

TECHNICAL MANUAL



COPRA® Anchoring Coupler

For Smart Bolted Connections

Version PEIKKO GROUP 10/2022

COPRA® Anchoring Coupler

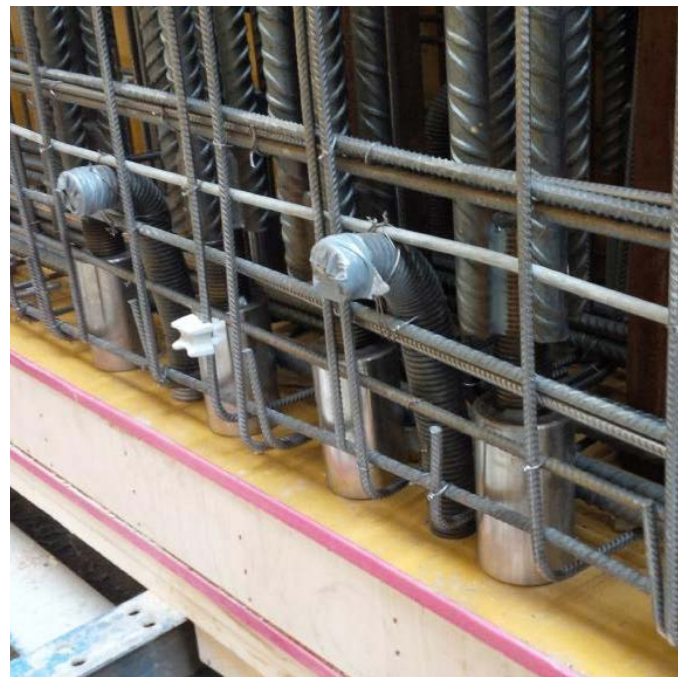
For Smart Bolted Connections

- Multi-purpose anchoring system for all bolted connections.
- Simplifies the process of installing bolted connections.
- Prevents bars from protruding from the formwork.
- Quick and easy installation into concrete with the help of standard accessories.
- Transfers forces after precast elements are erected and nuts are tightened.

The COPRA® Anchoring Coupler is a rebar anchor with female threads for bolted connections in precast concrete structures. COPRA® is mainly used in foundation-to-column and column-to-beam connections in combination with HPKM® / BOLDA® Column Shoes or BECO® Beam Shoes.

COPRA® Anchoring Couplers transfer tensile, compression, and shear forces through the connection during erection and in the final stage. COPRA® can be adapted to all types of concrete structures.

Hidden COPRA® Anchoring Couplers with removable threaded bars avoid the risk of protruding parts being damaged during construction. The joint between the two precast concrete parts is grouted to finalize the connection.



CONTENTS

About COPRA® Anchoring Coupler.....	4
1. Product properties	4
1.1 Structural behavior	6
1.2 Application conditions.....	7
1.2.1 Loading and environmental conditions.....	7
1.2.2 Interaction with base structure	8
1.2.3 Positioning of the anchoring couplers	8
1.3 Other properties	8
1.3.1 Anchoring couplers with bent anchor bars	11
2. Resistances	13
2.1 Fire resistance	13
Selecting COPRA® Anchoring Coupler.....	14
Annex A – Transverse reinforcement in the lap zone	17
Annex B – Accessories	18
Installation of COPRA® Anchoring Coupler	19
Install the product – Casting of the COPRA® Anchoring Coupler	19
Install the product – Assembling	22

About COPRA® Anchoring Coupler

1. Product properties

COPRA® Anchoring Couplers are used for connecting structural and non-structural elements to concrete load-bearing structures. Anchoring couplers consist of a removable threaded bar, which is installed on the building site, and an anchored coupler. The coupler is cast into a base structure and anchored via one or more anchor bars.

COPRA® Anchoring Couplers are available in various standard or semi-standard models that are suitable for different applications.

- COPRA® P Anchoring Coupler with straight anchor bar(s)
- COPRA® L Anchoring Coupler with headed anchor bar(s)
- COPRA® D Anchoring Coupler with a double-sided arrangement.



Figure 1. COPRA® Anchoring Coupler: a) with straight anchor bars; b) with headed anchor bars; c) double-sided model.

The COPRA® P Anchoring Coupler transfers tensile forces by splicing anchor bars to the overlapping main reinforcement of the concrete member. COPRA® Anchoring Coupler with straight anchor bars (Figure 1: a) is intended for use in structures with sufficient depth. Alternatively, the anchor bars may be bent to fit in shallow concrete members (see Figure 2).

COPRA® L Anchoring Coupler with headed anchor bars is primarily used in columns or other shallow structures (see Figure 1: b).

The COPRA® D Anchoring Coupler with one coupler on each side is suitable for transferring tensile forces throughout construction (e.g. connecting parts of the construction from opposite sides of the column – see Figure 3).

Anchoring couplers are cast into the construction together with the main and supplementary reinforcement (see section Installation of the COPRA® Anchoring Coupler). The connection is assembled by placing the threaded bar into the coupler and fastening the base plate using a washer and nuts.

Anchoring couplers can be designed to transfer axial and shear forces, as well as combinations thereof.

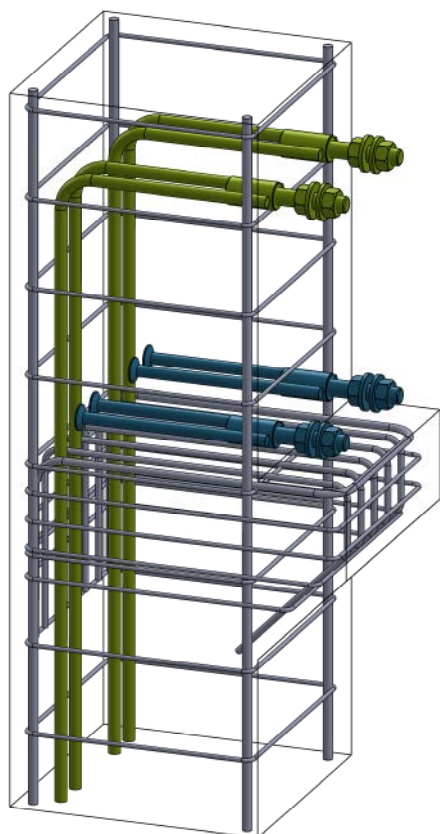


Figure 2. COPRA® Anchoring Couplers in a single-sided beam-to-column connection.

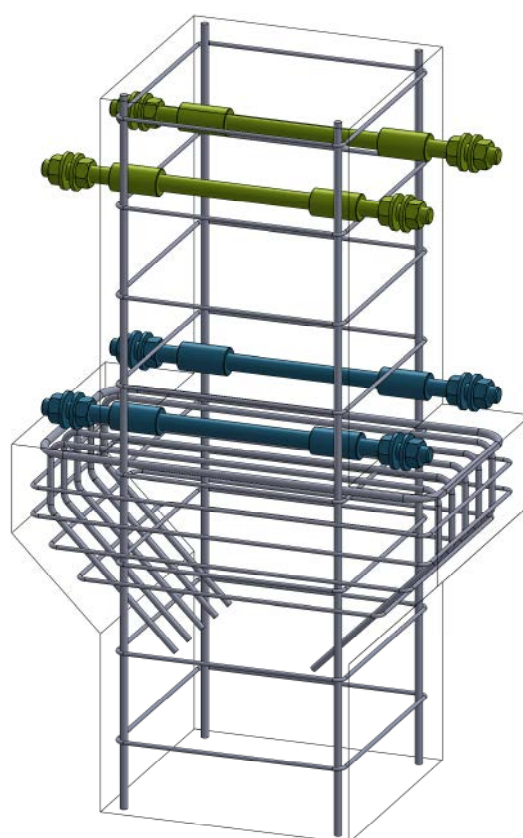


Figure 3. COPRA® Anchoring Couplers in a double-sided beam-to-column connection.

1.1 Structural behavior

COPRA® Anchoring Couplers are connecting elements that carry tensile, compression, and shear forces and transfer them into the base structure. Typically, the anchoring couplers are used to create moment-resisting connections. Forces can be transformed at precast beam-to-column or column-to-foundation connections. Other applications are also possible.

