

# WORLD LEADER

in Mechanical  
Rebar Splices



**Dextra**

[www.dextragroup.com](http://www.dextragroup.com)



## Vision

To be a **global leader** in engineering, manufacturing and delivery of high value added **quality products** and services for the construction industry.

## Mission

To achieve customer recognition and stakeholder **satisfaction** by committing to the highest level of performance with integrity, creativity and a **passion for results**.



Flamanville 3 EPR nuclear reactor, France



# About us

Established since 1983, Dextra is a leading manufacturer and distributor of engineered construction products for the building and civil industries.

Well known for its mechanical splicing systems for reinforcing steel bars, Dextra couplers are used everyday in high-rise buildings and concrete structures worldwide and have been accredited by major independent regulatory bodies in all continents.

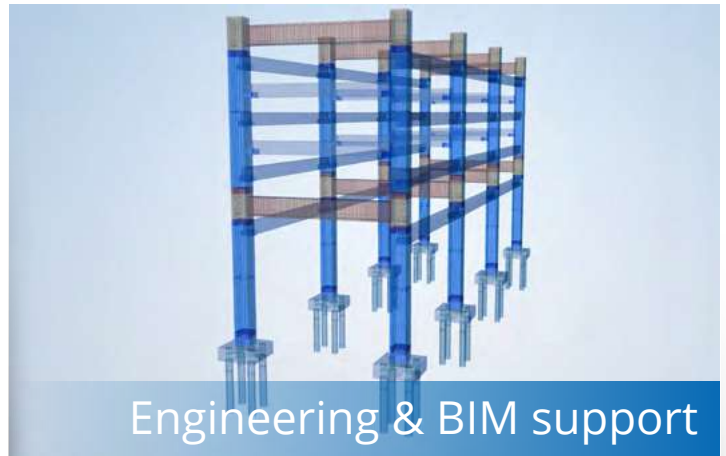
ISO 9001 certified since 1996, the management of Dextra has always put quality first, and thanks to its dedicated team of professionals, has developed a wide range of technical construction products such as: mechanical splicing systems, soil and rock anchorages systems, fibre-reinforced polymer bars, marine tie rods, architectural tension bars and other specialized construction accessories for formworks and foundation works.

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### Provision for change

The information provided in this document is for guidance only. Dextra reserves the right to modify its content including products technical specifications.



# A complete range of mechanical rebar couplers

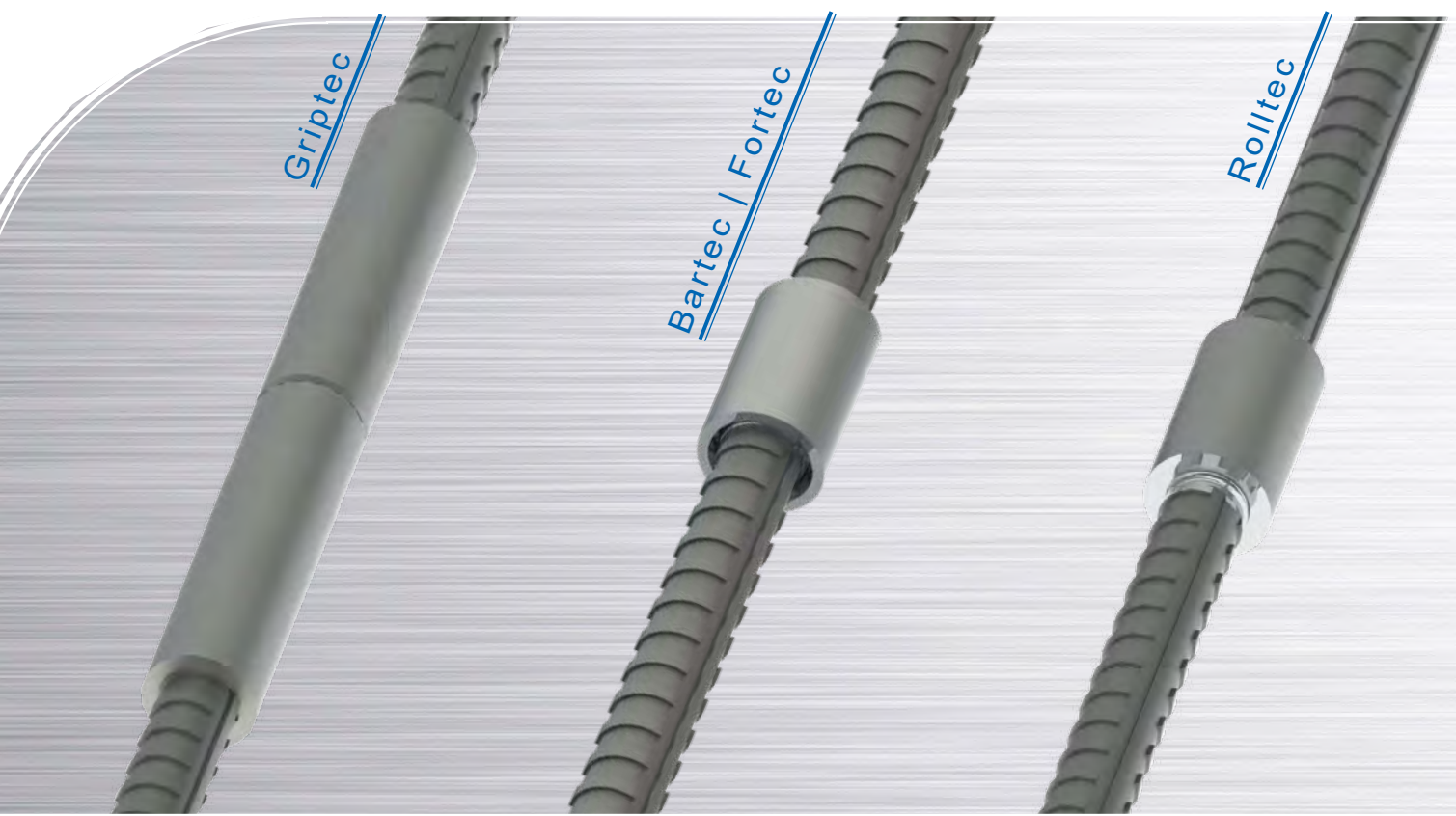


Mechanical rebar splices are devices used to connect steel bars in reinforced concrete construction. Compared to the conventional method of lap splicing, they not only save steel, but provide a stronger, faster and safer connection.

Bartec®, Fortec® and Griptec® are full tensile splices systems, which means that under tensile loading, the failure occurs in the reinforcing bar, away from the coupler.

