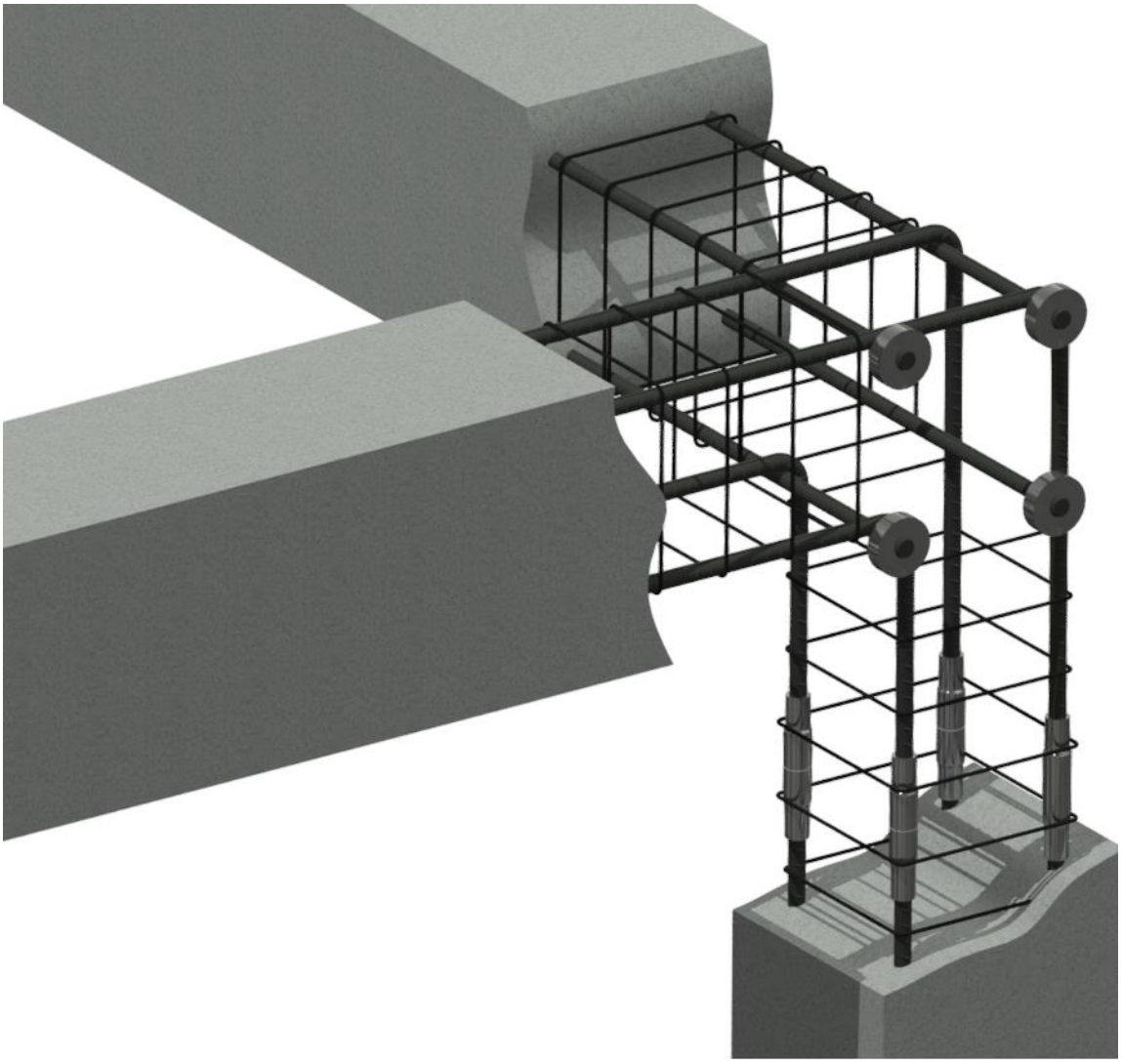
TECHNICAL DOCUMENTATION

REINFORCEMENT SYSTEMS | REBAR CONNECTION SYSTEM



EN – Original Instructions

OVERVIEW

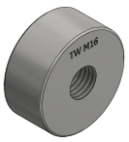
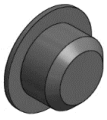
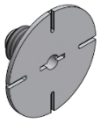
STANDARD MECHANICAL SPLICES				
PSA  Page 6	**PSA-SS**  Page 13	**TSE**  Page 11		
SPECIAL MECHANICAL SPLICES				
PSAD  Page 15	**TSED**  Page 16	**PSAG**  Page 17	**TSEG**  Page 17	**PSAGGD**  Page 18
PSA-T  Page 20	**PSA-DISK**  Page 14	**PSA-PSC**  Page 8	**PSA-TEC**  Page 23	**TSE-TEC**  Page 23
PSA-PSC-PSA  Page 8	**TSE-KBC**  Page 34			
ACCESSORIES				
KB-W  Page 25	**KB**  Page 27	**KBL**  Page 28	**KBC**  Page 34	
TWSK  Page 29	**PSC-BOLT**  Page 10	**SN**  Page 40	**TPM**  Page 43	**TEC**  Page 22
AP  Page 39	**KU-02**  Page 41	**KU-10**  Page 42	**TPP**  Page 44	
TOOLS				
TERWA WRENCH  Page 38				

TABLE OF CONTENTS

OVERVIEW **2**
INTRODUCTION **4**
FEMALE REINFORCEMENT COUPLER PSA **6**
MALE REINFORCEMENT COUPLER PSA-PSC **8**
PSC BOLT **10**
MALE REINFORCEMENT COUPLER TSE **11**
SPECIAL REINFORCEMENT COUPLERS **13**
FEMALE REINFORCEMENT COUPLER PSA-SS 13
FEMALE REINFORCEMENT COUPLER PSA WITH PROTECTION DISK 14
FEMALE REINFORCEMENT COUPLER PSAD 15
MALE REINFORCEMENT COUPLER TSED 16
BENT REINFORCEMENT COUPLERS – PSAG AND TSEG 17
DOUBLE BENT COUPLER PSAGGD **18**
TRANSITION COUPLERS PSA-T **20**
INSTRUCTIONS FOR INSTALLING REINFORCEMENT COUPLER PSA-T 21
TERWA END COUPLERS - TEC **22**
PROPOSALS FOR ORDERING REINFORCEMENT COUPLERS **24**
KB-W THREAD WELDABLE COUPLER **25**
INSTRUCTIONS FOR INSTALLING KB-W WELDABLE COUPLER **26**
FIXING CONNECTOR – KB **27**
FIXING CONNECTOR – KBL **28**
TWSK POSITION COUPLER **29**
INSTRUCTIONS FOR CONNECTING STRAIGHT OR BENT BARS WITH TWSK POSITION COUPLERS **30**
FIXING CONNECTOR - KBC **34**
INSTRUCTIONS FOR CONNECTING STRAIGHT REBARS WITH KBC COUPLERS **35**
INSTRUCTIONS FOR USE OF THE TERWA REINFORCEMENT COUPLER **36**
REINFORCEMENT COUPLER PSA-PSC ASSEMBLED WITH AN INSTALLED PSA COUPLER 36
REINFORCEMENT COUPLER TSE ASSEMBLED WITH AN INSTALLED PSA COUPLER 37
TERWA TORQUE WRENCH **38**
PLASTIC COVER - AP – WITHOUT THREAD **39**
DOUBLE THREADED SCREW PLUG SN **40**
PLASTIC NAILING PLATE KU-02 ..... **41**
PLASTIC NAILING PLATE KU-10 ..... **42**
STEEL MAGNETIC PLATE - TPM **43**
PLASTIC PLUG - TPP **44**
CONTACT **45**
DISCLAIMER **45**

INTRODUCTION

Terwa rebar connection system is a high quality, economical reinforcement connection system. The rebar connection system is a simple, efficient method for connecting reinforcement bars, which eliminates the disadvantages of the traditional method for overlapped joints. Overlapping joints are time-consuming, causes greater congestion of rebar and are unsafe to use in seismic areas. The couplers design allows a connection of the reinforcement steel in which the characteristics are equivalent to the uninterrupted reinforcing bar, and the loads are transferred in the bar, not in concrete as in the overlapped joints. Impact damage or a seismic event affects only the concrete and the rebar connections retain their strength. Terwa threaded couplers allow easy installation of the reinforcements both on site and in the prefab factory using standard tools.

The characteristics and advantages of the Terwa rebar connection system are:

- They are used for reinforcements steel with diameters from 10 mm to 40 mm.
- Complete connection of the reinforcement, the strength of the joint is equivalent to that of a continuous bar.
- Suitable for dynamic and seismic loads.
- No special preparation of the reinforcement steel required.
- Suitable for all types of reinforcement steel according to the European and American norms.
- Tested according to national and international regulations.
- The couplers are designed for reinforcement steel B450C, B500B or B500C according to EN 10080 and BS 4449, with a yield strength ≥ 500 MPa and a tensile strength ≥ 550 MPa.
- The shape, height, and the type of the ribs of the reinforcement steel have no influence on the connection.
- Since the dimension of the outer diameter is minimal, better concrete coverage is generated, and reinforcement steel congestion can be prevented.
- The contact surfaces of the couplers exclude the use of locknuts.
- Every diameter and length of the reinforcement steel, straight or bent, can be fitted with a coupler, and can be easily connected on site.

Installation:

- A nut wrench is not required for tightening the coupling. A pipe wrench or torque wrench has to be used to tighten the couplers and to prevent thread movement.
- Special tools, power sources and special training of personnel are not required.
- The metric thread connection method allows for fast, easy control of the connection.
- Mounting time is reduced to a minimum.

Characteristics:

- The couplers are delivered in a standard, electrolytic galvanised version, thereby preventing rust.
- At the client’s request, the couplers can be made from stainless steel.

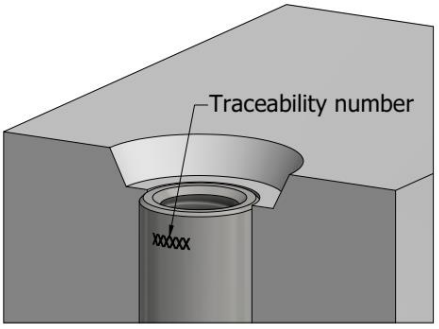
Terwa rebar connection system consists of:

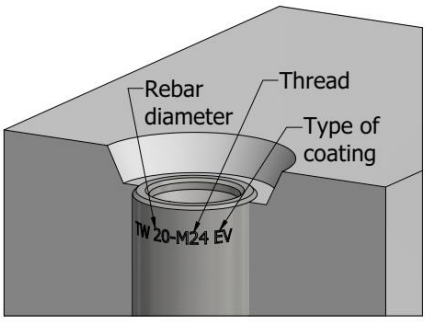
- Reinforcement steel:
    - B500A, B500B according to NEN 6008
    - B450C, B500A, B500B, B500C according to EN 10080.
    - B500B, B500C according to BS4449.
    - B500A, B500B, B500C according to DIN 488
    - B500A, B500B, B500C according to NF A35-080-1
    - B500A, B500B, B500C according to SFS 1300
    - K500B-T, K500C-T according to SS-EN 10080+SS 212540
    - B500NC according to NS-EN 10080+NS 3576
    - B550B according to EN 10080 and ÖN 4707

- A sleeve with interior thread type PKB, pressed on one or both ends of the reinforcement steel.
- Forged and threaded reinforcement bar - TSE coupler.
- Position coupler TWSK.
- Transition couplers, PSA-T.
- Welding coupler KB-W.
- Fixing connectors KB, KBC or KBL.
- Accessories.

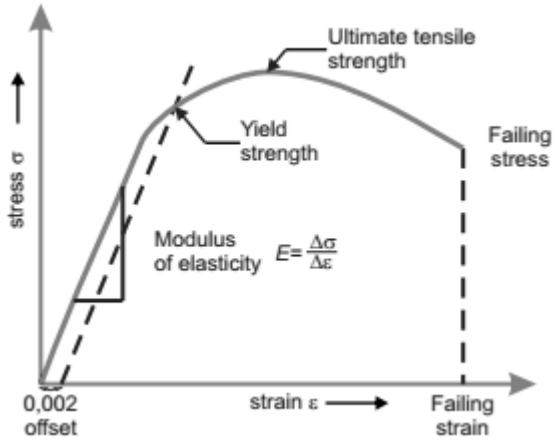
Quality
Terwa continuously controls the anchor production process in terms of strength, dimensional and material quality, and performs all of the required inspections for a superior quality system. All of the products are tracked from material acquisition to the final, ready to use product.

Marking and traceability
All systems have all data necessary for traceability, rebar dimension, thread type and type of coating.



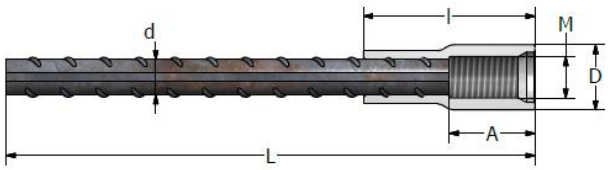


Coupler testing
Terwa rebar couplers are designed to ensure the full transfer of the load to the reinforcement steel and a slip value under 0.1 mm. Terwa periodically tests the system for this in the factory according to the European standards.

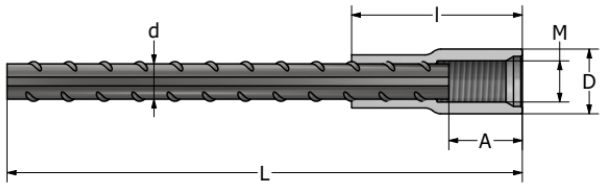


FEMALE REINFORCEMENT COUPLER PSA

The female reinforcement coupler PSA consists of a reinforcement steel and a sleeve PKB with interior metric thread pressed on one end of the reinforcement. In connection with a male reinforcement coupler TSE or PSA-PSC, the PSA coupler ensures uninterrupted reinforcement for all types of precast concrete units. These couplers can be made in various dimensions.
The reinforcement couplers can also be used to lift and move the precast concrete elements.
The PKB sleeves are made of structural steel, electrolytic galvanised or hot-dip galvanised. The reinforcement steel quality is mentioned on page 4. The rebar can also be made of stainless steel W1.4362 or equivalent.
On request, the PKB sleeves can be manufactured in stainless steel.

