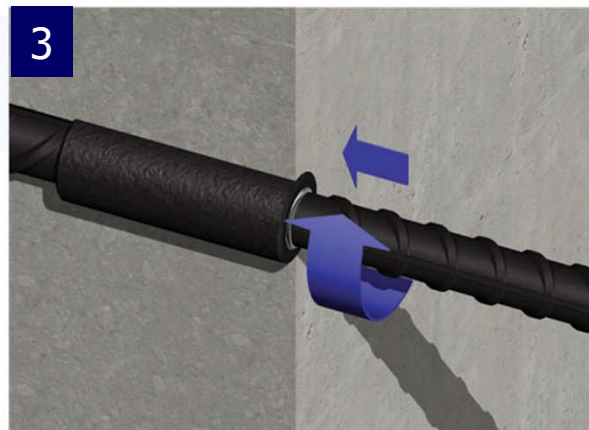
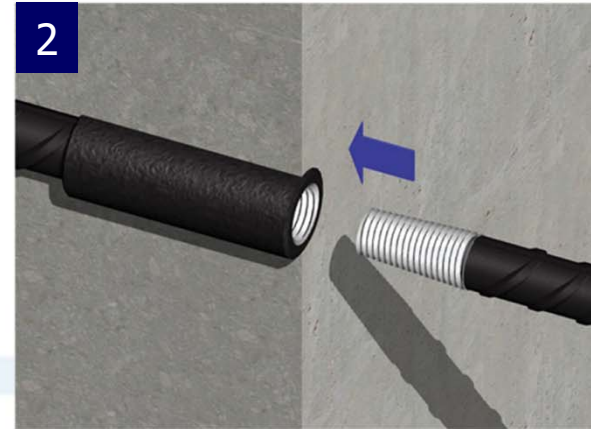
As with the standard range the two opposing bar ends are threaded with right hand taper threads, then joined together using a transition coupler.

Used to join reinforcing bars of different diameters where one or both of the bars can be rotated.

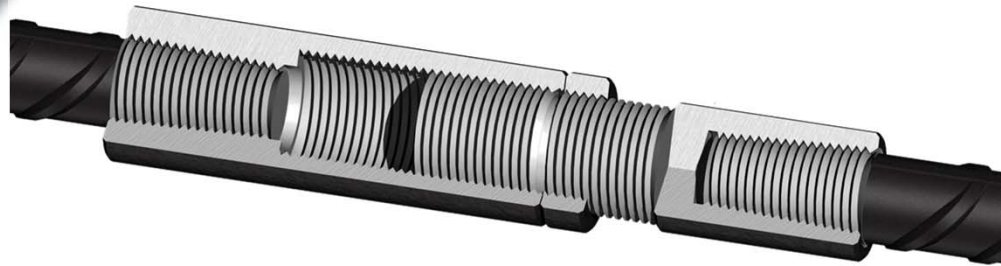
Typically used in columns where the diameter of the rebar reduces as the columns extend up the structure.



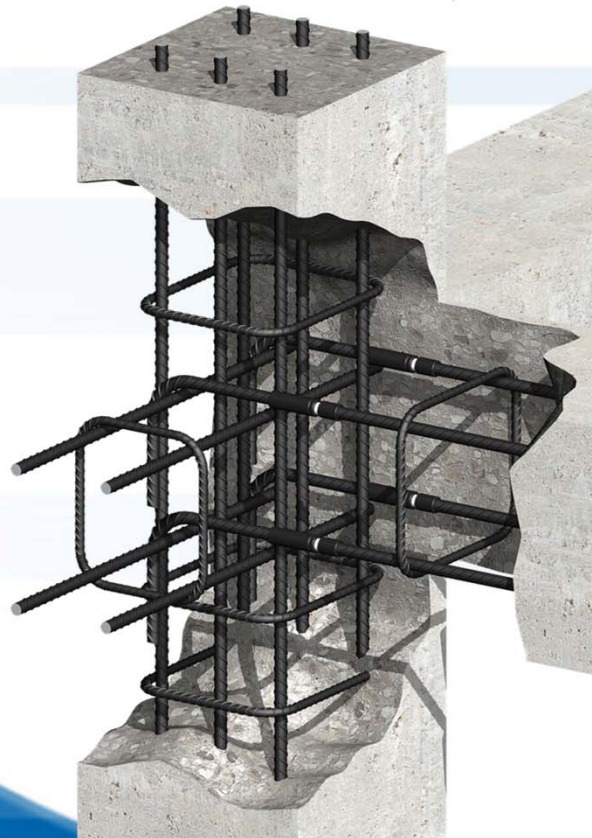
Transition Tapered Thread Installation



Positional Range



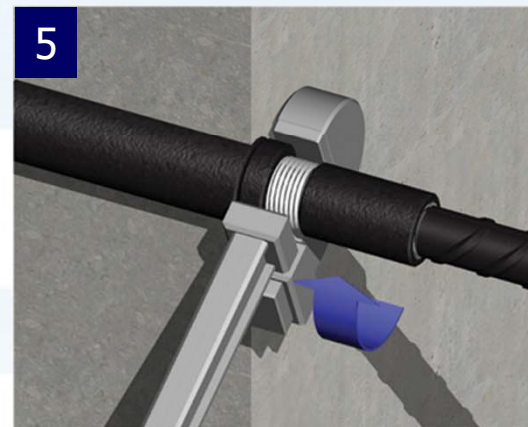
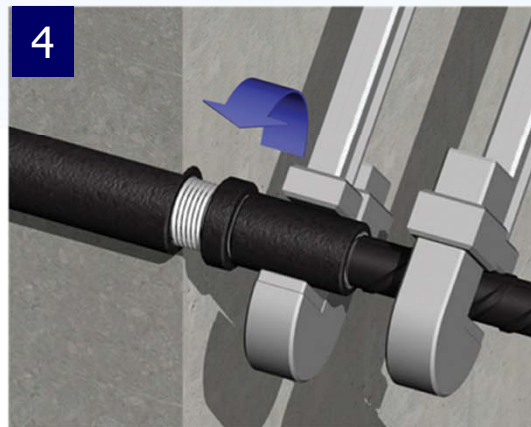
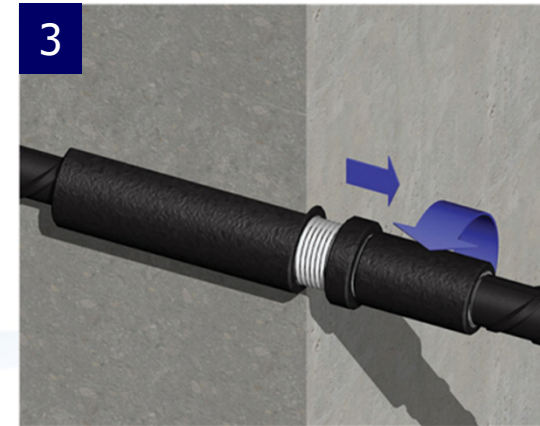
The two opposing bar ends are threaded with right hand tapered threads but are joined together using a three part positional coupler.



Used to join reinforcing bars where neither bar can be rotated.

Typical uses include closing of box outs and connecting precast to in-situ works.