The load transfer mechanisms of the COPRA® Anchoring Coupler under different types of connections are shown in Figure 4, Figure 5, and Figure 6.

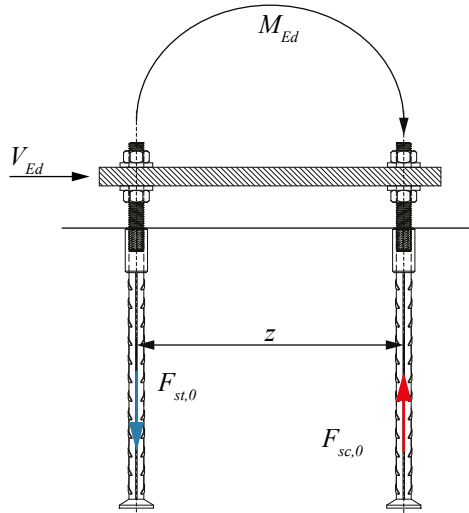


Figure 4. Structural behavior of anchoring couplers in column-to-foundation connections.

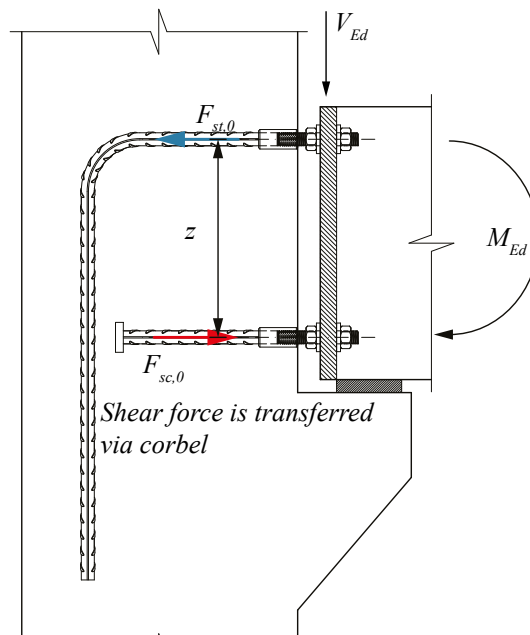


Figure 5. Structural behavior of anchoring couplers in beam-to-column connection.

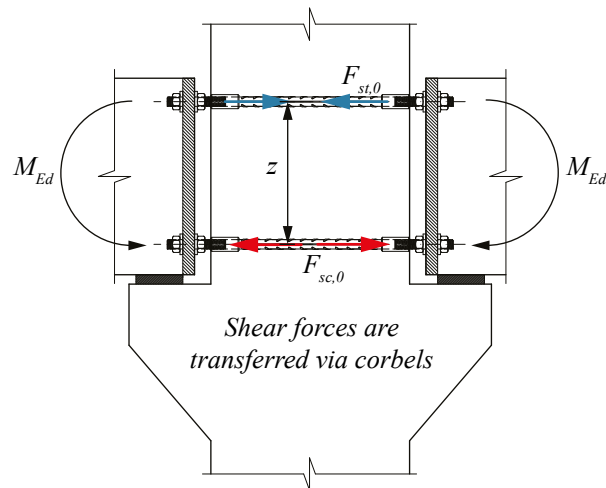


Figure 6. Structural behavior of anchoring couplers in double-sided connections.

1.2 Application conditions

The standard models of COPRA® P and COPRA® L Anchoring Couplers are pre-designed for use under the conditions mentioned in this section.

The anchorage part of the COPRA® D model must be designed on a project basis.

The double-sided COPRA® Anchoring Coupler is a semi-standard model with pre-designed parts. The length of the double-sided anchoring coupler must be based on the geometry of the concrete member.

See the section entitled “Selecting a COPRA® Anchoring Coupler” for further details. If this condition may not be satisfied, please contact Peikko’s Customer Engineering Service.

Note: COPRA® Anchoring Couplers must not be used as rebar couplers for reinforcement. Rebar Couplers from the Peikko product portfolio can be used to connect to the rebar.

1.2.1 Loading and environmental conditions

COPRA® Anchoring Couplers are designed to transfer static loads. To ensure resistance to corrosion, the concrete cover of the anchoring coupler, including washers and nuts, must observe the minimum values determined according to the environmental exposure class and intended operating life (EN 1992-1-1). For headed anchoring couplers, concrete cover refers to the forged head near the edge of the concrete element.

1.2.2 Interaction with base structure

COPRA® Anchoring Couplers are pre-designed for use in reinforced concrete structures such as columns, beams, and foundations. The properties of the anchoring couplers are valid for reinforced concrete with strength class in the range C25/30 to C50/60.

1.2.3 Positioning of the anchoring couplers

COPRA® Anchoring Couplers are cast into the concrete element up to the top of the coupler. The layout of the anchoring couplers should also consider the existing reinforcement to ensure the correct installation of the anchoring couplers and casting of all parts.

1.3 Other properties

COPRA® Anchoring Couplers are produced from structural steel rods, rebars and threaded bars with the following properties:

Coupler		S355J2	EN 10025-2
Ribbed bar		B500B	EN 10080-1
Threaded bar	(Load class H) (Load class P)	8.8 High strength steel, property class 8.8 $f_{yk} \geq 640\text{MPa}$ $f_{uk} \geq 800\text{MPa}$	EN ISO 898-1 Mechanical properties according to EN ISO 898-1
Washer		S355J2 + N	EN 10025-2
Nuts	(Load class H) (Load class P)	Property class 8 Property class 10	EN ISO 4032/EN ISO 898-2

Standard delivery for each anchoring coupler includes a threaded bar, two hexagon nuts, and two washers.

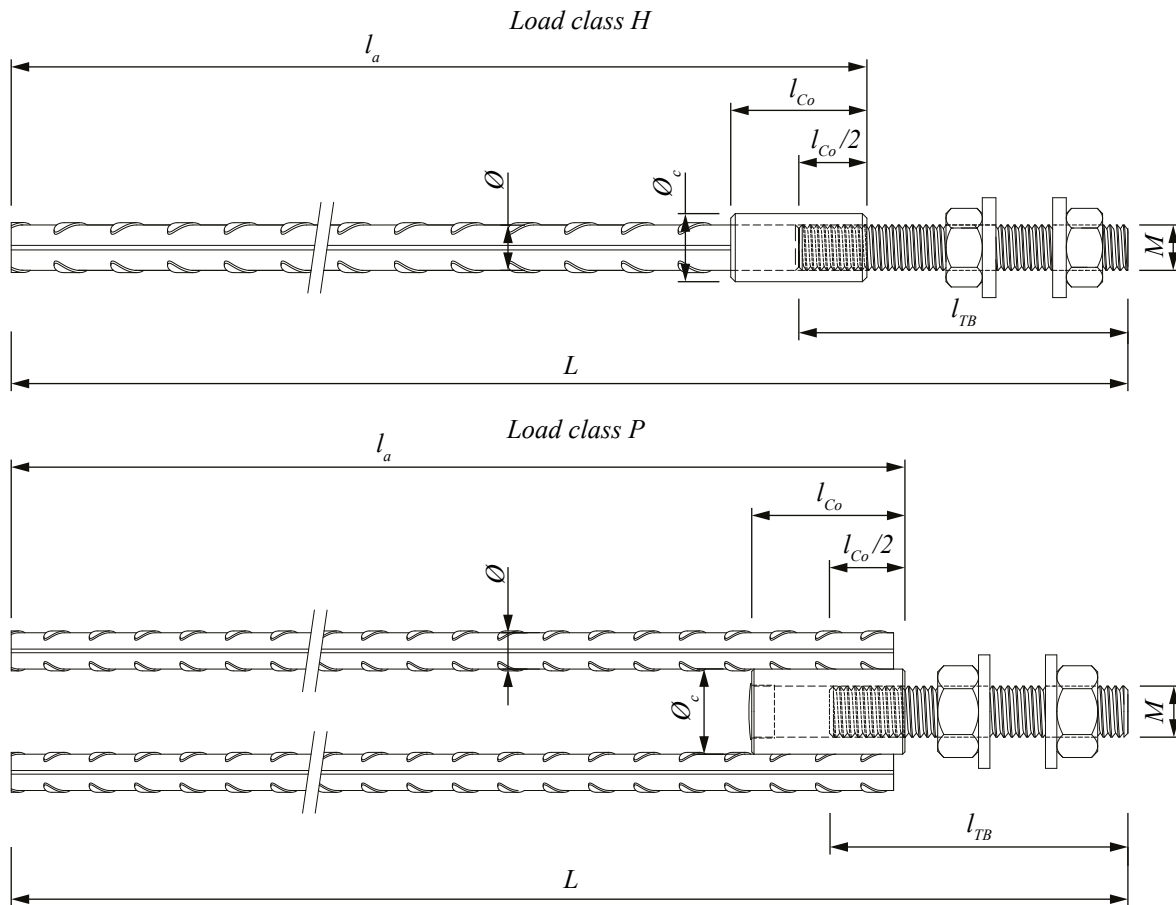
Peikko Group's production units are controlled externally and audited periodically based on the production certifications and product approvals provided by various independent organizations.