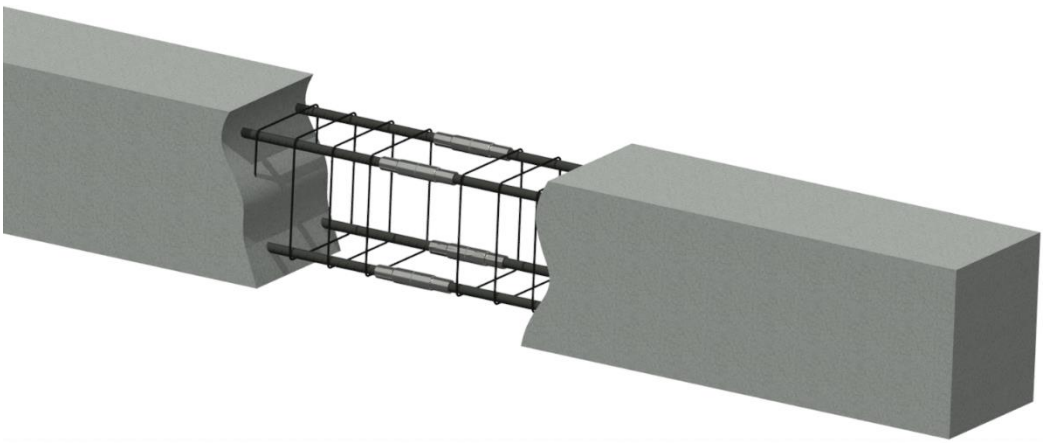


PSA with steel rebar



PSA-SS with stainless steel rebar and PKB sleeve

PSA Product description	Sleeve diameter	Sleeve length	Rebar diameter	Thread	
	D	l	d	Metric	A
	[mm]	[mm]	[mm]	M	[mm]
PSA 10 - M12 - L	17.5	50	10	12	18
PSA 12 - M16 - L	22	62	12	16	25
PSA 14 - M18 - L	25	74	14	18	32
PSA 16 - M20 - L	28	86	16	20	38
PSA 18 - M22 - L	32	92	18	22	40
PSA 20 - M24 - L	34	99	20	24	42
PSA 22 - M27 - L	38	107	22	27	45
PSA 25 - M30 - L	42.5	117	25	30	52
PSA 28 - M36 - L	50	130	28	36	55
PSA 32 - M42 - L	56	153	32	42	65
PSA 40 - M48 - L	67	188	40	48	72

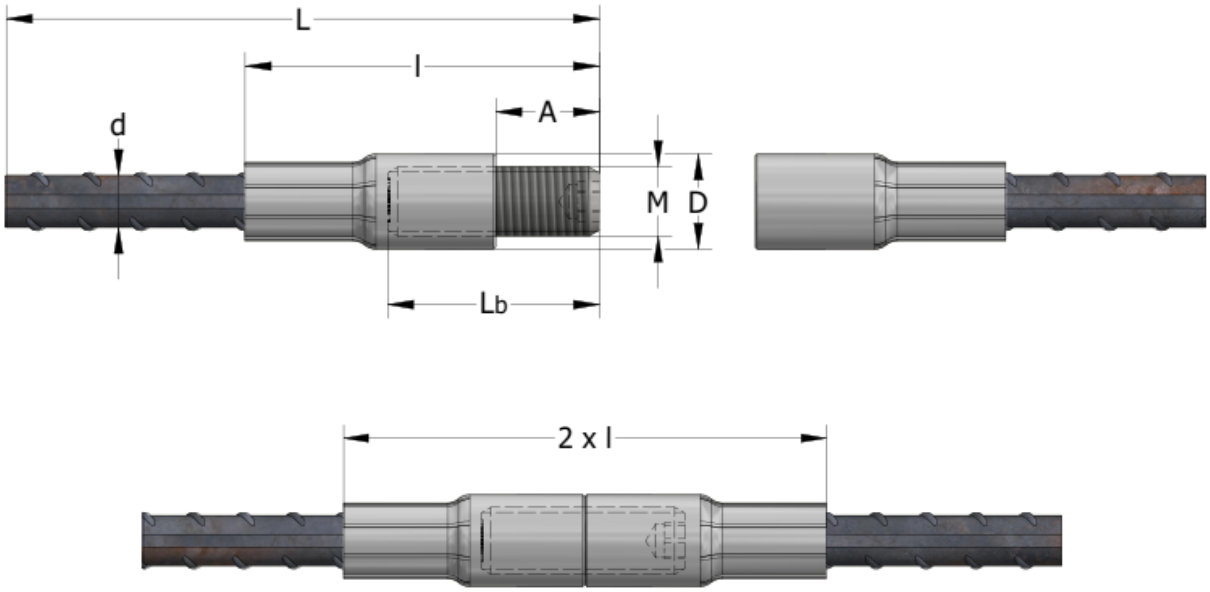


Female reinforcement coupler PSA – standard length

PSA with PKB electrolytic galvanised		PSA with PKB hot-dip galvanised		Product length	Weight
Product number	Product description	Product number	Product description	[mm]	[kg/piece]
47509	PSA-12-M16-0415	64483	PSA-12-M16-0415 TV	415	0,440
64485	PSA-12-M16-0615	48605	PSA-12-M16-0615 TV	615	0,620
64487	PSA-12-M16-0840	64488	PSA-12-M16-0840 TV	840	0,820
48905	PSA-12-M16-1040	64490	PSA-12-M16-1040 TV	1040	1,000
47479	PSA-12-M16-1540	64493	PSA-12-M16-1540 TV	1540	1,360
47796	PSA-12-M16-2040	66813	PSA-12-M16-2040 TV	2040	1,890
47510	PSA-16-M20-0560	64495	PSA-16-M20-0560 TV	560	1.040
64496	PSA-16-M20-0810	64497	PSA-16-M20-0810 TV	810	1.440
64499	PSA-16-M20-1060	64500	PSA-16-M20-1060 TV	1060	1.830
64502	PSA-16-M20-1480	64503	PSA-16-M20-1480 TV	1480	2.500
49185	PSA-16-M20-2240	64505	PSA-16-M20-2240 TV	2240	3.700
47511	PSA-16-M20-3540	66815	PSA-16-M20-3540 TV	3540	5.750
48654	PSA-20-M24-0705	64507	PSA-20-M24-0705 TV	705	2.010
64509	PSA-20-M24-1005	64510	PSA-20-M24-1005 TV	1005	2.750
64512	PSA-20-M24-1320	64513	PSA-20-M24-1320 TV	1320	3.530
64515	PSA-20-M24-1840	64516	PSA-20-M24-1840 TV	1840	4.810
48377	PSA-20-M24-2245	64518	PSA-20-M24-2245 TV	2245	5.810
60460	PSA-20-M24-3540	66817	PSA-20-M24-3540 TV	3540	9.010
47508	PSA-25-M30-1055	64520	PSA-25-M30-1055 TV	1055	4.550
64522	PSA-25-M30-1555	64523	PSA-25-M30-1555 TV	1555	6.480
60094	PSA-25-M30-2315	64525	PSA-25-M30-2315 TV	2315	9.410
48378	PSA-25-M30-3555	66819	PSA-25-M30-3555 TV	3555	14.185
49651	PSA-28-M36-1000			1000	5.630
60017	PSA-28-M36-1400			1400	7.570
47334	PSA-32-M42-1015	64527	PSA-32-M42-1015 TV	1015	7.560
47333	PSA-32-M42-1490	64529	PSA-32-M42-1490 TV	1490	10.560
64531	PSA-32-M42-2390	64532	PSA-32-M42-2390 TV	2390	16.250
60091	PSA-32-M42-3590	66821	PSA-32-M42-3590 TV	3590	23.830
47018	PSA-40-M48-1600	61801	PSA-40-M48-1600 TV	1600	17.820
47872	PSA-40-M48-2400	64535	PSA-40-M48-2400 TV	2400	25.740

Other lengths are available on request: **PSA – diam. d - thread x length (L) in mm.**

MALE REINFORCEMENT COUPLER PSA-PSC



The Male reinforcement coupler PSA-PSC consists of a female reinforcement coupler PSA and a PSC metric bolt screwed inside the PSA. Two PSA couplers and a threaded PSC bolt ensure the connection of two reinforcements for all types of precast concrete units. The PSC bolts are made of alloyed steel 34CrMo4 (W1.7220) or equivalent. On request, the PSA-PSC coupler can be made from stainless steel PSA-SS coupler with stainless steel PSC-SS BOLT.

The relevant dimensions for PSA-PSC reinforcement couplers are shown in the following table.

PSA-PSC	Dimensions				
Product description	Sleeve diameter	Sleeve length	Rebar diameter	Thread	PSC bolt dimension
	D	l	d	Metric	A
	[mm]	[mm]	[mm]	M	[mm]
PSA-PSC 10 - M12 - L	17.5	50	10	12	17
PSA-PSC 12 - M16 - L	22	62	12	16	24
PSA-PSC 14 - M18 - L	25	74	14	18	31
PSA-PSC 16 - M20 - L	28	86	16	20	37
PSA-PSC 18 - M22 - L	32	92	18	22	39
PSA-PSC 20 - M24 - L	34	99	20	24	41
PSA-PSC 22 - M27 - L	38	107	22	27	44
PSA-PSC 25 - M30 - L	42.5	117	25	30	51
PSA-PSC 28 - M36 - L	50	130	28	36	54
PSA-PSC 32 - M42 - L	56	153	32	42	64
PSA-PSC 40 - M48 - L	67	188	40	48	73

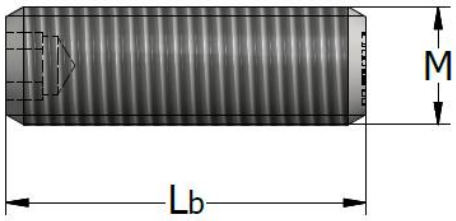
Male reinforcement coupler PSA-PSC – standard length

PSA-PSC with PKB electrolytic galvanised		Product length L	Weight
Product number	**Product description**	**[mm]**	**[kg/piece]**
66151	PSA-PSC-10-M12-0500	500	0,370
64418	PSA-PSC-10-M12-0600	600	0,430
65370	PSA-PSC-10-M12-0750	750	0,520
65369	PSA-PSC-10-M12-1300	1300	0,860
64033	PSA-PSC-10-M12-4500	4500	2,850
65611	PSA-PSC-12-M16-1700	1700	1,660
66958	PSA-PSC-12-M16-3125	3125	2,940
65610	PSA-PSC-12-M16-6400	6400	5,890
65656	PSA-PSC-14-M18-0800	800	1,170
65657	PSA-PSC-14-M18-1500	1500	2,010
65352	PSA-PSC-14-M18-1850	1850	2,440
66751	PSA-PSC-14-M18-2490	2490	3,210
64036	PSA-PSC-16-M20-1000	1000	1,870
63711	PSA-PSC-16-M20-1200	1200	2,190
66752	PSA-PSC-16-M20-2590	2590	4,420
66757	PSA-PSC-18-M22-2590	2590	5,570
66753	PSA-PSC-18-M22-3050	3050	6,490
61840	PSA-PSC-20-M24-1000	1000	2,920
65386	PSA-PSC-20-M24-1250	1250	3,540
61809	PSA-PSC-20-M24-2000	2000	5,390
65908	PSA-PSC-22-M27-1100	1100	3,910
66244	PSA-PSC-22-M27-1300	1300	4,510
65573	PSA-PSC-25-M30-2500	2500	10,470
65735	PSA-PSC-25-M30-4000	4000	16,240
61769	PSA-PSC-28-M36-2000	2000	11,060
64410	PSA-PSC-32-M42-1000	1000	8,400
64133	PSA-PSC-32-M42-3500	3500	24,180
64217	PSA-PSC-40-M48-1600	950	12,660
64218	PSA-PSC-40-M48-2400	1350	12,020

Other lengths are available on request: **PSA-PSC– diam. d - thread x length (L) in mm.**

PSC BOLT

PSC bolt ensure the connection between two PSA or other rebar couplers. Together with the PSA, the PSC bolt form the male part of the connection. Please see page 8 for more details and page 36 for mounting instructions.

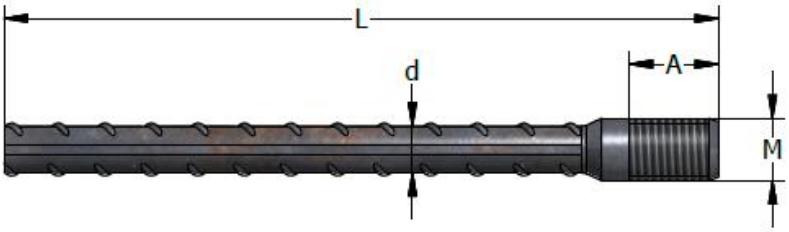


The PSC bolts are made of alloyed steel 34CrMo4 (W1.7220) or equivalent and stainless steel X6CrNiMo17-12-2 (W1.4571).

PSC				Dimensions	
Product description	Product number	Product description	Product number	M	L_b
				[mm]	[mm]
PSC - M12	49257	PSC-SS - M12	66312	12	35
PSC - M16	48258	PSC-SS - M16	63673	16	49
PSC - M18	49259	PSC-SS - M18	66313	18	63
PSC - M20	49594	PSC-SS - M20	63264	20	75
PSC - M22	49261			22	79
PSC - M24	49595	PSC-SS - M24	63674	24	83
PSC - M27	49632			27	89
PSC - M30	49596	PSC-SS - M30	65558	30	103
PSC - M36	49130			36	109
PSC - M42	49597	PSC-SS - M42	66314	42	129
PSC - M48	49598	PSC-SS - M48	66315	48	143

MALE REINFORCEMENT COUPLER TSE

The male reinforcement coupler TSE can be made of various type of reinforcement steel (page 4), forged at one end and then metric thread rolled. The end diameter is enlarged more than the rebar diameter to increase the strength of the thread for tensile and shear loads. To connect with a PSA reinforcement coupler, the TSE coupler is screwed in sleeve PKB using the entire length of the thread.



TSE Product description	Rebar diameter d	Thread dimensions Metric	 A
	[mm]		[mm]
TSE 10 - M12 - L	10	12	min 16
TSE 12 - M16 - L	12	16	min 23
TSE 14 - M18 - L	14	18	min 29
TSE 16 - M20 - L	16	20	min 30
TSE 18 - M22 - L	18	22	min 36
TSE 20 - M24 - L	20	24	min 38
TSE 22 - M27 - L	22	27	min 41
TSE 25 - M30 - L	25	30	min 44
TSE 28 – M36 - L	28	36	min 48
TSE 32 - M42 - L	32	42	min 54
TSE 40 - M48 - L	40	48	min 63

Male reinforcement coupler TSE – standard length

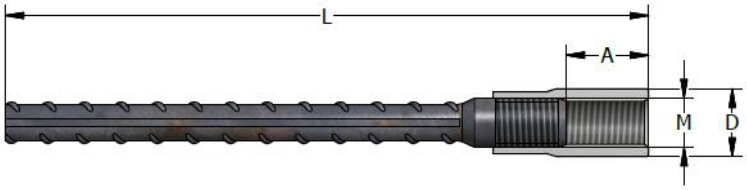
TSE		Product length - L	Weight
Product number	**Product description**	**[mm]**	**[kg/piece]**
65979	TSE-10-M12-0500	500	0.320
67873	TSE-10-M12-0800	800	0.520
44704	TSE-12-M16-0200	200	0.190
43581	TSE-12-M16-0375	375	0.350
43582	TSE-12-M16-0575	575	0.530
43583	TSE-12-M16-0800	800	0.730
43584	TSE-12-M16-1000	1000	0.910
43585	TSE-12-M16-1500	1500	1.360
43586	TSE-12-M16-2000	2000	1.800
65980	TSE-14-M18-0500	500	0.650
46859	TSE-16-M20-0200	200	0.350
43594	TSE-16-M20-0520	520	0.860
43595	TSE-16-M20-0770	770	1.260
43596	TSE-16-M20-1020	1020	1.660
43597	TSE-16-M20-1440	1440	2.330
43598	TSE-16-M20-2200	2200	3.550
65981	TSE-18-M22-0500	500	1.070
44546	TSE-20-M24-0200	200	0.520
43606	TSE-20-M24-0665	665	1.670
43607	TSE-20-M24-0965	965	2.410
43608	TSE-20-M24-1280	1280	3.190
43609	TSE-20-M24-1800	1800	4.470
43610	TSE-20-M24-2200	2200	5.460
65982	TSE-22-M27-0500	500	1.600
43614	TSE-25-M30-1000	1000	3.910
43615	TSE-25-M30-1500	1500	5.830
43616	TSE-25-M30-2260	2260	8.760
60458	TSE-25-M30-3500	3500	13.530
49652	TSE-28-M36-1000	1000	4.980
43627	TSE-32-M42-1400	1400	9.100
43628	TSE-32-M42-2300	2300	14.810
48361	TSE-32-M42-3500	3500	22.430
64538	TSE-40-M48-1655	1655	16.530
64539	TSE-40-M48-2455	2455	24.500

Other lengths are available on request: TSE**– diam. d – thread x length (L) in mm.**

SPECIAL REINFORCEMENT COUPLERS

FEMALE REINFORCEMENT COUPLER PSA-SS

The PSA-SS reinforcement coupler consists of a TSE reinforcement coupler and a stainless-steel KB bush.



