



FORBUILD



**CONCRETE REINFORCEMENT
SYSTEMS**

Dear Customers,

the concrete reinforcement systems offered by Forbuild are innovative and reliable solutions, which greatly reduce the time required to complete concreting works. Precise execution ensures structure durability, at the same time allowing quick and simple assembly.

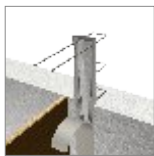
The broad variety of products for joining reinforcement bars allows us to pick, together with the Customer, the best solution, suitable for most cases. Our technical advisers are at Your disposal at every stage of Your investment.

We are confident that providing You with this catalogue, we shall simplify Your decision process with regard to the best technical solution. We will be grateful for any and all remarks concerning both the content as well as the graphics and presentation style of the included information. Our specialized trade representatives and technical advisors are staying to your disposal and provide assistance on every stage of the investment.

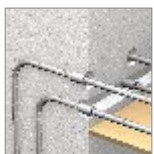
*We supply the technology, experience and high quality.
Build with us ensures success.*

FORBUILD SA

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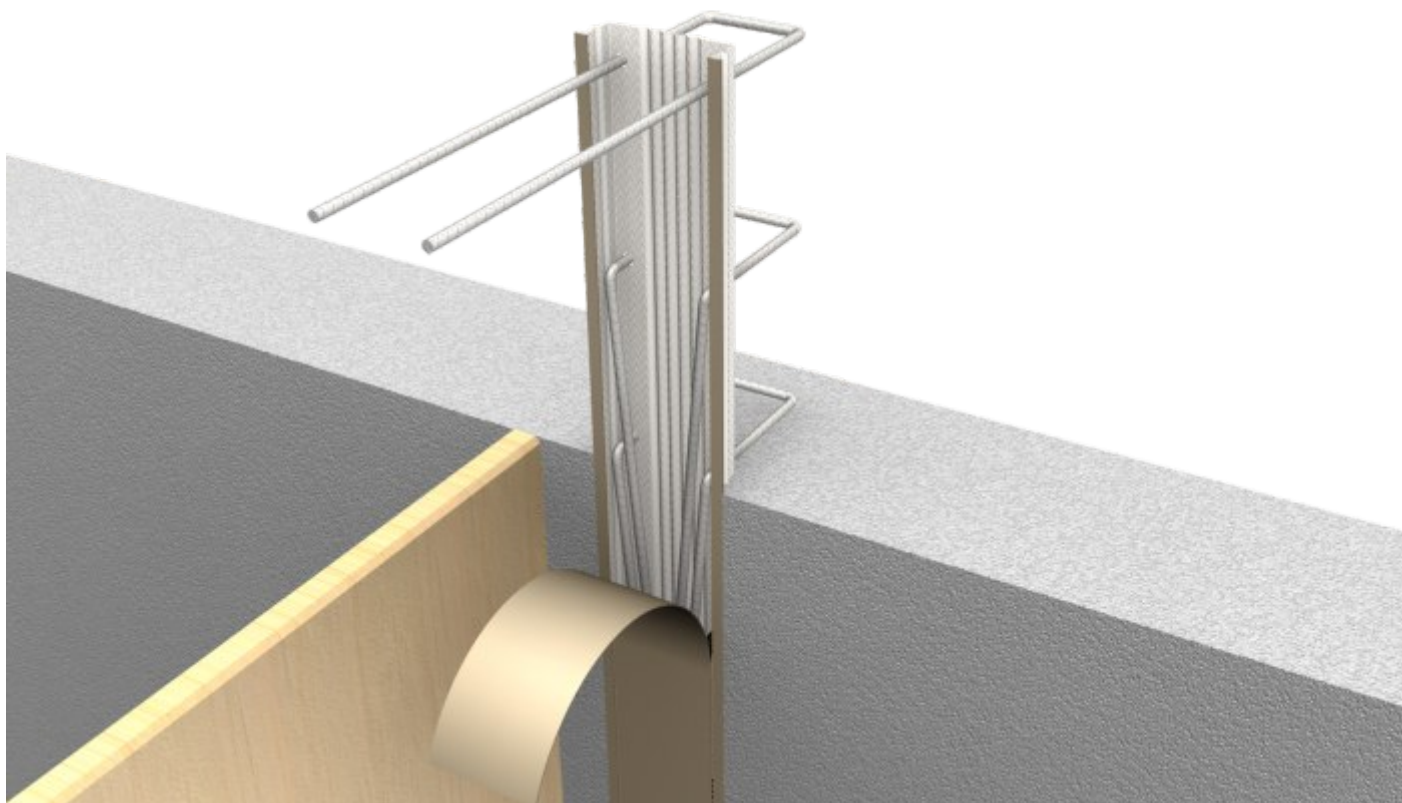
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BINDAX BENDABLE REINFORCEMENT SYSTEM