Manufacturing method	
Ribbed bars	Mechanical cutting
Threads	Rolling
Welds	MAG welding
Anchor heads	Forging

Manufacturing tolerances	
Total length	±10mm
Threads	+5mm, -0mm

The dimensions of the standard models of COPRA® Anchoring Couplers are summarized in *Table 1*, *Table 2*, and *Table 3*.

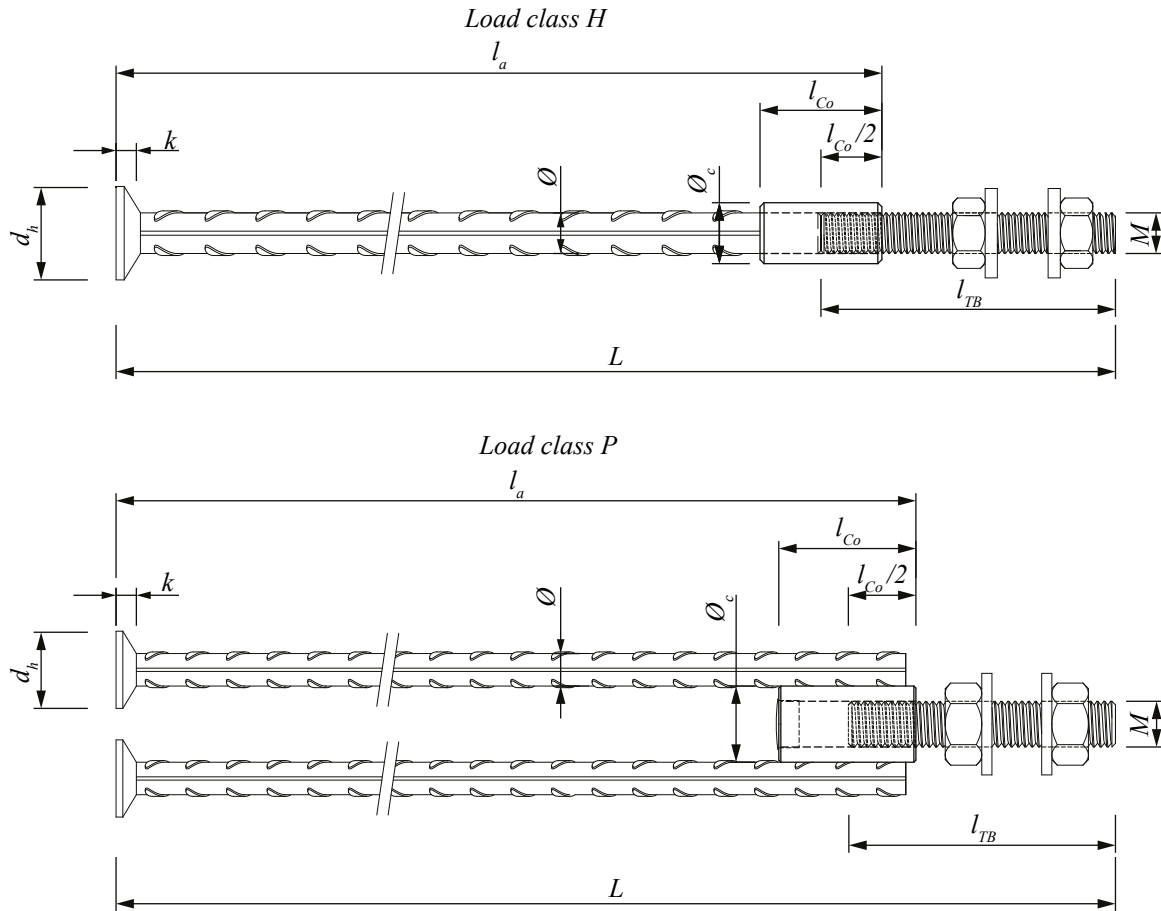
Table 1. Dimensions of the COPRA® P with straight anchor bar(s).



		Load class H					Load class P				
		COPRA 16H	COPRA 20H	COPRA 24H	COPRA 30H	COPRA 39H	COPRA 30P	COPRA 36P	COPRA 39P	COPRA 45P	COPRA 52P
M		M16	M20	M24	M30	M39	M30	M36	M39	M45	M52
l_{TB}	[mm]	130	145	166	195	245	195	220	245	263	320
l_{Co}	[mm]	48	60	72	90	120	90	108	120	135	160
θ_c	[mm]	25	30	35	50	65	50	60	65	75	90
θ	[mm]	Ø16	Ø20	Ø25	Ø32	Ø40	2Ø25	2Ø28	2Ø28	2Ø32	4Ø32
l_a	[mm]	864	1200	1296	1545	2510	1333	1800	2110	2400	1660
L	[mm]	970	1315	1426	1695	2695	1483	1966	2295	2595	1900
Washer	[mm]	Ø40-6	Ø44-6	Ø56-6	Ø65-8	Ø90-10	Ø65-8	Ø80-8	Ø90-10	Ø100-10	Ø100-12
Weight	[kg]	1.9	3.8	6.3	12.5	31.1	13.3	22.5	27.2	40.1	57.4
Color code		Yellow	Blue	Gray	Green	Orange	Black	Red	Brown	Purple	White

NOTE: Lap lengths of standard length anchor bars are calculated for concrete grade C25/30 in good bond condition.

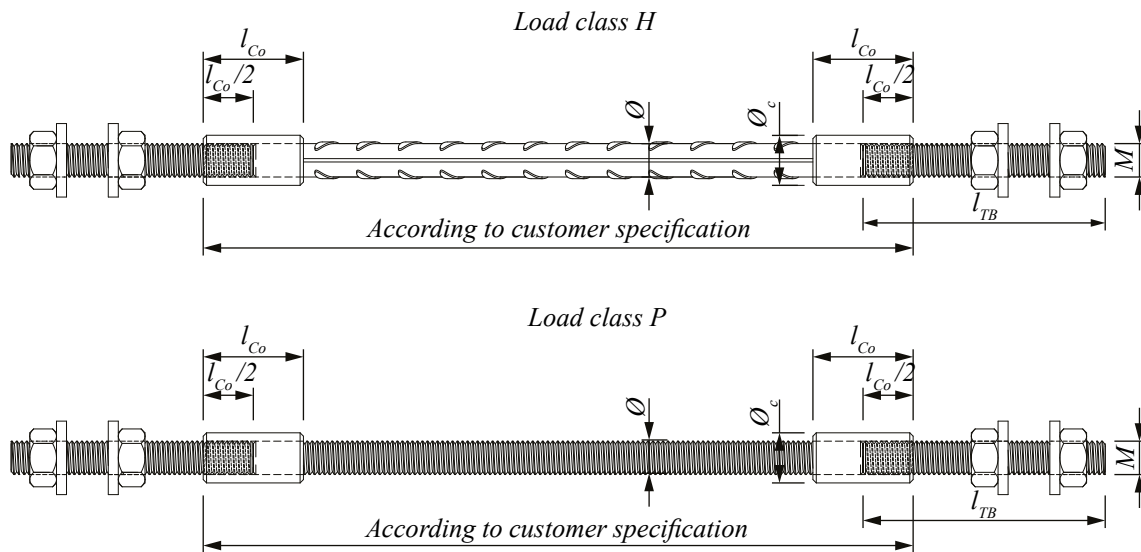
Table 2. Dimensions of the COPRA® L with headed anchor bar(s).