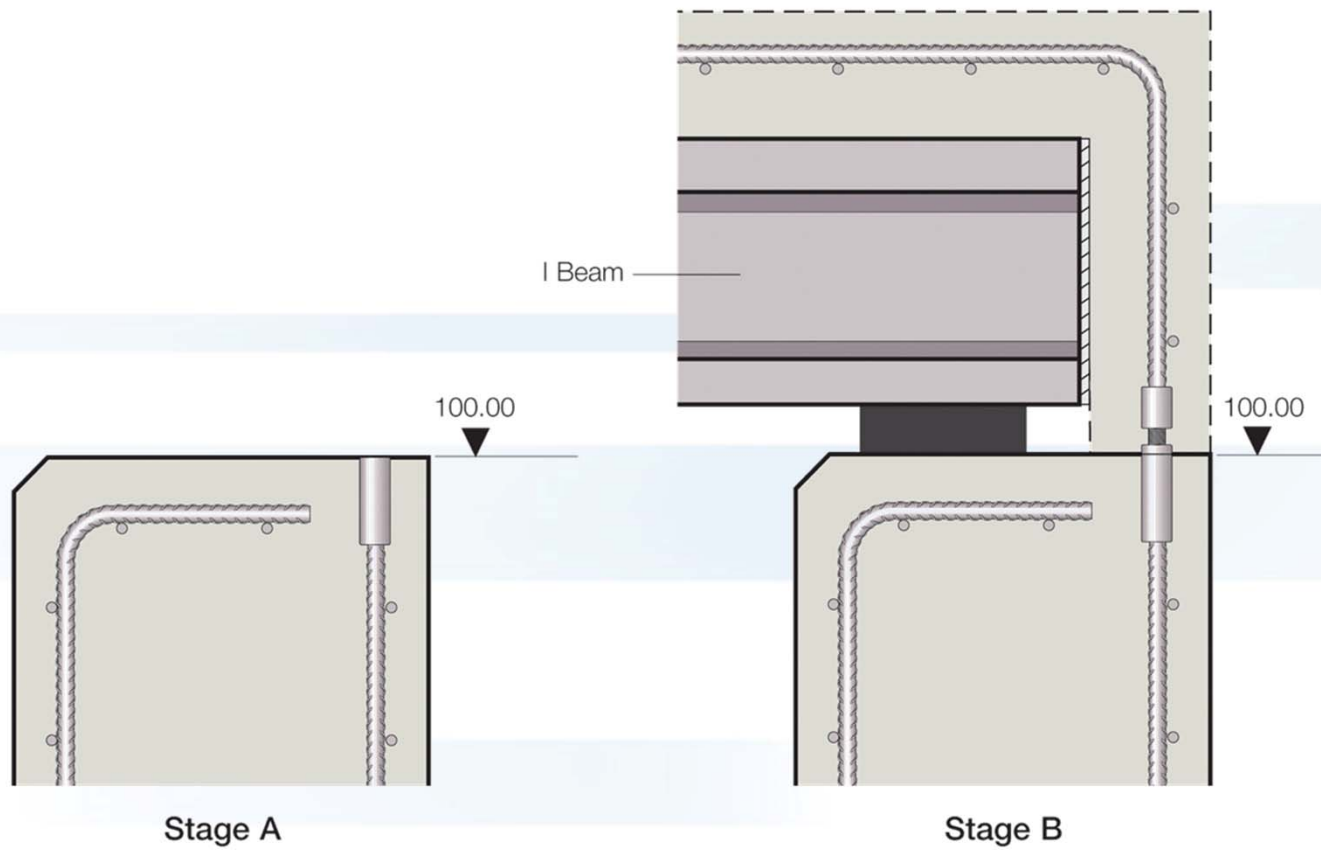
Positional Tapered Thread Installation





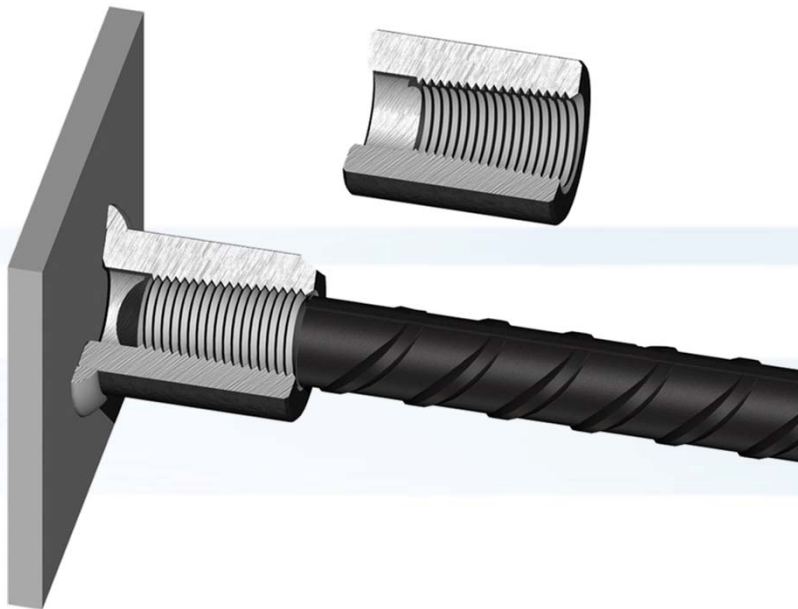
ଶରମ୍ଭ







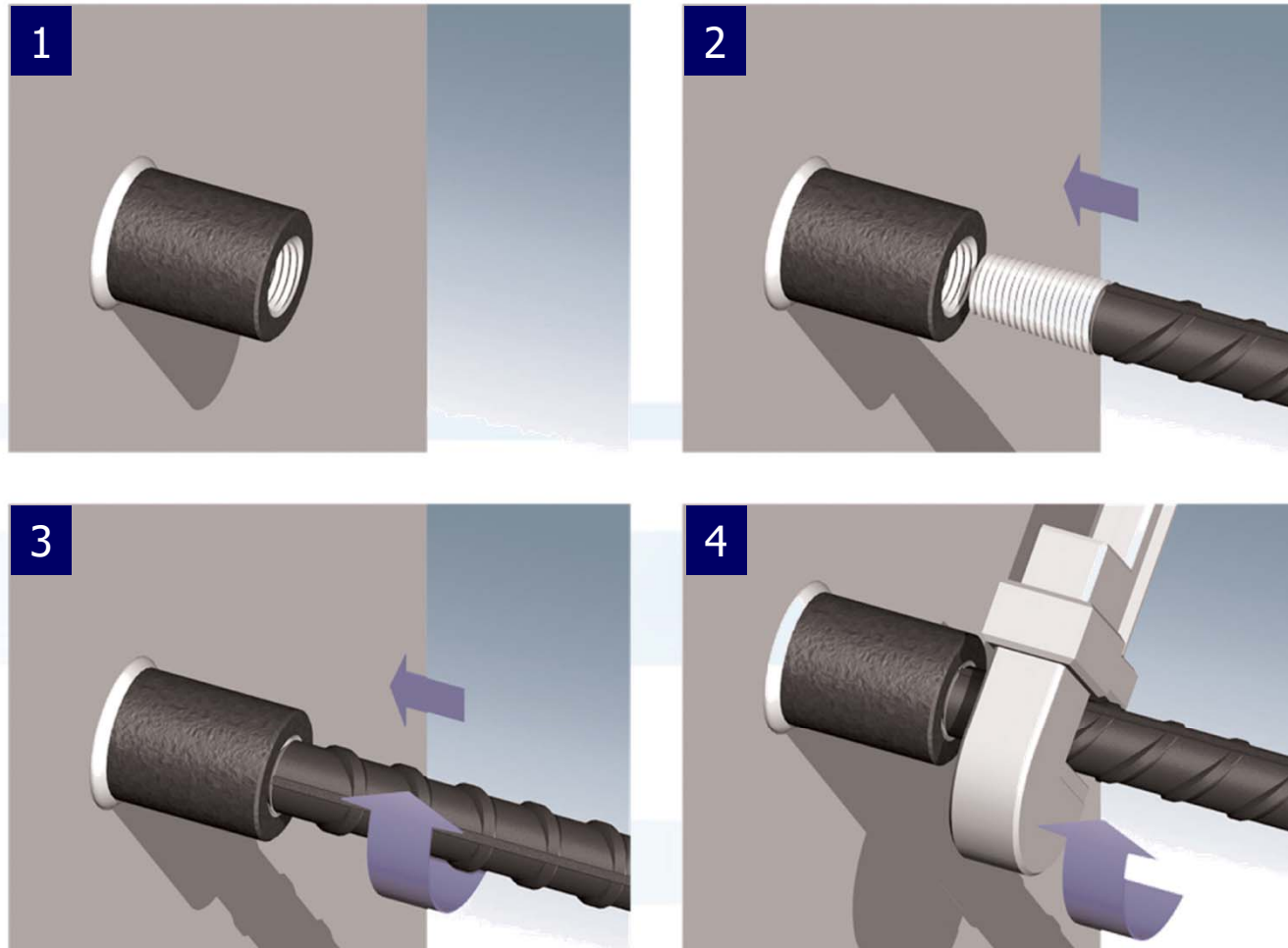
Weldable Range



Used to join reinforcing bars to structural steel plates or sections.