■ GENERAL INFORMATION**PRODUCT DESCRIPTION**

BINDAX sets are composed of the longitudinal steel profiles (rails) made by perforated, galvanized steel plate. Ribbed reinforcing bars are embedded in the profiles. Reinforcing bars from one side of the profile form anchoring loops, and from the other side- are bent to it and covered by the thick plastic tape..

Concrete reinforcement bended BINDAX is used to perform vertical and horizontal connections of the elements of reinforced concrete constructions, concreted in stages and the precast elements with monolithic.

Use of connecting set BINDAX ensures fulfillment all requirements specified by standards for proper form of contact anastomosis. Standards for design concrete constructions assume that with the correct shape of the joint we can treat the construction element as homogeneous and permanently compound.

USE

Reinforcement bended BINDAX allows execution of connection reinforced concrete structural elements, concreted in various stages of construction, i.e. in connection of the walls, floors to walls, staircase landings, balconies, consoles etc. It allows significantly reduce the duration of the investment and reducing the period of lease elements of formwork system.

ADVANTAGES

- simplified execution of constructing joints and additional concreting,
- easy and fast assembly - the component is attached to the formwork by nails,
- Specially contoured shape of the perforated rail provides proper preparation of the contact surface on the connection of the two elements, implemented at different time,

- Thanks to deliberately roughened joint with optimally shaped furrow (notch) entirely transfer shearing forces occurring in the connector,
- It allows for continuity of reinforcement and required length of anchoring bars in elements of reinforcement concrete,
- The shape of the rail guarantees the correct depth of concrete coverage of the reinforcing bars,
- The rail is made from galvanized steel plate, what protects it by aggressive influence of environment at the storage stage and during realization.
- The shape and construction of the rail provides stability during concreting and protect by permeation of the concrete inside the profile
- Thick plastic tape ensures durable protection of reinforcement bars at the time of installation the rail to the formwork. Perforation cut in the rail allows for its quick removal and commencement of reinforce works.
- Possibility of matching to the different shapes of formwork (i.e. arch formworks).
- It can be adapted to different systems of reinforcement in elements of reinforced concrete – non- standard elements, on inquiry.
- Reinforcement bended BINDAX has Technical Approval published by ITB in Warsaw.
- Reinforcement bended BINDAX pass complete cycle of audits. Production plant Forbuild SA has Certificate of Factory Production Control published by ITB in Warsaw. It means that the producer had implemented the factory production control system and conducts testing of samples of the product in accordance to the plan of the test for assurance the product in the highest quality.

TECHNICAL DETAILS

- component length: 1,25 m
- rail width: 60, 80, 110, 140, 160, 190, 220, 240 mm
- reinforcement bar diameter: ϕ 8, 10, 12, 14, 16
- rail bar spacing: 10, 15, 20, 25, 30.
- bending diameter: $6 \times \phi$ (bar diameter)
- rail recess depth: 30 mm.
- reinforcement bars :
 - yield strength $R_e \geq 500$ MPa
 - tensile strength $R_m \geq 550$ MPa

Designation examples:

BINDAX - S_i, typ S 190 - 12 / 20
 | | | |
 standard rail bar bar
 component width diameter spacing

Additionally, construction of the BINDAX connection sets gives possibility of performance non-standard elements:

- in non-standard length
- by spacing bars other than standard
- with bigger thickness of the rail (more than 30 mm)
- with the other shape of anchoring loops
- with other bending diameters
- for wider joints there is possibility of performing double-line connections (comprising two parallel rails),
- The bars in BINDAX sets, can be made with diameter 14, 16 on inquiry.