PSA - SS Product description	Coupler		
	Thread	A	D
	M	[mm]	[mm]
PSA - SS -12- M16 - L	16	27	22
PSA - SS -16- M20 - L	20	32	28
PSA - SS -20- M24 - L	24	37	34
PSA - SS -25- M30 - L	30	47	42,5
PSA - SS -32- M42 - L	42	72	56

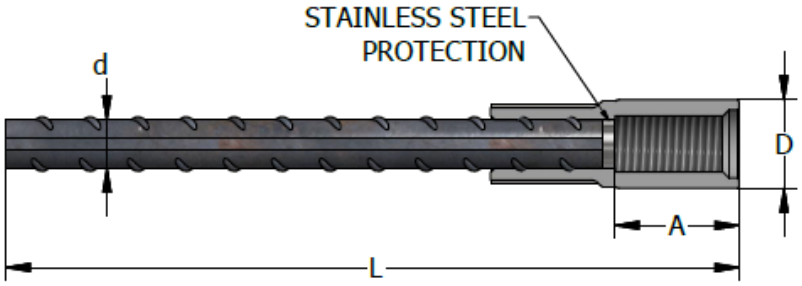
Female reinforcement coupler PSA-SS – standard length

PSA-SS-with stainless steel KB		Product length L	Weight
Product number	Product description	[mm]	[kg/piece]
64484	PSA-SS-12-M16-0415	415	0,440
64486	PSA-SS-12-M16-0615	615	0,620
64489	PSA-SS-12-M16-0840	840	0,820
64491	PSA-SS-12-M16-1040	1040	1,000
64492	PSA-SS-12-M16-1540	1540	1,360
66814	PSA-SS-12-M16-2040	2040	1,890
64494	PSA-SS-16-M20-0560	560	1.040
64498	PSA-SS-16-M20-0810	810	1.440
64501	PSA-SS-16-M20-1060	1060	1.830
64504	PSA-SS-16-M20-1480	1480	2.500
64506	PSA-SS-16-M20-2240	2240	3.700
66816	PSA-SS-16-M20-3540	3540	5.750
46564	PSA-SS-20-M24-0705	705	2.010
64511	PSA-SS-20-M24-1005	1005	2.750
64514	PSA-SS-20-M24-1320	1320	3.530
64517	PSA-SS-20-M24-1840	1840	4.810
64519	PSA-SS-20-M24-2245	2245	5.810
66818	PSA-SS-20-M24-3540	3540	9.010
64521	PSA-SS-25-M30-1055	1055	4.550
64524	PSA-SS-25-M30-1555	1555	6.480
64526	PSA-SS-25-M30-2315	2315	9.410
66820	PSA-SS-25-M30-3555	3555	14.185
64528	PSA-SS-32-M42-1015	1015	7.560
64530	PSA-SS-32-M42-1490	1490	10.560
64533	PSA-SS-32-M42-2390	2390	16.250
66822	PSA-SS-32-M42-3590	3590	23.830
64534	PSA-SS-40-M48-1600	1600	17,210
64536	PSA-SS-40-M48-2400	2400	25,130

Other lengths are available on request: **PSA-SS– diam. d – thread x length (L) in mm.**

FEMALE REINFORCEMENT COUPLER PSA WITH PROTECTION DISK

Reinforcement coupler PSA-with protection disk consists of a PSA reinforcement coupler and a stainless-steel disk pressed inside to prevent corrosion.



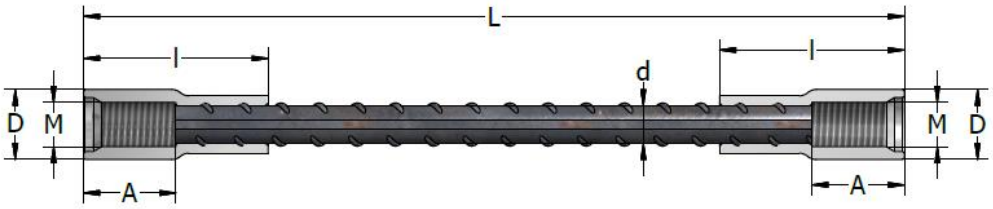
PSA - St sheet Product description	Coupler		
	Thread	A	D
	M	[mm]	[mm]
PSA - St sheet 16 - M20 - L	20	38	28
PSA - St sheet 20 - M27 - L	27	48	38
PSA - St sheet 22 - M30 - L	30	52	42.5
PSA - St sheet 28 - M36 - L	36	55	50

Female coupler PSA with protection disk – standard length

PSA- St sheet		Product length L	Weight
Product number	Product description	[mm]	[kg/piece]
60128	PSA- St sheet 16 - M20 -0500	500	0,900
60135	PSA- St sheet 16 - M20 -0550	550	1,070
60137	PSA- St sheet 20 - M27 -0705	705	2,120
60335	PSA- St sheet 22 – M30 -3640	3640	11,600
60324	PSA- St sheet 28 – M36 -3570	3570	18,000
60325	PSA- St sheet 28 – M36 -3605	3605	18,150

Other lengths are available on request: **PSA-St sheet – diam. d - thread x length (L) in mm.**

FEMALE REINFORCEMENT COUPLER PSAD



The female reinforcement coupler PSAD consists of reinforcement steel with two PKB sleeves pressed on both ends. The reinforcement steel quality is mentioned on page 4.

PSAD	Sleeve diameter	Sleeve length	Rebar diameter	Thread	
Product description	D	l	d	Metric	A
	[mm]	[mm]	[mm]	[mm]	[mm]
PSAD 10 – M12 – L	17.5	50	10	12	18
PSAD 12 – M16 – L	22	62	12	16	25
PSAD 14 – M18 – L	25	74	14	18	32
PSAD 16 – M20 – L	28	86	16	20	38
PSAD 18 – M22 – L	32	92	18	22	40
PSAD 20 – M24 – L	34	99	20	24	42
PSAD 22 – M27 – L	38	107	22	27	45
PSAD 25 – M30 – L	42.5	117	25	30	52
PSAD 28 – M36 – L	50	130	28	36	55
PSAD 32 – M42 – L	56	153	32	42	65

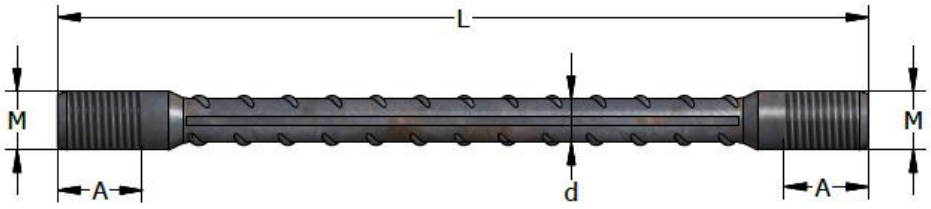
Female reinforcement coupler PSAD – standard length

PSAD		Product length L	Weight
Product number	Product description	[mm]	[kg/piece]
47965	PSAD 10 – M12 – 0300	300	0,260
46555	PSAD 12 – M16 – 0600	600	0,690
47201	PSAD 12 – M16 – 0800	800	0,870
46798	PSAD 14 – M18 – 0680	680	1,090
46677	PSAD 14 – M18 – 1020	1020	1,500
47238	PSAD 16 – M20 – 0600	600	1,230
47836	PSAD 16 – M20 – 1200	1200	2,190
61807	PSAD 18 – M22 – 0550	550	1.500
46556	PSAD 20 – M24 – 0600	600	2,000
48305	PSAD 20 – M24 – 1200	1200	3,470
62435	PSAD 22 – M27 – 0500	500	2.220
46603	PSAD 25 – M30 – 0600	600	3.110
46497	PSAD 25 – M30 – 1050	1050	4.840
46218	PSAD 25 – M30 – 1500	1500	6.580
49361	PSAD 28 – M36 – 0600	600	4.350
60186	PSAD 28 – M36 – 1000	1000	6.290
48612	PSAD 32 – M42 – 0625	625	5.960
48743	PSAD 32 – M42 – 0725	725	6.590
49207	PSAD 40 – M48 – 0800	800	11.150
61555	PSAD 40 – M48 – 1190	1190	15.000

Other lengths are available on request: **PSAD– diam. D – thread x length (L) in mm.**

MALE REINFORCEMENT COUPLER TSED

The TSED reinforcement coupler can be made of various type of reinforcement steel (page 4), forged at both end and then metric thread rolled.



TSED Product description	Rebar diameter d	Thread dimensions Metric	 A
	[mm]		[mm]
TSED 10 – M12 – L	10	12	min 16
TSED 12 – M16 – L	12	16	min 23
TSED 14 – M18 – L	14	18	min 29
TSED 16 – M20 – L	16	20	min 30
TSED 18 – M22 - L	18	22	min 36
TSED 20 – M24 – L	20	24	min 38
TSED 22 – M27 – L	22	27	min 41
TSED 25 – M30 – L	25	30	min 44
TSED 32 – M42 – L	32	42	min 54

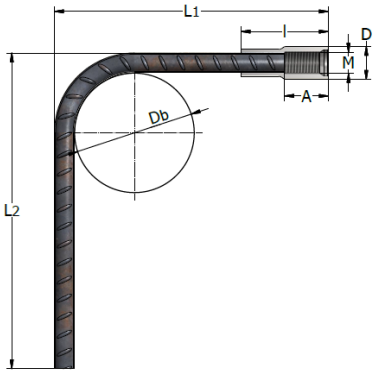
Male reinforcement coupler TSED – standard length

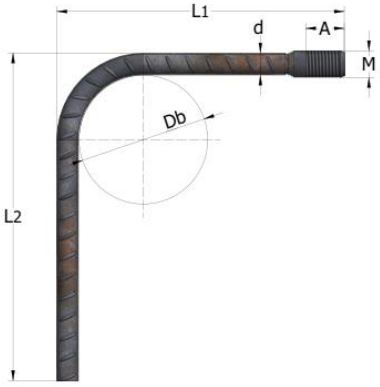
TSED		Product length L	Weight
Product number	Product description	[mm]	[kg/piece]
68733	TSED 10 – M12 - 0500	500	0.310
46464	TSED 12 – M16 – 0259	259	0,320
68734	TSED 14 – M18 - 0500	500	0.630
46465	TSED 16 – M20 – 0263	263	0.460
60361	TSED 16 – M20 – 0608	608	1.020
68735	TSED 18 – M22 - 0500	500	1.050
46466	TSED 20 – M24 – 0269	269	0.760
47891	TSED 20 – M24 – 0220	220	0.620
68736	TSED 22 – M27 - 0500	500	1.570
47890	TSED 25 – M30 – 0250	250	1.120
62298	TSED 25 – M30 – 0400	400	1.670
49527	TSED 25 – M30 – 1720	1720	6.770
61624	TSED 32 – M42 – 0800	800	5.450
48539	TSED 32 – M42 – 2000	2000	13.000

Other lengths are available on request: **TSED– diam. D – thread x length (L) in mm.**

BENT REINFORCEMENT COUPLERS – PSAG AND TSEG

The PSAG reinforcement coupler consists of a bent PSA reinforcement coupler. The TSEG reinforcement coupler consists of a bent TSE reinforcement coupler.





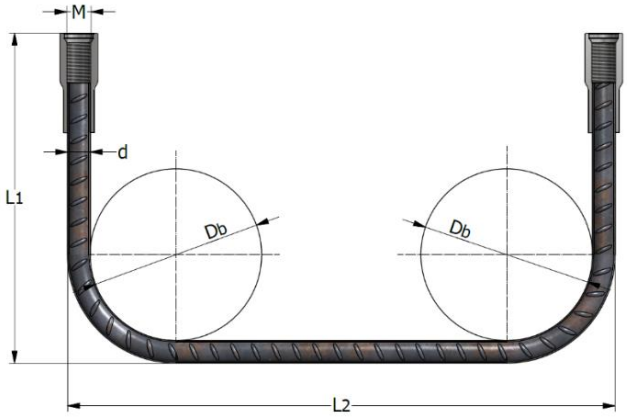
PSAG	Sleeve diameter	Sleeve length	Rebar diameter	Thread	
Product description	D	l	d	Metric	A
	[mm]	[mm]	[mm]	[mm]	[mm]
PSAG 10 - M12 – L1xL2	17.5	50	10	12	18
PSAG 12 - M16 - L1xL2	22	62	12	16	25
PSAG 16 – M20 - L1xL2	28	86	16	20	38
PSAG 20 – M24 - L1xL2	34	99	20	24	42
PSAG 25 – M30 - L1xL2	42.5	117	25	30	52
PSAG 28 – M36 - L1xL2	50	130	28	36	55
PSAG 32 – M42 - L1xL2	56	153	32	42	65

TSEG	Rebar diameter	Thread	
Product description	d	Metric	A
	[mm]	[mm]	[mm]
TSEG 10 – M12 - L1xL2	10	12	16
TSEG 12 - M16 - L1xL2	12	16	23
TSEG 16 – M20 - L1xL2	16	20	30
TSEG 20 – M24 - L1xL2	20	24	38
TSEG 25 – M30 - L1xL2	25	30	44
TSEG 28 – M36 - L1xL2	28	36	48
TSEG 32 – M42 - L1xL2	32	42	54

The PSAG or TSEG coupler generally has a bent diameter D_b= 10 x d, but on request, it can be manufactured at D_b= 15 x d or D_b= 20 x d. They can be made in different L_1 and L_2 sizes. When choosing dimensions L_1 and L_2, the minimum size according to the table below should be considered. L_1 is the length measured from the front of the sleeve to the back of the reinforcing bar.
Order example **PSAG (TSEG) – d – thread - length L_1 x L_2 in mm**
The minimum dimensions for bending are presented in the following table. The diameter to which a bar is bent should be such that damage to the reinforcement and crushing of concrete inside the bend of the bar are avoided. According to Eurocode 2 (EN 1992-1-1), minimum bend diameter should be:

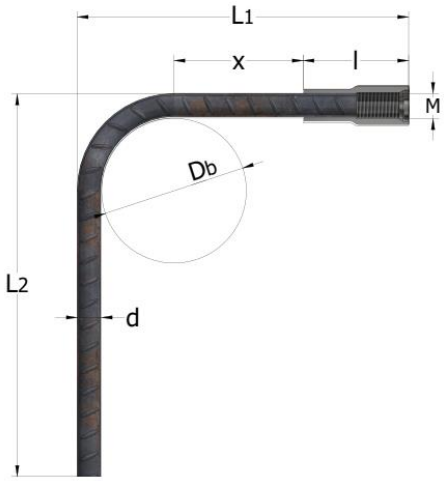
- **D_{bmin} = 4 x d for bar diameter d ≤ 16mm**
- **D_{bmin} = 7 x d for bar diameter d > 16mm**

DOUBLE BENT COUPLER PSAGGD

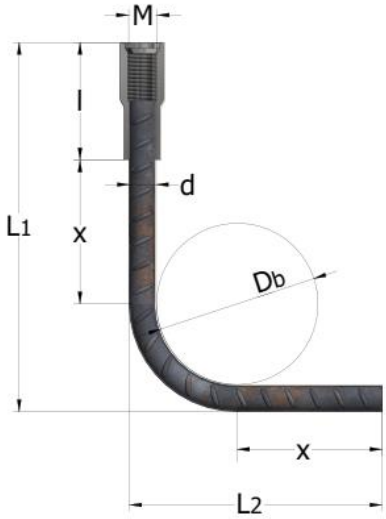


Order example **PSAGGD – d – thread - length L_1 x L_2 in mm**

Minimum dimensions of bent reinforcement couplers



Rebar diameter d	10	12	16	20	25	28	32	40
a	50	62	86	100	117	130	153	188
Bend diameter	4xd	4xd	4xd	7xd	7xd	7xd	7xd	7xd
D_{bmin}	40	48	64	140	175	196	224	280
x_{min} = 5xd *acc. to Eurocode 2*	50	60	80	100	125	140	160	200
L_1 minim	130	160	215	290	355	395	460	570
On request, the bends can also be made at the dimensions below								
x_{min} = 2xd	20	24	32	40	50	56	64	80
L_1 minim	100	125	165	230	280	315	360	450



Rebar diameter d	10	12	16	20	25	28	32	40
a	50	62	86	100	117	130	153	188
Bend diameter	4xd	4xd	4xd	7xd	7xd	7xd	7xd	7xd
D_{bmin}	40	48	64	140	175	196	224	280
x_{min} = 5xd *acc. to Eurocode 2*	50	60	80	100	125	140	160	200
L_2 minim	80	96	130	190	240	265	305	380

The length for the bent reinforcement coupler can be calculated using the formula:

$L = L_1 + L_2 - a$, **for a single bend**

$L = L_1 + L_2 + L_1 - 2a$ **for double bends**

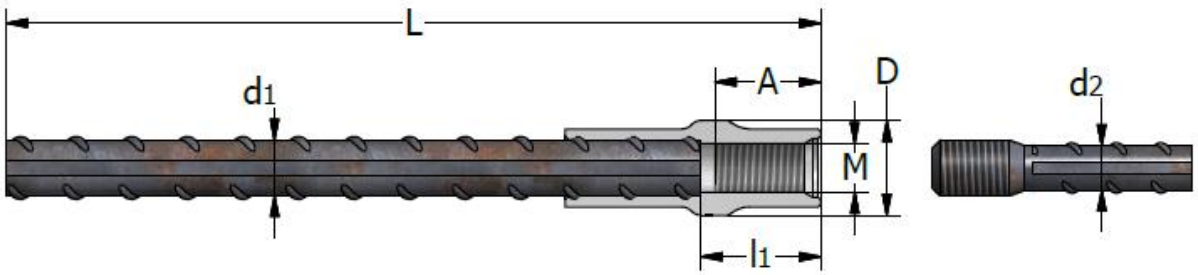
$a = (D_b + 2d) - b$ **"b" is the length in the bending area, "a" reduction of the bar length due to bending**

"a" reduction of the bar length due to bending		Reinforcing bar diameter d (mm)							
		10	12	16	20	25	28	32	40
Bend diameter Db mm	4 x d	21	25	33			-	-	-
	7 x d	27	33	44	54	68	76	87	109
	10 x d	34	40	54	67	84	94	108	135
	15 x d	44	53	71	89	111	124	142	178
	20 x d	55	66	88	110	138	154	176	221

TRANSITION COUPLERS PSA-T

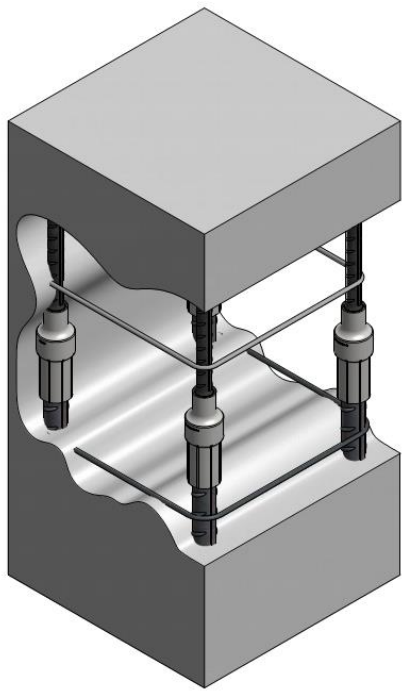
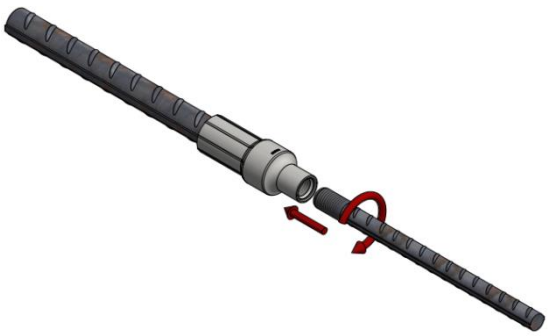
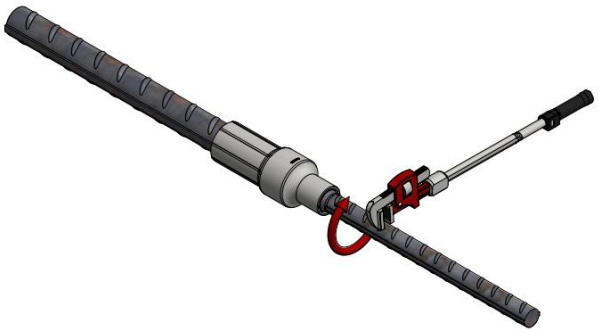
The PSA-T transition coupler consists of reinforcement steel and a special sleeve with interior metric thread pressed on one end. The connection is realised between two rebar with different diameters: the second rebar can be rotated, and its axial direction is not restricted. For the connection with a TSE reinforcement coupler or a PSC bolt and a PSA, the PSA-T coupler ensures uninterrupted reinforcement for all types of precast concrete units.

Order example: **PSA-T – diam. d1/d2 – thread x length (L) in mm.**

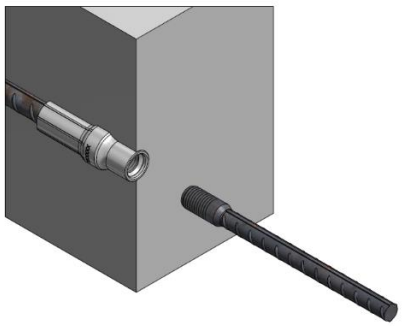


PSA-T Product description	Rebar diameter		Sleeve dimensions		
	First rebar d1	Second rebar d2	D	l1	A
	[mm]	[mm]	[mm]	[mm]	[mm]
PSA-T 16/12 - M16 - L	16	12	28	39	25
PSA-T 16/14 - M18 - L	16	14	28	39	32
PSA-T 18/14 - M18 - L	18	14	32	41	32
PSA-T 18/16 - M20 - L	18	16	32	41	38
PSA-T 20/16 - M20 - L	20	16	34	43	38
PSA-T 20/18 - M22 - L	20	18	34	43	40
PSA-T 22/14 - M18 - L	22	14	38	49	32
PSA-T 22/16 - M20 - L	22	16	38	49	38
PSA-T 22/20 - M24 - L	22	20	38	49	42
PSA-T 25/14 - M18 - L	25	14	42.5	53	32
PSA-T 25/16 - M20 - L	25	16	42.5	53	38
PSA-T 25/20 - M24 - L	25	20	42.5	53	42
PSA-T 28/16 - M20 - L	28	16	50	56	38
PSA-T 28/20 - M24 - L	28	20	50	56	42
PSA-T 28/22 - M27 - L	28	22	50	56	45
PSA-T 28/25 - M30 - L	28	25	50	56	52
PSA-T 32/20 - M24 - L	32	20	56	75	42
PSA-T 32/25 - M30 - L	32	25	56	75	52
PSA-T 32/28 - M36 - L	32	28	56	75	56
PSA-T 40/25 - M30 - L	40	25	67	97	52
PSA-T 40/28 - M36 - L	40	28	67	97	56
PSA-T 40/32 - M42 - L	40	32	67	97	65

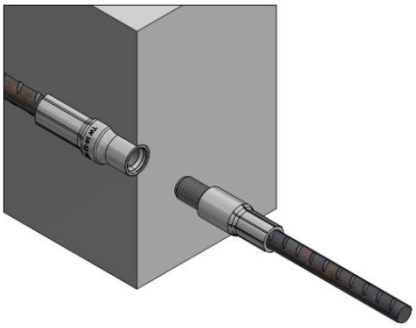
INSTRUCTIONS FOR INSTALLING REINFORCEMENT COUPLER PSA-T

<table>
<tr><td rowspan="2">  </td><td>  </td><td>Place and rotate the TSE or PSA-PSC coupler in the PSA-T coupler.</td></tr>
<tr><td>  </td><td>Finish the connection using a special TERWA torque wrench to tighten the connection. The connection must be sufficiently tight to prevent movement during concrete placement. The necessary torque for each type of rebar is shown in the table on page 38.</td></tr>
</table>

Note: *Ensure both parts of the connecting bars are installed exactly in line with one another, as any misalignment may result in reduced concrete coverage, insufficient bar spacing or may compromise mounting of the connecting element. Corrective bending in the threaded zone of the bar is not allowed.*



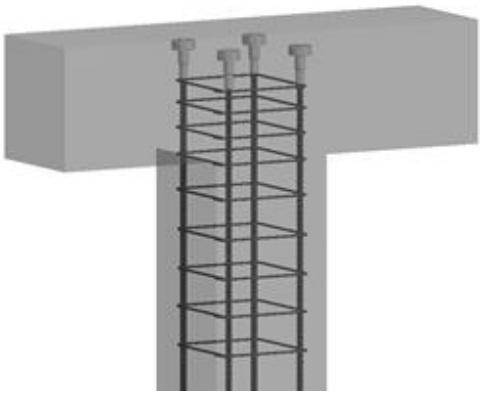
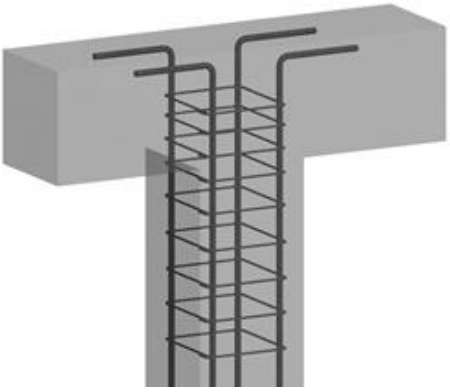
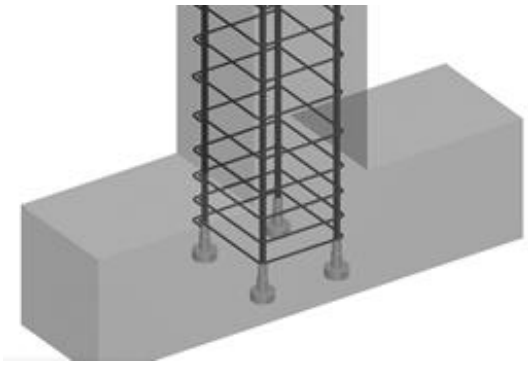
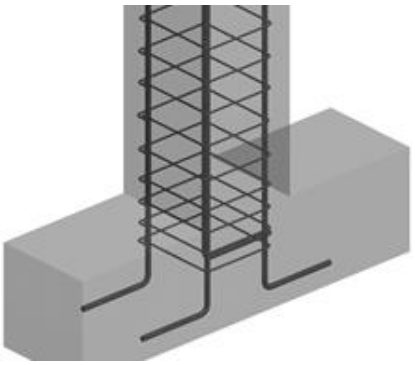
PSA-T – TSE connection



PSA-T – PSA-PSC connection

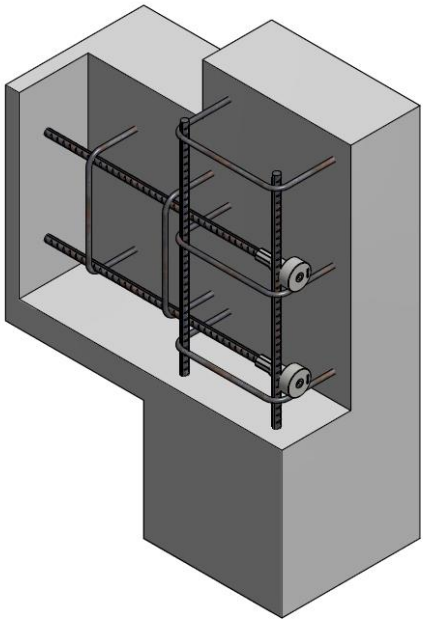
TERWA END COUPLERS - TEC

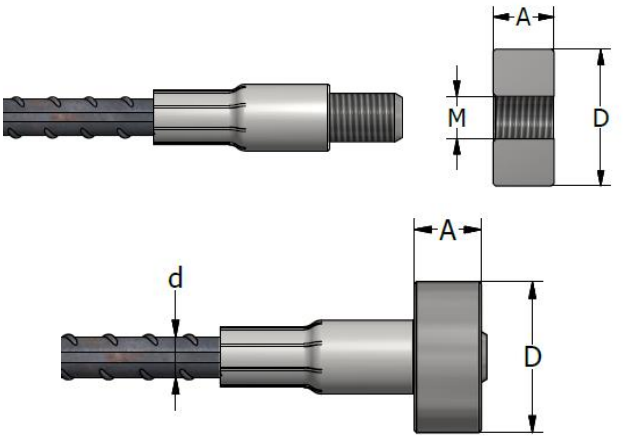
The Terwa End coupler represents an efficient alternative to the traditional connections roof-column, beam-column, or foundation-column.

TERWA END COUPLER	CLASSIC SOLUTION
The end coupler features the following advantages: • Minimises the length of the rebar and reduces the congestion inside the concrete element. • Eliminates the hooks. • Faster, simpler installation. • Simplifies the structural design. • Better anchorage in the concrete element.	The traditional method consists of a hooked rebar anchorage, which has a series of disadvantages: • Requires longer lengths of anchorage, which increases rebar congestion. • Installation is more labour intensive. • Execution time is longer. • Hidden costs, especially for larger diameters (the lap length grows proportionately to the reinforcement steel diameter). • Decreased safety at construction sites.
Column connection	
	
Foundation connection	
	

Terwa end coupler consists of a threaded round steel plate, which fits the PSA-PSC connection or the TSE connection.
Terwa end couplers meet the ACI 318 and Eurocode 2 concerning the embedding lengths for reinforcement steel. The end coupler is designed and tested to ensure proper embedding in concrete, having a contact area equal to 9 times the rebar cross section area, or a minimum diameter 3 times the rebar diameter.