Shorter than the Standard coupler, it has a right hand tapered thread at one end. The other end is welded directly to the steel.

Weldable Tapered Thread Installation

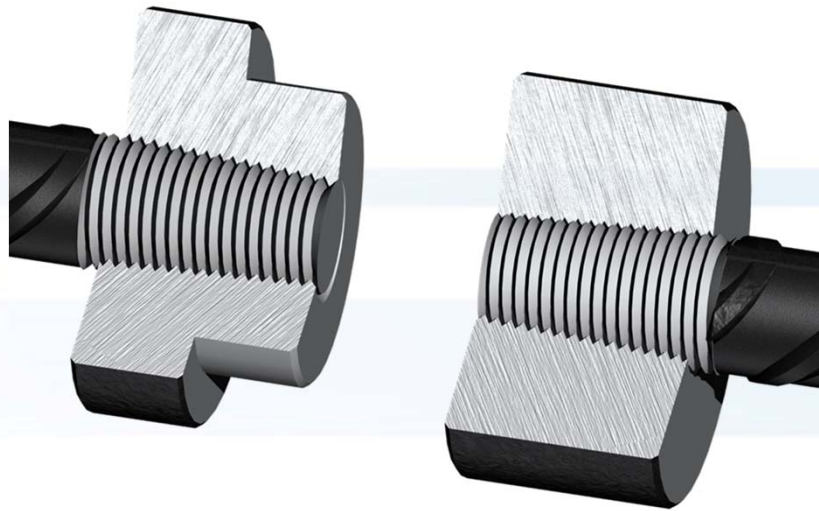


Headed Anchor Range

Provides a means of achieving rebar end anchorage within concrete.

Reduces congestion and simplifies bar replacement by removing the need for hooked bars.

Typical use in pile caps and beam to column connections.



Threading Machines



Compact, robust threading unit.

Located in major rebar yards.

Site location for large projects.



ፎሬ ጠ

Approvals

CARES



Tested to show compliance with the requirements of BS8110, achieving tensile stress values exceeding 497 N/mm² and permanent set values less than 0.1mm.

BS ISO 9001



BNFL

Full destructive tests have been carried out to demonstrate compliance with BNFL nuclear codes.

ACI 318

Results show compliance with the requirements of ACI 318 when used on Grade 60 rebar to ASTM A615.

DIBt



German Technical Approval



Bartec Couplers

Three different combinations all utilising the standard Bartec coupler.

To suit 12mm to 57mm bar diameters.



Ancon Bartec System



The rough cropped end of the reinforcing bar is removed to produce a clean square cut face.



The square cut bar end is enlarged in the cold forging machine to the correct predetermined dimension.



The thread is then cut onto the enlarged bar end.

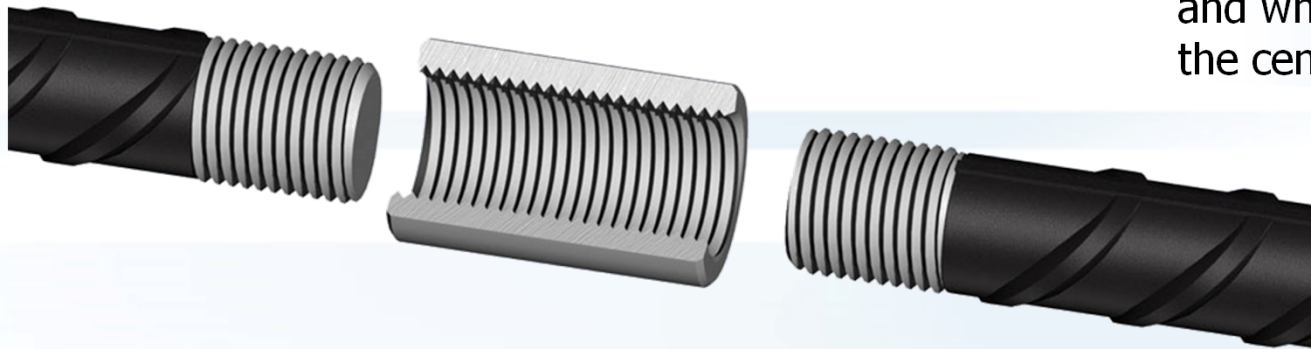


Each threaded bar end is proof tested to the characteristic yield of the rebar.

Bartec Type A

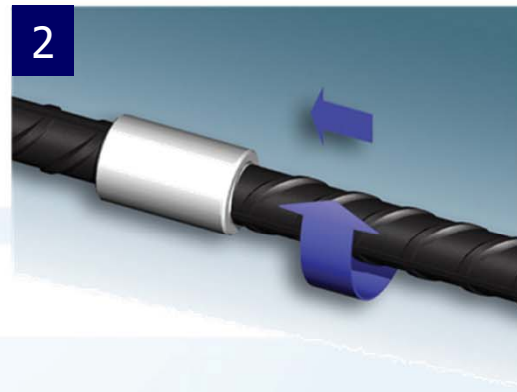
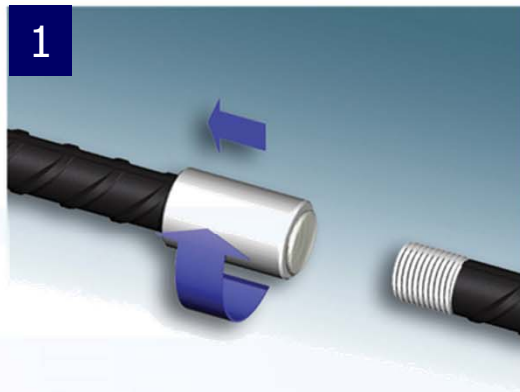
The bar ends are enlarged and parallel threaded.

Both bar ends are threaded to half the length of the coupler and when assembled meet in the centre of the sleeve.



Used where one or both bars can be rotated.