This solution it' s shown in the Technical Approval published by ITB in Warsaw.

THE ANCHORAGE LENGTH AND OVERLAPPING THE BARS ACCORDING TO PN-EN 1991-1-1

BASIC ANCHOR LENGTH $l_{b,reqd}$ WG PN-EN 1992-1-1

When calculating the required anchor length, one should consider the steel grade and those properties of bars that influence adhesiveness.

$$l_{b,reqd} = \frac{\phi}{4} \frac{\sigma_{sd}}{f_{bd}}$$

σ_{sd} – calculational tensile stress at the spot from which the anchor length is measured

f_{bd} – calculational value of concrete tensile strength

ϕ - bar diameter

OVERLAP LENGTH l_0 WG PN-EN 1992-1-1

The calculational overlap length is:

$$l_0 = \alpha_1 \cdot \alpha_2 \cdot \alpha_3 \cdot \alpha_5 \cdot \alpha_6 \cdot l_{b,reqd} \quad \text{but not less than } l_{0,min}$$

$l_{b,reqd}$ – basic anchor length

$\alpha_1, \alpha_2, \alpha_3, \alpha_5, \alpha_6$ – coefficient values according to table 8.2 of the standard

$l_{0,min} = \{ 0,3 \cdot \alpha_6 \cdot l_{b,reqd}; 15\phi; 200 \text{ mm} \}$

APPROVALS, CERTIFICATES

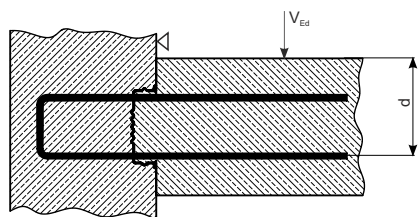


Technical approval No. AT-15-3793/2014 published by ITB Warsaw

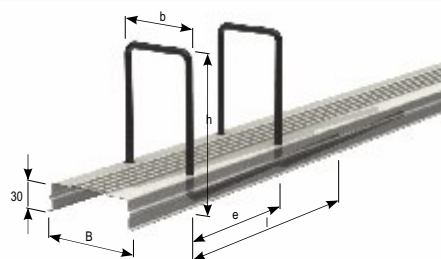


The Certificate of the Factory Production Control no. ITB-0353/Z published by Building Research Institute in Warsaw

