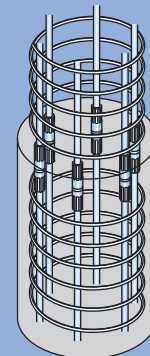
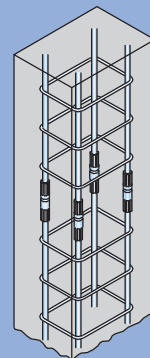
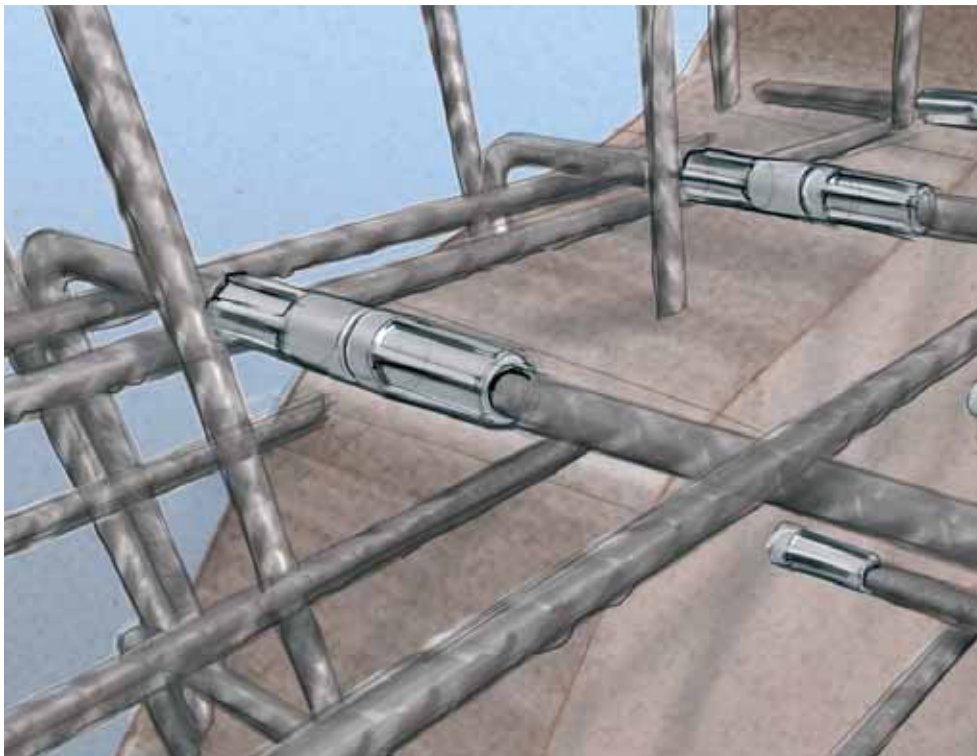


TECHNICAL INFORMATION



MODIX[®] COUPLER SYSTEM



CONCRETE CONNECTIONS

PLANNING AND CONSULTING SERVICE


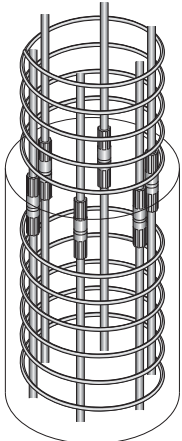

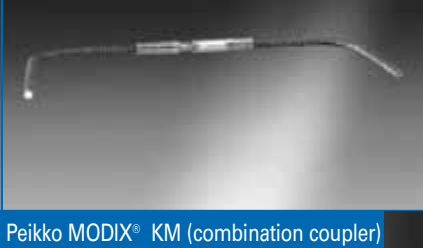
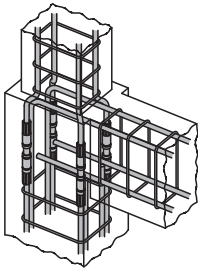

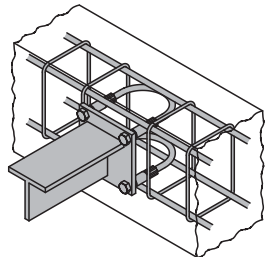

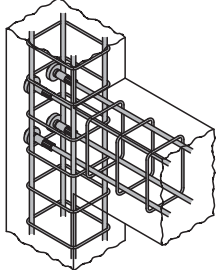

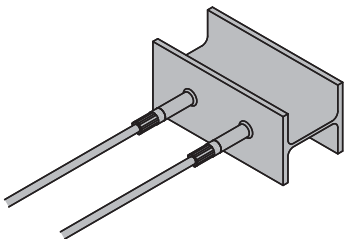
The engineers at the Peikko Application Technology Department are ready to help you with your design and construction questions. Our answers come complete with plans, project solutions and detailed equations.

Please send your design, requirements, etc. and the proposed site address to:

Peikko Deutschland GmbH
Brinker Weg 15
34513 Waldeck
www.peikko.com

We will gladly inform you about our other product range.



MODIX® type	Connection application	Example
Peikko MODIX® SM (standard coupler) 	<ul style="list-style-type: none"> ▶ For connection of bars with the same diameter. ▶ One bar (coupler part B) can be rotated. ▶ Material for coupler parts S 355 C J2 	
Peikko MODIX® RM (reduction coupler) 	<ul style="list-style-type: none"> ▶ For connection of bars with different diameters. ▶ One bar (connecting bar, that is coupler B) can be rotated. 	
Peikko MODIX® PM (position coupler) 	<ul style="list-style-type: none"> ▶ For connection of straight or bent bars. ▶ Neither of the bars can be rotated. ▶ The movement along the axis of the bar which is to be connected is. 	
Peikko MODIX® KM (combination coupler) 	<ul style="list-style-type: none"> ▶ For connection of a reinforcement bar and a standard metric screw. 	
Peikko MODIX® EM (end anchor coupler) 	<ul style="list-style-type: none"> ▶ Alternative to end hooks. ▶ Anchor or plug for reinforcement. 	
Peikko MODIX® AM (weld-to coupler) 	<ul style="list-style-type: none"> ▶ For connection between reinforcement and steel plates or sections. 	

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Peikko MODIX® SM (standard coupler)	7 - 10	SM
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Peikko MODIX® RM (reduction coupler)	11 - 12	RM
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Peikko MODIX® PM (position coupler)	13 - 16	PM
--	----------------	-----------

Peikko MODIX® KM (combination coupler)	17 - 18	KM
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Peikko MODIX® EM (end-anchor coupler)	19 - 20	EM
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Peikko MODIX® AM (weld-to coupler)	21 - 22	AM
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Peikko Couplers without torque wrench – quickly and securely connected

Peikko MODIX® – the advantages:

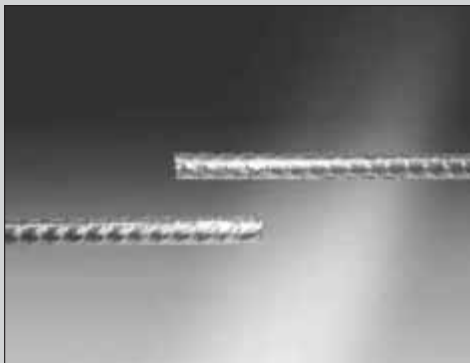
- ▶ Closed ring gap insures required torque is applied.
- ▶ Quality of connection is checked by simple visual inspection.
- ▶ Connection is made with a conventional wrench, the torque wrench is no longer required.
- ▶ The maximum allowable reinforcement ration can be utilised.
- ▶ Short delivery times possible, as the couplers are applied at the bending shop.
- ▶ Full connection for compressive and tensile forces.
- ▶ Fast and simple installation.
- ▶ Sensible accessories.
- ▶ Certified for predominantly dead (static) loads as well as for dynamic loads.
- ▶ Certified for impulsive loads, for instance in nuclear storage facilities and in applications with high loading speeds.

Approved by the building authorities in

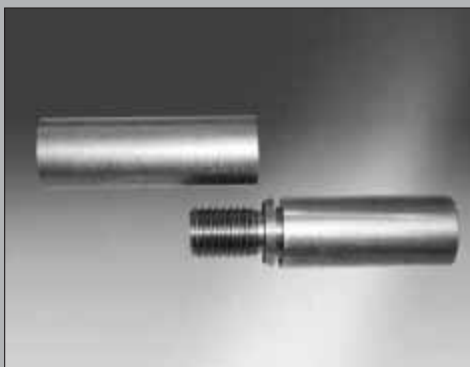
- ▶ Germany (DIBt Berlin) according to DIN 1045-1
- ▶ The Netherlands
- ▶ Finland
- ▶ Austria



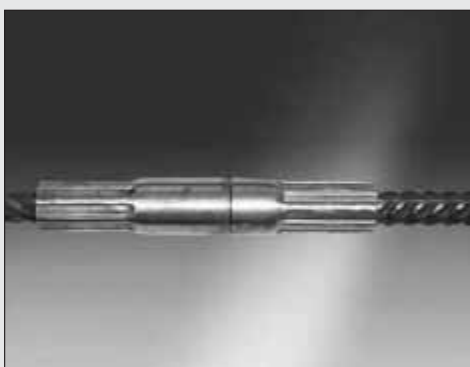
Processing at the Steel Partner



The MODIX® coupler elements SM A and SM B are pressed onto the reinforcing bars at the bending shop using a 500 tonne press which is provided and maintained by Peikko.