		Load class H					Load class P				
		COPRA 16H	COPRA 20H	COPRA 24H	COPRA 30H	COPRA 39H	COPRA 30P	COPRA 36P	COPRA 39P	COPRA 45P	COPRA 52P
M		M16	M20	M24	M30	M39	M30	M36	M39	M45	M52
l_{TB}	[mm]	130	145	166	195	245	195	220	245	263	320
l_{Co}	[mm]	48	60	72	90	120	90	108	120	135	160
\varnothing_c	[mm]	25	30	35	50	65	50	60	65	75	90
\varnothing	[mm]	Ø16	Ø20	Ø25	Ø32	Ø40	2Ø25	2Ø28	2Ø28	2Ø32	4Ø32
d_h	[mm]	38	46	55	70	90	55	84	84	70	70
k	[mm]	10	12	13	15	18	13	20	20	15	15
l_a	[mm]	174	235	300	350	515	520	574	695	785	900
L	[mm]	280	350	430	500	700	670	740	880	980	1140
Washer	[mm]	Ø40-6	Ø44-6	Ø56-6	Ø65-8	Ø90-10	Ø65-8	Ø80-8	Ø90-10	Ø100-10	Ø100-12
Weight	[kg]	0.8	1.4	2.5	5.0	11.4	7.1	11.2	14.0	19.5	38.5
Color code		Yellow	Blue	Gray	Green	Orange	Black	Red	Brown	Purple	White

NOTE: The total length of the headed anchoring bars should be defined according to the dimensions of the concrete member and verified according to EN 1992-4. Customized lengths can be produced upon a request.

Table 3. Dimensions of the double-sided COPRA® D.



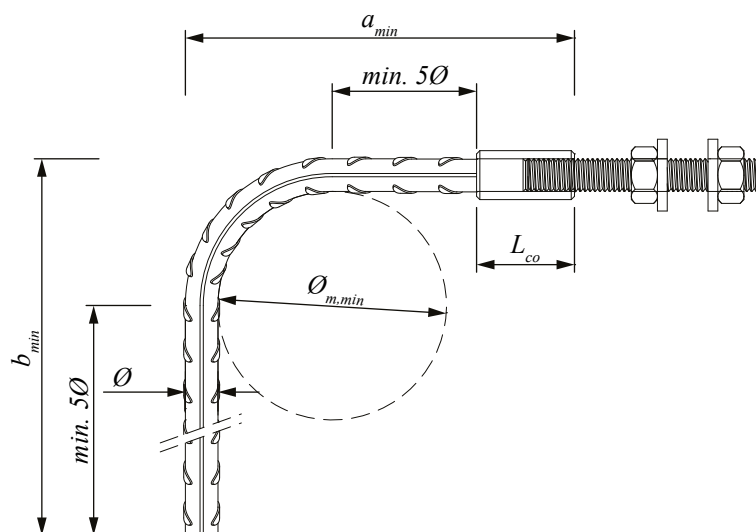
		Load class H					Load class P				
		COPRA 16H	COPRA 20H	COPRA 24H	COPRA 30H	COPRA 39H	COPRA 30P	COPRA 36P	COPRA 39P	COPRA 45P	COPRA 52P
M		M16	M20	M24	M30	M39	M30	M36	M39	M45	M52
l_{TB}	[mm]	130	145	166	195	245	195	220	245	263	320
l_{Co}	[mm]	48	60	72	90	120	90	108	120	135	160
ϕ_c	[mm]	25	30	35	50	65	50	60	65	75	90
ϕ	[mm]	$\phi 16$	$\phi 20$	$\phi 25$	$\phi 32$	$\phi 40$	$\phi 30$	$\phi 36$	$\phi 39$	$\phi 45$	$\phi 52$
Washer	[mm]	$\phi 40-6$	$\phi 44-6$	$\phi 56-6$	$\phi 65-8$	$\phi 90-10$	$\phi 65-8$	$\phi 80-8$	$\phi 90-10$	$\phi 100-10$	$\phi 100-12$
Color code		Yellow	Blue	Gray	Green	Orange	Black	Red	Brown	Purple	White

NOTE. The total length of the double-sided COPRA® Anchoring Coupler should be defined according to the dimensions of the concrete member.

1.3.1 Anchoring couplers with bent anchor bars

The anchor bars in single-sided COPRA® Anchoring Couplers may be bent to fit in shallow concrete members. The minimum dimensions of the bent part are specified in Table 4 and should be also taken into account when designing the bent anchoring couplers.

Table 4. Minimum dimensions of the bent part of the anchoring coupler.



		COPRA 16H	COPRA 20H	COPRA 24H	COPRA 30H	COPRA 39H	COPRA 30P	COPRA 36P	COPRA 39P	COPRA 45P	COPRA 52P
\varnothing	[mm]	16	20	25	32	40	25	28	28	32	32
$\varnothing_{m,min}$	[mm]	64	140	175	224	280	175	196	196	224	224
L_{co}	[mm]	48	60	72	90	120	90	108	120	135	160
a_{min}	[mm]	176	250	310	394	500	328	374	386	439	464
b_{min}	[mm]	128	190	238	304	380	238	266	266	304	304

NOTE: The minimum mandrel diameter $\varnothing_{m,min}$ must be checked for each individual case according to EN 1992-1-1 section 8.3.

The length of the bent anchor bars should be determined in accordance with EN 1992-1-1: section 8.4.

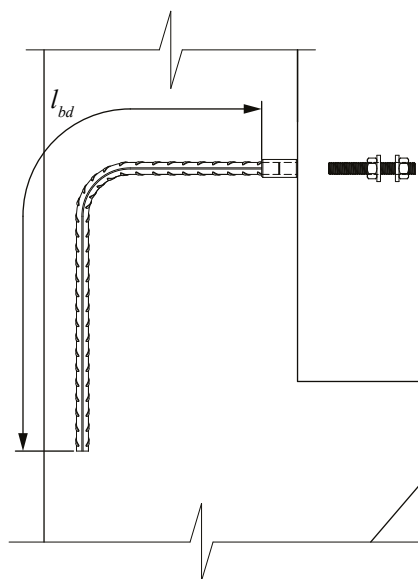


Figure 7. Anchorage length for bent anchoring couplers.

2. Resistances

The resistances of COPRA® Anchoring Couplers are determined by a design concept that refers to the following standards:

- EN 1992-1-1:2004/AC:2010
- EN 1993-1-8:2005
- VDI 2233-1:2003.

The resistances of COPRA® Anchoring Couplers provided in this document are equal to the tensile resistances of the threaded bars used in the anchoring couplers.

Table 5. Design values of tensile or compressive resistance of individual COPRA® Anchoring Coupler.

		COPRA 16H	COPRA 20H	COPRA 24H	COPRA 30H	COPRA 39H	COPRA 30P	COPRA 36P	COPRA 39P	COPRA 45P	COPRA 52P
N_{Rd} $N_{Rd,0}$	[kN]	62	96	139	220	383	299	436	521	697	938

NOTE: The tensile resistance shown in Table 5 may be reduced when COPRA® L type parts with head(s) are used due to the close location to the concrete edge or a small anchorage length. Each case must be designed case-by-case and verified by a designer.

Table 6. Design values of shear resistance of individual COPRA Anchoring Coupler.

		COPRA 16H	COPRA 20H	COPRA 24H	COPRA 30H	COPRA 39H	COPRA 30P	COPRA 36P	COPRA 39P	COPRA 45P	COPRA 52P
Erection Stage $V_{Rd,0}$	[kN]	5	10	18	37	72	53	88	104	144	215
Final Stage V_{Rd}	[kN]	20	31	45	72	125	89	130	155	207	219
t_{Grout}	[mm]	50	50	50	50	60	50	55	60	65	70

NOTE 1: The resistances V_{Rd} and $V_{Rd,0}$ are valid for thicknesses of grouting equal to t_{Grout} and when counter nuts are used.

NOTE 2: The design value of resistance of the anchoring couplers from Load class H corresponds to the resistance of the HPM® Rebar Anchor Bolts and Load class P corresponds to the resistance of the PPM® Anchor Bolts.