COMPUTATIONAL LATERAL FORCE OPERATING TRANSVERSELY TO THE PROFILE



△ = construction joint d - useful width of the cross section

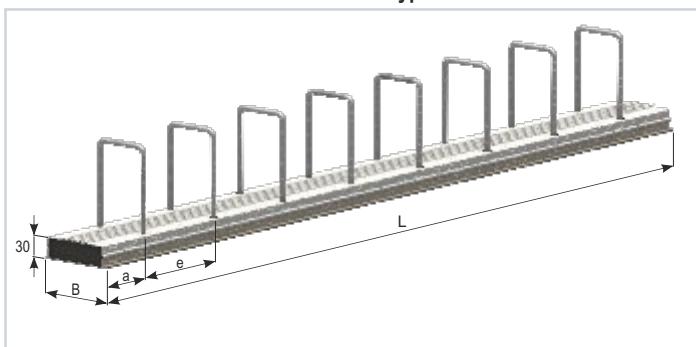


ϕ [mm]/e[cm]	B=80mm	B=110mm	B=140mm	B=160mm	B=190mm	B=220mm	B=240mm
C20/25							
8/10	-	57,04	70,54	79,54	87,37	87,37	87,37
8/15	41,02	54,52	58,25	58,25	58,25	58,25	58,25
8/20	39,77	43,69	43,69	43,69	43,69	43,69	43,69
8/25	34,95	34,95	34,95	34,95	34,95	34,95	34,95
8/30	-	29,12	29,12	29,12	29,12	29,12	29,12
10/10	-	61,28	74,78	83,78	97,28	110,78	119,78
10/15	43,85	57,35	70,85	79,85	91,01	91,01	91,01
10/20	41,89	55,39	68,26	68,26	68,26	68,26	68,26
10/25	40,71	54,21	54,61	54,61	54,61	54,61	54,61
10/30	-	45,51	45,51	45,51	45,51	45,51	45,51
12/10	-	66,46	79,96	88,96	102,46	115,96	124,96
12/15	-	60,80	74,30	83,30	96,80	110,30	119,30
12/20	-	57,98	71,48	80,48	93,98	98,30	98,30
12/25	-	56,28	69,78	78,64	78,64	78,64	78,64
12/30	-	55,15	65,53	65,53	65,53	65,53	65,53
C25/30							
8/10	-	68,44	84,64	87,37	87,37	87,37	87,37
8/15	49,23	58,25	58,25	58,25	58,25	58,25	58,25
8/20	43,69	43,69	43,69	43,69	43,69	43,69	43,69
8/25	34,95	34,95	34,95	34,95	34,95	34,95	34,95
8/30	-	29,12	29,12	29,12	29,12	29,12	29,12
10/10	-	73,53	89,73	100,53	116,73	132,93	136,52
10/15	52,62	68,82	85,02	91,01	91,01	91,01	91,01
10/20	50,27	66,47	68,26	68,26	68,26	68,26	68,26
10/25	48,85	54,61	54,61	54,61	54,61	54,61	54,61
10/30	-	45,51	45,51	45,51	45,51	45,51	45,51
12/10	-	79,75	95,95	106,75	122,95	139,15	149,95
12/15	-	72,96	89,16	99,96	116,16	131,06	131,06
12/20	-	69,57	85,77	96,57	98,30	98,30	98,30
12/25	-	67,54	78,64	78,64	78,64	78,64	78,64
12/30	-	65,53	65,53	65,53	65,53	65,53	65,53

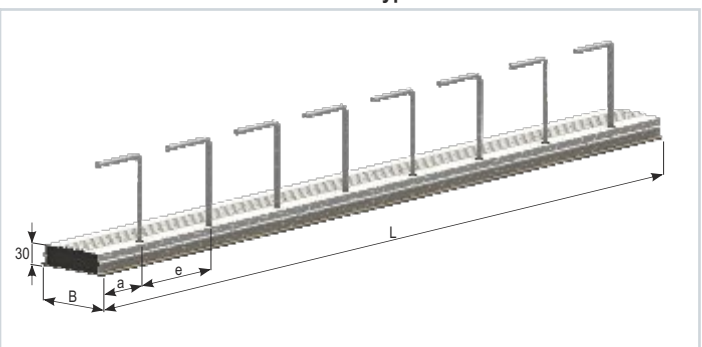
ϕ [mm]/e[cm]	B=80mm	B=110mm	B=140mm	B=160mm	B=190mm	B=220mm	B=240mm
C30/37							
8/10	-	76,05	87,37	87,37	87,37	87,37	87,37
8/15	54,70	58,25	58,25	58,25	58,25	58,25	58,25
8/20	43,69	43,69	43,69	43,69	43,69	43,69	43,69
8/25	34,95	34,95	34,95	34,95	34,95	34,95	34,95
8/30	-	29,12	29,12	29,12	29,12	29,12	29,12
10/10	-	81,70	99,70	111,70	129,70	136,52	136,52
10/15	58,47	76,47	91,01	91,01	91,01	91,01	91,01
10/20	55,85	68,26	68,26	68,26	68,26	68,26	68,26
10/25	54,28	54,61	54,61	54,61	54,61	54,61	54,61
10/30	-	45,51	45,51	45,51	45,51	45,51	45,51
12/10	-	88,61	106,61	118,61	136,61	154,61	166,61
12/15	-	81,07	99,07	111,07	129,07	131,06	131,06
12/20	-	77,30	95,30	98,30	98,30	98,30	98,30
12/25	-	75,04	78,64	78,64	78,64	78,64	78,64
12/30	-	65,53	65,53	65,53	65,53	65,53	65,53