Beam – Column Connection





PSA-TEC **TSE-TEC**

Terwa end couplers are available electrolytic galvanised or without coating.

End coupler	Product no.		Thread	Thickness A	D	Rebar diameter (d)	Weight
	Electrolytic galvanised EV	Without coating	Metric	[mm]	[mm]	[mm]	[kg/pc]
TEC-M12	61614	61556	M12	10	38	10	0.084
TEC-M16	61615	61557	M16	12	45	12	0.137
TEC-M20	61616	61558	M20	18	60	16	0.369
TEC-M24	61617	61613	M24	20	75	20	0.644
TEC-M30	61618	61560	M30	27	90	25	1.231
TEC-M36	61619	61561	M36	30	105	28	1.850
TEC-M42	61620	61562	M42	35	120	32	2.804
TEC-M48	61621	61563	M48	40	145	40	4.729

PROPOSALS FOR ORDERING REINFORCEMENT COUPLERS

PSA rebar diam-thread - L

PSA-PSC rebar diam-thread - L

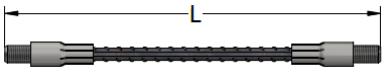
PSAD rebar diam-thread – L

TSE rebar diam-thread - L

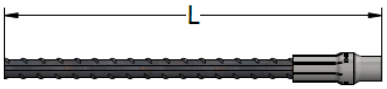
TSED rebar diam-thread - L

PSA-TSE rebar diam-thread – L

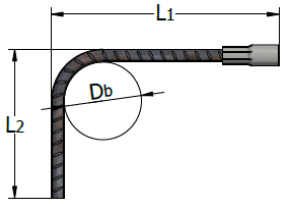
PSAD-2xPSC rebar diam-thread - L



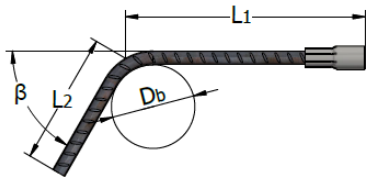
PSA-T - rebar diam d1/ d2-thread - L



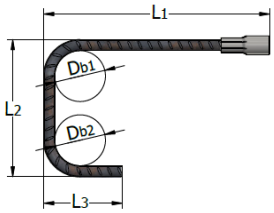
PSAG rebar diam-thread – L_1 x L_2



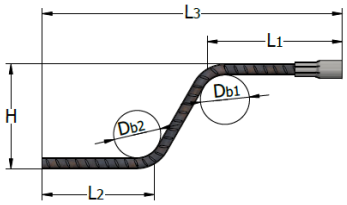
PSAG rebar diam-thread – L_1 x L_2 x β



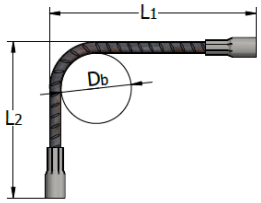
PSAGG rebar diam-thread – L_1 x L_2 x L_3



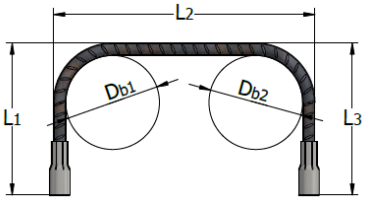
PSAGG rebar diam-thread – L_1 x L_2 x L_3 x H



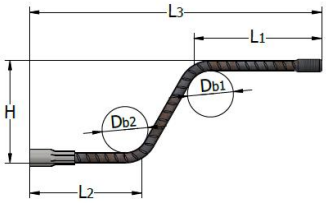
PSAGD rebar diam-thread – L_1 x L_2



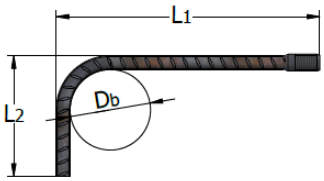
PSAGGD rebar diam-thread – L_1 x L_2 x L_3



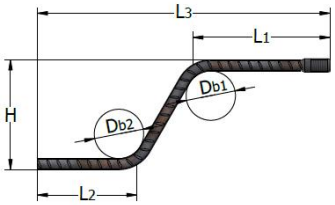
PSA/TSE GG rebar diam-thread – L_1 x L_2 x L_3 x H



TSEG rebar diam-thread – L_1 x L_2

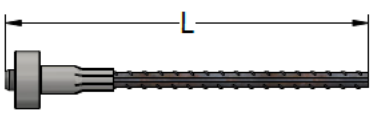


TSEGG rebar diam-thread – L_1 x L_2 x L_3 x H



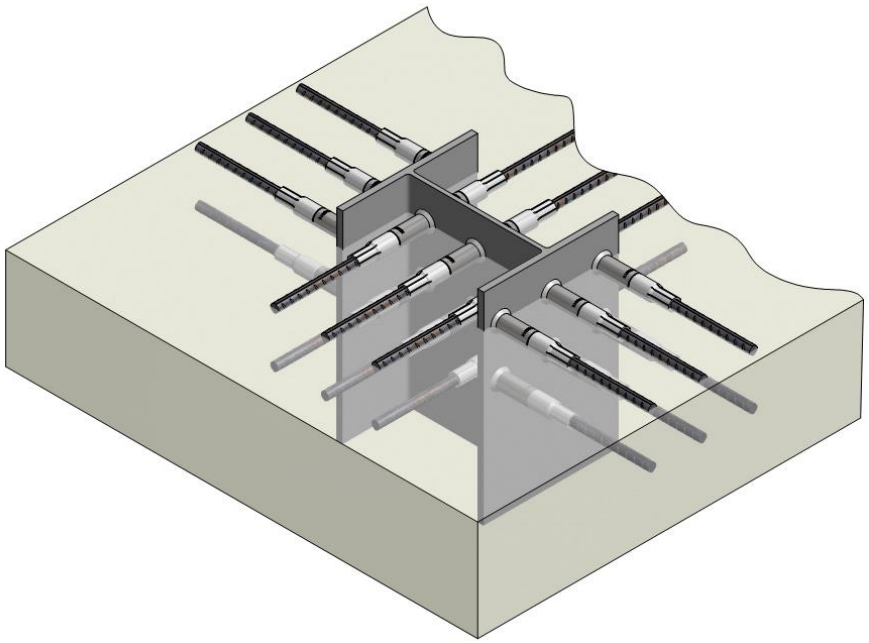
TSE-TEC rebar diam-thread – L

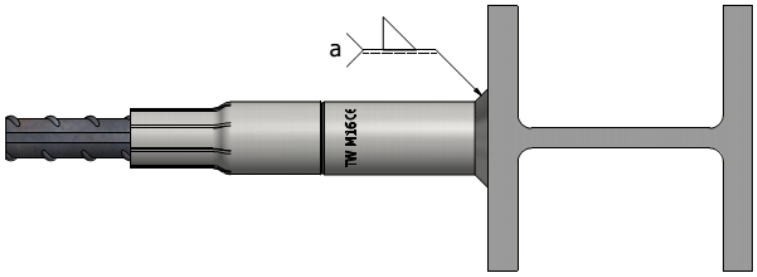
PSA-TEC rebar diam-thread – L

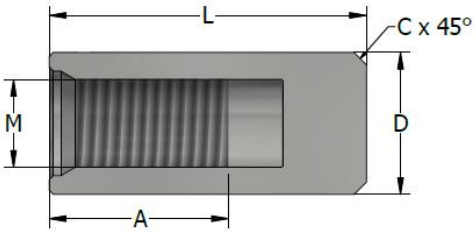


KB-W THREAD WELDABLE COUPLER

KB-W is sleeve used to connect reinforcing bars to structural steel plates or sections. The KB-W sleeve has a thread at one end. The other end is welded directly to the structural steel. The KB-W couplers are made of steel S355 or equivalent. The designer must determine the type and size of weld ("a") . Welders should be qualified for the type of weld required.

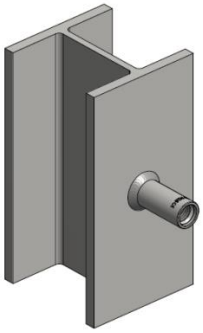
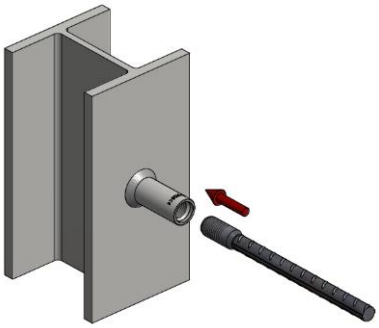
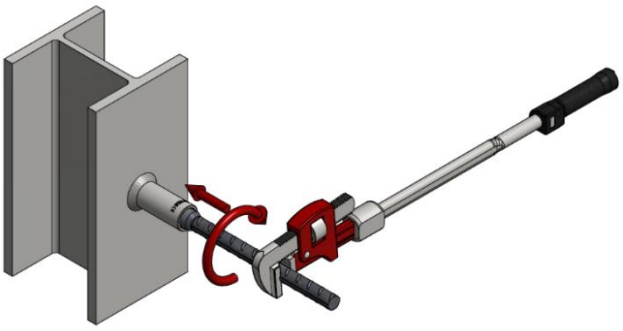
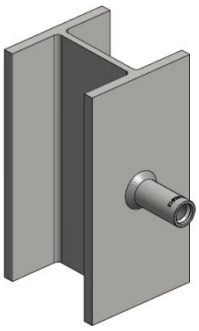
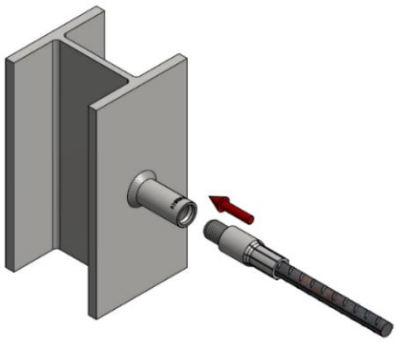
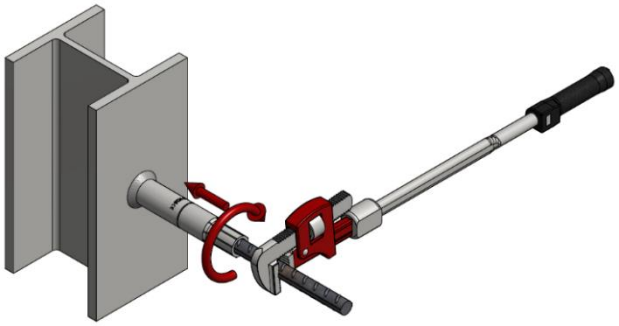




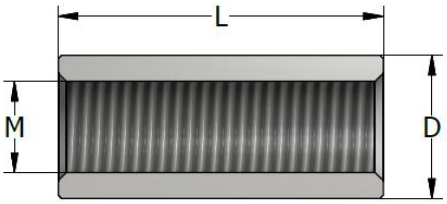


KB-W weldable coupler	Product no.	Thread	L	D	A	C	Weight
		Metric	[mm]	[mm]	[mm]	[mm]	[kg/pc]
KB-W M12	61792	M12	41	17.5	18	2	0.055
KB-W M16	61793	M16	50	22	26	2	0.100
KB-W M18	63723	M18	59	25	33	2	0.155
KB-W M20	61794	M20	65	28	39	3	0.210
KB-W M24	61795	M24	76	34	43	3	0.380
KB-W M30	61796	M30	88	42.5	53	3	0.670
KB-W M36	61797	M36	94	50	56	5	0.950
KB-W M42	61798	M42	103	56	65	5	1.230
KB-W M48	61799	M48	115	67	74	5	2.030

INSTRUCTIONS FOR INSTALLING KB-W WELDABLE COUPLER

Connection with reinforcement coupler TSE		
		
Weld the KB-W coupler to the steel structure.	*Position the TSE bar in the coupler.*	*Rotate the TSE bar in the KB-W coupler until tight. To ensure the quality of connection, tighten the TSE bar with a wrench. The necessary torque for each type of rebar is shown in the table on* ***page 38****.*
Connection with PSA-PSC reinforcement coupler		
		
Weld the KB-W coupler to the steel structure.	*Position the PSA-PSC bar in the coupler.*	*Rotate the PSA-PSC bar in the KB-W coupler until tight. To ensure the quality of connection, tighten the PSA-PSC bar with a wrench. The necessary torque for each type of rebar is shown in the table on* ***page 38****.*

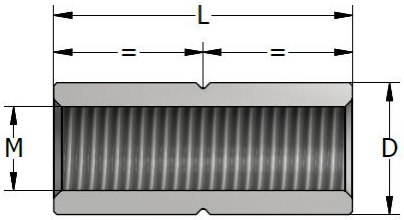
FIXING CONNECTOR – KB



Fixing connectors KB are manufactured in steel S355JO galvanised (EV), hot-dip galvanised (TV) or in stainless steel 304 / W 1.4301 (SS2) or W 1.4571 –AISI 316Ti (SS4).

KB	Product number				Thread	Overall length L	D	Weight
	Zinc galvanising	Hot-dip galvanised	Stainless steel SS4	Stainless steel SS2	M	[mm]	[mm]	[kg/pc]
KB M12x36	45662	45679	44342	44331	12	36	17.5	0.033
KB M16x48	45668	45678	44343	44653	16	48	22	0.085
KB M16x45	45902	45905	45904	45903	16	45	22	0.079
KB M20x55	45898	45901	45900	45899	20	55	28	0.124
KB M20x60	45663	45677	44345	44655	20	60	28	0.135
KB M24x72	45664	45676	44347	44335	24	72	34	0.257
KB M30x90	45665	45675	44471	44338	30	90	42.5	0.493
KB M36x110	45666	45674	44802	45542	36	110	50	0.830
KB M42x126	44468	44470	45537	44340	42	126	56	1.166

FIXING CONNECTOR – KBL

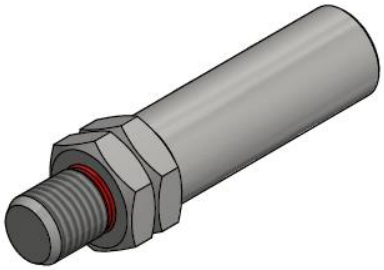


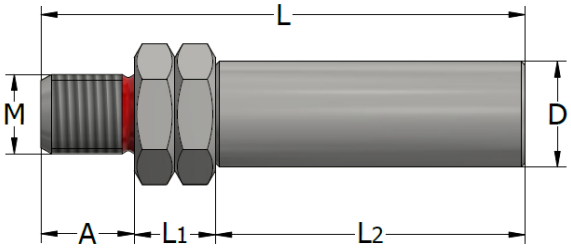
Fixing connectors KBL are manufactured - in steel S355JO (EN 10025) galvanised (EV) or stainless-steel W 1.4571 –AISI 316Ti (SS4).