NOTE 3: The resistances shown in Table 5 and Table 6 are without the simultaneous action of axial and shear load. For combined resistance, use the HPM® Rebar Anchor Bolts Technical Manual section 2.2.

NOTE 4: The shear resistance of the COPRA® Anchoring Coupler is not applicable in combination with the BECO® Beam Shoe. For more information, please see the BECO® Beam Shoe Technical Manual.

2.1 Fire resistance

The concrete cover of the anchoring couplers should be at least equivalent to the concrete cover of the reinforcement of the concrete element to ensure adequate fire protection of the coupler. If the fire resistance of the connection is judged to be insufficient, the concrete cover of the anchoring coupler must be increased.

Selecting COPRA® Anchoring Coupler

The following aspects must be considered when selecting an appropriate type of COPRA® Anchoring Coupler to be used in bolted connections:

- Resistances
- Position and arrangement of the anchoring couplers in the load-bearing structure
- Design values of loads.

The resistance of the COPRA® Anchoring Coupler must be verified at the following stages:

- Erection stage
- Final stage
- In the event of a fire.

Product code

After selecting the correct COPRA® Anchoring Coupler, a product code describing the product may be defined according to the description in *Figure 8*. Please use this code in drawings and when ordering the product from Peikko's Sales Service.

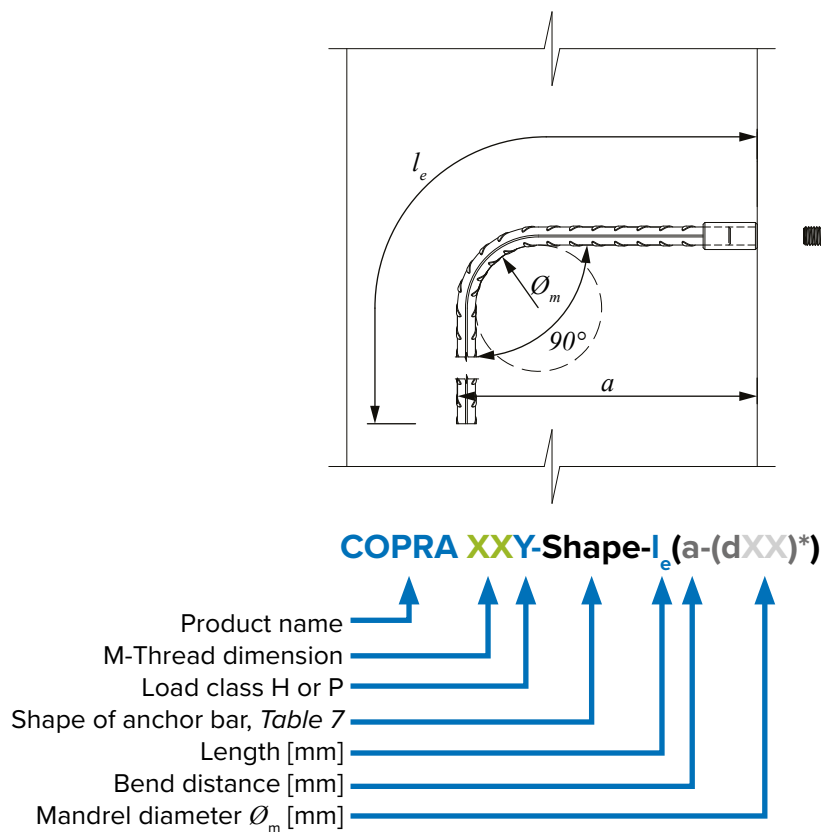


Figure 8. Product code for single-sided COPRA® Anchoring Couplers.

* Mandrel diameter must be defined only if the value differs from the minimum requirements of EN 1992-1-1, section 8.3.

Length of COPRA® P with straight anchor bar/s:

$$l_e = l_{bd} + l_{Co}$$

where:

- l_{Co} = Length of the coupler, *Table 1* [mm]
 l_{bd} = Anchorage length, *Figure 7* [mm]
= For standard models $l_{bd} = l_a$, *Table 1* [mm]

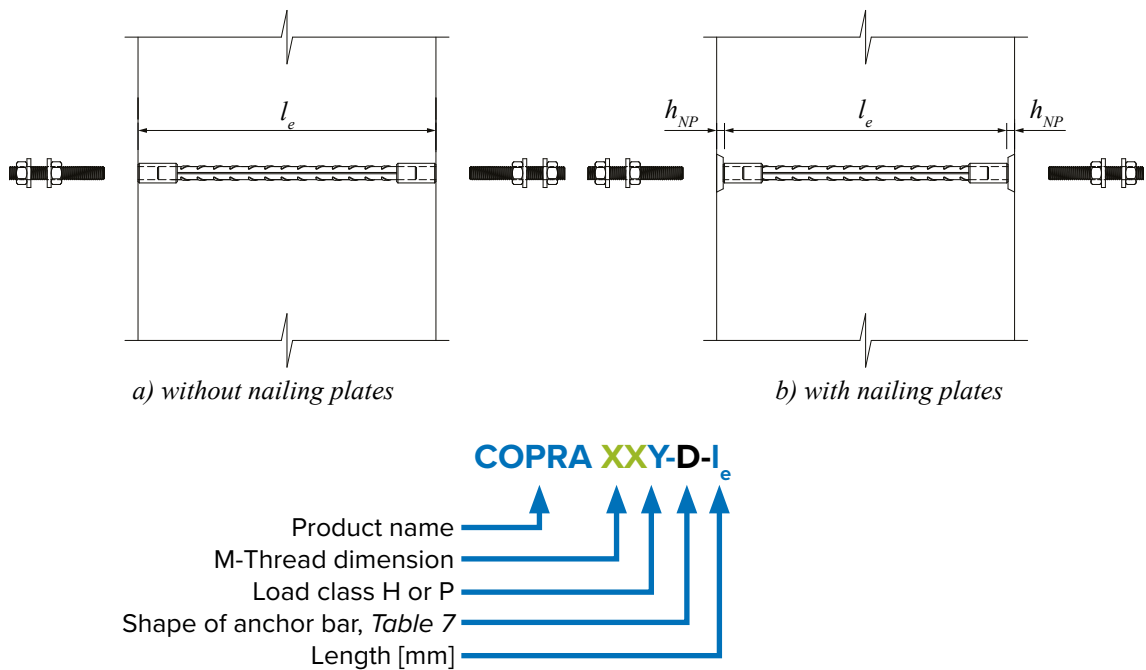


Figure 9. Product code for double-sided COPRA® Anchoring Couplers.

Length of the double-sided anchoring coupler

$$l_e = h_c - 2 \times h_{np}$$

where:

- h_c = Column width [mm]
- h_{np} = Thickness of nailing plate [mm], see section Annex B – Accessories [mm]

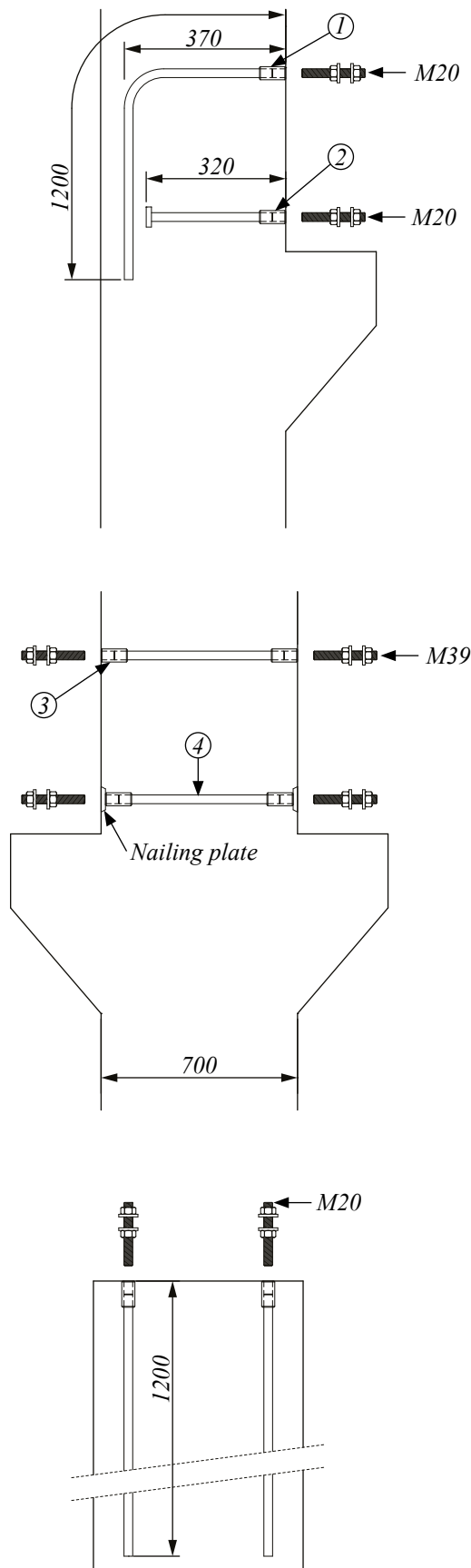
NOTE: The thickness of nailing plates should be taken into account only in cases where nailing plates are used.