Avoiding a failure at the connection means that the ductility and the ultimate performance of the reinforcement as a whole are not affected by the mechanical splices.

Bar break capability is especially recommended for sensitive applications such as nuclear reactors and demanding environments such as seismic areas.



## Cast In Situ



Griptec® is the most accomplished mechanical splice on the market: Its patented production process includes a systematic, non-destructive tensile test that performs a 100% check on the bar end.

Moreover, the machine automatically adjusts its processing parameters when the bar size is changed which not only greatly improves the productivity, but also reduces the risk of mistakes.



Bartec® is designed to achieve an ultimate tensile strength higher than the actual strength of the bar. The design strength guarantees a performance higher than 125% of the specified yield strength of the bar, up to grade 600.

Bartec® not only offers the complete range of splices that may be required on-site but also facilitates handling and stock-keeping by combining the two most common splices—standard and position splices—into one product.



This splicing system based on cold-rolled parallel threads requires only a single machine and a single operator for its rebar preparation.

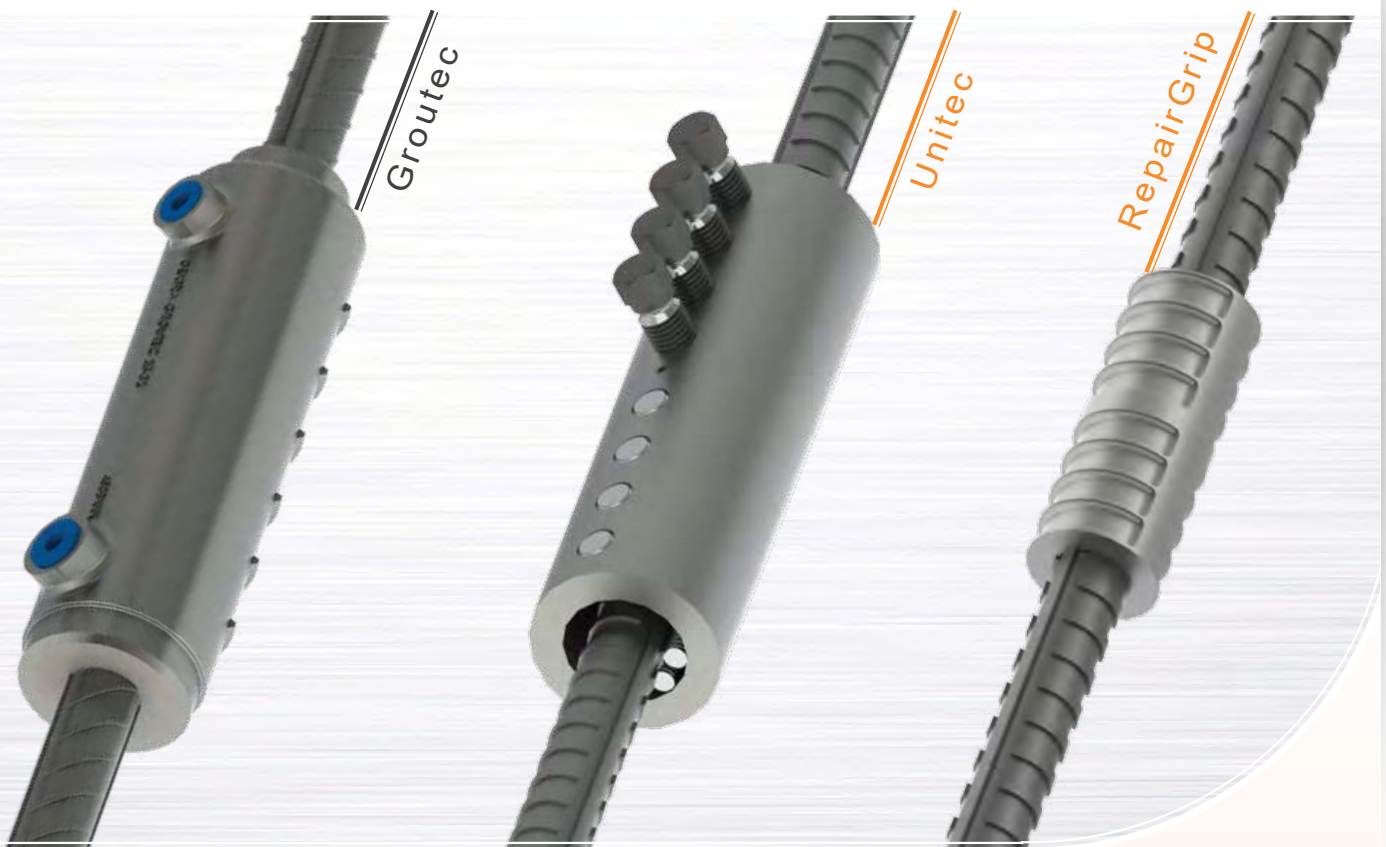
Like all Dextra splice systems, Rolltec® offers the full range of splice solutions (standard, position, transition, caging) and covers a large range of both metric and imperial measurements.



# Splice selection chart

Range	Griptec	Bartec	Fortec	Rolltec	Groutec	Unitec	RepairGrip
Bar size (mm)	12 – 50	12 – 50	12 – 40	12 – 50	12 – 40	12 – 50	12 – 40
Bar size (imperial)	#4 – #18	#4 – #18		#4 – #18	#4 – #10	#4 – #18	#4 – #12
Code compliance	BS 8110, EC2, ACI 318, ASME, AASHTO			BS 8110, EC2, ACI 318, AASHTO		BS 8110, EC2, ACI 318, ASME, AASHTO	
Main certifications (*)	DIBt, CARES, AFCAB	IAPMO, CARES, Caltrans, Dubai Municipality	AFCAB	IAPMO, AFCAB, Dubai Municipality	IAPMO, Dubai Municipality	IAPMO, CARES, AFCAB, Dubai Municipality, DIBt	Dubai Municipality
Position – Transition – Caging – Headed Bars – Weldable	√	√	√	√	Transition		
Bar end preparation	Required	Required	Required	Required	One side only	Not Required	Not Required
CAD/BIM support	Tekla, Revit and AutoCAD components available to download on <a href="http://www.dextragroup.com">www.dextragroup.com</a>						

\* Please consult us for our full and updated scope of certifications.



## Pre-cast



Groutec® is a mechanical splice specially designed to connect precast concrete elements with each other or with structures made in-situ, both horizontally or vertically.

At the precast factory, Groutec® is connected to the reinforcement through a threaded connection, using either the Bartec® or Rolltec® systems. It is then cast in concrete.