■ STANDARD COMPONENTS

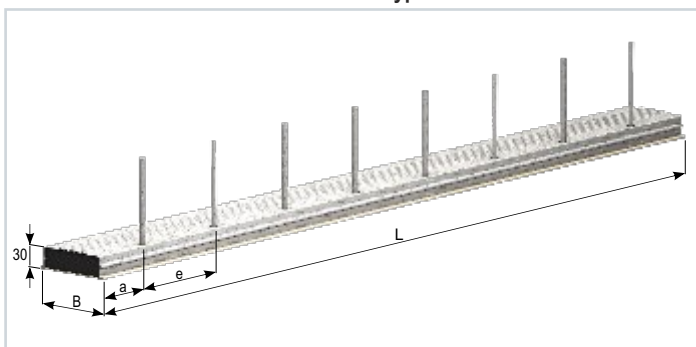
BINDAX - type S



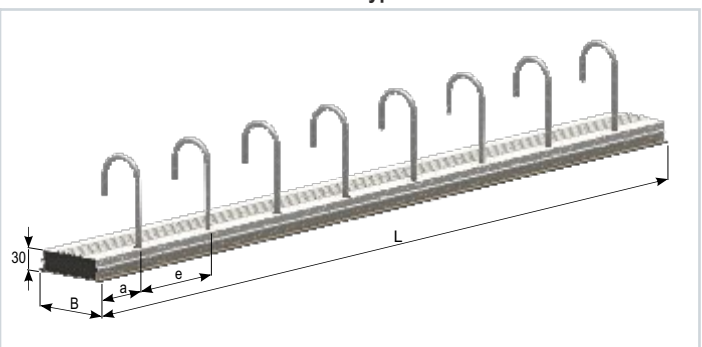
BINDAX - type WH



BINDAX - type W



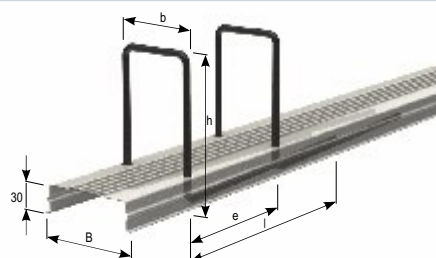
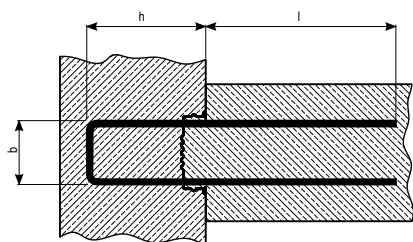
BINDAX - type H



Reinforcement bars system in the BINDAX rails

The bar spacing in the rail e [cm]	The distance of the first bar from the end of the rail a [cm]	Quantity of the bars in the rail [pcs.]
10	5,5	12
15	8,0	8
20	10,5	6
25	12,5	5
30	16,0	4

■ **BINDAX - TYPE S**

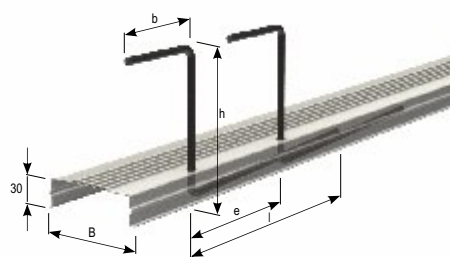
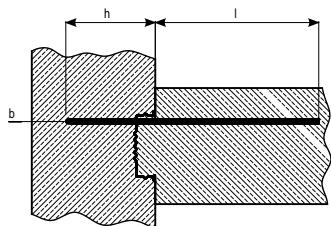


