



Reinforcement Continuity Systems

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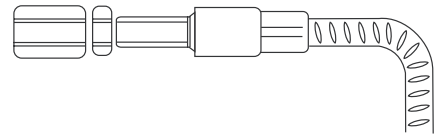
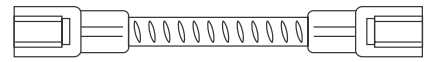
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Full Strength Continuity Connection for Reinforcement

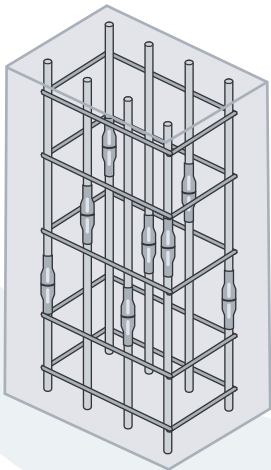
A simple, efficient and more effective method of connecting reinforcement, which overcomes the disadvantages of the traditional method.

The patent system

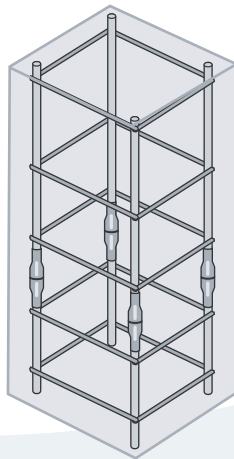
Produced by means of male and female couplers with a metric thread allowing connection of the reinforcement steel.



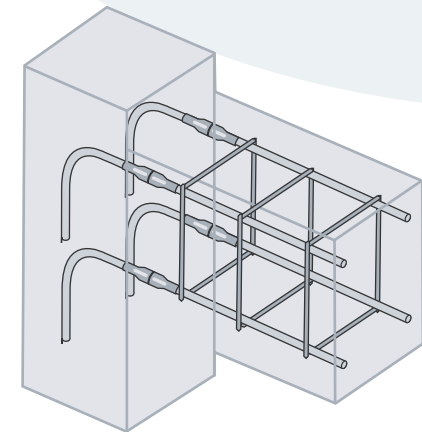
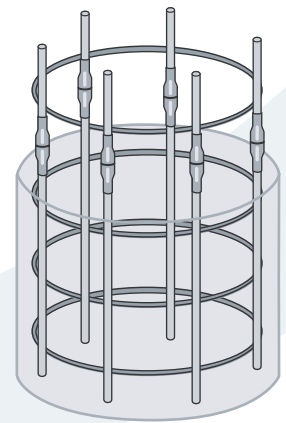
Shear wall