KBL	Product number		Thread	Overall length L	D	Weight
	Zinc galvanising	Stainless steel SS4	M	[mm]	[mm]	[kg/pc]
KBL M12x45	45835	45840	12	36	17.5	0.042
KBL M16x45	60863	47668	16	48	22	0.081
KBL M16x60	45836	45841	16	45	22	0.108
KBL M20x55		47669	20	55	28	0.127
KBL M20x75	45837	45842	20	60	28	0.173
KBL M24x90	45838	45843	24	72	34	0.329
KBL M30x90	45839	45844	30	90	42.5	0.506

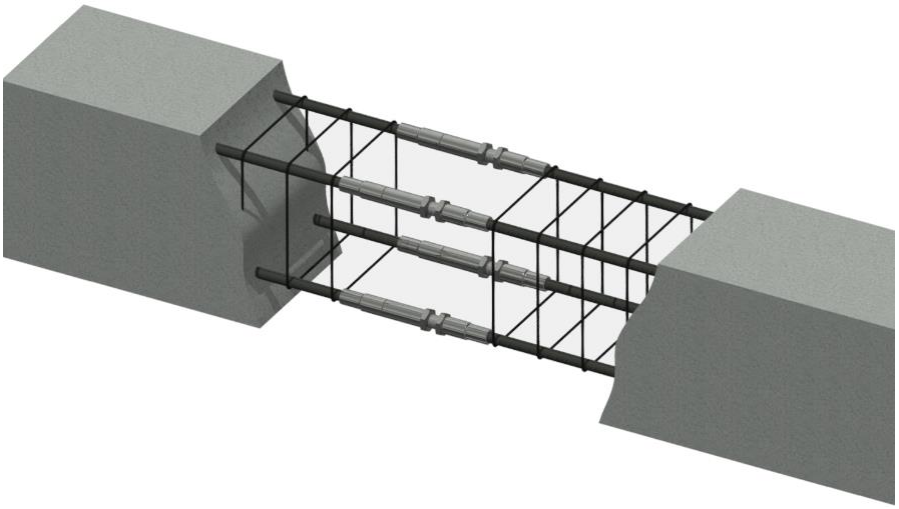
TWSK POSITION COUPLER

TWSK position couplers can be used in combination with the Terwa couplers and are available for steel reinforcement bars with diameters between 10 and 40 mm.
This is the perfect solution for connecting two rebars when it is not possible to rotate one or both of the bars. It can also be used to connect rebars which cannot be moved axially.
They also provide a solution for the connection between the steel reinforcement carcass of the monolith and precast concrete elements.
The TWSK Position coupler is delivered separately, in assembled condition.
A TWSK position coupler consists of a threaded bolt, two nuts to secure the system and a threaded bush electrolytic galvanised. The couplers TWSK are tested for certification and are manufactured in accordance with technical standards.



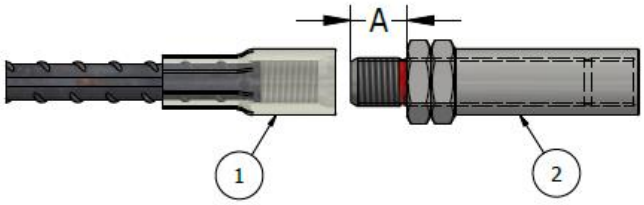


TWSK		Rebar diameter	Thread		Coupler			
Product description	Product no.	d	M	Length A	L	L1	L2	D
		[mm]		[mm]	[mm]	[mm]	[mm]	[mm]
TWSK M12	60839	10	12	14	85	22	49	17.5
TWSK M16	60840	12	16	18.5	96	16	61.5	22
TWSK M20	60841	16	20	23	122.5	20	79	28
TWSK M24	60842	20	24	28	145	24	93	34
TWSK M30	60843	25	30	34.5	179	30	114.5	42.5
TWSK M36	60844	28	36	41	211	36	134	50
TWSK M42	60845	32	42	47.5	248	42	158.5	56
TWSK M48	60846	40	48	54	282.5	48	180.5	67

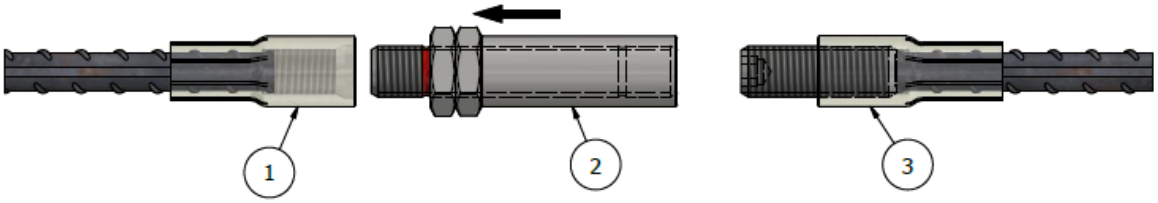


INSTRUCTIONS FOR CONNECTING STRAIGHT OR BENT BARS WITH TWSK POSITION COUPLERS

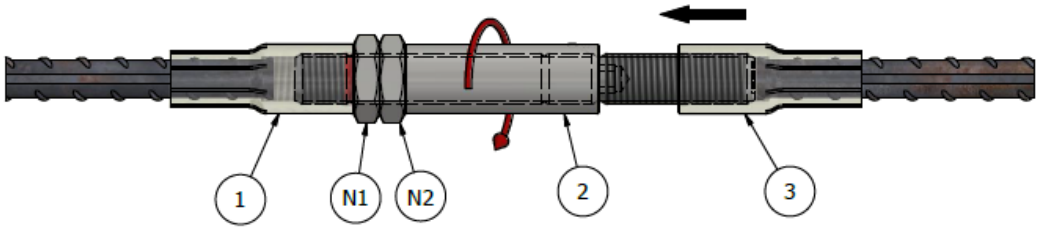
- ***First bar cannot move axially or rotate.***
- ***Second bar can move only axially.***



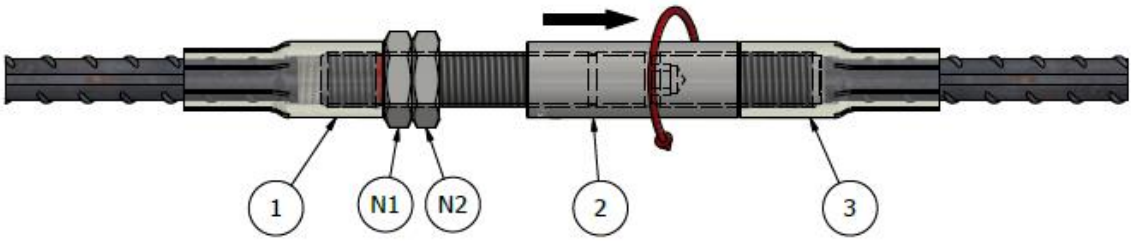
PSA rebar coupler **1** is cast in concrete. Before mounting, please be sure that the first nut is placed at distance **A** indicated in table on *page 31*.



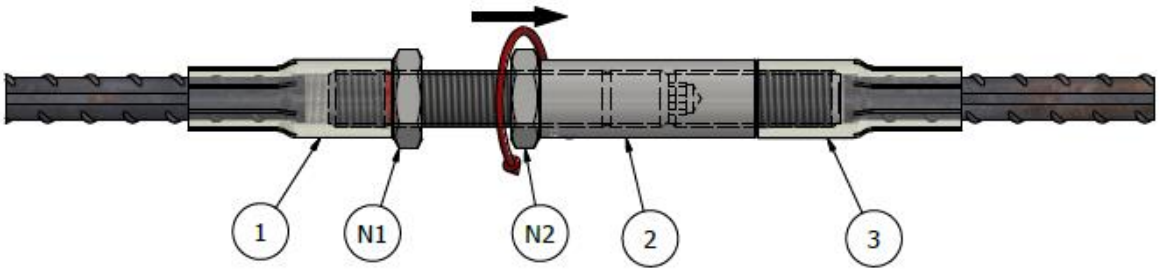
Screw the TWSK position coupler **2** onto the PSA rebar coupler **1**



Tighten the first nut **N1** of TWSK coupler with a wrench. The necessary torque for each type of rebar is shown on *page 38*.
Align the second rebar coupler (PSA-PSC, TSEG, TSE) **3** in contact with the TWSK thread bolt.

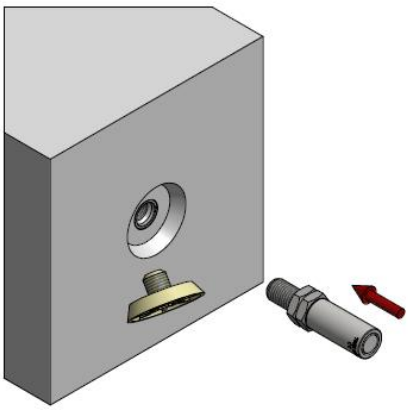


Screw the threaded bush **2** into the second rebar coupler **3**

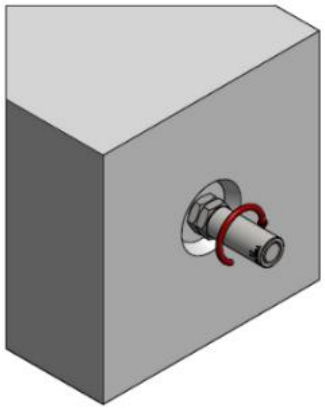


Tighten the second nut **N2** against the TWSK bush with a wrench. The necessary torque for each type of rebar is shown on *page 38.*

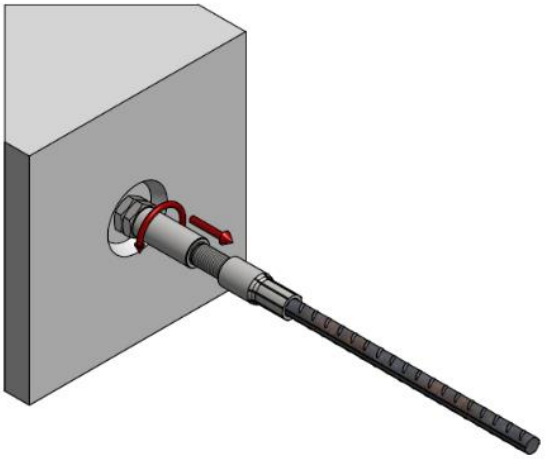
TWSK		Rebar diameter	Thread	
Product description	Product no.	d	M	Length A
		[mm]		[mm]
TWSK M12	60839	10	12	14
TWSK M16	60840	12	16	18.5
TWSK M20	60841	16	20	23
TWSK M24	60842	20	24	28
TWSK M30	60843	25	30	34.5
TWSK M36	60844	28	36	41
TWSK M42	60845	32	42	47.5
TWSK M48	60846	40	48	54



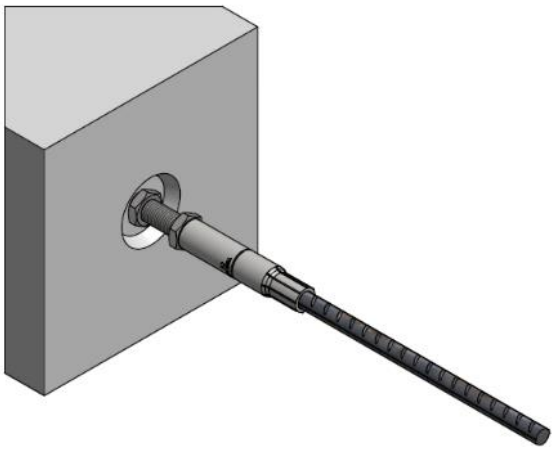
1. Remove the nailing plate from coupler PSA in the concrete element



2. Hand-tighten the TWSK threaded bar in coupler PSA. Tighten the first nut of TWSK against Coupler PSA.



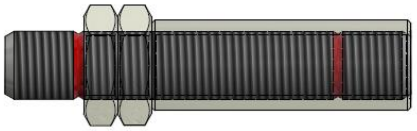
3. Align the thread of coupler PSA-PSC. Turn the TWSK bush.

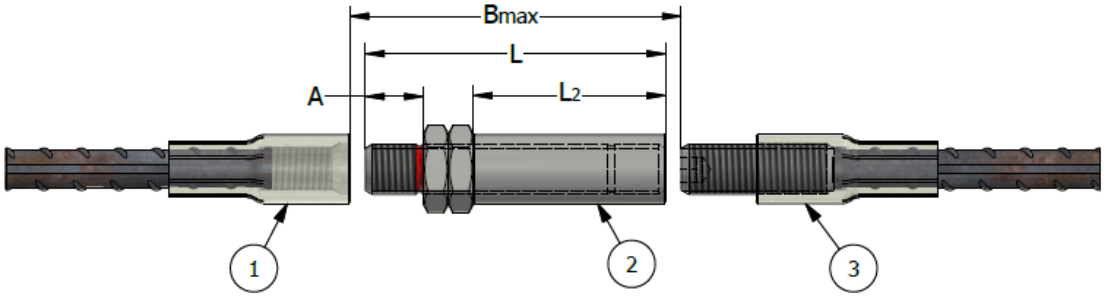


4. Tighten the second nut against the TWSK bush. *The necessary torque for each type of rebar is shown on* ***page 38***.

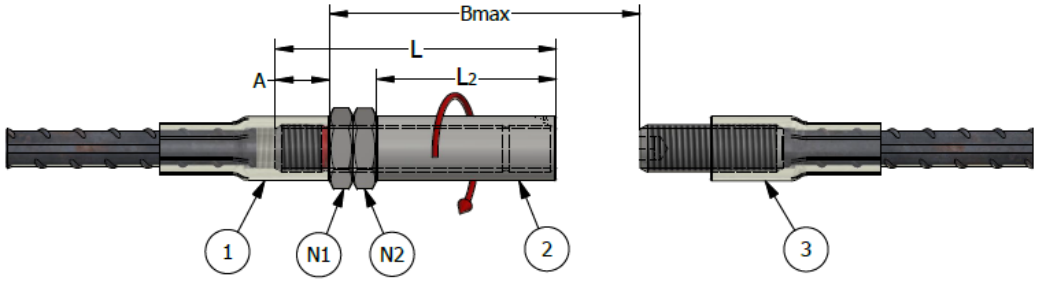
- ***None of the bars can be moved axially or rotated***

The threaded bolt has two machined channels.

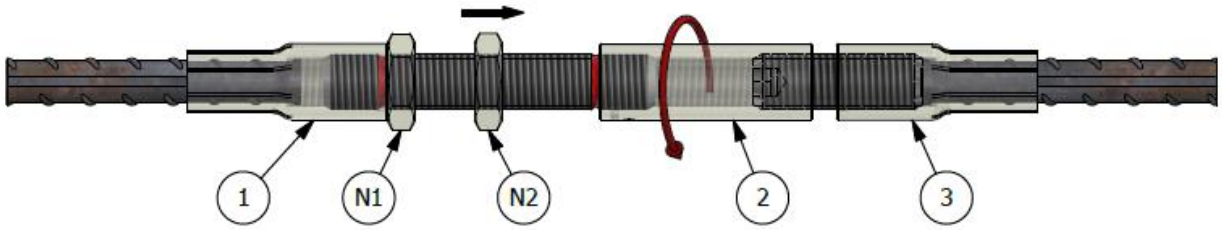




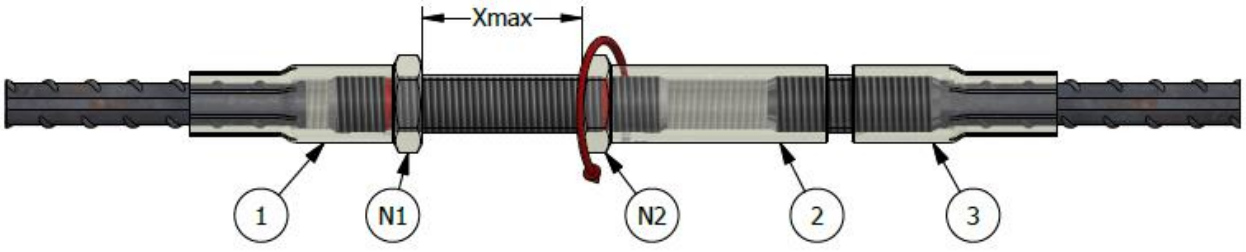
Rebar coupler **1** and **3** are fixed. Before mounting, please be sure that the first nut is placed at distance **A** indicated in table on *page 33*. Maximum distance $\mathbf{B_{max}}$ between rebar coupler **1** and **3** is indicated in table on *page 33*.