Bartec A Installation

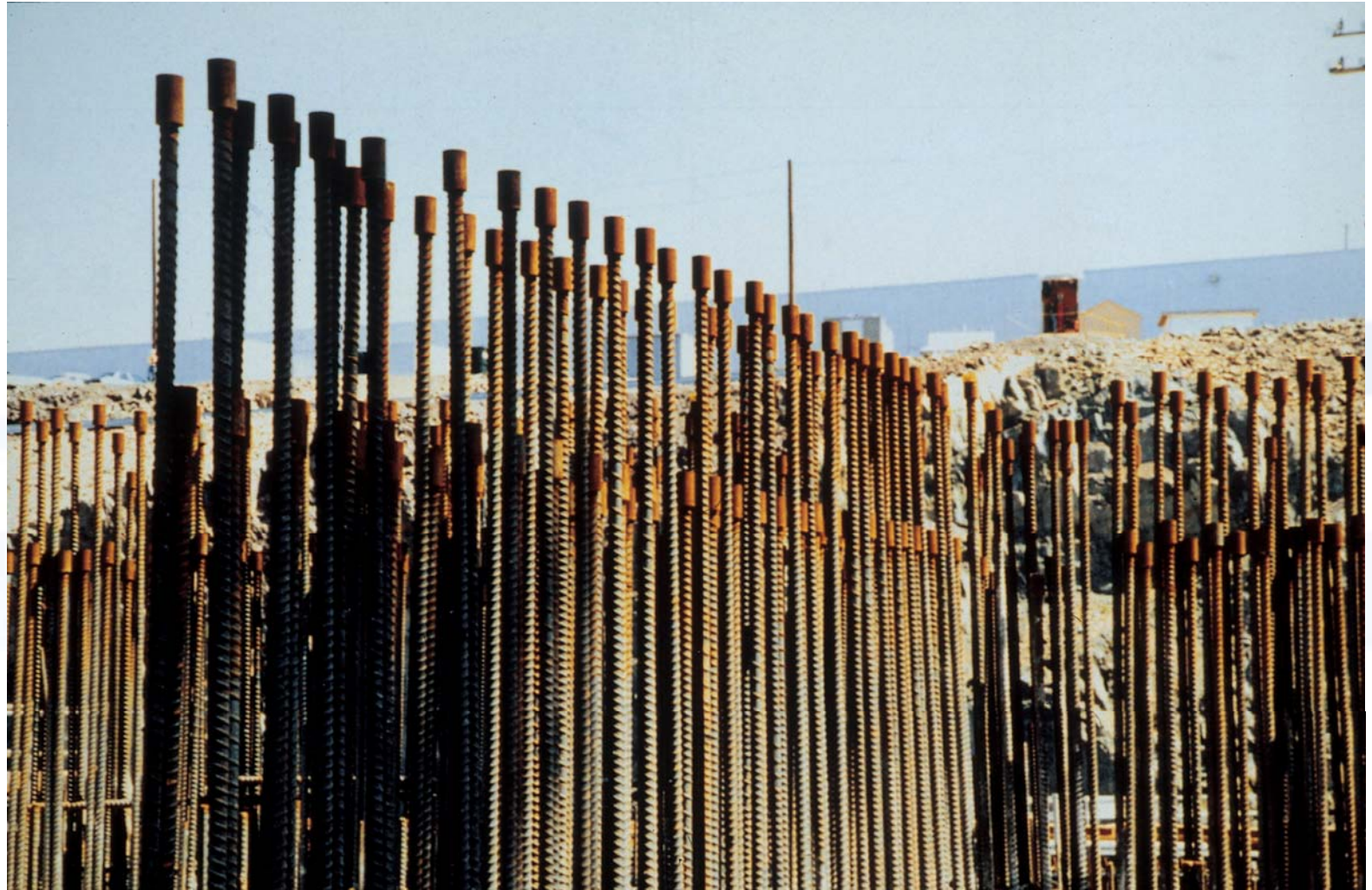






ᄒᄒᄒ



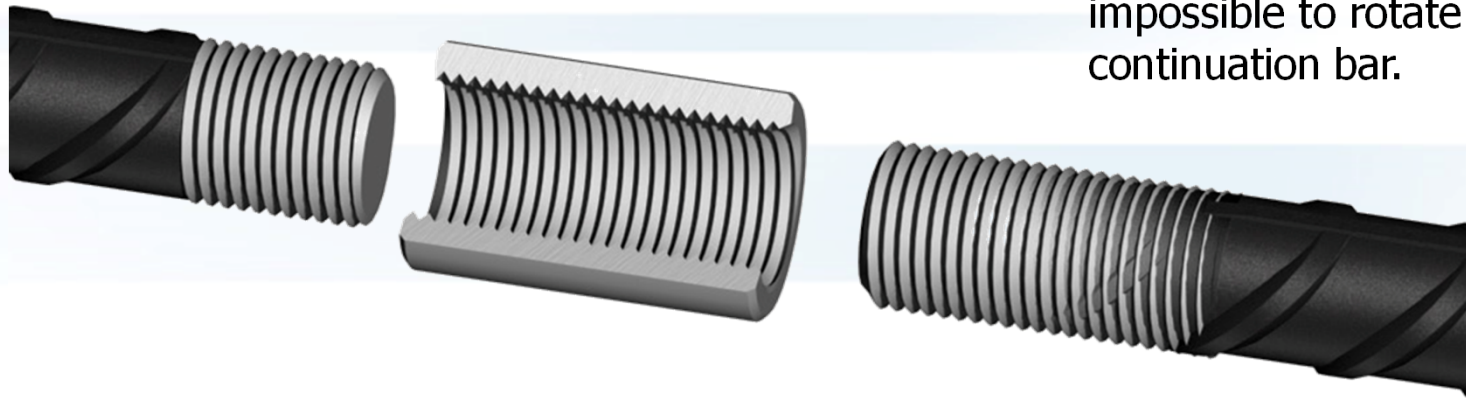


ᄒᄒᄒ

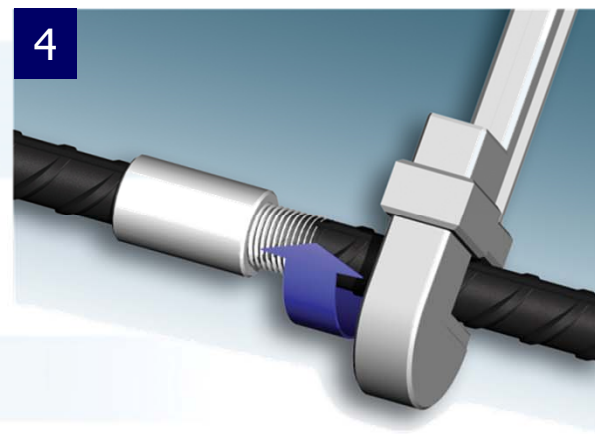
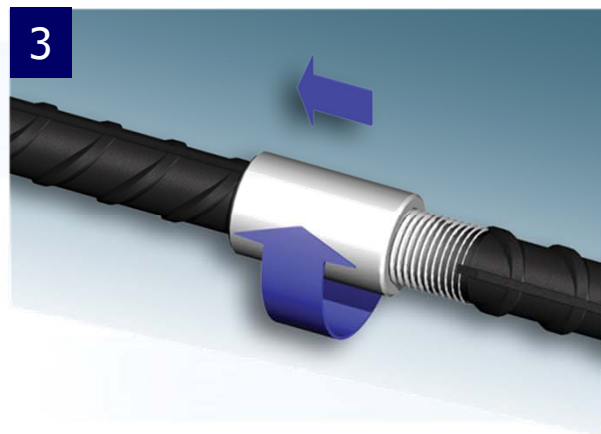
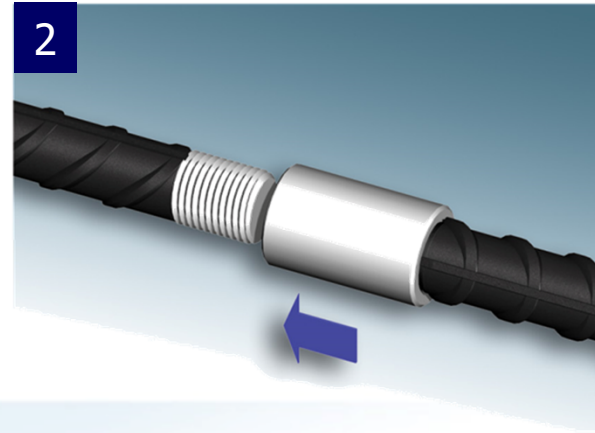
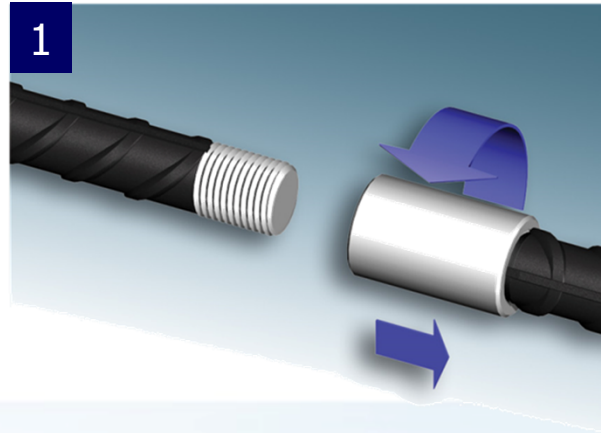
Bartec Type B

The bar ends are enlarged and threaded as for the Type A connection except that the continuation bar is threaded for the full length of the coupler.

Used where it is difficult but not impossible to rotate the continuation bar.