Column

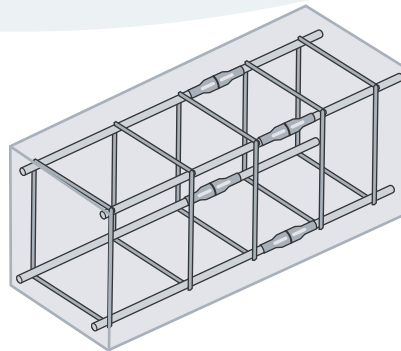


Column

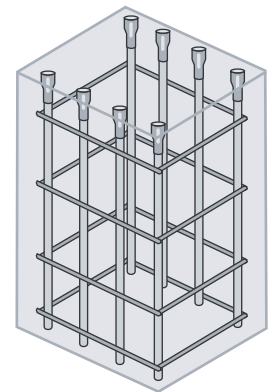


Beam

Future extension



Beam-Column



Configuration and Advantages of the Patent System

- For reinforcement steel with a diameter from 10 mm to 40 mm.
- The full diameter or cross-section of the bar can be used.
- The strength of the connection is equivalent to the reinforcement steel (Bar-break).
- Suitable for dynamic loads.
- Slip below 0.1 mm at 70% of the yield strength.
- Reinforcement steel does not require any special preparation.
- Couplers are designed for reinforcement steel with a nominal yield strength of 550 N/mm² and a tensile strength of 750 N/mm².
- The shape, height and the type of ribs of the reinforcement steel have no influence on the connection.
- The minimal dimensions of the outside diameter of the coupling ensure that a better concrete cover is generated and a heavy concentration of reinforcement can be avoided.
- Lock nuts are not required.
- Every diameter and length of reinforcement steel, straight or bent, can be fitted with a coupler and easily connected.
- Due the metric thread, no special tools are required to assemble the Patent System or tighten the coupling.
- No special training of personnel is needed.
- The Patent System allows fast and easy to control of the connection.
- Crane time is reduced to a minimum.
- Tested and approved according to international and European standards and regulations.

Friction Welding of Stainless Steel Anchors

The fast and versatile welding solution

Quality Solution for connecting Stainless Steel

Where a stainless steel product is required, our sockets are produced using the friction welding process. This results in what we believe to be a superior product to what is generally on the market.

How does friction welding work?

Commonly used in industrial applications, friction welding is the process of generating heat through mechanical friction between a moving work piece and a stationary component. Our approach is to distinguish between the friction phase and the forging phase. During the friction phase a rotating work piece is pressed against a fixed one, then once both have been heated to a sufficient temperature the forging phase begins whereby the rotating work piece is stopped and a force is applied to continue pressing the two pieces together.

What are the advantages?

In addition to super fast joining times, friction welding techniques are generally melt-free thereby offering an optimum welding method for modern production operations. In fact, for many types of assembly friction welding is recommended over other methods for both metallurgical and commercial reasons.

Another key advantage of friction welding is the ability to securely join dissimilar metals – often impossible with other welding methods due to the different melting points of the metals.

Welded connections between stainless steel, reinforcing bars or other steel components are essential in civil and structural engineering works; friction welding provides a cost-effective and fast solution for such jobs.

A friction-welded joint is a butt-type, full-contact welded joint that achieves a fusion between the two materials at the joint interface with no gaps. Only a very weak electrochemical reaction is possible at this point, which virtually eliminates the risk of galvanic corrosion, in turn providing cost benefits over time by eliminating the need for expensive repair work. Furthermore, the heating of the two materials is uniform over the entire contact face, ensuring the same strength properties can be assumed throughout the plane of the joint.

Dealing with dynamic stresses

Friction-welded joints between stainless steel and ribbed reinforcing bars are subject to dynamic stresses. Following extensive testing and countless years of practical experience, particularly in transport infrastructure projects, it has been proven that friction welding is the ideal method for dealing with dynamic stresses.

For further proof of this, we have carried out fatigue tests with 2.5, 5 and 10 million load cycles. In the subsequent tensile tests it was always the ribbed reinforcing bar that failed.

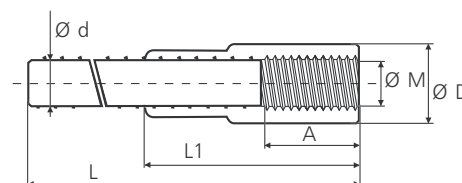
If any further evidence was required, thanks to its great versatility and many advantages friction welding has been specified in the framework development planning of Deutsche Bahn AG and confirmed as a production method for the Federal Ministry of Transport's building and urban development for transport infrastructure projects.



Standard Lengths Reinforcement Steel

PSA rebar couplers – pressed version

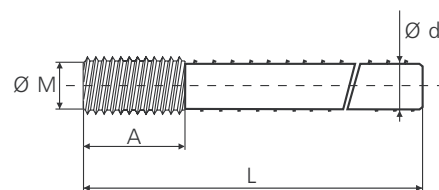
Can also be used for lifting. Please consult CFS.