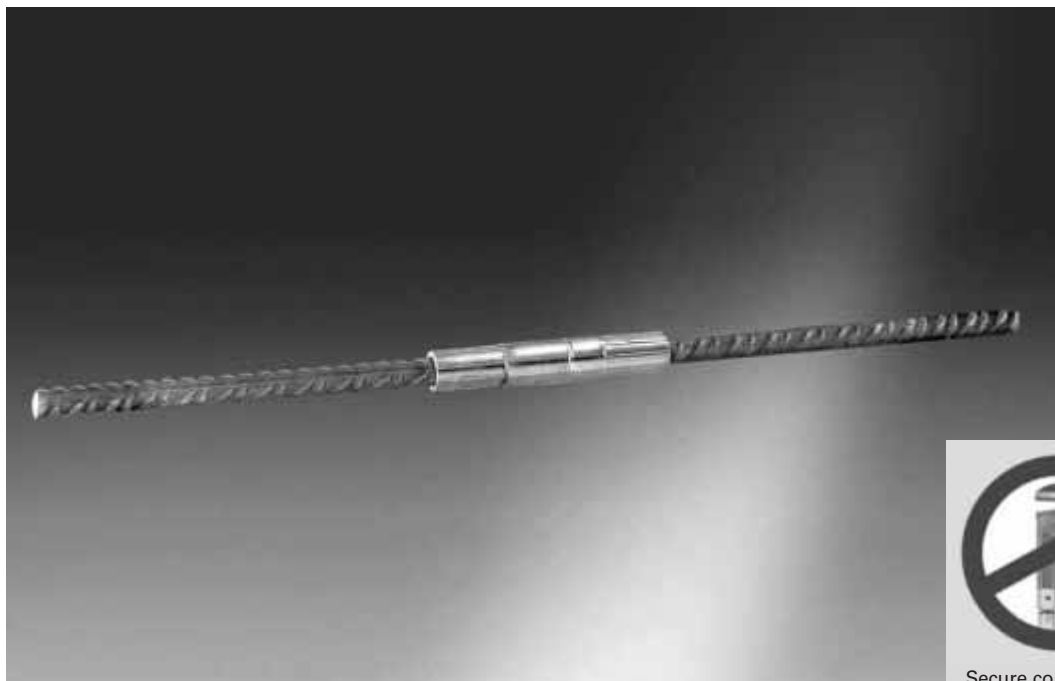
BENDING SHOP



The resulting coupler bars are screwed together at the site until the ring gap is closed – full load transfer across the connection

CONSTRUCTION SITE

Peikko MODIX® SM (STANDARD COUPLER)



Peikko MODIX® SM (standard coupler)



Secure connection of the Peikko MODIX® coupler without torque wrenches

SM

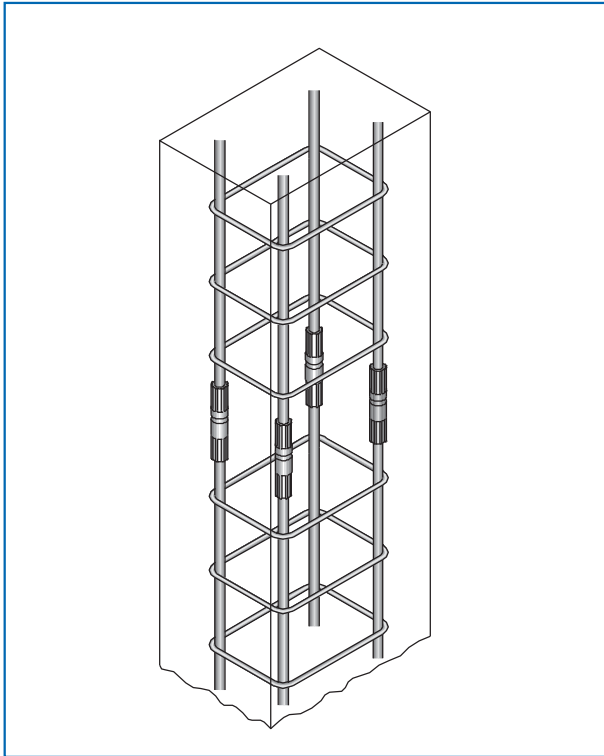
For connecting bars with the same diameter, where the connecting bar (coupler part B) can be rotated.

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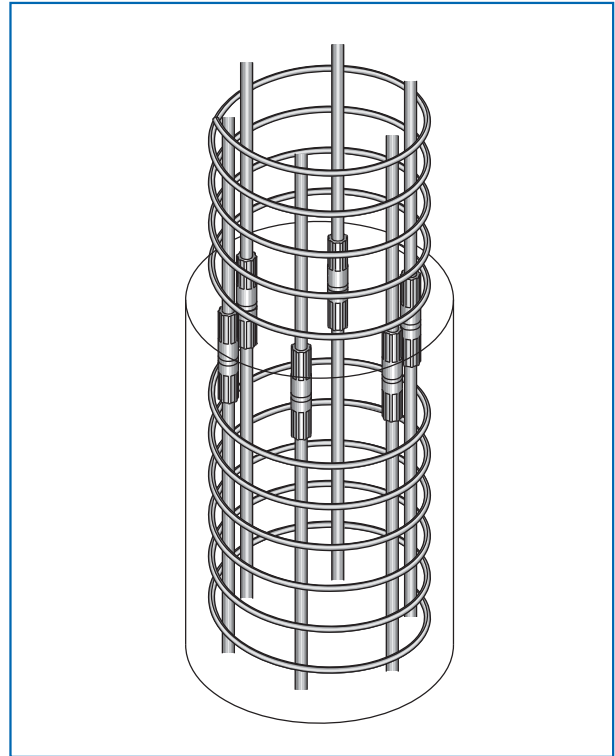
Peikko MODIX® SM (STANDARD COUPLER)

Application examples

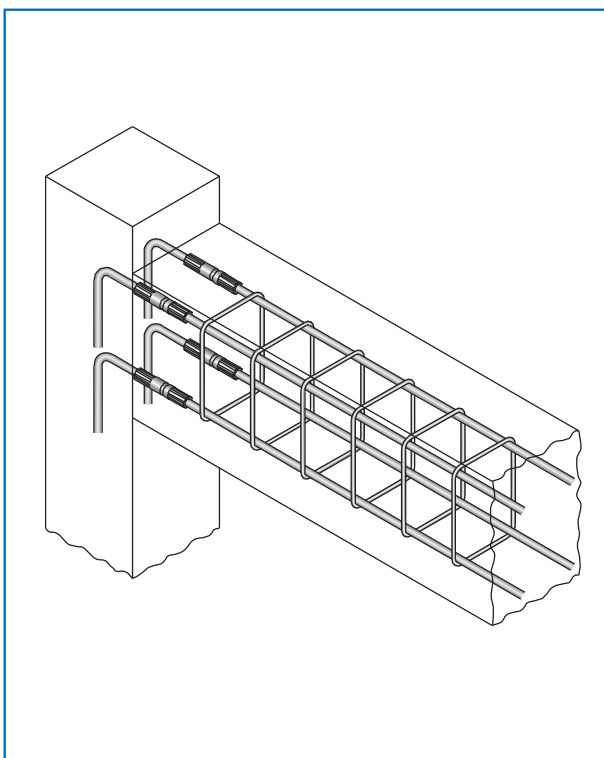
SM



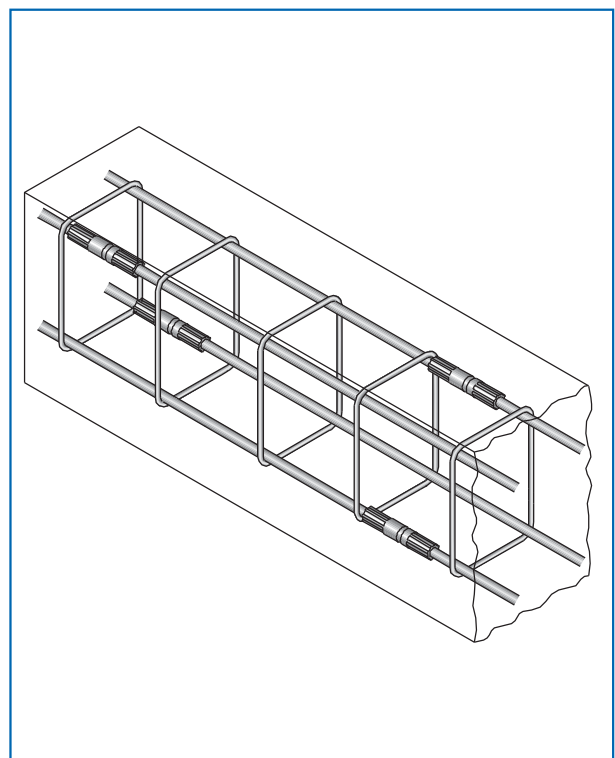
Rectangular support



Round support



Beam-Column joint



Beam

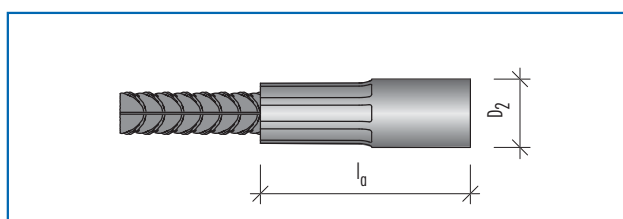
Peikko MODIX® SM (STANDARD COUPLER)