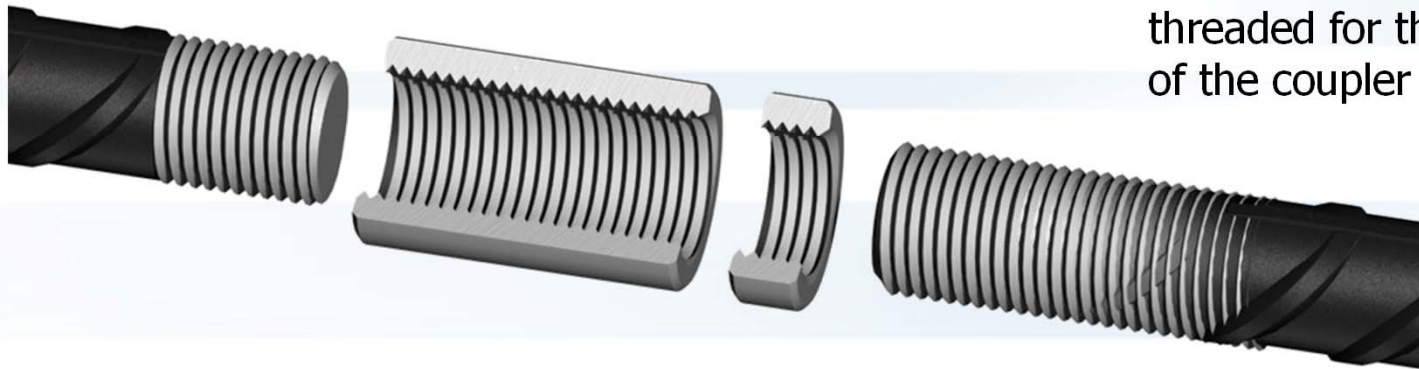
Bartec B Installation



Bartec Type C

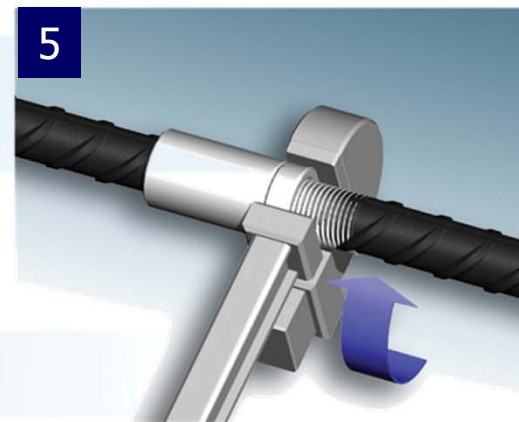
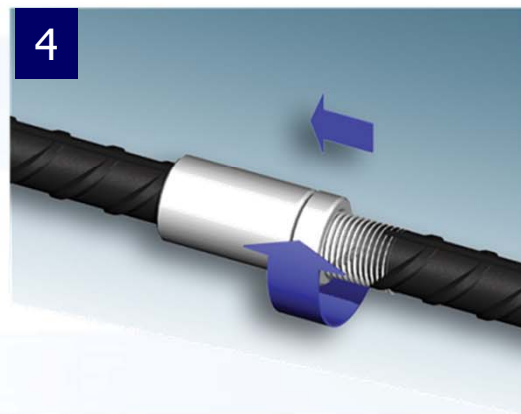
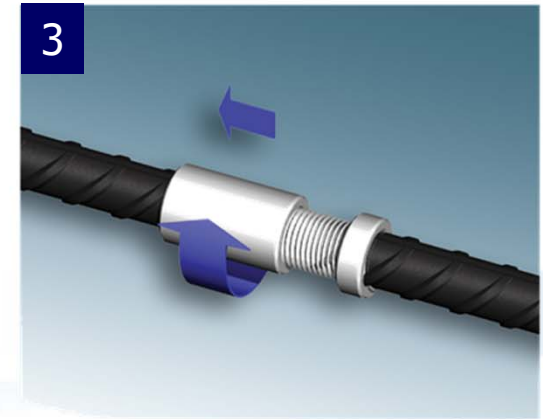
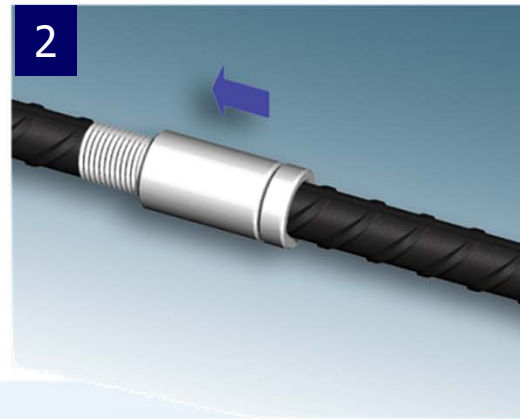
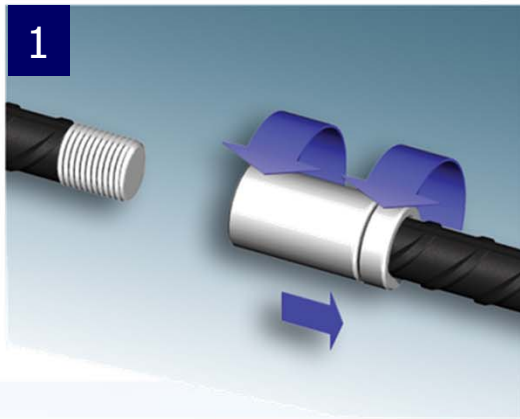
Similar to the Type B connection but has an additional locknut.

The continuation bar is threaded for the full length of the coupler and locknut.

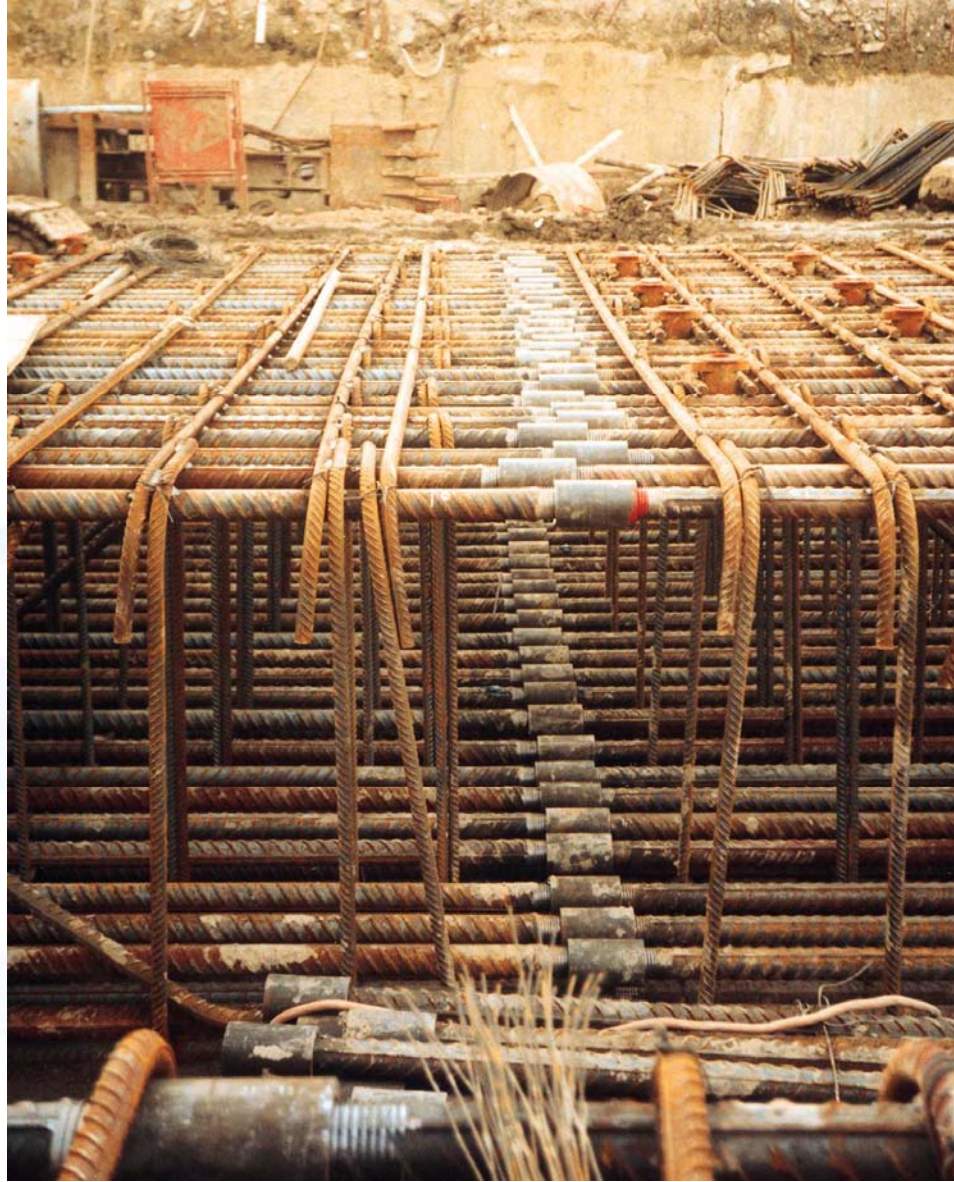


Used where it is not possible to rotate the continuation bar.