At the construction site, continuation bar is then inserted into the sleeve which is then filled with non-shrink grout to complete the connection.

## Repair & Retrofit



Unitec® system is a universal on-site splicing system, that does not need any hydraulic power tools.

A standard compressed air supply is sufficient to tighten the bolts and achieve the connection.

Unitec® is especially recommended in situations where there is no bar end preparation facility to thread the bars and where it would be too cumbersome to handle a mobile hydraulic press.



RepairGrip™ is an on-site splicing system consisting of a sleeve that is swaged onto the rebars by means of a mobile hydraulic press.

It is an easy and quick solution for connection situations in which threading is not possible. It only requires sufficient space for the press to be placed.

# Applications

## Beams

Standard / Position Splice  
Pages 8 - 19

### End beams

Headed Bars  
Pages 20 - 21

### Temporary openings

Standard Splice  
Pages 8 - 19

### Pile caps

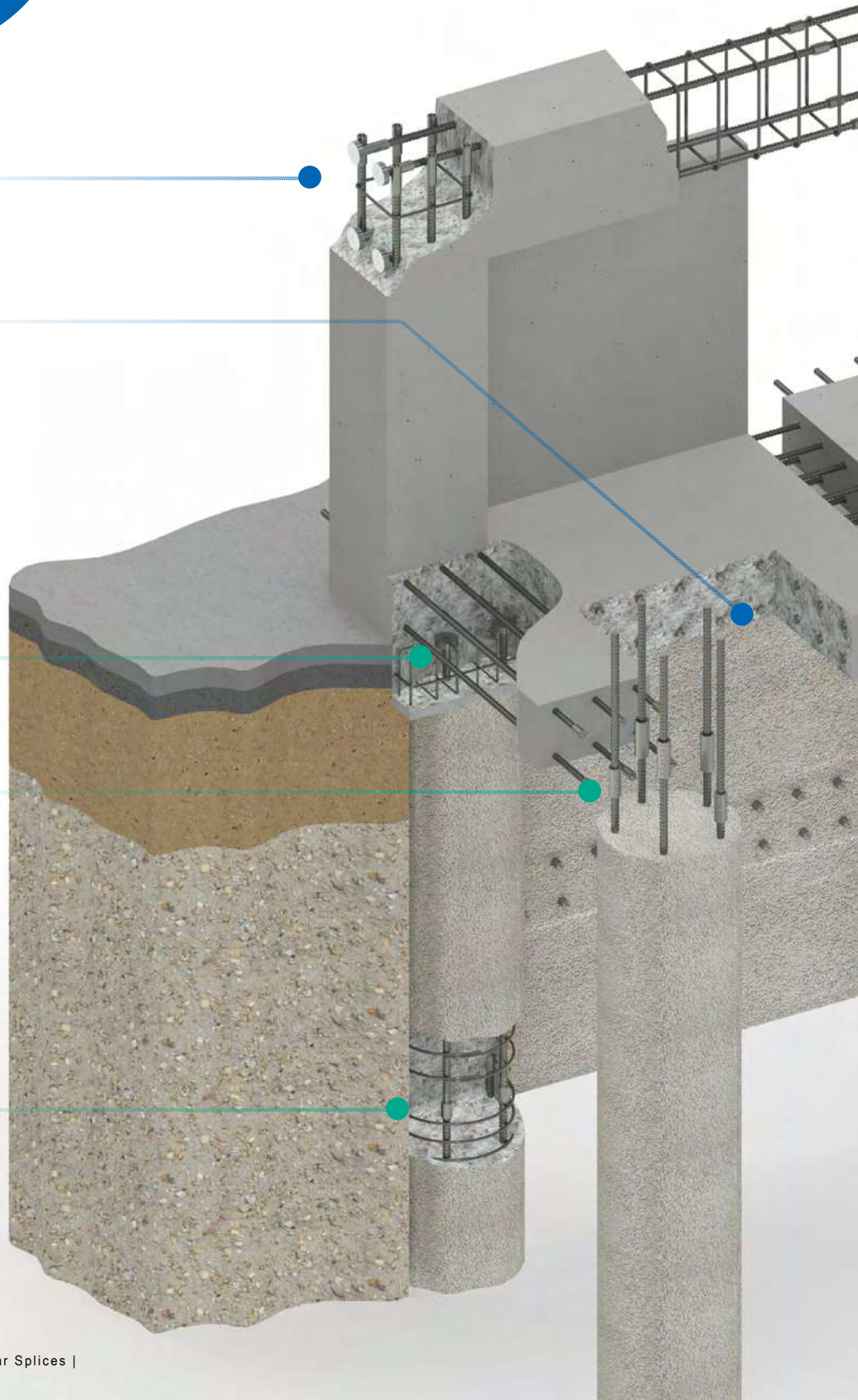
Headed Bars  
Pages 20 - 21

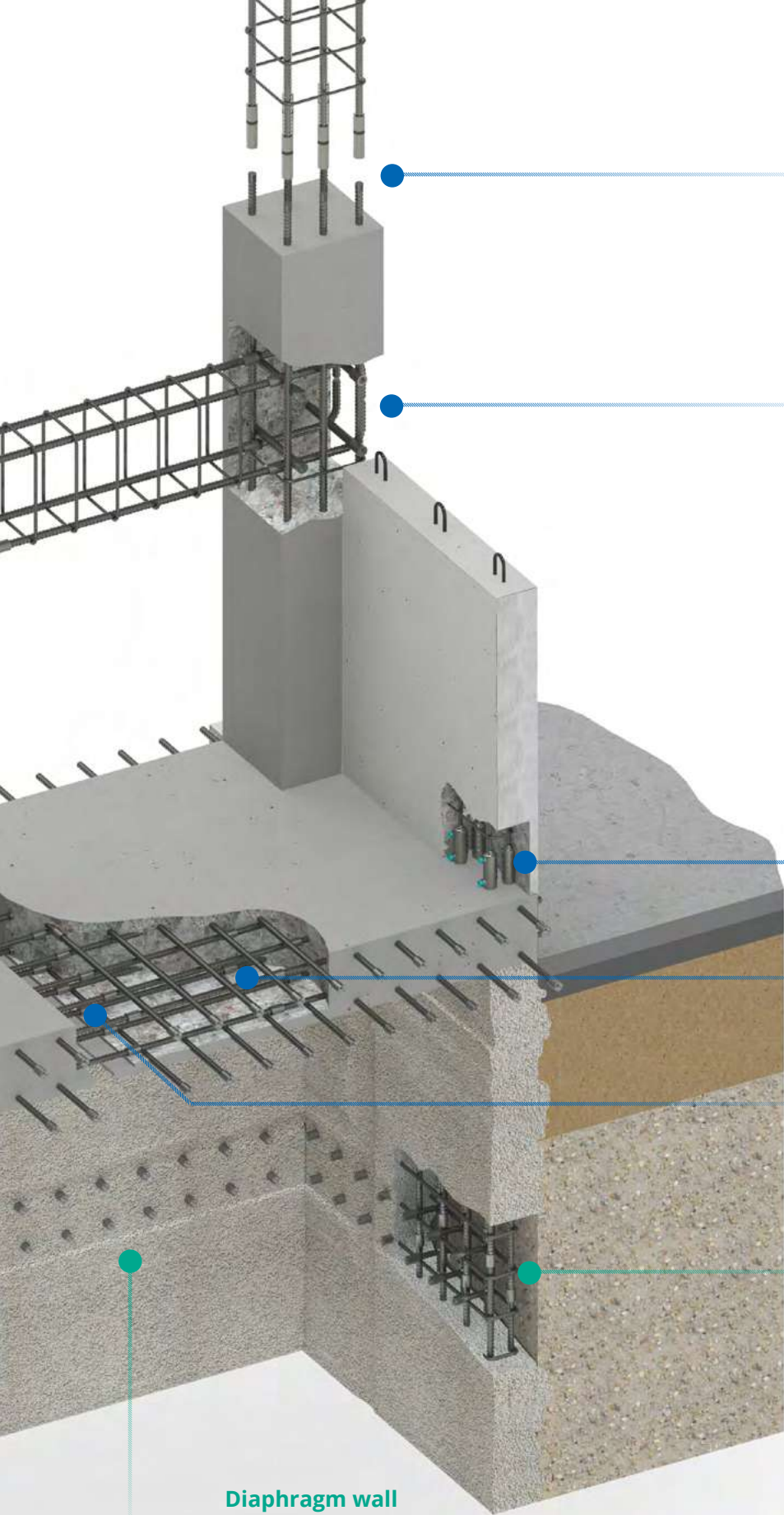
### Pile trimming repair

Unitec  
RepairGrip  
Pages 24 - 27

### Pile cages

Standard / Position Splice  
Pages 8 - 19





## Column cages

Caging Splice  
Pages 8 - 19

## Beam to column

Standard Splice  
Pages 8 - 19

## Precast elements connection

Groutec Couplers  
Pages 22 - 23

## Rafts & slabs

Standard / Position Splice  
Pages 8 - 19

## Construction joints

Standard / Position Splice  
Pages 8 - 19

## Vertical bars

Standard / Position Splice  
Pages 8 - 19

## Diaphragm wall slabs connection

Standard Splice  
Pages 8 - 19

Above ground applications ●

Underground applications ●





The Only 100%-proofed  
Splicing System



## Benefits

- Each and every connection is proof-tested by pull test during the extrusion cycle: 100% controlled!
- No reduction of the nominal cross section area of the bar.
- No torque wrenching.
- Product traceability.
- Visual inspection.
- Cross threading of parallel threads is impossible.