Table 7. End types and bending shapes of COPRA® Anchoring Couplers. Shape codes according to EN ISO 3766.

P – Straight end		D – Double sided		L – Headed stud	
P		D		L	
P12					

NOTE: The letters P, D or L describe the end type of the anchor bar, while the numbers after the letter describe the bending shape.

Examples of product codes in various situations.



- Tensile or compression force for each anchoring coupler
 $N_{Ed} = 87 \text{ kN}$
- Selected **COPRA 20H**
- Tensile resistance $N_{Rd} = 96 \text{ kN}$
 $N_{Ed} < N_{Rd} \Rightarrow 87 < 96 \text{ kN}$

Item 1.

- Bended anchoring coupler with rebar as anchor bar

COPRA 20H-P12 - 1200(370)

Item 2.

- Headed anchoring coupler

COPRA 20H-L - 320

- Tensile or compression force for each anchoring coupler
 $N_{Ed} = 458 \text{ kN}$
- Selected **COPRA 39P**
- Tensile resistance $N_{Rd} = 521 \text{ kN}$
 $N_{Ed} < N_{Rd} \Rightarrow 458 < 521 \text{ kN}$

Item 3.

- Double-sided anchoring coupler

COPRA 39P-D - 700

Item 4.

- Double-sided anchoring coupler. Nailing plates are used for installation to the formwork. The length of the anchoring coupler is reduced by the thickness of nailing plates.

COPRA 39P-D - 680

- Tensile or compression force for each anchoring coupler
 $N_{Ed} = 70 \text{ kN}$
- Selected **COPRA 20H**
- Tensile resistance $N_{Rd} = 96 \text{ kN}$
 $N_{Ed} < N_{Rd} \Rightarrow 70 < 96 \text{ kN}$
- COPRA® Anchoring Coupler with straight anchor bar

COPRA 20H-P - 1200

Annex A – Transverse reinforcement in the lap zone

COPRA® Anchoring Couplers with straight bars are spliced with the main reinforcement of the base structure. The main reinforcement in the base structure must be at least equal to the cross-section of the anchorage reinforcement of the anchoring coupler. Following EN 1992-1-1, the lap zone should be reinforced with a sufficient amount of transverse reinforcements ΣA_{st} (see Table 8 for the minimum amounts of transverse reinforcement).

Table 8. Transverse reinforcement in lap zone.

		COPRA 16H	COPRA 20H	COPRA 24H	COPRA 30H	COPRA 39H	COPRA 30P	COPRA 36P	COPRA 39P	COPRA 45P	COPRA 52P
Σn_{st}	[pcs]	(4+4)Ø6	(4+4)Ø8	(4+4)Ø8	(5+5)Ø10	(7+7)Ø12	(5+5)Ø8	(5+5)Ø8	(6+6)Ø10	(6+6)Ø10	(6+6)Ø10
l_o	[mm]	816	1140	1224	1455	2390	1243	1692	1990	2265	1500

NOTE: Transverse reinforcement is defined for anchoring couplers under tensile load.

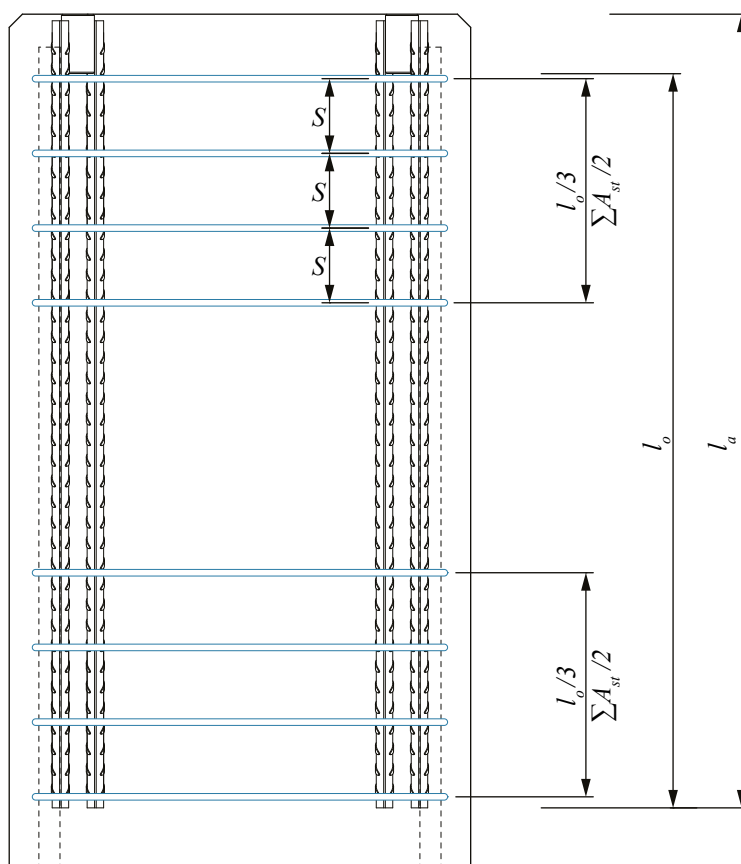


Figure 10. Placing of transverse reinforcement at lap zone.

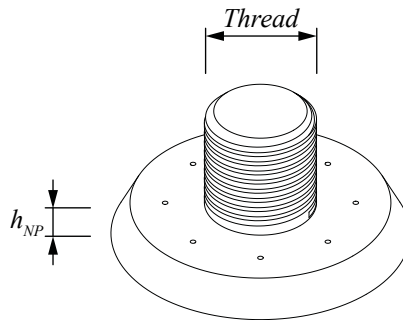
Legend:

- S – Spacing of transverse reinforcement ≤ 150 mm
- l_o – Splice length
- l_a – Length of the bolt
- A_{st} – Area of transverse reinforcement

Annex B – Accessories

Nailing plates

Screw-in nailing plates can be used to fix COPRA® Anchoring Couplers to the mold as an optional solution. Nailing plates are available for all product ranges of anchoring couplers. To ensure that the thread of the coupler will be clean after casting, it is recommended to apply some grease to the thread.



Thread	[mm]	M16	M20	M24	M30	M36	M39	M45	M52
h_{NP}	[mm]	10	10	10	10	10	10	12	12

Installation template

In cases where anchoring couplers are placed in vertical positions in groups, the correct position of the anchoring couplers can be secured using the PPL Installation Template. It enables groups of anchoring couplers to be centralized and the correct position to be assured in relation to the horizontal plate. For more information, please see the PPL Bolt Installation Template leaflet.

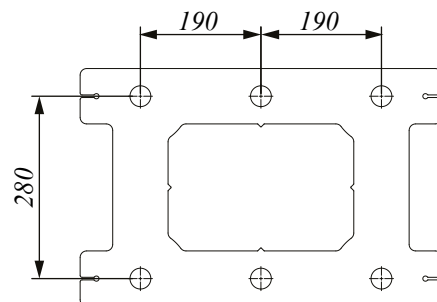
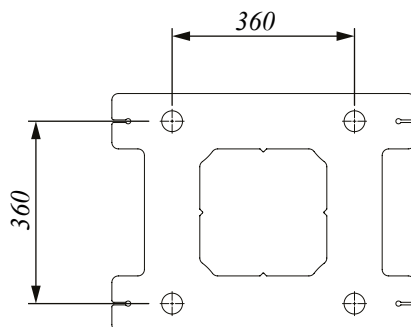


Ordering PPL Installation Templates

When PPL Installation Templates are ordered, the thread diameter of anchoring couplers, the number of bolts, and the center-to-center dimensions must be specified.