Part No.	Diam. d mm	Length L mm	Thread		Coupling	
			M	Length A mm	Diam. D mm	L1 mm
CFS-PSA-12-400	12	400	16	25	22	62
CFS-PSA-12-600	12	600	16	25	22	62
CFS-PSA-12-800	12	800	16	25	22	62
CFS-PSA-12-1000	12	1000	16	25	22	62
CFS-PSA-12-1500	12	1500	16	25	22	62
CFS-PSA-16-550	16	550	20	36	27	86
CFS-PSA-16-800	16	800	20	36	27	86
CFS-PSA-16-1020	16	1020	20	36	27	86
CFS-PSA-16-1440	16	1440	20	36	27	86
CFS-PSA-16-1500	16	1500	20	36	27	86
CFS-PSA-20-500	20	500	24	40	34	99
CFS-PSA-20-700	20	700	24	40	34	99
CFS-PSA-20-1000	20	1000	24	40	34	99
CFS-PSA-20-1280	20	1280	24	40	34	99
CFS-PSA-20-1500	20	1500	24	40	34	99
CFS-PSA-20-1800	20	1800	24	40	34	99
CFS-PSA-20-2000	20	2000	24	40	34	99
CFS-PSA-25-600	25	600	30	50	41	117
CFS-PSA-25-1000	25	1000	30	50	41	117
CFS-PSA-25-1500	25	1500	30	50	41	117
CFS-PSA-25-2260	25	2260	30	50	41	117
CFS-PSA-28-400	28	400	36	60	50	125
CFS-PSA-28-1790	28	1790	36	60	50	125
CFS-PSA-28-2530	28	2530	36	60	50	125
CFS-PSA-32-1400	32	1400	42	65	55	153
CFS-PSA-32-2000	32	2000	42	65	55	153
CFS-PSA-32-2300	32	2300	42	65	55	153
CFS-PSA-40-1600	40	1600	48	72	65	172
CFS-PSA-40-3400	40	3400	48	72	65	172

TSE forged male bar coupler

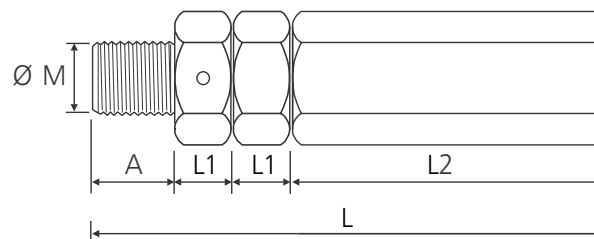
For use with PSA coupler.



Part No.	Diam. d mm	Length L mm	Thread	
			M	Length A mm
CFS-TSE-12-375	12	375	16	min 22
CFS-TSE-12-575	12	575	16	min 22
CFS-TSE-12-775	12	775	16	min 22
CFS-TSE-12-1000	12	1000	16	min 22
CFS-TSE-12-1500	12	1500	16	min 22
CFS-TSE-16-520	16	520	20	min 28
CFS-TSE-16-770	16	770	20	min 28
CFS-TSE-16-1020	16	1020	20	min 28
CFS-TSE-16-1410	16	1410	20	min 28
CFS-TSE-16-1500	16	1500	20	min 28
CFS-TSE-20-465	20	465	24	min 35
CFS-TSE-20-665	20	665	24	min 35
CFS-TSE-20-965	20	965	24	min 35
CFS-TSE-20-1250	20	1250	24	min 35
CFS-TSE-20-1500	20	1500	24	min 35
CFS-TSE-20-1800	20	1800	24	min 35
CFS-TSE-20-2000	20	2000	24	min 35
CFS-TSE-25-600	25	600	30	min 43
CFS-TSE-25-1000	25	1000	30	min 43
CFS-TSE-25-1500	25	1500	30	min 43
CFS-TSE-25-2260	25	2260	30	min 43
CFS-TSE-28-400	28	400	36	min 43
CFS-TSE-28-1790	28	1790	36	min 43
CFS-TSE-28-2530	28	2530	36	min 43
CFS-TSE-32-1400	32	1400	42	min 45
CFS-TSE-32-2000	32	2000	42	min 45
CFS-TSE-32-2300	32	2300	42	min 45
CFS-TSE-40-2000	40	2000	48	min 56
CFS-TSE-40-2600	40	2600	48	min 56

TSK – Position Coupler

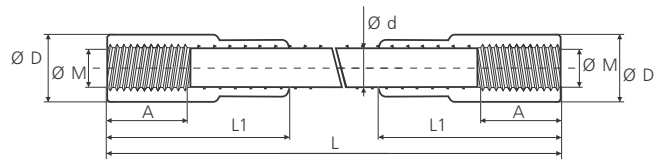
The position coupler is assembled from a threaded bar with a hexagonal nut and an internally threaded coupler sleeve with a lock nut. The TSK is suitable for a bent or straight reinforcement bar, of which neither can be rotated, and where space for the connected bar is limited.