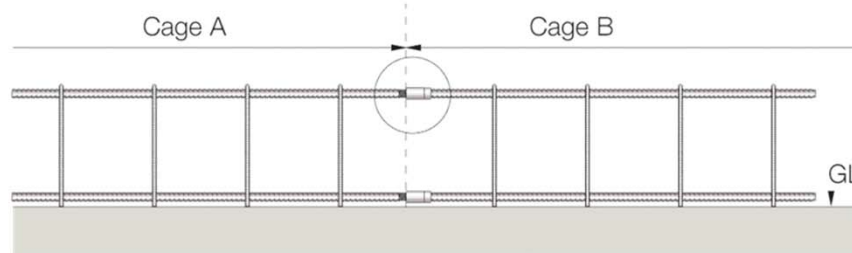
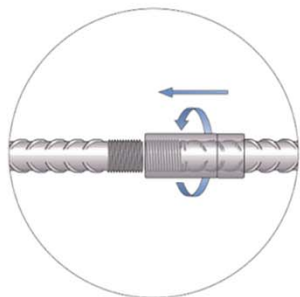
Bartec C Installation





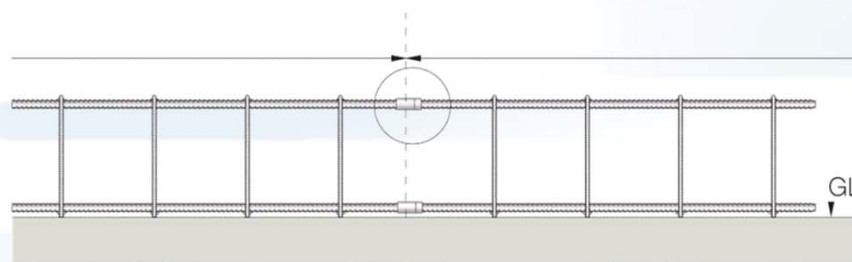


Stage 1 - Cages Butted Together



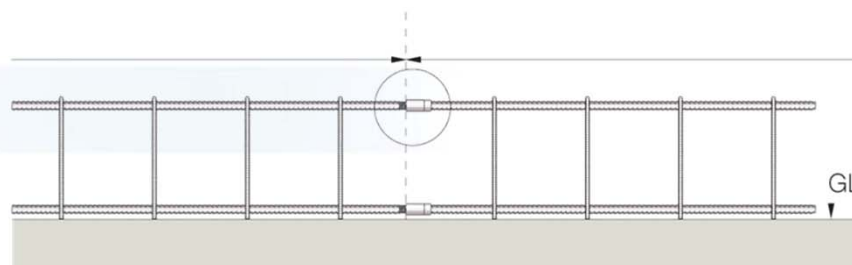
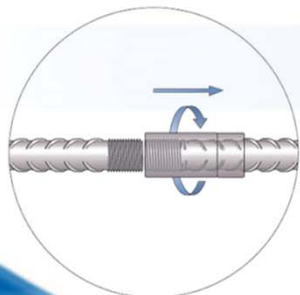
Assemble cages

Stage 2 - Initial Fit Up of Cages

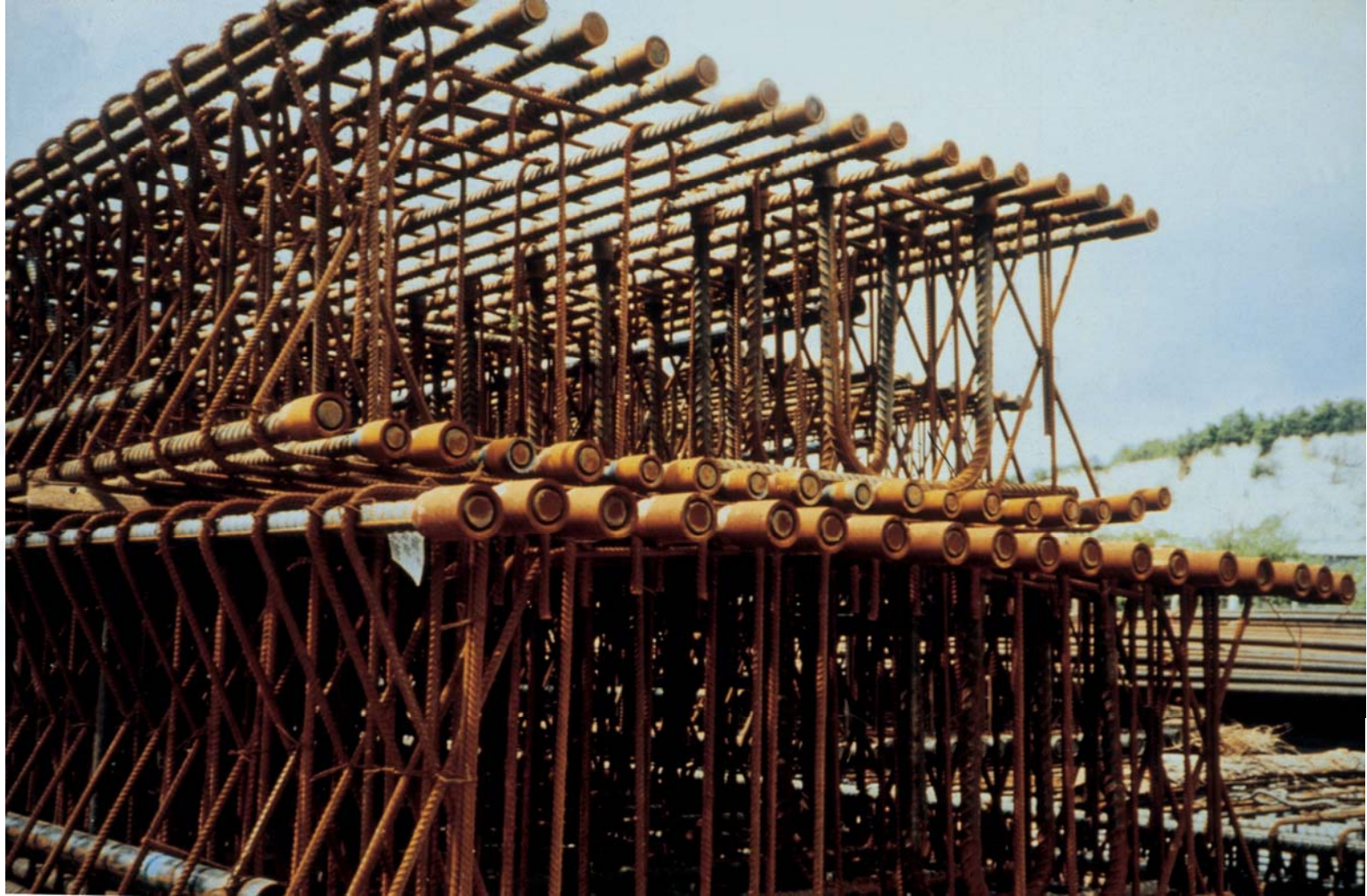


Tack weld links to maintain fit for final stage assembly

Stage 3 - Cages Separated and Stored



Cages separated and stored for assembly with matching cage on site.