Dimensions

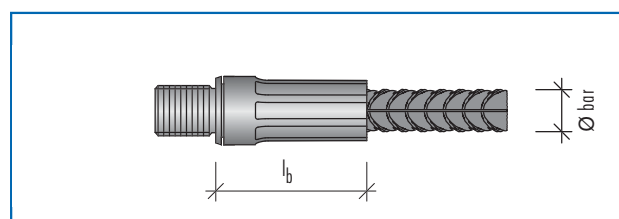
Colour of thread protector	Bar \varnothing [mm]	Coupler classification	Length part A [mm] l_a	Length part B [mm] l_b	Parts A + B fitted together [mm] l_{ges}	ISO-metric thread M	Coupler \varnothing [mm] D_2
orange	10	SM 10	52	46	96	M 12 x 1,75	17,5
yellow	12	SM 12	63	52	113	M 16 x 2	21
blue	14	SM 14	72	57	127	M 18 x 2,5	24
white	16	SM 16	80	63	141	M 20 x 2,5	27
grey	20	SM 20	98	77	173	M 24 x 3	33
red	25	SM 25	122	98	218	M 30 x 3,5	41
black	28	SM 28	141	111	250	M 36 x 4	47
brown	32	SM 32	156	124	278	M 42 x 4,5	53

Connection is visually checked – torque wrench is not necessary

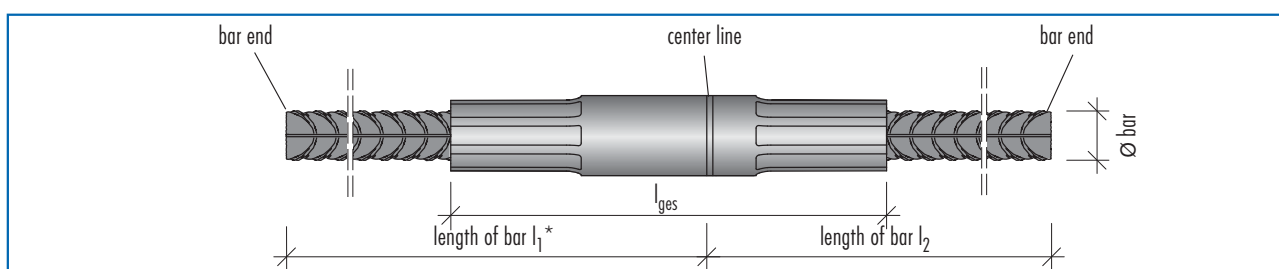
SM



Coupler part A



Coupler part B



Parts A + B screwed together, l_1 and l_2 = length of bar in reinforcement drawings, *for bent bars provide unwound length and the bent lengths

Permissible loads

Under predominantly dead (static) loads the MODIX® coupler can sustain the same tensile and compressive loads as a non-buttet reinforcing bar. Under dynamic loads the permissible stress range $2 \cdot \sigma_{A_s}$ according to the certification MODIX, is to be maintained.

Bar lengths, bent bars

Bar lengths l_1 and l_2 are specified to the center line of the connection. The required cutting discrepancy for BSt 500 S bars is considered by the MODIX® partner. On bar bends, a minimum distance of $5 \cdot d_s$ from the coupler end must be maintained.

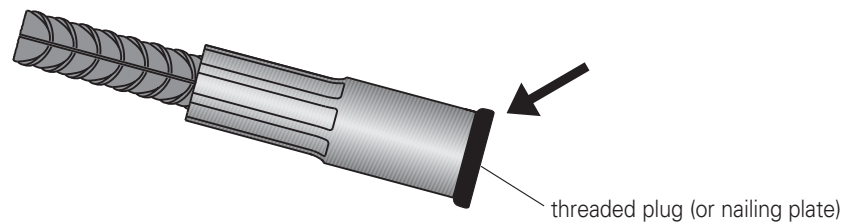
Center line and edge spacing

For the required concrete cover and the spacing of the couplers, the same rules apply as for non-buttet bars.

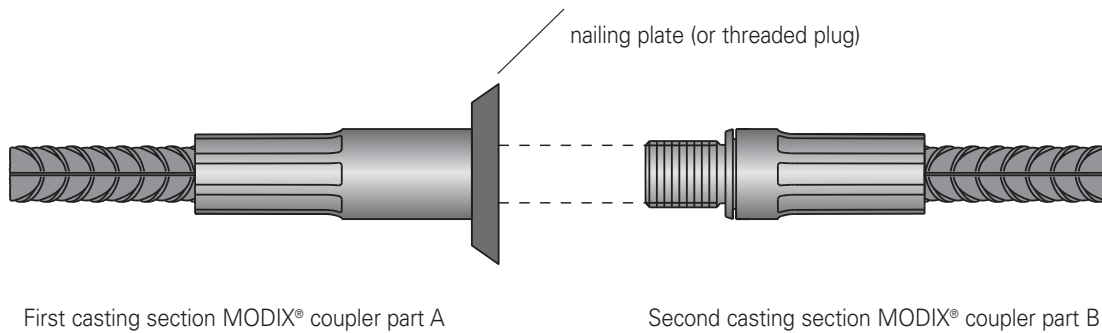
Peikko MODIX® SM (STANDARD COUPLER)

Installation instructions

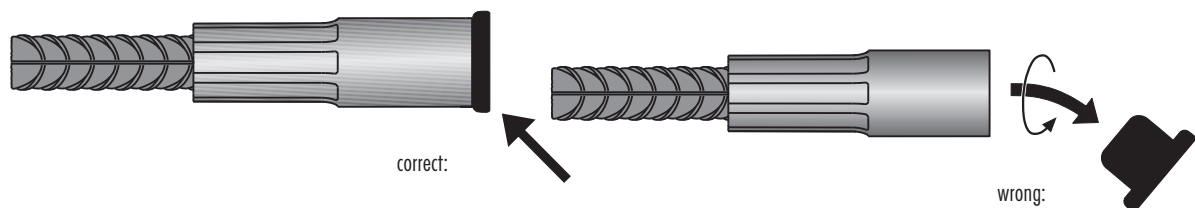
- ① The thread protectors (threaded plugs) must be checked to make sure that they sit securely during reinforcement operations. To fix coupler part A to the formwork, a Peikko nailing plate should be used (see accessories page 23).



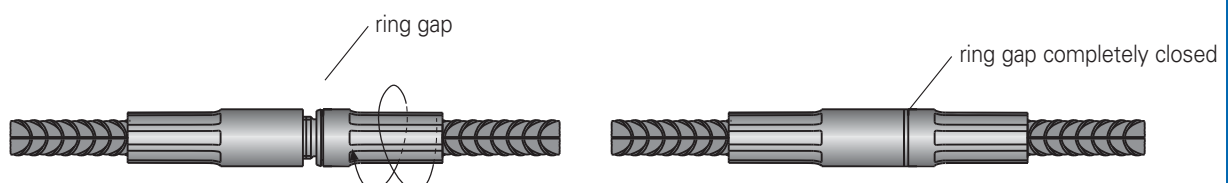
- ② The MODIX® coupler part A must be laid out along the axis of the coupler part B, which will be inserted later.