Part No.	Rebar	Thread		L mm	Coupling	
	Dia. mm	Size	Length A mm		L1 mm	L2 mm
CFS-TSK-12	12	M 16	16	90	13	48
CFS-TSK-16	16	M 20	20	112	16	60
CFS-TSK-20	20	M 24	24	134	19	72
CFS-TSK-25	25	M 30	30	168	24	90
CFS-TSK-26	26	M 33	33	184	26	99
CFS-TSK-28	28	M 36	36	202	29	108
CFS-TSK-32	32	M 42	42	236	34	126
CFS-TSK-40	40	M 48	48	268	38	144

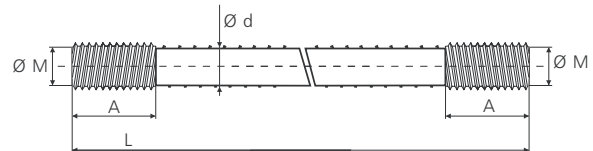
PSAD Double Rebar Coupler

This is assembled from reinforcement steel FeB 500 and a Patent System coupler with an internal metric thread at both ends.



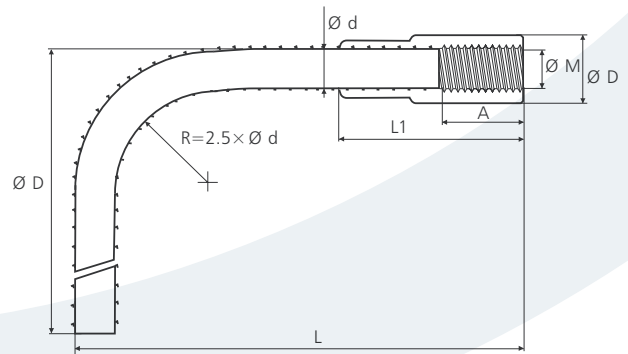
TSAD Double Rebar Coupler

Assembled from a thread bar with locked couplers with an internal metric thread on both ends. This is used for applications where tolerance on the length is less than 3mm.



PSAG – Bent Rebar Coupler

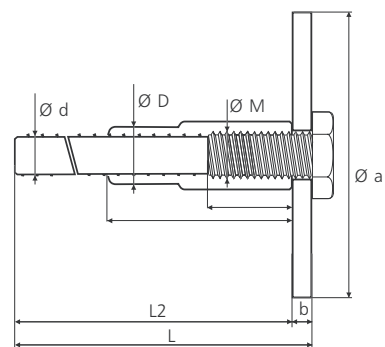
The assembly of the PSAG rebar coupler is identical to that of the PSA rebar coupler. The lengths (L1 and L2) of the reinforcement steel can be made to order and bent as required.



PSAP – End Connection

Identical to the PSA rebar coupler, but the coupling will be joined to an anchor plate by a bolt. The anchor plate dimensions allow the full strength of the reinforcement steel to be used.

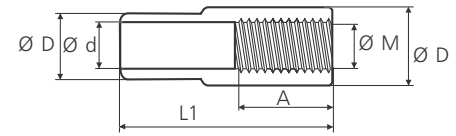
- The Patent System gives optimal flexibility to manufacture every desired connection using 2 separate couplers, PKB and PEB, in the workshop, on site or in the concrete factory.



Accessories and Appliances

PKB – standard anchor coupler

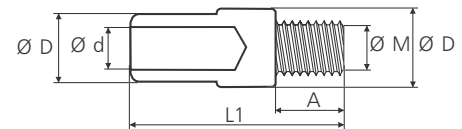
Has internal thread to produce anchors.