Symbol	Rail width B [mm]	Bar diameter φ [mm]	Bar spacing e [cm]	h [cm]	b [cm]	l [cm]	Measurement unit	Packaging [pcs/palette]	Weight [kg/m]	Art. no.
BINDAX - type S										
BINDAX-S,typ S 80-8/15	80	8	15	15	6	32	mb	150pcs.=187,5	3,217	ZB-ZO-CS-0-02543
BINDAX-S,typ S 80-8/20	80	8	20	15	6	32	mb	150	2,413	ZB-ZO-CS-0-02544
BINDAX-S,typ S 80-8/25	80	8	25	15	6	32	mb	150	2,011	ZB-ZO-CS-0-02545
BINDAX-S,typ S 80-10/15	80	10	15	15	6	29	mb	150	4,286	ZB-ZO-CS-0-02540
BINDAX-S,typ S 80-10/20	80	10	20	15	6	36	mb	150	3,830	ZB-ZO-CS-0-02541
BINDAX-S,typ S 80-10/25	80	10	25	15	6	39	mb	150	3,468	ZB-ZO-CS-0-02542
BINDAX-S,typ S 110-8/10	110	8	10	15	9	32	mb	80pcs.=100m	5,265	ZB-ZO-CS-0-05396
BINDAX-S,typ S 110-8/15	110	8	15	15	9	32	mb	80	3,510	ZB-ZO-CS-0-05397
BINDAX-S,typ S 110-8/20	110	8	20	15	9	32	mb	80	2,890	ZB-ZO-CS-0-05398
BINDAX-S,typ S 110-8/25	110	8	25	15	9	32	mb	80	2,640	ZB-ZO-CS-0-05400
BINDAX-S,typ S 110-8/30	110	8	30	15	9	32	mb	80	2,112	ZB-ZO-CS-0-05401
BINDAX-S,typ S 110-10/10	110	10	10	15	9	39	mb	80	8,130	ZB-ZO-CS-0-02388
BINDAX-S,typ S 110-10/15	110	10	15	15	9	39	mb	80	5,420	ZB-ZO-CS-0-02390
BINDAX-S,typ S 110-10/20	110	10	20	15	9	39	mb	80	4,340	ZB-ZO-CS-0-02392
BINDAX-S,typ S 110-10/25	110	10	25	15	9	39	mb	80	3,617	ZB-ZO-CS-0-02393
BINDAX-S,typ S 110-10/30	110	10	30	15	9	39	mb	80	2,893	ZB-ZO-CS-0-05402
BINDAX-S,typ S 110-12/10	110	12	10	15	9	30	mb	80	9,561	ZB-ZO-CS-0-02395
BINDAX-S,typ S 110-12/15	110	12	15	15	9	33	mb	80	7,740	ZB-ZO-CS-0-02396
BINDAX-S,typ S 110-12/20	110	12	20	15	9	46	mb	80	6,040	ZB-ZO-CS-0-02397
BINDAX-S,typ S 110-12/25	110	12	25	15	9	46	mb	80	5,033	ZB-ZO-CS-0-05403
BINDAX-S,typ S 110-12/30	110	12	30	15	9	46	mb	80	4,026	ZB-ZO-CS-0-05404