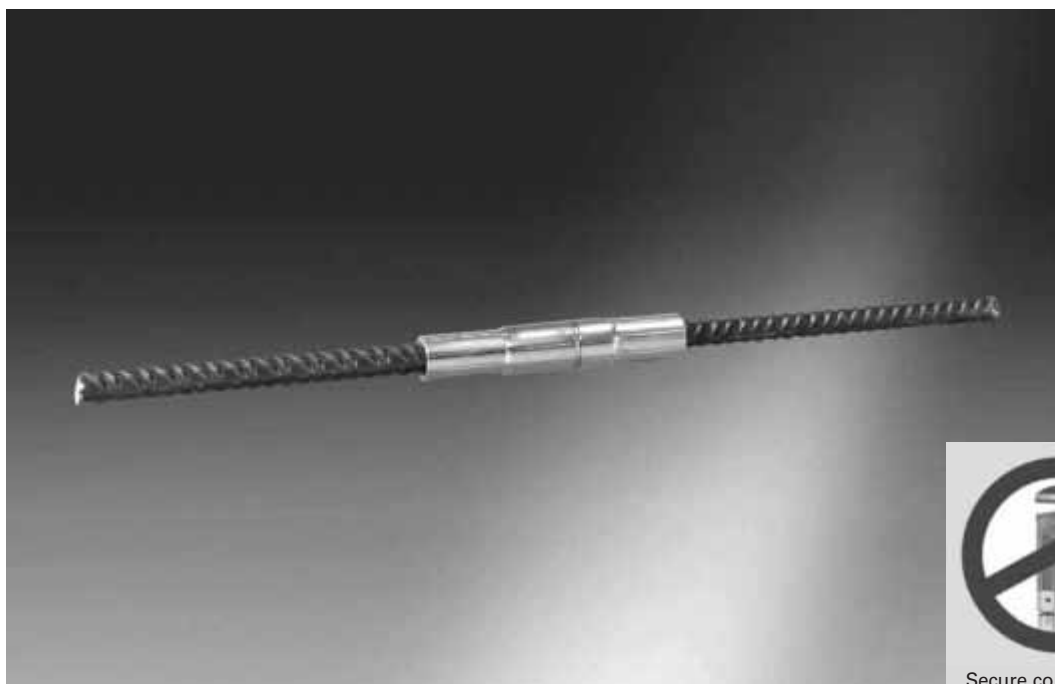
- ③ After dismantling of the formwork, in order to protect the coupler thread, the plug should be left in place until coupler part B is inserted.



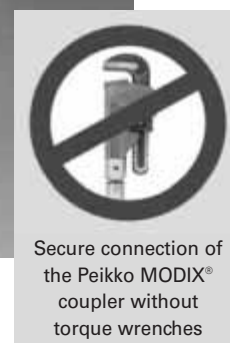
- ④ In the second casting phase the protector plug is removed, coupler element B is screwed onto coupler element A. It is tightened using a wrench until the ring gap is completely closed.



Peikko MODIX® RM (REDUCTION COUPLER)



Peikko MODIX® RM (reduction coupler)



RM

For connection of bars with different diameters, where the connecting bar (coupler part B) can be rotated.

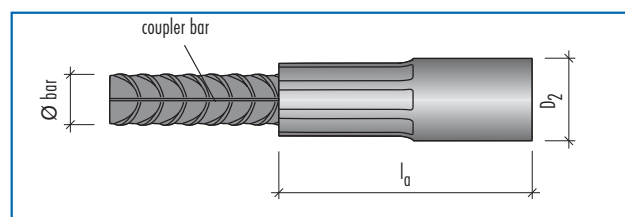
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Peikko MODIX® RM (REDUCTION COUPLER)

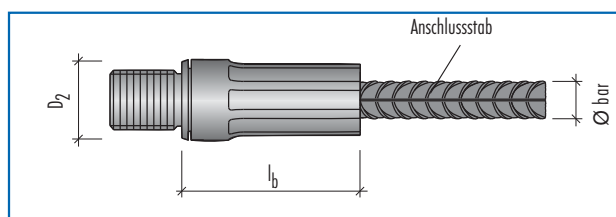
Dimensions

Colour of thread protector	Coupler \varnothing [mm]	Connector bar \varnothing [mm]	Coupler classification	Length part A [mm] l_a	Length part B [mm] l_b	Parts A + B fitted together [mm] l_{ges}	ISO-metric thread M	Coupler \varnothing [mm] D_2
yellow	12	10	RM 12/10	63	52	115	M 16 x 2	21
blue	14	12	RM 14/12	72	57	129	M 18 x 2,5	24
white	16	14	RM 16/14	80	63	143	M 20 x 2,5	27
grey	20	16	RM 20/16	98	77	175	M 24 x 3	33
red	25	20	RM 25/20	122	98	220	M 30 x 3,5	41
black	28	25	RM 28/25	141	111	252	M 36 x 4	47
brown	32	28	RM 32/28	156	124	280	M 42 x 4,5	53

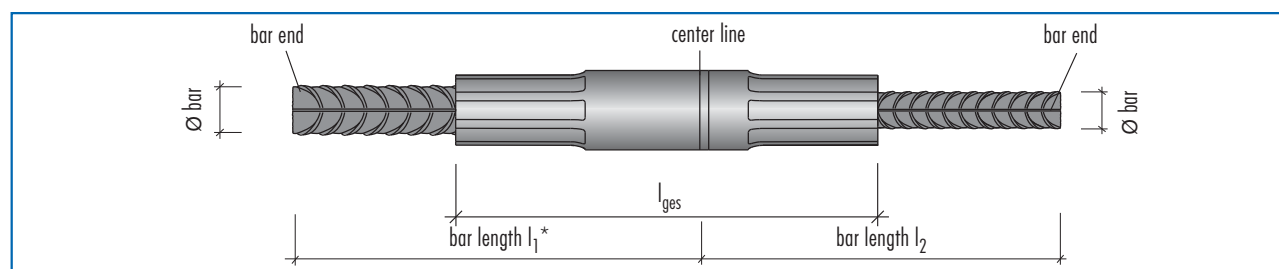
Connection is visually checked – torque wrench is not necessary



Coupler part A



Coupler part B



Parts A + B screwed together, l_1 and l_2 = bar length in reinforcement drawings, *for bent bars provide unwound length and the bent lengths.

Center line and edge spacing

For the required concrete cover and for spacing of the couplers, the same rules apply as for non-buttet bars.

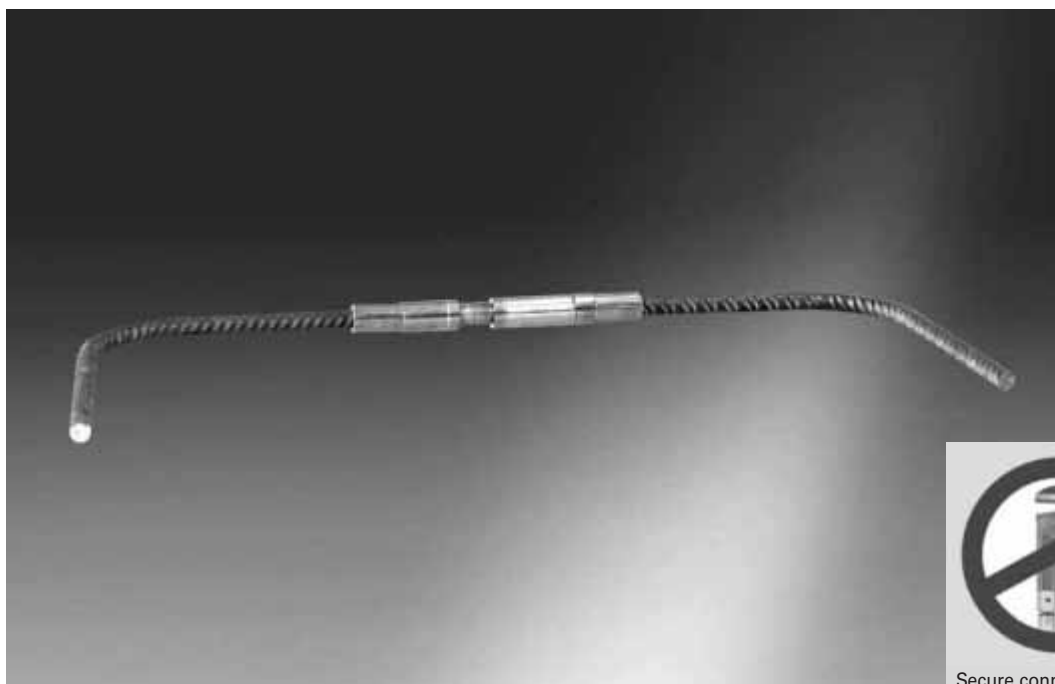
Installation instructions

See standard coupler page 10.

Combinations of bar diameters

Only bars of the next smaller diameter can be connected (please refer to the table above, column "coupler classification").