- Good fatigue performance thanks to rolled threads.
- Compact design with small outer diameter.

Heathrow Airport T5, U.K.



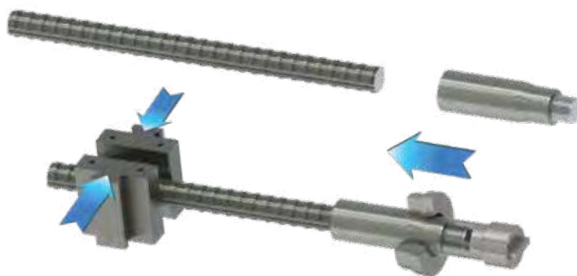




## Automatic two steps process

### Extrusion

- The sleeve is placed over the rebar end and pushed inside the Griptec® machine by the operator. The production process starts automatically.
- The sleeve is then extruded over the bar-end.



### Performance testing

The proof-test is an integral part of the Griptec® bar-end preparation process.

After the sleeve is extruded over the bar-end, the connection is proof-tested automatically by the Griptec® machine. This confirms the performance above the prescribed design load.







Porsche Museum, Germany

## Splicing methods

### Standard splice

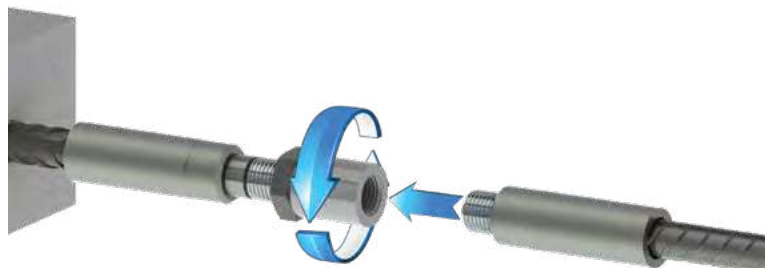
Standard Griptec® splices are achieved using a standard female coupler and a standard male coupler of the matching size.



### Position splice

When both bars cannot be rotated, the Griptec® splice system uses a "Position set" in combination with standard male and female sleeves.

This set consists of a threaded stud, a position nut and a locknut. It is screwed into the female sleeve, and then the nut is screwed back on the male sleeve to accomplish the connection.





# State of the art equipment

- High productivity:  
30 to 45 seconds per bar end.
- One man operation
- Fully computerized process.
- Low operational cost.
- Quick tool changing.
- Pre-programmed setting of extrusion equipment and testing parameters for each bar size.
- Fits any reasonable shear cut.
- No dirty lubricant and machining chips.

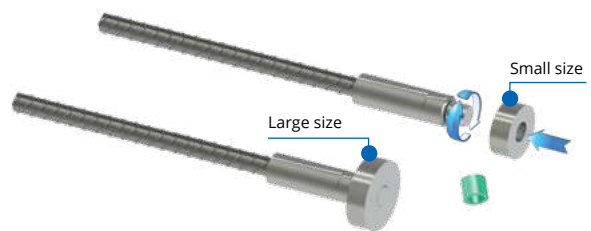
## Bridging splice

When the bars cannot be brought butt to butt, Griptec® bridging sets are the answer. This is a variant of the position set which uses a longer stud. Gaps of more than one bar diameter can be bridged.



## Headed bars

An efficient alternative to hooked bars to provide end anchorages in congested areas. Griptec® mechanical anchorages are circular in shape and have a net bearing area of 4 and 9 times the cross-section of the bar.