Screw the TWSK position coupler **2** onto the PSA reinforcement coupler **1** that is cast in concrete. Tighten the first nut **N1** of TWSK coupler with a wrench. The necessary torque for each type of rebar is shown on *page 38*.

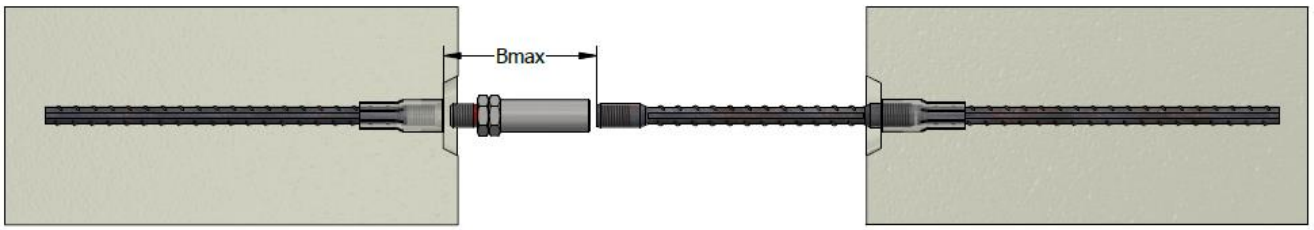


Screw the threaded bush into the second rebar coupler **3** (TSEG, TSE, or PSAG-PSC, PSA-PSC) until the end of the bush has reached the margin of the second machined ring on the thread bolt.

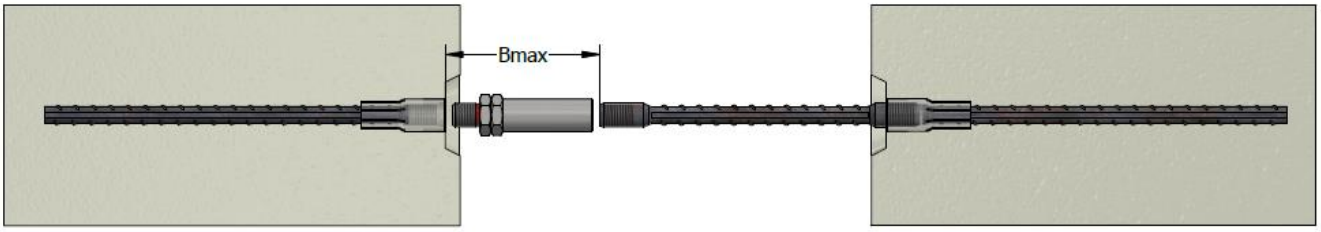


Tighten the second nut **N2** against the TWSK bush with a wrench. The necessary torque for each type of rebar is shown on *page 38.* **Important: be sure that the dimension between the two locknut is not larger than Xmax indicated in table on *page 33*.**

➢ ***Connection in the area between previously concreted elements – opening in floor slabs***



For openings between concrete elements, additionally reinforcement coupler must be used such as TSED, PSA-TSE.



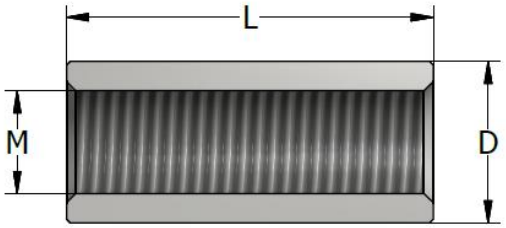
The length of the additional reinforcement coupler must be calculated considering the maximum mounting dimension Bmax in table below.

Important: be sure that the dimension between the two locknut is not larger than Xmax indicated below.

TWSK		Rebar diameter	Thread		Installation dimension			
Product description	Product no.	d	M	Length A	L	L2	Bmax	Xmax
		[mm]		[mm]	[mm]	[mm]	[mm]	[mm]
TWSK M12	60839	10	12	14	85	49	85	37
TWSK M16	60840	12	16	18.5	96	61.5	106	45
TWSK M20	60841	16	20	23	122.5	79	138.5	59
TWSK M24	60842	20	24	28	145	93	161	62
TWSK M30	60843	25	30	34.5	179	114.5	199	84
TWSK M36	60844	28	36	41	211	134	231	98
TWSK M42	60845	32	42	47.5	248	158.5	274	116
TWSK M48	60846	40	48	54	282.5	180.5	312.5	132

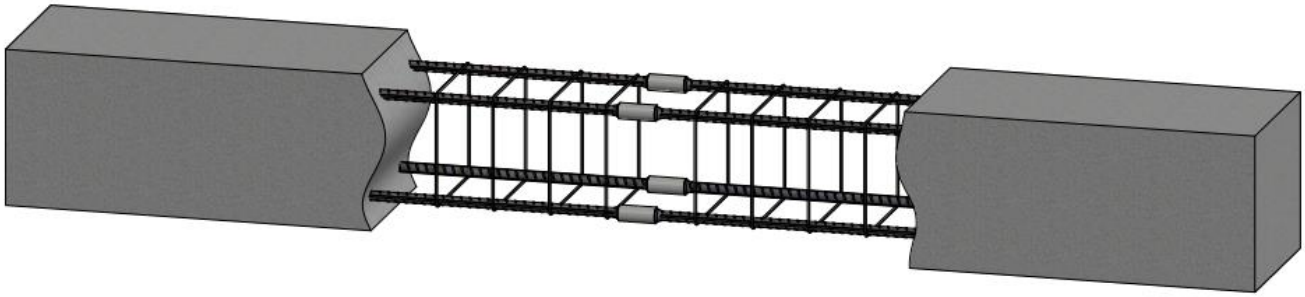
FIXING CONNECTOR - KBC

KBC connectors can be used in combination with the Terwa couplers and are available for steel reinforcing bars with diameters between 10 and 40 mm.
This is the perfect solution for connecting two rebars when it is possible to rotate the second bar.
A KBC connector consists of a threaded bush with a single right-hand thread. The connectors are tested for certification and are manufactured in accordance with technical standards.
KBC are manufactured in galvanised (EV) steel S355J2, hot-dip galvanised (TV) steel or in stainless steel 304 / W 1.4301 (SS2) or W 1.4571 –AISI 316Ti (SS4).



KBC	Product number				Thread	Overall length L	D
	Zinc galvanizing	Hot-dip galvanized	Stainless steel SS4	Stainless steel SS2	M	[mm]	[mm]
KBC M16x50	64616	64638	64618	64617	16	50	22
KBC M20x65	64619	64639	64621	64620	20	65	28
KBC M24x82	64622	64640	64624	64623	24	82	34
KBC M30x95	64625	64641	64627	64626	30	95	42.5
KBC M36x104	64628	64642	64630	64629	36	104	50
KBC M42x117	64631	64643	64633	64632	42	117	56
KBC M48x136	64634	64644	64636	64635	48	136	67

INSTRUCTIONS FOR CONNECTING STRAIGHT REBARS WITH KBC COUPLERS

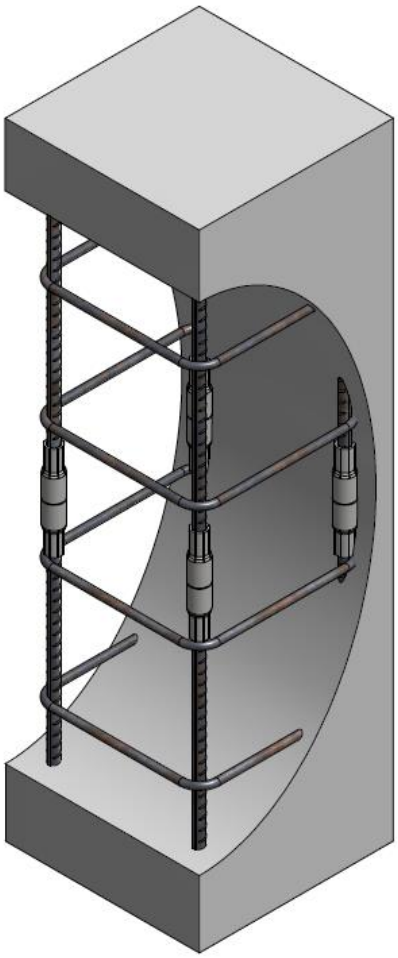
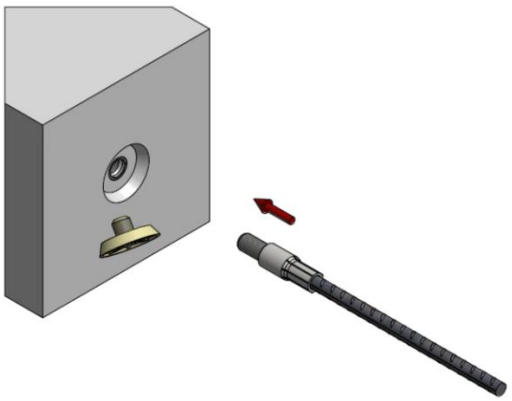
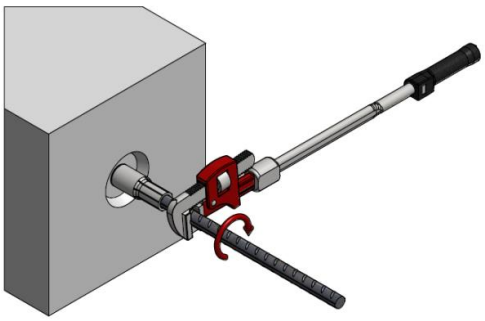


- ***The first bar cannot be moved axially or rotated.***
- ***The second bar can be moved axially and rotated.***

	*The first TSE rebar coupler is fixed.*
	*Screw the KBC coupler onto the TSE*
	*Screw the second TSE rebar coupler in the KBC coupler*
	*Tighten the joint using a torque wrench on the second TSE rebar coupler. The necessary torque for each type of rebar is shown in the table on* ***page 38****.*

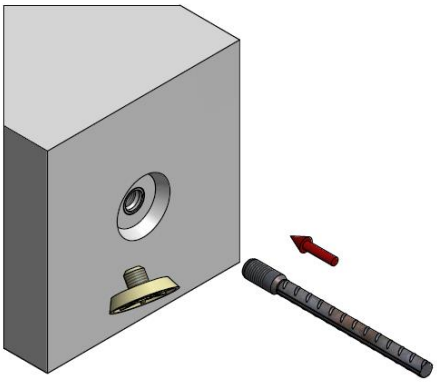
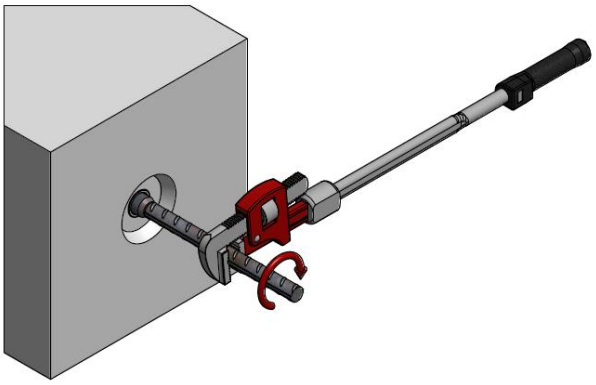
INSTRUCTIONS FOR USE OF THE TERWA REINFORCEMENT COUPLER

REINFORCEMENT COUPLER PSA-PSC ASSEMBLED WITH AN INSTALLED PSA COUPLER

<table>
<tr>
<td rowspan="2">  </td>
<td>  </td>
<td>Place and rotate the PSA-PSC coupler manually until the couplers are fastened.</td>
</tr>
<tr>
<td>  </td>
<td>Finish the connection using a special TERWA torque wrench to tighten the connection. The connection must be sufficiently tight to prevent movement during concrete placement. The necessary torque for each type of rebar is shown in the table on page 38.</td>
</tr>
</table>

Note: *Make sure both parts of the connecting bars are installed exactly in line with one another, as any misalignment may result in reduced concrete coverage, insufficient bar spacing or may compromise mounting of the connecting element. Corrective bending in the threaded zone of the bar is not allowed.*

REINFORCEMENT COUPLER TSE ASSEMBLED WITH AN INSTALLED PSA COUPLER

	
Place and rotate TSE coupler manually until the couplers are fastened.	*Finish the connection using a special TERWA torque wrench to tighten the connection. The connection must be sufficiently tight to prevent movement during concrete placement. The necessary torque for each type of rebar is shown on* ***page 38****.*

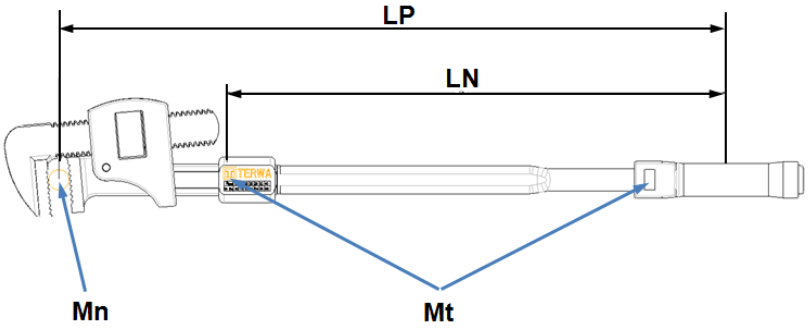
Note: *Make sure both parts of the connecting bars are installed exactly in line with one another, as any misalignment may result in reduced concrete coverage, insufficient bar spacing or may compromise mounting of the connecting element. Corrective bending in the threaded zone of the bar is not allowed.*

TERWA TORQUE WRENCH

The Terwa torque wrench is specially designed for correctly mounting the Terwa coupler on site and at the factories. All Terwa wrenches are delivered with a calibration report and work instructions.
The torque values for all rebar diameters are marked on the wrench. The torque values for all Terwa couplers are listed below.