Peikko MODIX® PM (POSITION COUPLER)



Peikko MODIX® PM (position coupler)



PM

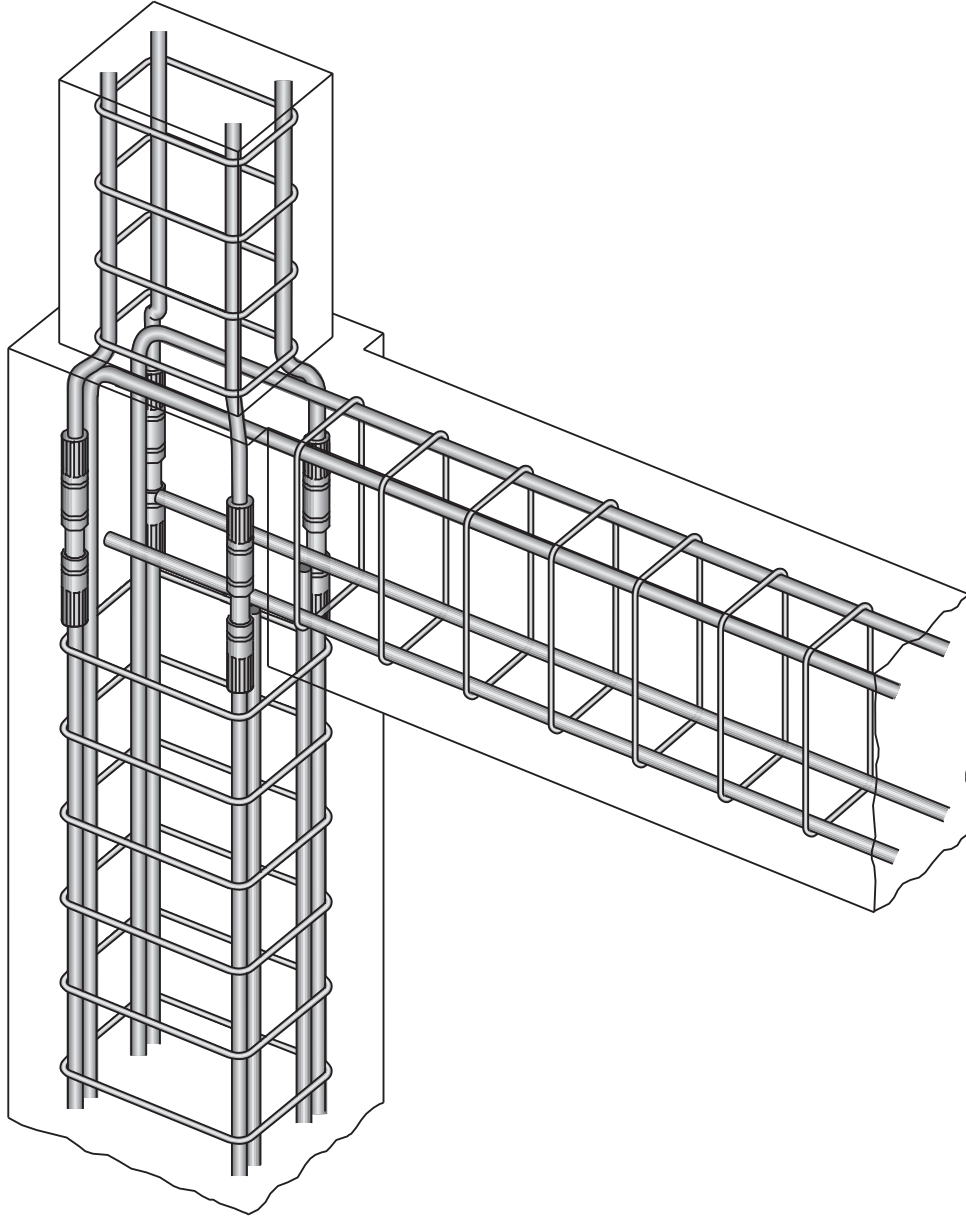
For connection of straight or bent bars, where rotation of the bars is not possible, and the movement of coupler part B along the bar axis is restricted.

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Peikko MODIX® PM (POSITION COUPLER)

Application example

PM



Tapered-column cross section with attached beam

Peikko MODIX® PM (POSITION COUPLER)

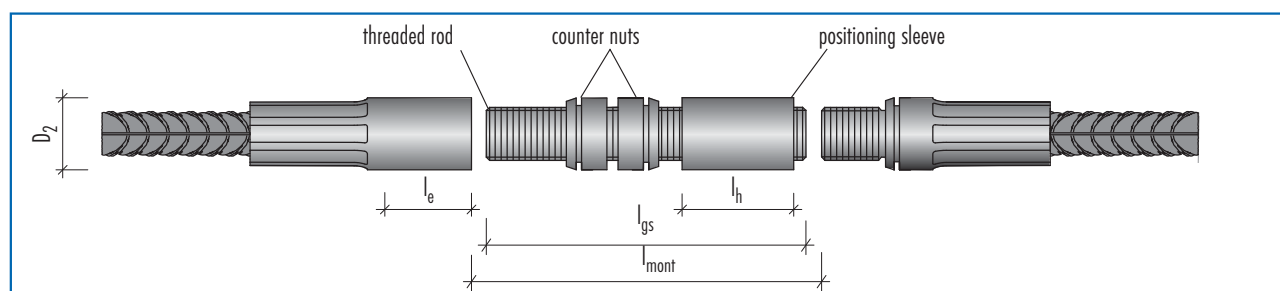
Dimensions

Colour of thread protector	Bar \varnothing [mm]	Coupler classification	Length part A [mm] l_a	Coupler length [mm] l_{konstr}	Thread length part A l_e	Length of positioning sleeve ¹⁾ l_h	Length threaded rod ¹⁾ l_{gs}	Max. free spacing ²⁾ l_{mont}	ISO-metric thread M	Coupler \varnothing [mm] D_2
orange	10	PM 10	52	125	21	37	79	59	M 12 x 1,75	17,5
yellow	12	PM 12	63	150	26	48	98	73	M 16 x 2	21
blue	14	PM 14	72	168	30	55	111	82	M 18 x 2,5	24
white	16	PM 16	80	184	33	61	121	89	M 20 x 2,5	27
grey	20	PM 20	98	213	37	69	136	100	M 24 x 3	33
red	25	PM 25	122	259	44	83	161	118	M 30 x 3,5	41
black	28	PM 28	141	298	51	97	187	137	M 36 x 4	47
brown	32	PM 32	156	338	59	112	214	156	M 42 x 4,5	53

Connection is visually checked – torque wrench is not necessary

¹⁾ Sufficient when coupler part A and B are moveable along their axis. See below „Fitting tolerances“

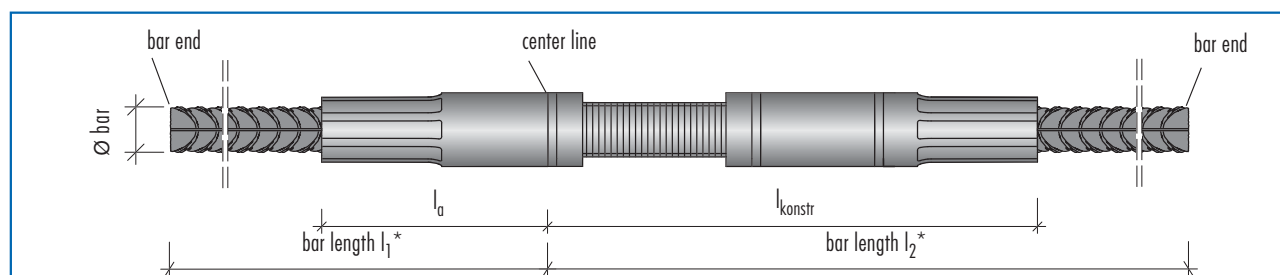
²⁾ After the threaded rod is screwed into coupler part A



Coupler part A (order sep.)

Peikko MODIX® PM

Coupler part B (order sep.)



Parts A + B screw-fitted with MODIX® PM, l_1 and l_2 = bar length for reinforcement drawing, *for bent bars provide unwound length and the bent lengths

Fitting tolerances

With the position coupler MODIX® PM, the threaded rod and the coupler part B respectively, are to be tightly fitted. In cases where a bigger tolerance along the bar axis is necessary, threaded rods and positioning sleeves of other lengths are available on request.

Bar lengths, bent bars

Bar lengths l_1 and l_2 are specified to the center line of the connection. The required cutting discrepancy for BSt 500 S bars is considered by the MODIX partner. On bar bends, a minimum distance of $5 \cdot d_s$ from the coupler end must be maintained.

Center line and edge spacing

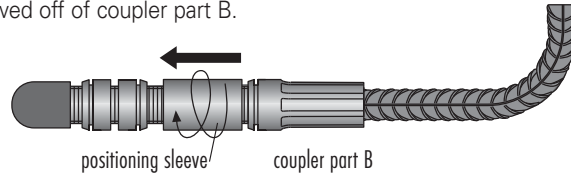
For the required concrete cover and the spacing of the couplers, the same rules apply as for non-butt bars.