## Transition splice

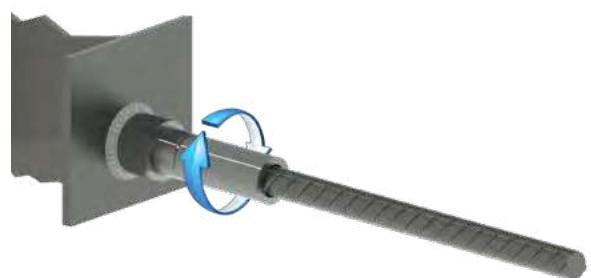
When there is a need to splice bars of different sizes, the Griptec® system uses standard female couplers, simply joining them with a special transition stud.

This conveniently avoids the difficult task of planning in advance the location of transitions.



## Weldable couplers

For composite construction where concrete reinforcement bars must be welded to structural steel, Griptec® weldable couplers, specially made from low carbon steel, are available.







**BARTEC**®

**FORTEC**

The Ultimate Splicing System

## Benefits

- No reduction of the bar cross section area.
- Allows full ductile elongation of bars.
- Easy installation, no torque wrench required.
- One standard coupler for standard and position splicing
- Type 2 coupler suitable for seismic areas.
- Tested under reverse cyclic conditions.
- Solves bar congestion problems.
- No staggering of splices bars required.
- Product traceability.







## A 3 steps process

### Cutting

The end of the reinforcing bar is sawn square.



### Cold forging

The sawn end of the reinforcing bar is then enlarged by a patented cold forging process. The core diameter of the bar is increased to a pre-determined size.



### Threading

Finally, the thread is mechanically formed onto the enlarged end of the bar.



# Splicing methods

## Standard splice

Easy connection by bar rotation until full thread engagement.

Thanks to the parallel thread:

- No risk of thread mis-match.
- No risk of cross-threading.

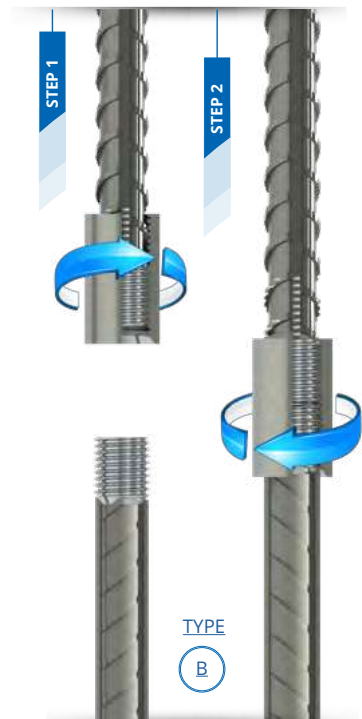


## Position splice

The Bartec® position splice, to be used when both bars cannot be rotated, consists of an extended thread on the connecting bar and a standard coupler.

The coupler is fully engaged onto the extended thread of the connecting bar (step 1).

The assembly is completed by butting the bars end to end and screwing the coupler back onto the first bar until full engagement (step 2).

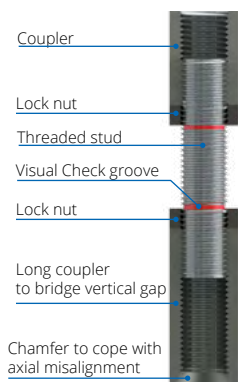


The assembly method Type C is similar to Type B, with the addition of a lock-nut to maintain the second bar in position.



## Bridging splice

To connect bars that can't be brought butt to butt, Bartec® Bridging Splice is your solution. This is often the case with complex prefabricated cages.



## Transition splice

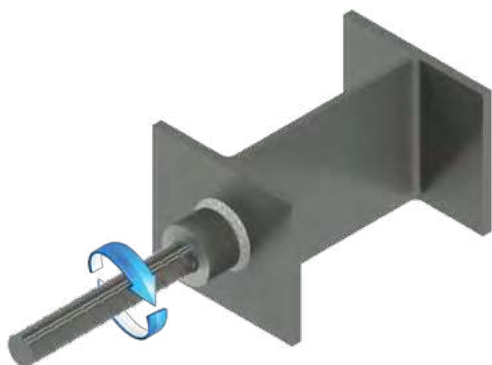
When there is a need to splice bars of different sizes, Bartec® offers transition couplers that conveniently allow the connection of rebars of very different diameters, e.g. 40-32 or 32-25.

Depending on the situation, it may also be possible to reduce the size of the end of the larger bar and then use a standard coupler.



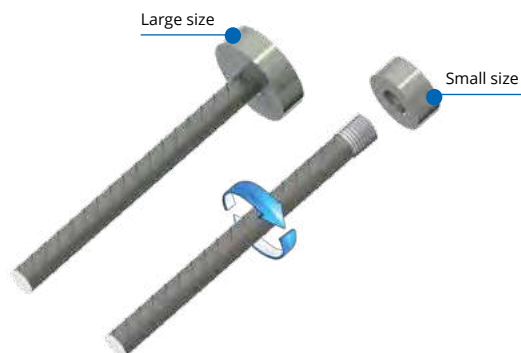
## Weldable couplers

For composite construction where concrete reinforcement bars must be welded to structural steel, Bartec® weldable couplers provide the ideal solution. They are specially made from low carbon steel and have a large chamfer for bevel welding.



## Headed bars

Also called "End Anchors", they are a convenient alternative to hooked bars to provide end anchorages in congested areas. Bartec® standard anchorage heads are circular and have a net bearing area of 4 times or 9 times the cross-section of the bar. The large headed bar is an ETA-assessed and CE-marked solution.



## Generic specification

- No reduction of the nominal cross section area of the parent bars.
- No reduction of the ductility of the reinforcing bar.
- Couplers are individually marked to allow full traceability of the material.
- Parallel-thread system.