Examples of installation plates:

- 1) **PPL 39 - 4** 360 × 360: 4 pieces M39 bolts in square form.
- 2) **PPL 30 - 6** 280 × (190+190): 6 pieces M30 bolts in rectangular form.



Installation of COPRA® Anchoring Coupler

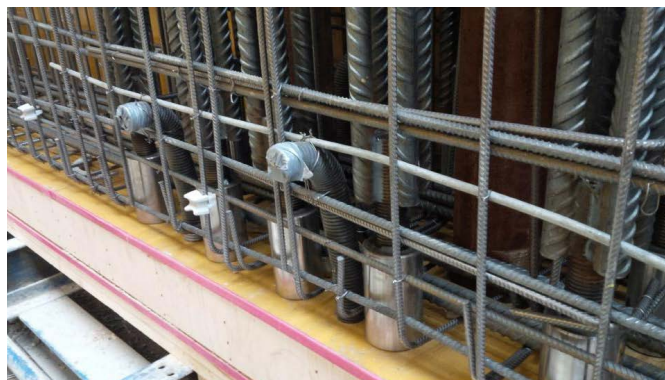
Install the product – Casting of the COPRA® Anchoring Coupler

Identification of the product

COPRA® Anchoring Couplers are available in models (16, 20, 24, 30, 36, 39, 45, 52) defined by the M-thread diameter of the bolt. The model of anchoring coupler can be identified by the name on the product's label and the product's color.

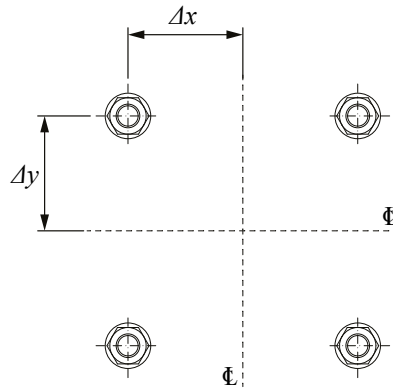
Table 9. Color codes for COPRA Anchoring Couplers.

Anchoring Coupler	Thread diameter	Color code
COPRA 16H	M16	Yellow
COPRA 20H	M20	Blue
COPRA 24H	M24	Gray
COPRA 30H	M30	Green
COPRA 39H	M39	Orange
COPRA 30P	M30	Black
COPRA 36P	M36	Red
COPRA 39P	M39	Brown
COPRA 45P	M45	Purple
COPRA 52P	M52	White



Installation tolerances

Anchoring couplers are installed at the precast factory. The height level of the anchoring coupler is defined by the formwork or an installation template. The maximum height installation tolerance in precast elements is ± 2 mm. The installation tolerances for groups of anchoring couplers are shown in the following table.

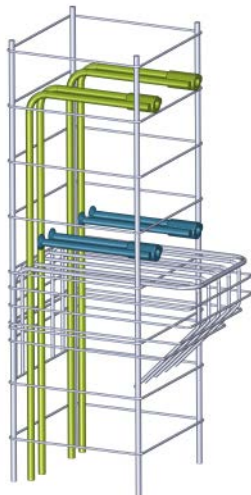


		COPRA 16H	COPRA 20H	COPRA 24H	COPRA 30H	COPRA 39H	COPRA 30P	COPRA 36P	COPRA 39P	COPRA 45P	COPRA 52P
Δx	[mm]	± 3	± 3	± 3	± 3	± 3	± 3	± 4	± 4	± 4	± 5
Δy	[mm]	± 3	± 3	± 3	± 3	± 3	± 3	± 4	± 4	± 4	± 5

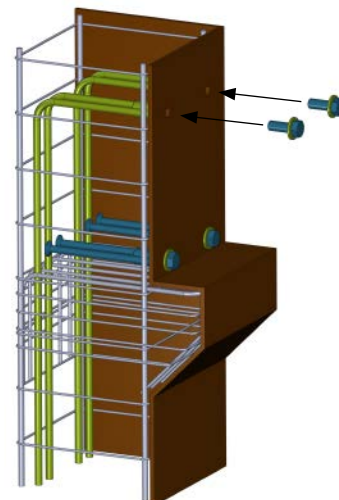
Installation of COPRA® Anchoring Couplers

Anchoring couplers are placed into the reinforcing cage and screwed to the formwork wall. It is recommended to place some grease on the coupler thread before screwing it into the mold. This prevents the coupler from being filled with concrete during casting. After the concrete element is cast, the connecting nuts are removed from the mold and the concrete element is removed from the formwork.

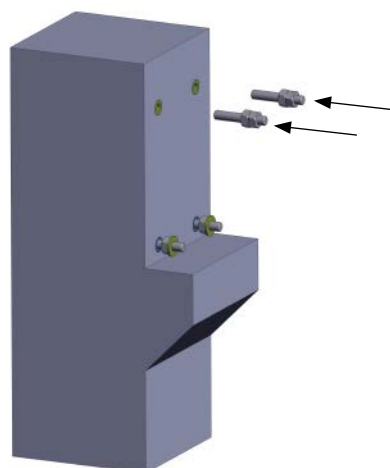
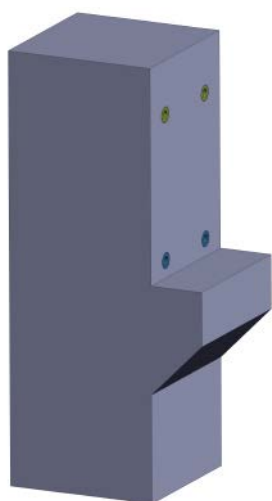
NOTE: Optionally, nailing plates can be used to attach the couplers to the formwork. See Annex B – Accessories.



1) Placing the anchoring couplers into the reinforcing cage of the column.



2) Placing the column reinforcement with anchoring couplers to the formwork. Fixing anchoring couplers with bolts.

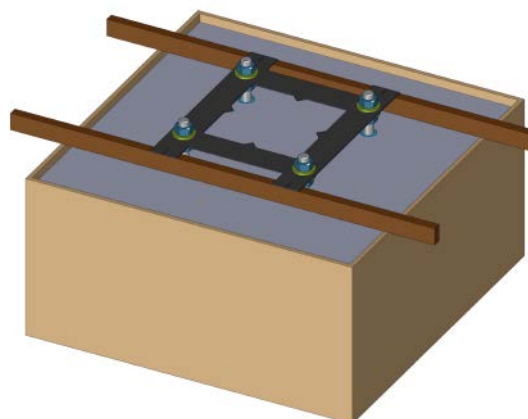
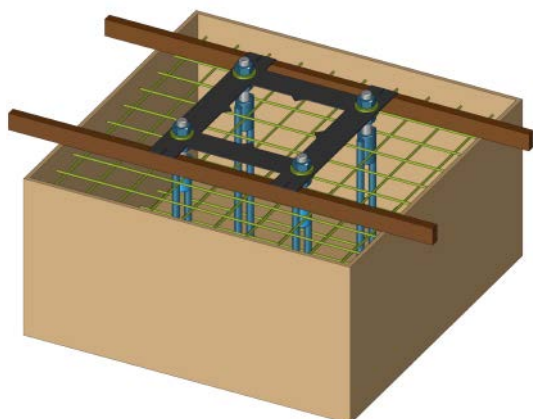


3) Casting the column and demolding the element.

4) Installing the threaded bars with nuts at building site.