Peikko MODIX® PM (POSITION COUPLER)

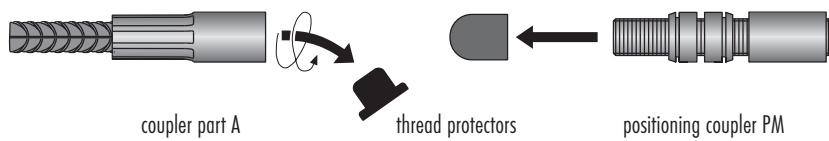
Installation instructions

If the MODIX® PM and the coupler part B, including the attached reinforcing bar, are delivered pre-assembled to the site:

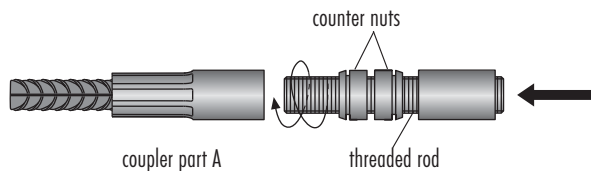
- ① Positioning sleeve must be screwed off of coupler part B.



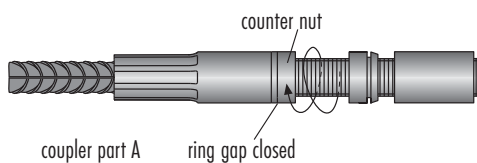
- ② Remove thread protective plug from in-situ coupler part A and thread protective cap from the MODIX® PM.



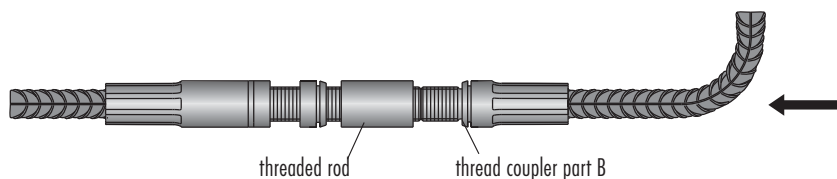
- ③ Hand tighten the threaded rod so it sits tightly in the coupler part A.



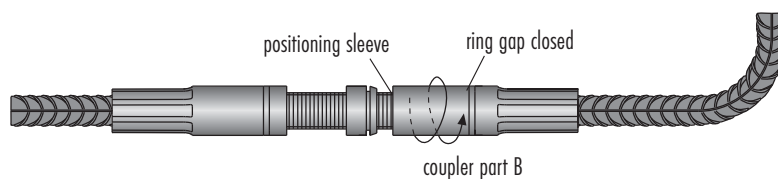
- ④ Tighten counter nut of MODIX® PM against coupler part A until the ring gap is closed.



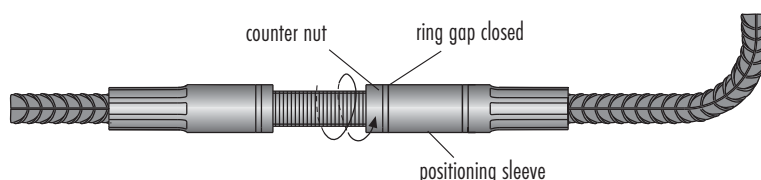
- ⑤ Align thread of coupler part B including the attached reinforcing bar with the threaded rod of the MODIX® PM.



- ⑥ Turn positioning sleeve of the MODIX® PM over the threaded part of coupler part B until the ring gap is closed.



- ⑦ Second counter nut of the MODIX® PM is then tightened against the positioning sleeve until the ring gap is closed.



Peikko MODIX® KM (COMBINATION COUPLER)

Installation instructions



Peikko MODIX® KM (combination coupler)



KM

For connection of a bar (coupler part A) and a standard metric screw

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Peikko MODIX® KM (COMBINATION COUPLER)

Dimensions

Colour of thread protector	Bar \varnothing [mm]	Coupler classification	Length part A [mm] l_a	Thread length [mm] l_e	Thickness of distance sleeve ¹⁾ [mm] d	Thickness of steel element [mm] t	ISO-metric thread M	Thread length of screw [mm] l_{gew}	Coupler \varnothing [mm] D_2
orange	10	KM 10	52	21	9	10 - 14	M 12 x 1,75	40	17,5
yellow	12	KM 12	63	26	10	10 - 14	M 16 x 2	45	21
blue	14	KM 14	72	30	11	10 - 15	M 18 x 2,5	50	24
white	16	KM 16	80	33	11	11 - 18	M 20 x 2,5	55	27
grey	20	KM 20	98	37	12	11 - 19	M 24 x 3	60	33
red	25	KM 25	122	44	14	17 - 26	M 30 x 3,5	75	41
black	28	KM 28	141	51	16	23 - 33	M 36 x 4	90	47
brown	32	KM 32	156	59	18	23 - 33	M 42 x 4,5	100	53

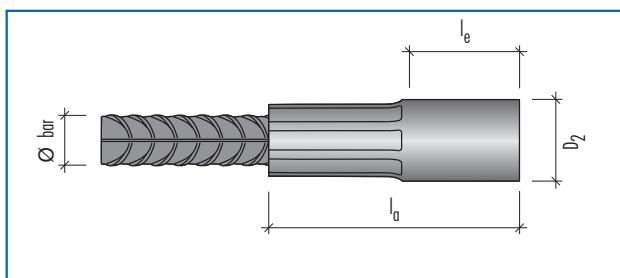
¹⁾ In compressed condition

Corrosion protection is to be applied to the combination coupler at the site.

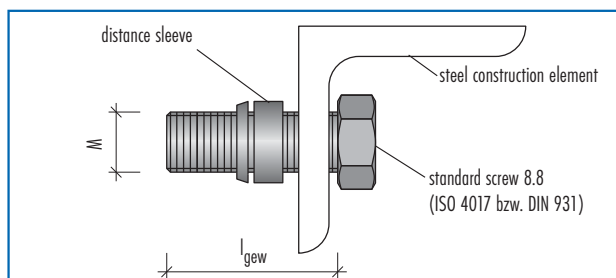
KM

Calculating the required thread length of the standard screw

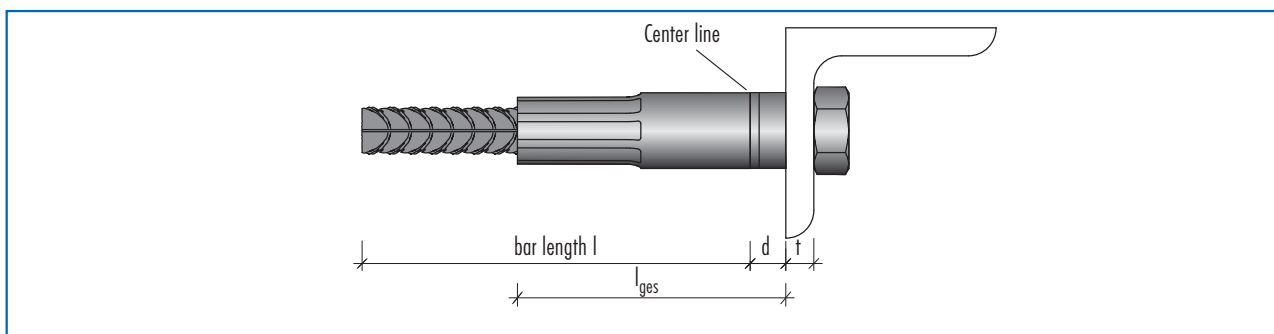
Depending on the thickness of the component to be installed at the site (t) a thread length different from the one of the standard screw provided with the coupler may be required. The thread length of coupler part A (l_e) and the thickness of the distance sleeve (d) must be added to the thickness (t) of the component which is to be installed.



Coupler part A (order sep.)



Combination parts to be combined



Part A + combined parts, length l is the bar length specified in the rebar drawings

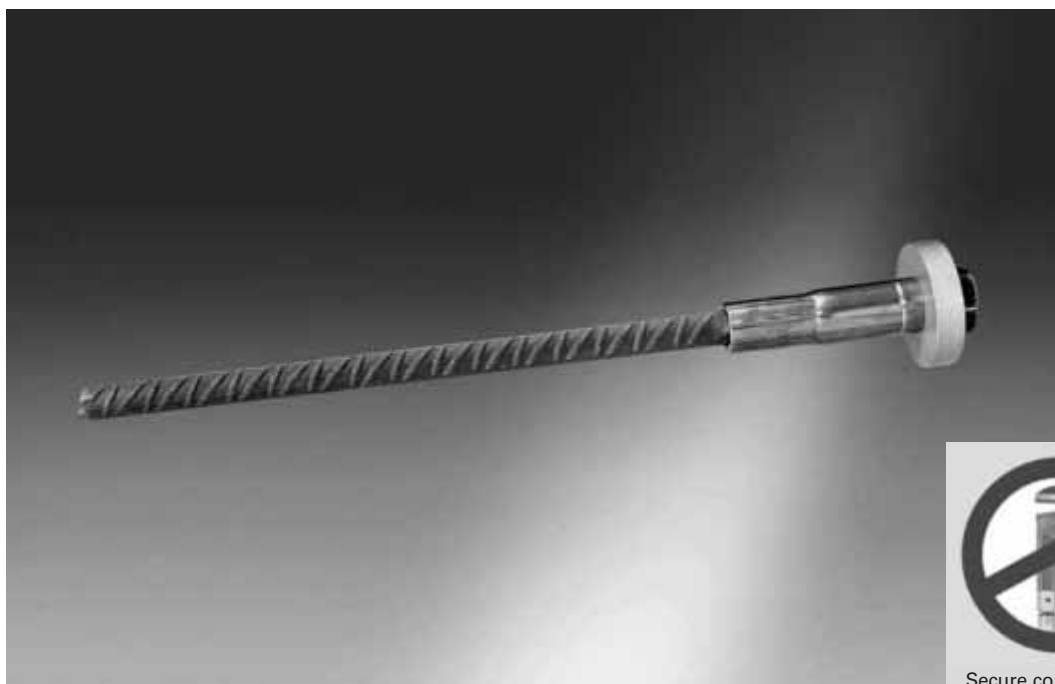
Installation

Insert the steel screw through the steel construction element, apply the distance sleeve, then tighten the rebar with the coupler.