**FORTEC**

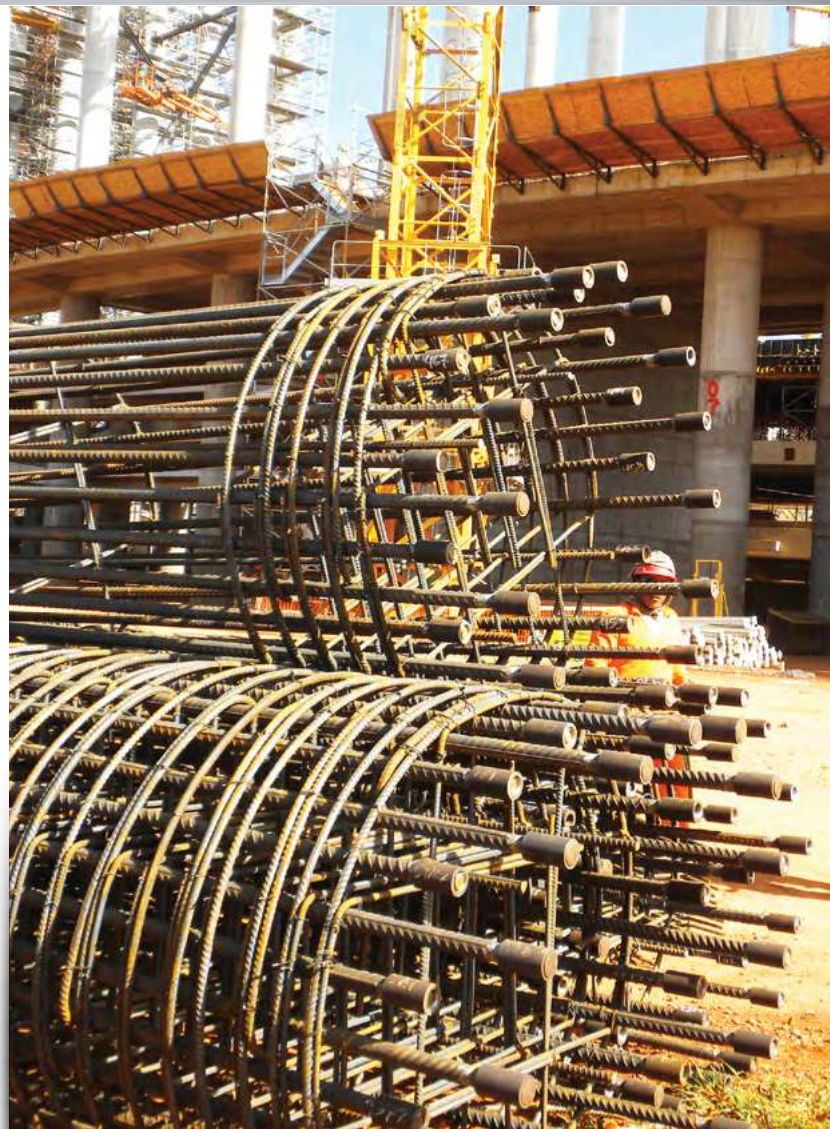
In certain international markets, Bartec® is sold under the brand name Fortec. For more details, please refer to the specific Fortec brochure.



Streamlined Simplicity

## Benefits

- Practical and economical alternative to laps.
- Simple process : only one machine, one operator.
- Fast cycle time : less than 30 seconds per thread.
- One standard coupler for the two main applications, standard and position, to avoid confusion and reduce warehousing on site.
- Easy installation, no torque wrench required.
- Shortens construction cycle times.
- Product traceability.







## Rebar preparation: a two steps process

### Peeling

The end of the reinforcing bar is peeled.



### Thread Rolling

The peeled end of the reinforcing bar is then threaded by rolling.





# Splicing methods

## Standard splice

Easy connection by bar rotation until full thread engagement.

Parallel thread :

- No risk of thread mis-match.
- No risk of cross-threading.

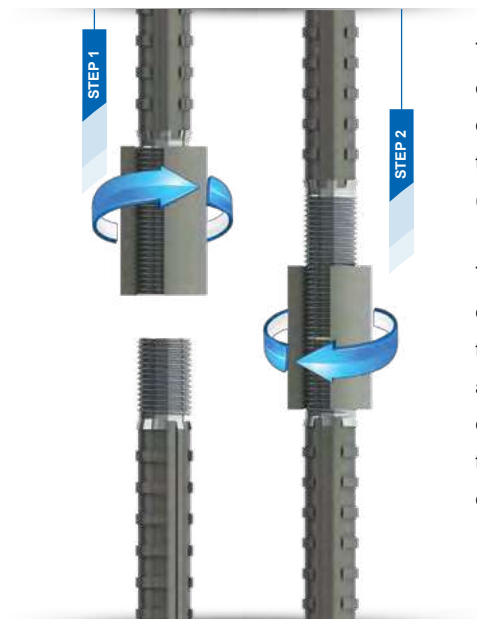


TYPE

B

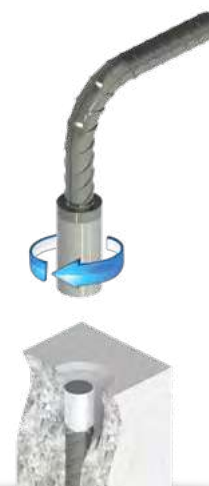
## Position splice

The Rolltec® position splice, to be used when both bars cannot be rotated, consists of an extended thread on the connecting bar and a standard coupler.



The coupler is fully engaged onto the extended thread of the connecting bar (step 1).

The assembly is completed by butting the bars end to end and screwing the coupler back onto the first bar until full engagement (step 2).



TYPE

C

The assembly method Type C is similar to Type B, with the addition of a lock-nut to maintain the second bar in position.



## Caging splice

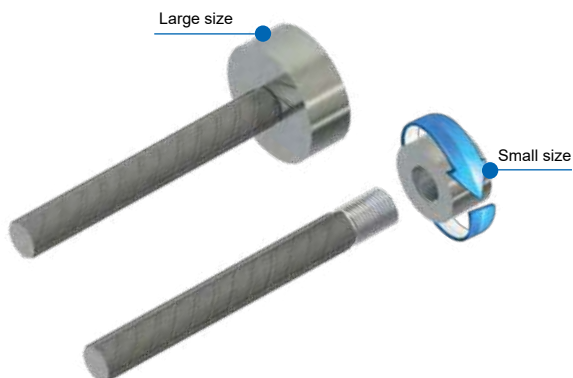
To connect cages that haven't been pre-fabricated together or sets of bars that can't be brought butt to butt, the Rolltec® Caging assembly is your solution. Both bars are threaded with a standard Bartec thread.

The rotating elements of the assembly will guarantee thread continuity to easily produce the splice.