Reinforcement diameter [mm]	Necessary torque for each type of rebar [Nm]	Setting torque using wrench Mt [Nm]
10	50	60
12	60	60
14	70	60
16	80	60
18	90	70
20	100	75
22	110	82
25	125	93
28	140	104
32	160	119
40	200	148

TERWA torque wrench

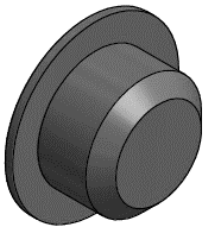


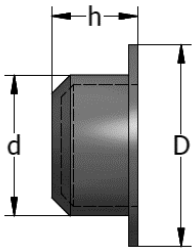
Mn – required torque
Mt – setting torque using wrench
LP – length to middle of each reinforcement steel
LN – standard length wrench

Mt = Mn x LN/LP

TERWA wrench dimensions

PLASTIC COVER - AP – WITHOUT THREAD

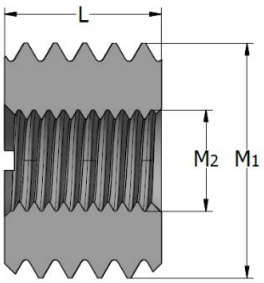




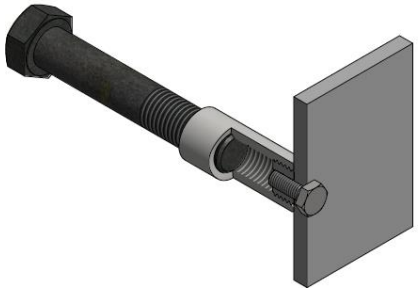
The plastic cover – AP prevents dirt and concrete water entering the bush in the PSA or PSAD thread zone. This plastic cover is made of PVC or LDPE.

AP	Product no.	Thread	D	d	h
		M	[mm]	[mm]	[mm]
AP-12	43617	12	15.0	10.0	9.5
AP-16	43618	16	19.0	13.6	11.2
AP-18	46697	18	20.6	14.7	12.7
AP-20	43579	20	22.2	17.7	12.7
AP-24	43620	24	27.3	21.2	12.3
AP-27	46698	27	29.3	23.4	17.5
AP-30	43621	30	32.0	24.7	19.0
AP-33	46816	33	36.7	30.0	15.2
AP-36	46817	36	38.1	31.1	18.3
AP-42	43622	42	44.1	35.9	24.5
AP-48	46699	48	49.2	41.4	19.0

DOUBLE THREADED SCREW PLUG SN

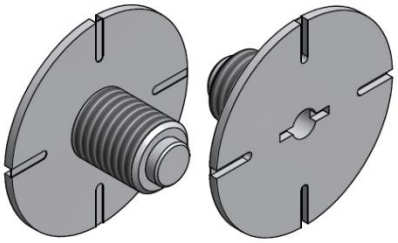


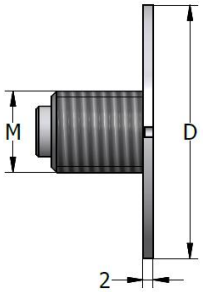
SN	Product no.	Thread M1	Thread M2	L [mm]
SN M12-M6	45214	12	6	16
SN M16-M8	45215	16	8	16
SN M20-M8	45216	20	8	16
SN M24-M8	46303	24	8	16
SN M24-M10	45217	24	10	16
SN M30-M10	45218	30	10	16
SN M30-M8	46079	30	8	16
SN M36-M10	45219	36	10	25
SN M42-M10	45220	42	10	30
SN M48-M10	45464	48	10	36
SN M48-M12	46525	48	12	36
SN M48-M16	46524	48	16	36



The SN screw plug is used to attach the PSA or PSAD reinforcement coupler to the formwork with a standard screw

PLASTIC NAILING PLATE KU-02



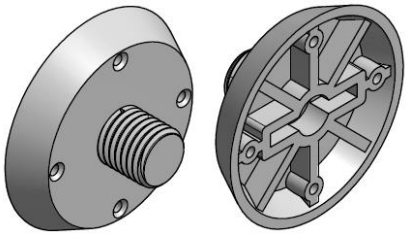


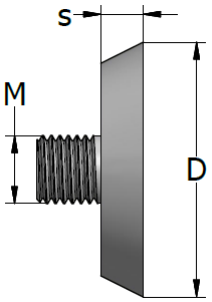
KU-02	Product no.	Thread	Diam. D	Thickness
		M	[mm]	[mm]
KU-02-M12	46050	M12	50	2
KU-02-M16	47113	M16	50	2
KU-02-M20	47114	M20	50	2
KU-02-M24	47115	M24	50	2

The nailing plates KU-02 are made of plastic and used for fixing the PSA or PSAD reinforcement coupler to the formwork with nails. These are suitable for fixing the PSA reinforcement coupler to the surface of the concrete units.

PLASTIC NAILING PLATE KU-10

Nailing plates KU-10 are used for fixing the PSA and PSAD rebar connection to the formwork with nails. The fixing flange ensures a minimal recess around the head of the anchor. The recess is filled with fine concrete for protection against corrosion.

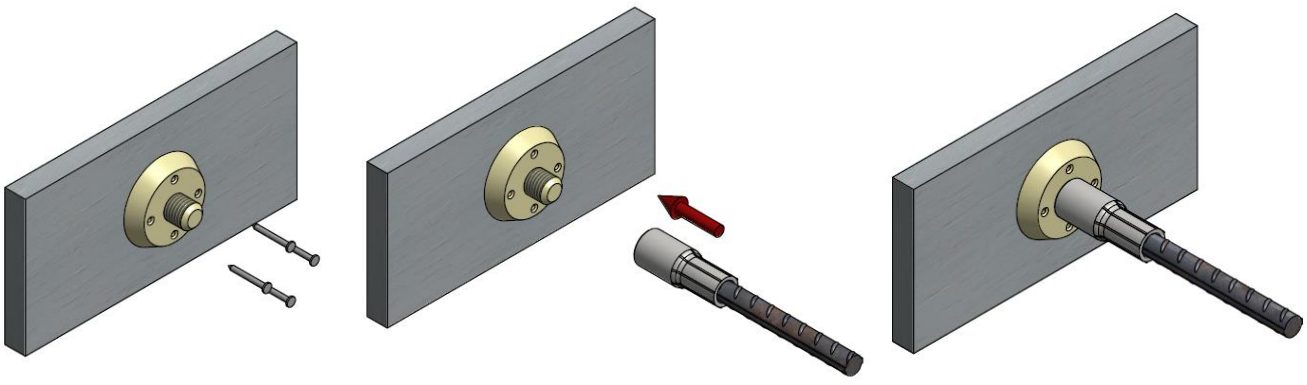




KU-10	Product no.	Thread	Diam. D	Diam. d	s	Colour
		M	[mm]	[mm]	[mm]	
KU-10-M12	63246	12	47	37	10	Red RAL 3020
KU-10-M16	63256	16	47	37	10	Grey RAL 7043
KU-10-M20	63257	20	60	50	10	Green RAL 6024
KU-10-M24	63258	24	60	50	10	Blue RAL 5017
KU-10-M30	63259	30	73	63	10	Light grey RAL 7004
KU-10-M36	63260	36	73	63	10	Orange RAL 2009
KU-10-M42	63261	42	96	86	12	Yellow RAL 1023
KU-10-M48	63131	48	96	86	12	White RAL 9003

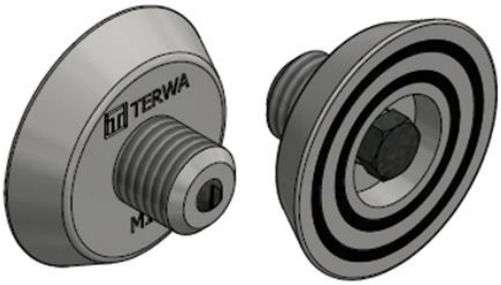
Plastic nailing plates KU-10 are nailed to formwork. Using forming wax on the nailing plate makes it easier to remove and screw on PSA or PSAD connection. The rebar connection must be fastened to the reinforcement by suitable means so that it does not move during concreting. After stripping, unscrew.

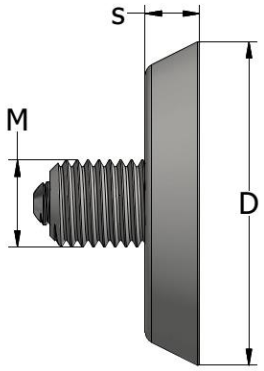
INSTRUCTIONS FOR INSTALLING KU-10



STEEL MAGNETIC PLATE - TPM

The plates with magnets TPM are used for fixing the PSA and PSAD rebar connection to the steel formwork. The fixing flange ensures a minimal recess around the head of the anchor. When using this magnetic recess former, it is very important that the surface of the formwork is clean. The recess is filled with fine concrete for protection against corrosion.



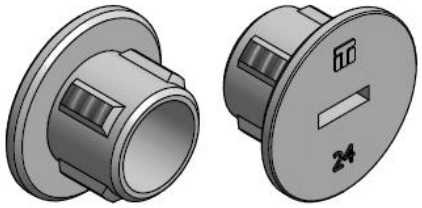


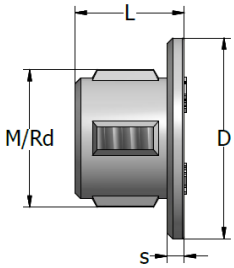
TPM-10	Product no.	Thread	Diam. D	s
		M	[mm]	[mm]
TPM-10-M12	63867	12	47	10
TPM-10-M16	63868	16	47	10
TPM-10-M20	63869	20	60	10
TPM-10-M24	63870	24	60	10
TPM-10-M30	63871	30	73	10
TPM-10-M36	63872	36	73	10
TPM-10-M42	63873	42	96	12

Note: high-strength magnets are used, so please be careful of your hands when mounting them on the steel formwork.

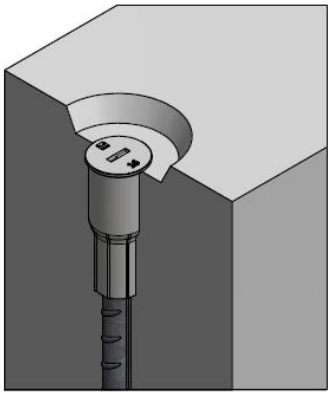
PLASTIC PLUG - TPP

Plastic plugs are used to cover the PSA and PSAD sleeves and protect the thread from rust and/or dirt. They are available in concrete grey and can therefore remain in the concrete element after installation for a finished look.



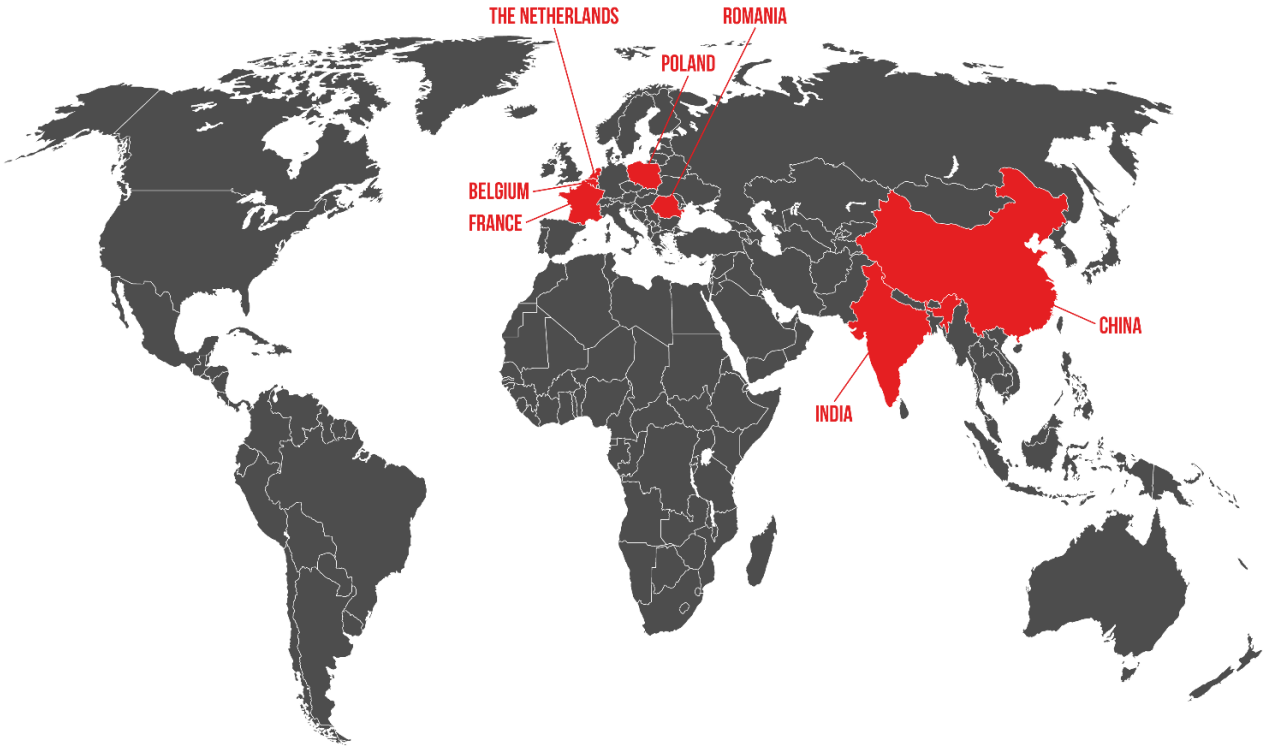


Plastic plug - TPP	Product no.	Thread	Diam. D	L	s
		M/Rd	[mm]	[mm]	[mm]
TPP -M/Rd12	62768	12	17.5	10	2
TPP -M/Rd16	62769	16	22	12.5	2
TPP -M/Rd20	62770	20	28	15	3
TPP -M/Rd24	62771	24	34	18	3
TPP -M/Rd30	62772	30	42.5	21	3
TPP -M/Rd36	62773	36	50	23	3
TPP -M/Rd42	62774	42	56	27.5	3
TPP -M/Rd48	63553	48	67	32	3



After removing the KU nailing plate, mount the plastic plug inside the sleeve.
It can also be used to protect the sleeve thread of reinforcement connector PSA or PSAD before installation, which prevents dirt from getting into the thread zone.

CONTACT



TERWA is the global supplier for precast and construction solutions with multiple offices around the world. Our staff, partners and agents are happy to provide all construction and precast companies who work in the building industry with full service and 100% support.

TERWA CONSTRUCTION GROUP

Terwa B.V. (HQ)
Global Sales & Distribution
Kamerlingh Onneslaan 1-3
3401 MZ IJsselstein
The Netherlands
T +31-(0)30 699 13 29
E info@terwa.com

Terwa Construction Central East Europe
Sales & Distribution
Strada Sânzienei
507075 Ghimbav
Romania
T +40 372 611 576
E info@terwa.com

Terwa the Netherlands
Sales & Distribution
Kamerlingh Onneslaan 1-3
3401 MZ IJsselstein
The Netherlands
T +31-(0)30 699 13 29
E info@terwa.com

Terwa Belgium
Sales & Distribution
Kamerlingh Onneslaan 1-3
3401 MZ IJsselstein
The Netherlands
T +32-467 00 20 62
E info@terwa.com

Terwa France
Sales & Distribution
Kamerlingh Onneslaan 1-3
3401 MZ IJsselstein
The Netherlands
T +31-(0)30 699 13 29
E info@terwa.com

Terwa Construction Systems Sp. z o.o.
Sales & Distribution
Ul. Cicha 5 lok. 4
00-353 Warszawa
Poland
E info@terwa.com

Terwa International
Sales & Distribution
India
T +91 89 687 000 41
E info@terwa.com

Terwa Construction China
Sales & distribution
B05, 5F, No. 107, 2nd of the South Zhongshan Road
200032 Shanghai
China
E info@terwa.com

ALL SPECIFICATIONS CAN BE CHANGED WITHOUT PRIOR NOTICE.

DISCLAIMER