Axis and edge spacing

For the required concrete cover and for the spacing of couplers, the same rules apply as for non-buttet bars.

Peikko MODIX® EM (END-ANCHOR COUPLER)



Peikko MODIX® EM (end-anchor coupler)



EM

An ideal alternative to hooked reinforcement ends.

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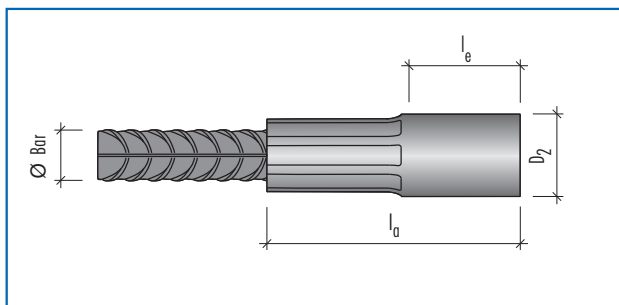
Peikko MODIX® EM (END-ANCHOR COUPLER)

Dimensions

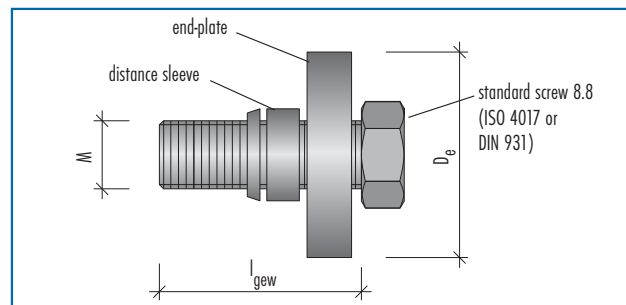
Colour of thread protector	Bar \varnothing [mm]	Coupler classification	Length part A [mm] l_a	Thread length part A [mm] l_e	End-plate thickness [mm] t	\varnothing End-plate [mm] D_e	Thickness of distance sleeve ¹⁾ [mm] d	Length fitted together [mm] l_{ges}	ISO-metric thread M	Thread length of screw [mm] l_{gew}	Coupler \varnothing [mm] D_2
orange	10	EM 10	52	21	10	40	9	71	M 12 x 1,75	40	17,5
yellow	12	EM 12	63	26	12	48	10	85	M 16 x 2	45	21
blue	14	EM 14	72	30	14	55	11	97	M 18 x 2,5	50	24
white	16	EM 16	80	33	15	63	11	106	M 20 x 2,5	55	27
grey	20	EM 20	98	37	19	80	12	129	M 24 x 3	60	33
red	25	EM 25	122	44	24	95	14	160	M 30 x 3,5	75	41
black	28	EM 28	141	51	28	110	16	185	M 36 x 4	90	47
brown	32	EM 32	156	59	31	130	18	205	M 42 x 4,5	100	53

¹⁾ in compressed condition

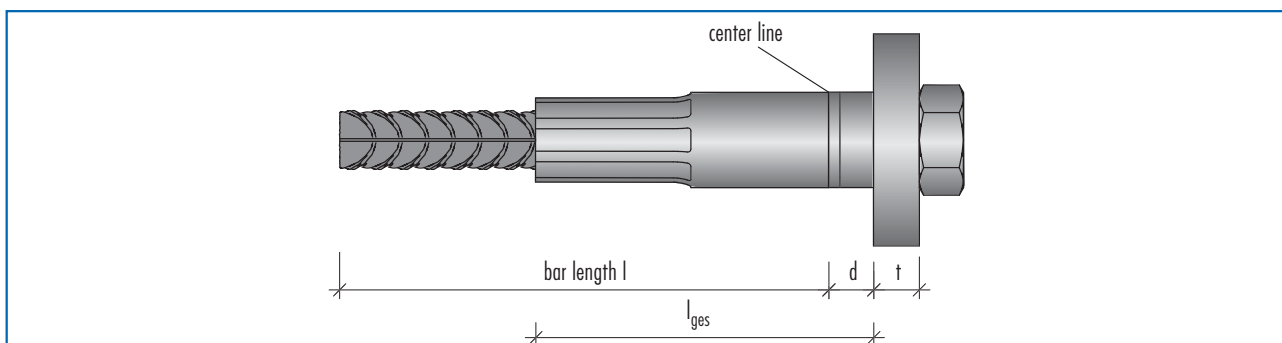
EM



Coupler part A (order sep.)



End-anchor parts



Part A + end-anchor parts after fitting, l = bar length for rebar drawings

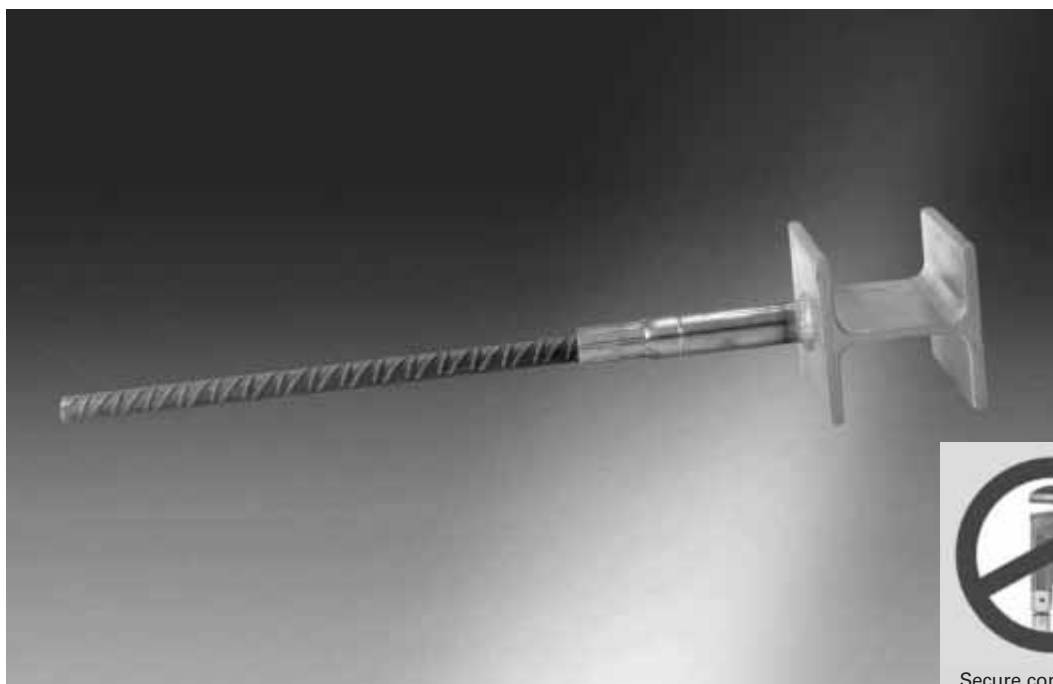
Installation

Place end-plate and distance sleeve over the screw, then tighten coupler bar.

Axis and edge spacing

The end-plates are dimensioned to transfer the full strength of the respective bar. The center line and edge spacing result from the proof of the partial area pressure (according to DIN 1045-1), which is performed by the structural engineer.

Peikko MODIX® AM (WELD-TO COUPLER)



Peikko MODIX® AM (weld-to coupler)



For cases where reinforcement must be welded to steel construction elements or end-plates, where the connecting bar (coupler part B) can be rotated.