## Headed bars

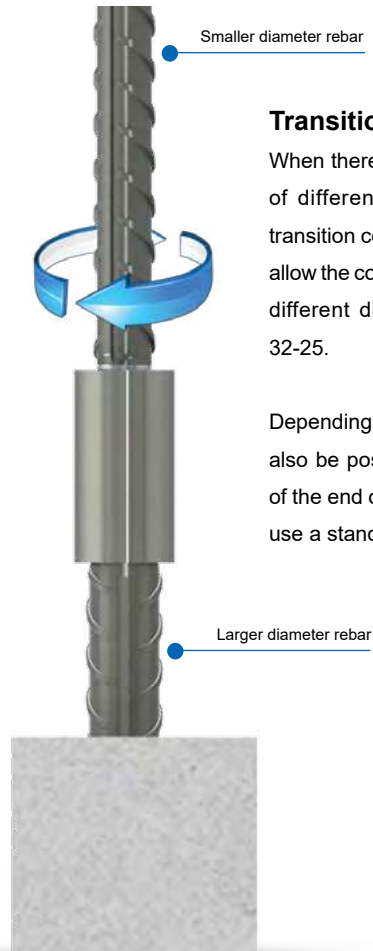
Also called "End Anchors", they are convenient alternative to hooked bars to provide end anchorages in congested areas. Rolltec® standard anchorage heads are circular and have a net bearing area of 4 times or 9 times the cross-section of the bar. The large headed bar is an ETA-assessed and CE-marked solution.



## Transition splice

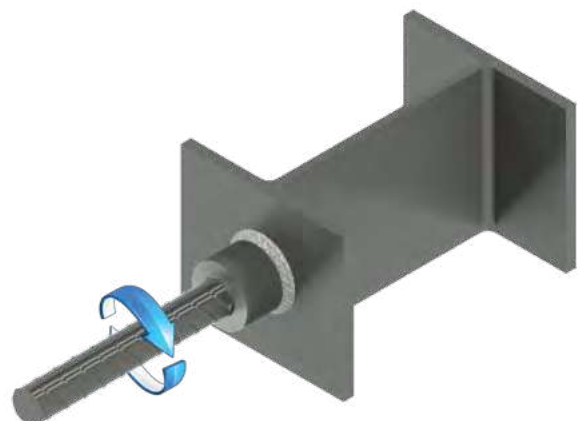
When there is a need to splice bars of different sizes, Rolltec® offers transition couplers that conveniently allow the connection of rebars of very different diameters, e.g. 40-32 or 32-25.

Depending on the situation, it may also be possible to reduce the size of the end of the larger bar and then use a standard coupler.



## Weldable couplers

For composite construction where concrete reinforcement bars must be welded to structural steel, Rolltec® weldable couplers, specially made from low carbon steel, are available.



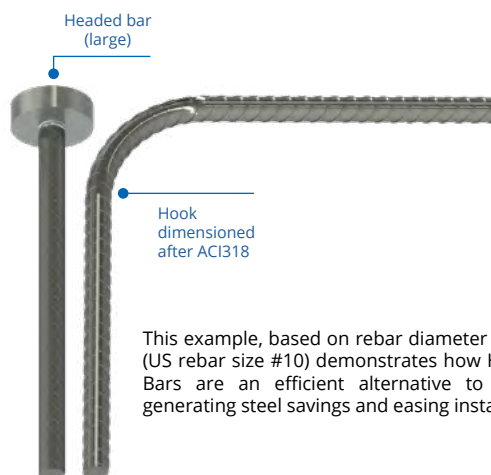


# HEADED BARS

The Alternative Solution to Hooked Bars

## Product features

- Made of an anchor plate that is fixed to the end of reinforcement bar.
- Convenient alternative to hooks in congested areas.
- Two standard head sizes: net bearing area of 4 or 9 times the cross section of the bar.
- Requires the same bar end preparation as Dextra coupler systems.
- Compatible with Bartec, Fortec, Griptec and Rolltec threads.



This example, based on rebar diameter 32 mm (US rebar size #10) demonstrates how Headed Bars are an efficient alternative to hooks, generating steel savings and easing installation.







## Applications

### As main reinforcement

- Less congestion.
- Easier installation. Threaded heads can be fitted on site after rebar installation.
- No more risk of rebar embrittlement due to bar bending.
- Require shorter anchorage (development) length.
- More faithful realisation of strut-and-tie modeling.
- Better anchorage effectiveness (lower bearing stress and less slip) especially on large diameter bars.

### As transverse reinforcement

- Shear reinforcement in slabs and footings.
- Cross ties in walls, columns and diaphragm walls.
- Faster installation time.
- No more site bending of double-headed 135° or 180° hooks.
- Allow use of larger bars, therefore decreasing the quantity of links.



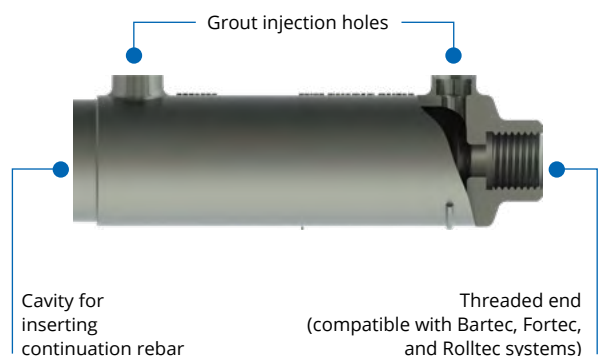




## The Rebar Coupler Designed to Connect Precast Elements

### Benefits

- Easily connects two precast elements with no requirement for in situ wet concrete joint.
- Can be used with non-shrink grouting mortars readily available from major manufacturers.
- Compact and economical splicing solution thanks to its optimized design.
- Allows connection of continuation bars that are not perfectly aligned.
- The same coupler model can also be used for the connection of bars of different diameters (transition splice).
- Product traceability.







## Installation

### At the precast factory

Groutec is installed on the reinforcement thanks to its threaded connection. Positioning accessories (magnetic or screw-type) are available to tighten the coupler against the formwork. Coupler and reinforcement are then cast in concrete to create precast panels, beams or columns.



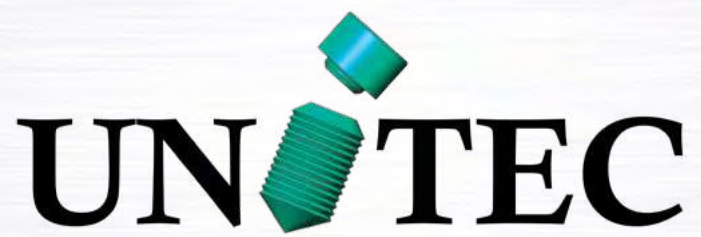
### At the construction site

Continuation rebars are inserted into the cavity. Groutec accommodates both horizontal and vertical connections (with Groutec in the top or in the bottom element).

Coupler cavities are then filled with non-shrink grouting mortar through the injection holes, or directly by pouring grout in the cavity by gravity.