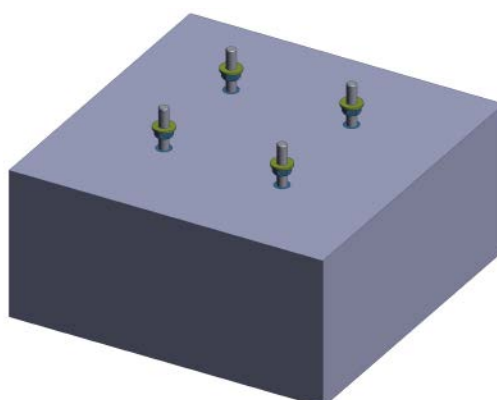
Installation to foundation

Anchoring couplers are placed into the reinforcing cage and screwed to the installation template with threaded bars and nuts. The foundation is filled with concrete. When the concrete element hardens to the required strength, the installation template is removed and used for another group of anchoring couplers. The lower nuts are leveled to the correct position before the attachment is erected.



1) Placing reinforcement and anchoring couplers into the formwork. The installation template ensures the correct position of the anchoring coupler.

2) Casting the foundation.



3) Removing the installation template and leveling the lower nuts to the correct position.

Install the product – Assembling

Erection of the attachment

Vertical attachment (Figure 11):

Before placing the vertical attachment into the final position, screw the threaded bar onto the coupler and tighten it with two nuts (see *Figure 11*). Interlocking between two nuts enables the threaded bar to be fastened to the coupler. The top nut is removed from the threaded bar. The lower nuts with washers are leveled into the final position. The attachment is placed in the final position. The lower nuts are adjusted as needed. The top washers and nuts are placed onto the threaded bars and tightened. After the nuts are tightened, the precast element can be detached from the crane.

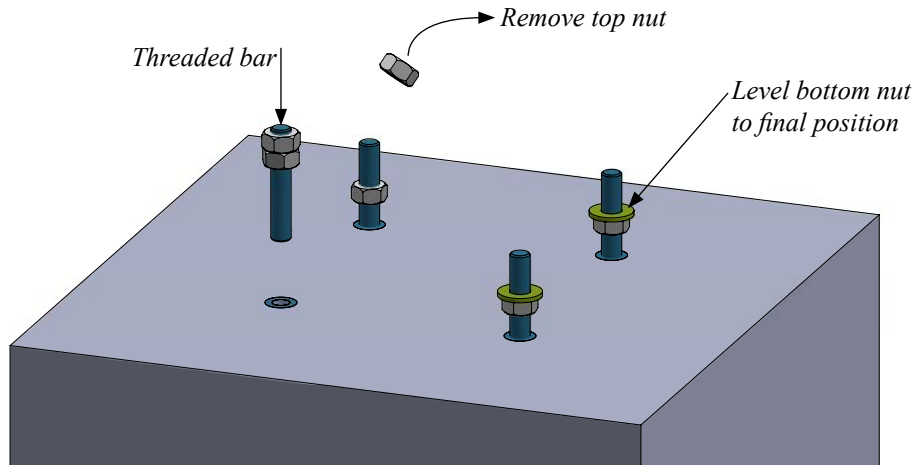


Figure 11. Installation of the threaded bars to the couplers.

Horizontal attachment (Figure 12):

Before placing the horizontal attachment in the final position, the thread protection plastic plugs are removed from the coupler. The horizontal attachment is placed on the column corbel (steel or elastic shim plate). The threaded bar is placed through the casting box into the coupler and tightened with two nuts. Interlocking between two nuts enables the threaded bar to be fastened to the coupler. Shim plates are placed between the column and horizontal attachment. The top washers and nuts are screwed into the final position and tightened.

1. Install the precast beam in the column corbel.
2. Insert threaded bars through the beam shoe and screw them to the couplers. Threaded bars are tightened to the couplers using two nuts.
3. Remove the top nuts and tighten the lower nuts in their final position.

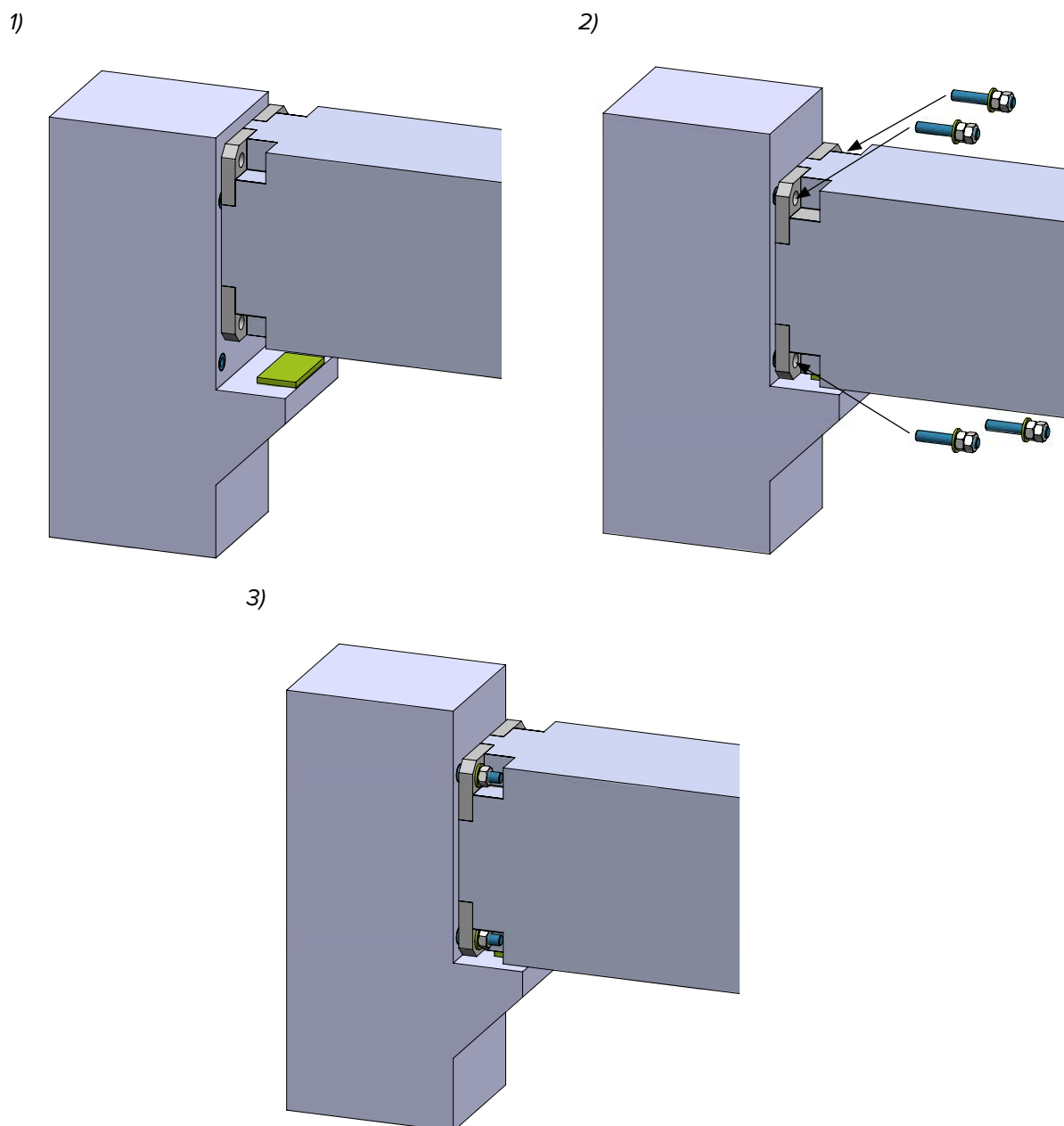


Figure 12. Horizontal attachment to anchoring couplers.

NOTE: Threaded couplers must be clean and dirt-free before the threaded bar is screwed into the coupler.

The gap in the connection must be then grouted with non-shrinking mortar. The connection is finalized after the grouting has hardened to sufficient strength and the structure can take the load of upper-floor elements.

Revision History

Version: PEIKKO GROUP 10/2022. Revision: 004

- Updates to Tables 1 and 2.
- Removed paragraph from Section 1.2.
- Updated Table 8.

Version: PEIKKO GROUP 05/2022. Revision: 003

- Updates to Table 2.
- Annex B updated.

Version: PEIKKO GROUP 03/2017. Revision: 002*

- New cover design for 2018.

Version: PEIKKO GROUP 11/2015. Revision: 001

- First publication.

Resources

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