AM

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Peikko MODIX® AM (WELD-TO COUPLER)

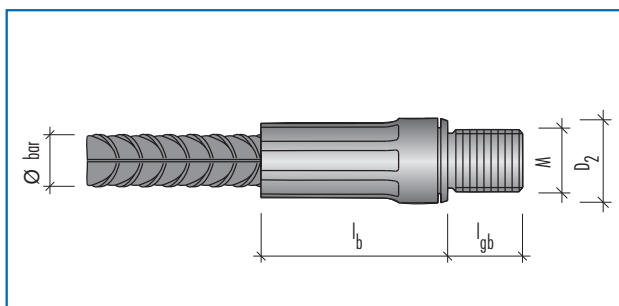
Dimensions

Colour of thread protector	Bar \varnothing [mm]	Coupler classification	Length part B [mm] l_b	Thread length part B [mm] l_{gb}	Length of weld-to sleeve [mm] $l_a^{1)}$	Part A + sleeve fully assembled [mm] l_{ges}	ISO-metric thread M	Coupler \varnothing [mm] D_2
orange	10	AM 10	46	18	52	98	M 12 x 1,75	17,5
yellow	12	AM 12	52	23	63	115	M 16 x 2	21
blue	14	AM 14	57	27	72	129	M 18 x 2,5	24
white	16	AM 16	63	30	80	143	M 20 x 2,5	27
grey	20	AM 20	77	34	98	175	M 24 x 3	33
red	25	AM 25	98	41	122	220	M 30 x 3,5	41
black	28	AM 28	111	48	141	252	M 36 x 4	47
brown	32	AM 32	124	56	156	280	M 42 x 4,5	53

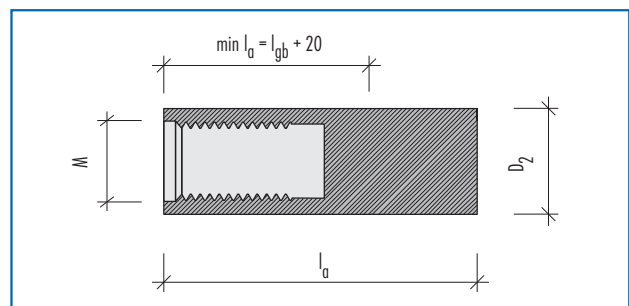
Torque wrench is not necessary

¹⁾ Weld-to sleeves can be shortened on site to the thread length $l_a = l_{gb} + 20$ mm

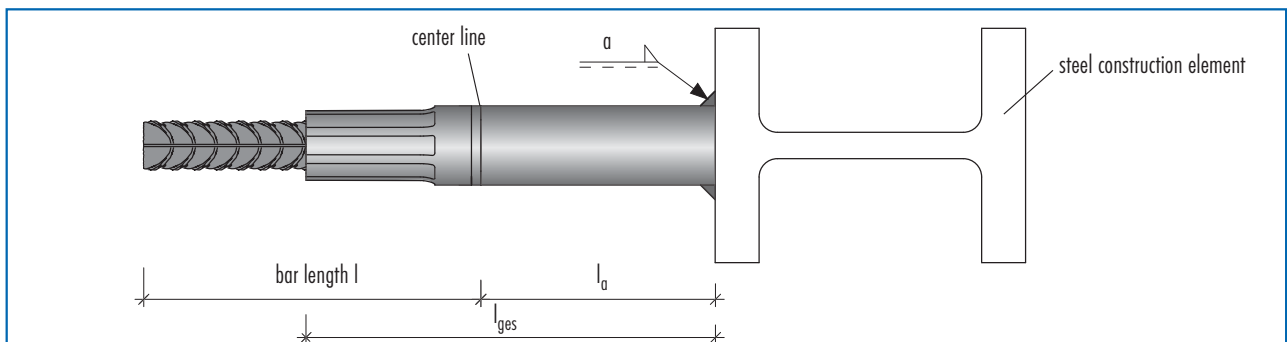
AM



Coupler part B (order sep.)



Cross-section: weld-on sleeve



Part B in end condition with steel element welded on

Axis and edge spacing

For the required concrete cover and for the spacing of the couplers, the same rules apply as for non-buttet rods.

Note

The required weld is designed by the structural engineer.





Installation

(see installation instructions SM, page 10).

Required corrosion protection is applied at the site.

Peikko MODIX®

Accessories

Screw-in protective plug¹⁾ 	<ul style="list-style-type: none"> ▶ Is screwed into coupler part A. ▶ Protects the thread from corrosion and from concrete during the first pouring. ▶ Is removed directly before fitting part B.
Slip-over protective cap¹⁾ 	<ul style="list-style-type: none"> ▶ Is slipped on to coupler part B. ▶ Protects the thread from corrosion during storage and transport. ▶ Is removed directly before assembling with part A.
Screw-in nailing plate²⁾ 	<ul style="list-style-type: none"> ▶ Is screwed into coupler part A. ▶ For fixing to the formwork. ▶ Is removed directly before fitting part B.
magnetic plate²⁾ 	<ul style="list-style-type: none"> ▶ Is screwed into coupler part A. ▶ For fixing to steel formwork. ▶ Is removed directly before fitting part B.

¹⁾ Installed at the factory; delivered with the coupler. When additional thread protectors, nailing plates or magnetic plates are required, they can be ordered separately.

²⁾ Fitted on site. When required please order separately.

▶ Thickness of nail plate 10 mm (all diameters).

▶ Thickness of magnetic plate 15 mm (all diameters).

Please consider these values when specifying the corresponding bar lengths.

bar \varnothing [mm]	10	12	14	16	20	25	28	32
Colour of thread protector	orange	yellow	blue	white	grey	red	black	brown
\varnothing Screw-in nailing plate	58	58	58	58	58	80	80	80
\varnothing Magnetic plate	on request							

Peikko MODIX®

Invitation to tender form

POSITION	AMOUNT	UNIT		SINGLE UNIT PRICE	TOTAL PRICE
1.			Reinforced concrete reinforcement and construction elements		
1.1.			Peikko MODIX® threaded coupler Threaded coupler system for connecting reinforcing bars, as an addition to reinforcement bars. System Peikko MODIX® as per certification nr. Z-1.5-177 For installation without torque wrench. Installation according to specifications of design engineer.		
1.1.1		piece	Peikko MODIX® SM threaded coupler for BStø _____ mm As specified in 1.1, for connection of bars with the same diameter. It has to be possible to turn one of the connecting bars.		
1.1.2		piece	Peikko MODIX® RM reduction coupler for BStø _____/_____ mm As specified in 1.1, however for use as a reduction coupler. Peikko MODIX® RM for connection of bars with different diameters.		
1.1.3		piece	Peikko MODIX® PM position coupler for BStø _____ mm As specified in 1.1, however for use as a position coupler for bars which can not be turned, e.g. tapered columns with connecting bars bent at right angles.		
1.1.4		piece	Peikko MODIX® KM combination coupler for BSt ø _____ mm As specified in 1.1, however for use as combination coupler to connect a reinforcement bar and a metric screw. Diameter of screw (thread) M _____		
1.1.5		piece	Peikko MODIX® EM end-anchor coupler for BSt ø _____ mm As specified in 1.1, however for use as end-anchor coupler including standard screw and end-plate.		
1.1.6		piece	Peikko MODIX® AM weld-to coupler for BSt ø _____ mm As specified in 1.1, however for use as weld-to coupler for connection of reinforcement bars and steel construction elements.		

Peikko MODIX®

References

Müglitztal bridge, Dresden, Germany

The P 28 mm reinforcing bars from the foundations are extended to the column heads using standard couplers Peikko MODIX® SM.

112 connections in each column.

Customer: DEGES Deutsche Einheit Fernstraßenplanungs- und -bau GmbH, Berlin

General contractor: ARGE BAB 17 Müglitztalbrücke BW 33, Ed. Züblin AG, Brückenbau Plauen GmbH

Installation: 2002



Hornberg Tunnel, Hornberg, Germany

The two separately cast lanes are connected using standard couplers Peikko MODIX® SM.

Customer: Bundesministerium für Verkehr, Bau- und Wohnungswesen, RP (Regierungspräsidium) Freiburg

General contractor: ARGE Tunnel Hornberg

Installation: 2003



Randstad-Rail Rotterdam, The Netherlands

Several thousand couplers are installed in the future stations of this section of the regional train connection between Rotterdam and The Hague.

Customer: City of Rotterdam

General contractor: ARGE Saturn v.o.f.

Installation: 2005 - 2006



Peikko MODIX®

References

North-South Line subway Amsterdam, The Netherlands

The ceilings and facing walls are connected with the previously cast diaphragm walls using more than 200,000 couplers Peikko MODIX®.

Customer: City of Amsterdam

General contractor: Max Bögl Noord-Zuidlijn v.o.f. Amsterdam

Installation: 2003 - 2008



Lehrter Bahnhof (station) Berlin, Germany

Over 34,000 Peikko MODIX® couplers were used in the construction of the new central station in Berlin.

Customer: DB ProjektBau GmbH, BRD, DBAG, Senat von Berlin, Berliner Verkehrsbetriebe (BVG)

General contractor: Donges Stahlbau GmbH
Subcontractor: Wayss & Freytag Ingenieurbau AG und BAB Stahlhandelsgesellschaft

Installation: 2004 - 2005



Landesbank (state bank) Baden-Württemberg/ City Park Karlsruhe, Germany

Splicing of the column reinforcement. Installation of standard and position couplers.

Customer: City-Park-Südost Verwaltungs GmbH & Co. KG, Stuttgart

General contractor: Bilfinger Berger AG

Installation: 2006



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