BINDAX-S,typ S 140-8/10	140	8	10	15	12	32	mb	108pcs.=135m	5,325	ZB-ZO-CS-0-02424
BINDAX-S,typ S 140-8/15	140	8	15	15	12	32	mb	108	3,550	ZB-ZO-CS-0-02425
BINDAX-S,typ S 140-8/20	140	8	20	15	12	32	mb	108	3,090	ZB-ZO-CS-0-02426
BINDAX-S,typ S 140-8/25	140	8	25	15	12	32	mb	108	2,830	ZB-ZO-CS-0-02427
BINDAX-S,typ S 140-8/30	140	8	30	15	12	32	mb	108	2,264	ZB-ZO-CS-0-05405
BINDAX-S,typ S 140-10/10	140	10	10	15	12	39	mb	108	7,560	ZB-ZO-CS-0-02412
BINDAX-S,typ S 140-10/15	140	10	15	15	12	39	mb	108	5,640	ZB-ZO-CS-0-02413
BINDAX-S,typ S 140-10/20	140	10	20	15	12	39	mb	108	4,370	ZB-ZO-CS-0-02414
BINDAX-S,typ S 140-10/25	140	10	25	15	12	39	mb	108	3,642	ZB-ZO-CS-0-05424
BINDAX-S,typ S 140-10/30	140	10	30	15	12	39	mb	108	2,914	ZB-ZO-CS-0-05425
BINDAX-S,typ S 140-12/10	140	12	10	15	12	40	mb	108	11,767	ZB-ZO-CS-0-02417
BINDAX-S,typ S 140-12/15	140	12	15	15	12	46	mb	108	8,010	ZB-ZO-CS-0-02420
BINDAX-S,typ S 140-12/20	140	12	20	15	12	46	mb	108	6,060	ZB-ZO-CS-0-02421
BINDAX-S,typ S 140-12/25	140	12	25	15	12	46	mb	108	5,050	ZB-ZO-CS-0-02422
BINDAX-S,typ S 140-12/30	140	12	30	15	12	46	mb	108	4,040	ZB-ZO-CS-0-05426
BINDAX-S,typ S 160-8/10	160	8	10	15	14	32	mb	84pcs.=105m	5,760	ZB-ZO-CS-0-05427
BINDAX-S,typ S 160-8/15	160	8	15	15	14	32	mb	84	3,840	ZB-ZO-CS-0-02443
BINDAX-S,typ S 160-8/20	160	8	20	15	14	32	mb	84	3,370	ZB-ZO-CS-0-02444
BINDAX-S,typ S 160-8/25	160	8	25	15	14	32	mb	84	3,010	ZB-ZO-CS-0-02445
BINDAX-S,typ S 160-8/30	160	8	30	15	14	32	mb	84	2,408	ZB-ZO-CS-0-05428
BINDAX-S,typ S 160-10/10	160	10	10	15	14	39	mb	84	7,240	ZB-ZO-CS-0-02429
BINDAX-S,typ S 160-10/15	160	10	15	15	14	39	mb	84	5,440	ZB-ZO-CS-0-02430