ଶେଷ





சென்னை

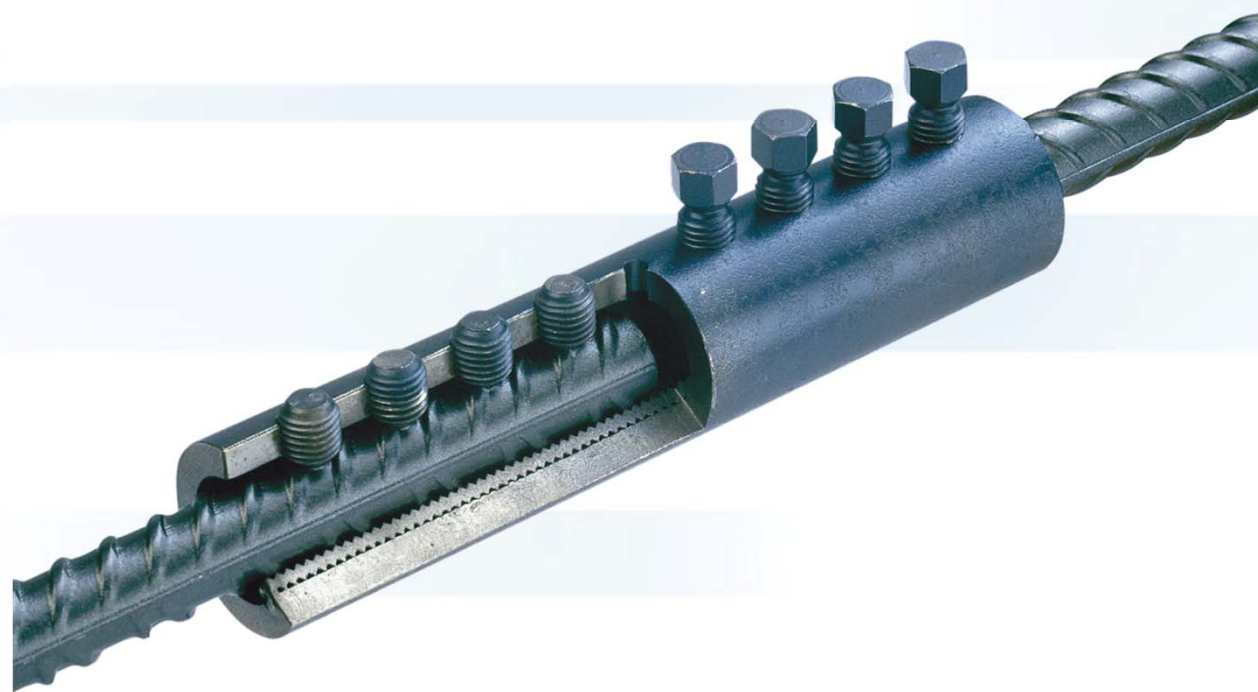
Approvals

Full destructive tests show compliance with

- **ACI 349**
- **ASME III Div 2 (ACI 359)**
- **ACI 318**
- **CSA CAN 3 – N2872**
- **BS 8110**
- **BNFL Nuclear Requirements**

MBT Coupler

Section showing the embedment of the lockshear bolts and saddles into the bar and shell of the coupler.



MBT Couplers



ET Range – to suit 10mm to 40mm diameter bars.

Transition Range – available in sizes 20/12mm to 40/32mm.

Continuity Range - to suit 16mm to 40mm diameter bars.

Headed Anchor – to suit 10mm to 40mm diameter bars.

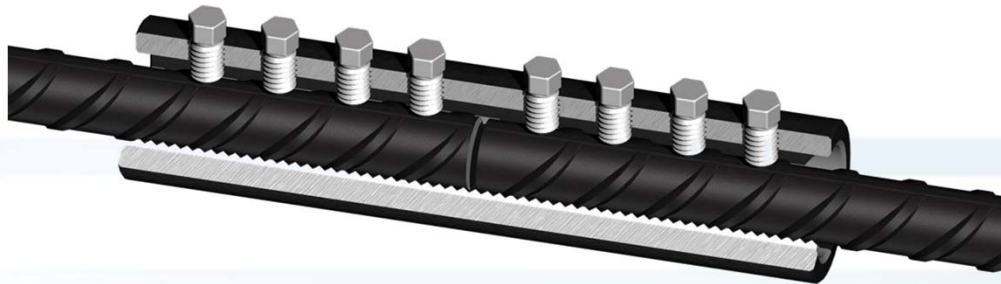
ET Range

Used to join reinforcing bars of the same diameter where the fixed bar is in-situ or already in place.

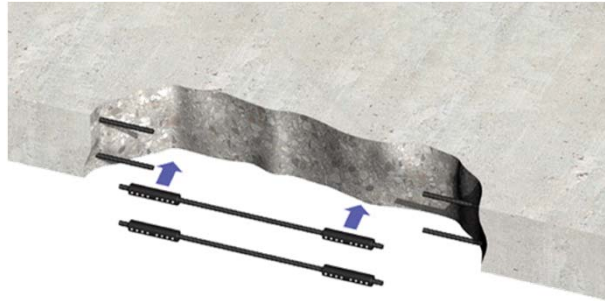
Requires no bar end preparation.

Requires no bar rotation.

Can be used to join imperial, metric, plain round or deformed rebar.



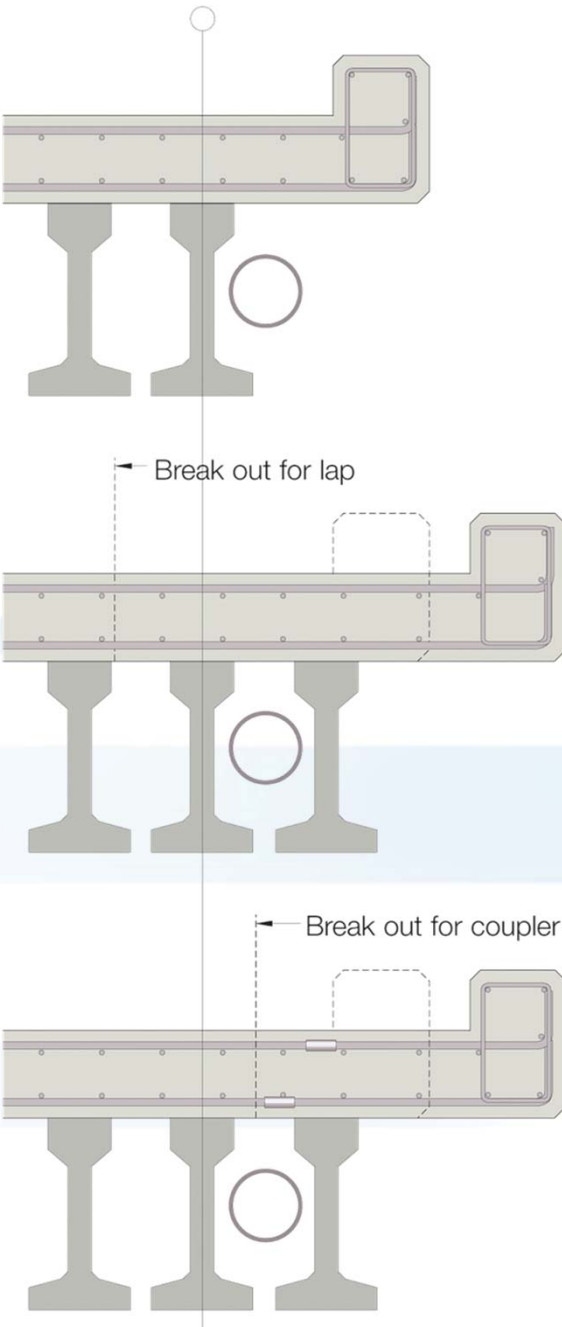
ET Range Applications



Typical applications include:

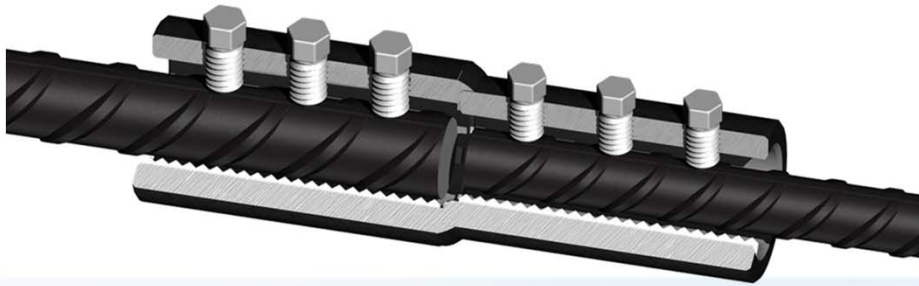
- Repair and remedial work
- Closing gaps in box outs
- Extending existing structures
- Connection of prefabricated cages
- Fixing cranked bars to the top of piles







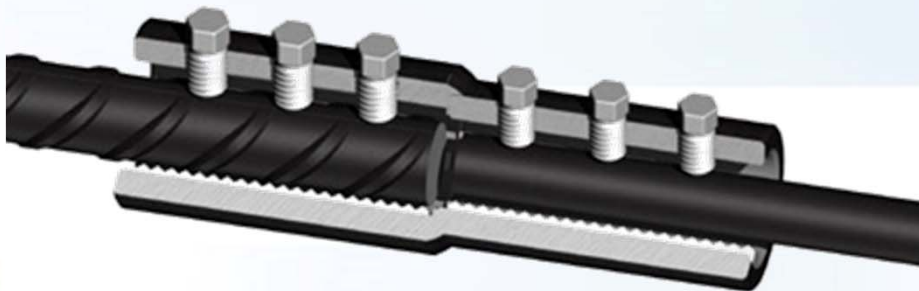
Transition Range



Used to join reinforcing bars of different diameters where the fixed bar is in-situ or already in place.

Requires no bar end preparation.

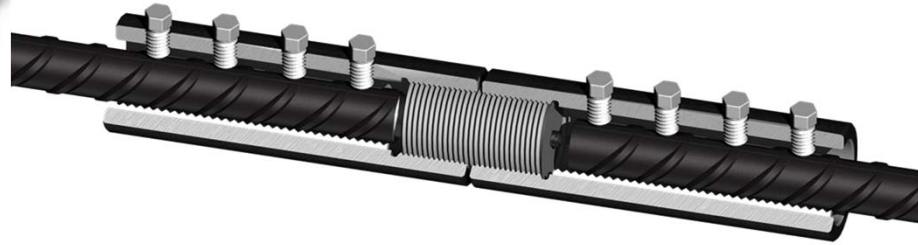
Requires no bar rotation.



Can be used to join imperial, metric, plain round or deformed rebar.



Continuity Range



Essentially two standard half couplers joined together using a threaded stud.

Permits extension of reinforcement at joints without the need to drill formwork.

Used to join bars of the same diameter.

Requires no bar end preparation.

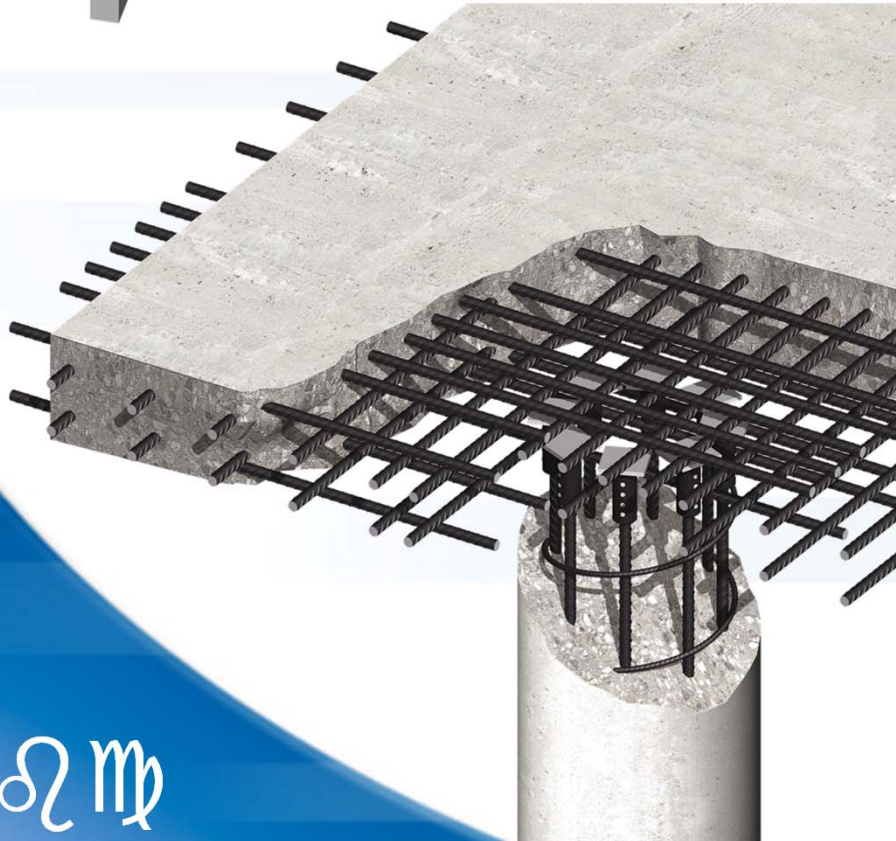
Requires no bar rotation.



Headed Anchor Range



Comprises half an MBT coupler with a plate welded to one end which carries the full tension load of the bar when bearing against the concrete.



Used to provide dead end embedment for bars in concrete.

Removes the need for hooked bars and so simplifies bar placement and reduces congestion.

Electric Nut Runner



Approvals

ET Series:

Tested to show compliance with the following international design codes:

- BS5400
- BS8110
- ACI 318
- DIN 1045 German Code
- BBK94 Volume 22 Swedish Code
- BBA Highway Agency approved up to 40mm diameter
- MBT Couplers designed and manufactured in accordance with BS EN ISO 9001



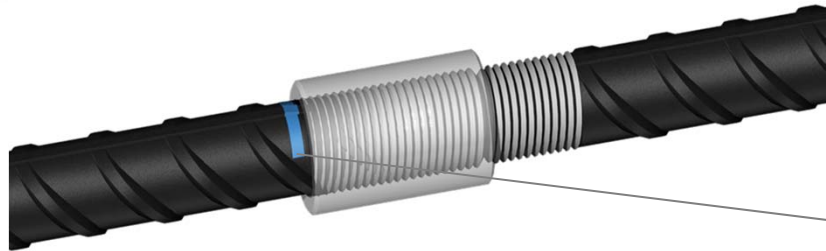
Summary

Coupler	Sizes (mm)	Guaranteed Tensile Capacity	Failure	Comment
Tapered Thread	12-50	Full Strength up to 115% f_y	95%-100% of rebar tensile strength	Will suit 80% of building applications - economical & simple system
Bartec	12-50	Full Strength	Bar break up to 150% f_y	All construction applications - bar break system
MBT ET Series	10-40	Full Strength up to 115% f_y	Bar break / pull out	Remedial, refurbishment applications - simple to install

Note: The value f_y is the characteristic strength of the rebar 500N/mm²

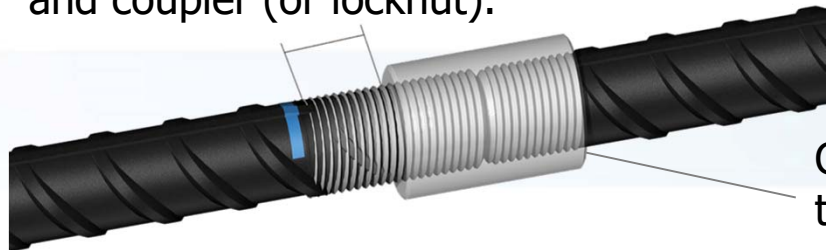


Bartec Thread Engagement



For Type B & C Couplers the rear of the thread can be marked using a light paint.

Measure between rear of thread and coupler (or locknut).



Coupler locked tight on rear of thread.







ഭരണ



ᄒᄒᄒ