Part No.	Rebar dia mm	Diameter d mm	Thread Size	Length A mm	Length Dia. D mm	L1 mm
CFS-PKB-16	12	14.5	M 16	27	22	58
CFS-PKB-20	16	19	M 20	36	27	80
CFS-PKB-24	20	24	M 24	40	34	92
CFS-PKB-30	25	29	M 30	50	41	110
CFS-PKB-33	26	31	M 33	54	46	117
CFS-PKB-36	28/30	34	M 36	60	50	125
CFS-PKB-42	32/34	37	M 42	65	55	145
CFS-PKB-48	40/43	47	M 48	65	65	180

PEB – standard end coupler

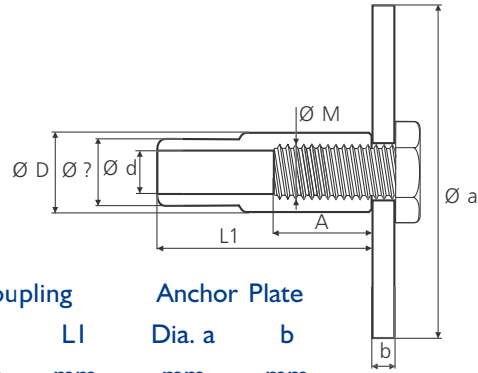
Has external thread to produce end anchors.



Part No.	Rebar dia mm	Diameter d mm	Thread Size	Length A mm	Length Dia. D mm	L1 mm
CFS-PEB-16	12	14.5	M 16	18.5	22	58
CFS-PEB-20	16	19	M 20	22.5	27	80
CFS-PEB-24	20	24	M 24	27	34	92
CFS-PEB-30	25	29	M 30	35	41	110
CFS-PEB-36	28/30	34	M 36	40	50	127
CFS-PEB-42	32/34	37	M 42	46	55	150
CFS-PEB-48	40/43	47	M 48	54	65	180

PKBP – end anchor coupler

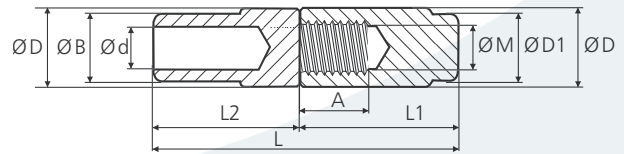
Has an anchor plate to produce an end coupler.



Part No.	Rebar		Thread	Coupling	Anchor Plate			
	Dia. mm	Dia. d mm	Length A mm		Dia. D mm	LI mm	Dia. a mm	b mm
CFS-PKBP-12	12	12	M 16	27	22	58	48	12
CFS-PKBP-16	16	16	M 20	36	27	80	63	15
CFS-PKBP-20	20	20	M 24	40	33	92	80	19
CFS-PKBP-25	25	25	M 30	50	41	110	95	24
CFS-PKBP-28	28/30	28	M 36	60	50	125	110	28
CFS-PKBP-32	32/34	32	M 42	65	55	145	130	31
CFS-PKBP-36	36	36	M 42	65	60	145	145	36
CFS-PKBP-40	40/43	40	M 48	72	65	180	160	40

PEBL – weldable coupler

Has weldable socket to connect reinforcement steel with steel constructions.



Part No.	Rebar	Diameter d mm	Thread Size	Length A mm	Length Dia.	
	dia mm				D mm	LI mm
CFS-PEBL-16	12	M 16	27	22	20	58
CFS-PEBL-20	16	M 20	36	27	25	80
CFS-PEBL-24	20	M 24	40	34	31	92
CFS-PEBL-30	25	M 30	50	41	38	110
CFS-PEBL-36	28/30	M 36	60	50	45	127
CFS-PEBL-42	32/34	M 42	65	55	50	150
CFS-PEBL-42	36	M 42	65	60	56	–
CFS-PEBL-48	40/43	M 48	82	65	60	180