Bolted Coupler without  
Rebar Preparation

## Product features

Unitec® is a shear-bolt coupling system for the connection of concrete reinforcement bars from Ø12 to 50 mm (ASTM #4 to #18).

## Benefits

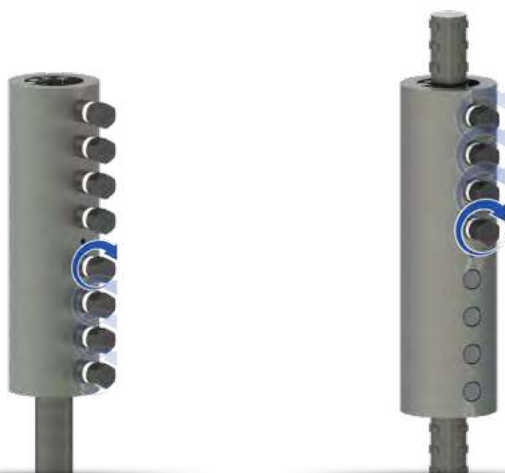
- Easy to use with a standard impact wrench: the heads of the screws just shear off when required torque is reached.
- No need for bar end preparation.
- Readily available off the shelf.
- Ideal for concrete-embedded bars, repair and retrofit works.
- Type 2 splice as per ACI 318 requirements. Complies with BS 8110 and NF A35-020 standards
- Product traceability.







## A simple in-situ installation with standard tools



1

Insert the Unitec® coupler over the end of the first bar until contact with the centre pin.

Pre-position the coupler using a ratchet or a wrench. Then proceed with tightening from center to edge of coupler using a standard pneumatic impact wrench.

2

Insert the second bar into the coupler until contact with the centre pin and repeat the operation.







## Pressed Connector for Repair Applications

### Product features

The RepairGrip™ system is a portable system designed to splice bars in situ. It is a simple and proven method to splice bars that did not have their end shop-prepared.

The RepairGrip™ sleeve is swaged onto the bar ends by an hydraulic tool powered by a separate power unit. The resulting connection guarantees a tensile strength of at least 125% of the nominal yield strength on reinforcing bars grade 500 MPa.

RepairGrip™ splices are butt-to-butt splices that are suitable for both tension and compression applications.

### Benefits

- For repair or retrofit works.
- Fits any cold shear cut bar end.
- Fast installation.
- No reduction of the cross section area of the bar.
- Product traceability.

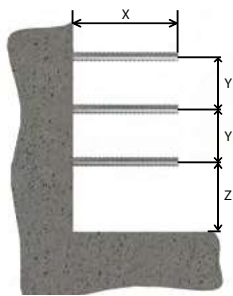


Dubai Metro, UAE

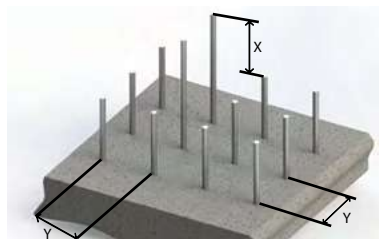




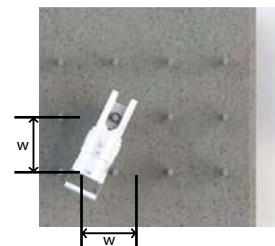
## Minimum bar spacing



Start by swaging the bar that is closest to the floor or adjacent wall.



Clustered bars can be spliced if they are staggered and if the central bars are the longest. Start by swaging the central bars.



If clustered bars are not staggered, the required spacing is wider so that the swaging tool can reach the central bars.

	DMG32 (DMG650)							DMG40 (DMG800)	
Bar size (mm)	12	16	20	22	25	28	32	36	40
Bar size (imperial)	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11	# 12
X		150			170		160	190	220
Y		95			100		110	120	120
Z		90			90		90	100	100
W		230			230		230	250	250





# Equipment, Network & Service

## Production know-how

Dextra's factory for mechanical splice systems is strategically situated near Bangkok's international airport and the expressway to the deep-sea port on Thailand's eastern coast.

Covering a total area of over 20,000 square meters, including 13,000 square meters of covered space, we design and manufacture both couplers and bar end preparation equipment for our mechanical splice systems.

Additionally, we have recently inaugurated a new factory in Pune, India, dedicated to producing rebar couplers and other solutions.

**40+**  
years of experience  
in designing &  
manufacturing  
concrete reinforcement  
products and equipment





Dextra Factory in Bangkok,  
Thailand



Dextra Factory in Pune,  
India

Dextra **designs, supplies and maintains** highly productive rebar preparation equipment. More than **500 equipment sets** are currently operated on project sites and in factories of rebar fabricators around the globe.

This network is supported by a **worldwide team of local after sales engineers** who are in charge of the maintenance of Dextra equipment and the training of machine operators. This way we ensure that our customers receive the best possible service and achieve a **maximum productivity**.

## Bar end preparation equipment



Bartec equipment set



Rolltec equipment



Griptec equipment





# Quality

## Quality assurance

Our manufacturing facility and Quality Management System comply with the requirements of, and are regularly audited by, the following agencies :

- Bureau Veritas: ISO 9001 & ISO 19443
- UK CARES: ISO 9001
- American Society of Mechanical Engineers (ASME): ASME.BPVC.III
- International Laboratory Accreditation Cooperation Mutual Recognition Arrangement (ILAC MRA): ISO/IEC 17025:2017



## Environmental verifications

We also emphasize our Environmental Management System for sustainable production processes, which are verified by the following agencies:

- Bureau Veritas: ISO 14001
- Ministry of Industry of Thailand: Green Industry Level 3
- Environmental Product Declarations (EPD) & EPD Hub







Dextra aims to supply products that exceed the most demanding international technical approvals and it is our goal to create maximum customer satisfaction by complying with our clients' needs and specified requirements.

## Product certifications

Dextra's mechanical splices have been tested, evaluated, certified, and/or qualified by third-party agencies in numerous countries:

- Australia
- Austria
- Canada
- France
- Germany
- Hungary
- Malaysia
- Norway
- Poland
- Romania
- Russia
- United Arab Emirates
- United Kingdom
- USA



Transport  
Roads & Maritime  
Services



LAND  
SALZBURG



DIBt



Ministère  
des Transports  
Québec



Certified to ISO 15835:2018  
Certification No: CCS PC 00-23020





Battersea Power Station Development Phase III, UK: Griptec, Rolltec, Groutec, Unitec



Sphere Music and Entertainment Arena, USA: Bartec, Headed Bar

## Commercial presence in more than **55 countries**

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