■ BINDAX - TYPE S

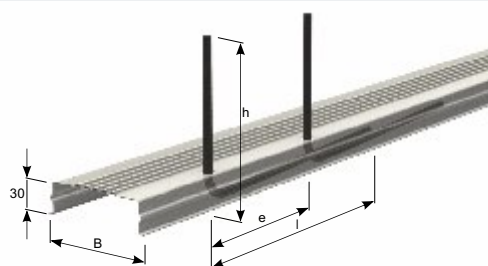
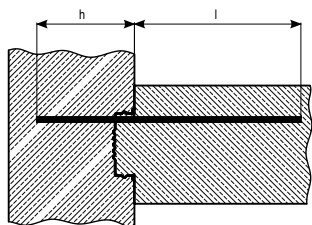
Symbol	Rail width B [mm]	Bar diameter φ [mm]	Bar spacing e [cm]	h [cm]	b [cm]	l [cm]	Measurement unit	Packaging [pcs/palette]	Weight [kg/m]	Art. no.
BINDAX - type S										
BINDAX-S,typ S 160-10/20	160	10	20	15	14	39	mb	84	4,490	ZB-ZO-CS-0-02432
BINDAX-S,typ S 160-10/25	160	10	25	15	14	39	mb	84	3,742	ZB-ZO-CS-0-05431
BINDAX-S,typ S 160-10/30	160	10	30	15	14	39	mb	84	2,993	ZB-ZO-CS-0-05432
BINDAX-S,typ S 160-12/10	160	12	10	15	14	43	mb	84	12,120	ZB-ZO-CS-0-02436
BINDAX-S,typ S 160-12/15	160	12	15	15	14	46	mb	84	7,900	ZB-ZO-CS-0-02438
BINDAX-S,typ S 160-12/20	160	12	20	15	14	46	mb	84	6,340	ZB-ZO-CS-0-02439
BINDAX-S,typ S 160-12/25	160	12	25	15	14	46	mb	84	5,283	ZB-ZO-CS-0-05433
BINDAX-S,typ S 160-12/30	160	12	30	15	14	46	mb	84	4,227	ZB-ZO-CS-0-05434
BINDAX-S,typ S 190-8/10	190	8	10	15	17	32	mb	72pcs.=90m	6,315	ZB-ZO-CS-0-02459
BINDAX-S,typ S 190-8/15	190	8	15	15	17	32	mb	72	4,210	ZB-ZO-CS-0-02460
BINDAX-S,typ S 190-8/20	190	8	20	15	17	32	mb	72	3,550	ZB-ZO-CS-0-02461
BINDAX-S,typ S 190-8/25	190	8	25	15	17	32	mb	72	3,370	ZB-ZO-CS-0-02462
BINDAX-S,typ S 190-8/30	190	8	30	15	17	32	mb	72	2,696	ZB-ZO-CS-0-05436
BINDAX-S,typ S 190-10/10	190	10	10	15	17	39	mb	72	7,860	ZB-ZO-CS-0-02448
BINDAX-S,typ S 190-10/15	190	10	15	15	17	39	mb	72	6,150	ZB-ZO-CS-0-02449
BINDAX-S,typ S 190-10/20	190	10	20	15	17	39	mb	72	5,050	ZB-ZO-CS-0-02450
BINDAX-S,typ S 190-10/25	190	10	25	15	17	39	mb	72	4,208	ZB-ZO-CS-0-05437
BINDAX-S,typ S 190-10/30	190	10	30	15	17	39	mb	72	3,367	ZB-ZO-CS-0-05438
BINDAX-S,typ S 190-12/10	190	12	10	15	17	46	mb	72	12,825	ZB-ZO-CS-0-02453
BINDAX-S,typ S 190-12/15	190	12	15	15	17	46	mb	72	8,550	ZB-ZO-CS-0-02454
BINDAX-S,typ S 190-12/20	190	12	20	15	17	46	mb	72	6,980	ZB-ZO-CS-0-02455
BINDAX-S,typ S 190-12/25	190	12	25	15	17	46	mb	72	5,817	ZB-ZO-CS-0-02456
BINDAX-S,typ S 190-12/30	190	12	30	15	17	46	mb	72	4,653	ZB-ZO-CS-0-05440
BINDAX-S,typ S 220-8/10	220	8	10	15	20	32	mb	48pcs.=60m	6,555	ZB-ZO-CS-0-05442
BINDAX-S,typ S 220-8/15	220	8	15	15	20	32	mb	48	4,370	ZB-ZO-CS-0-02478
BINDAX-S,typ S 220-8/20	220	8	20	15	20	32	mb	48	3,825	ZB-ZO-CS-0-02479
BINDAX-S,typ S 220-8/25	220	8	25	15	20	32	mb	48	3,570	ZB-ZO-CS-0-02480
BINDAX-S,typ S 220-8/30	220	8	30	15	20	32	mb	48	2,856	ZB-ZO-CS-0-05444
BINDAX-S,typ S 220-10/10	220	10	10	15	20	39	mb	48	8,295	ZB-ZO-CS-0-02465
BINDAX-S,typ S 220-10/15	220	10	15	15	20	39	mb	48	6,370	ZB-ZO-CS-0-02466
BINDAX-S,typ S 220-10/20	220	10	20	15	20	39	mb	48	5,320	ZB-ZO-CS-0-02467
BINDAX-S,typ S 220-10/25	220	10	25	15	20	39	mb	48	4,433	ZB-ZO-CS-0-02468
BINDAX-S,typ S 220-10/30	220	10	30	15	20	39	mb	48	3,547	ZB-ZO-CS-0-05473
BINDAX-S,typ S 220-12/10	220	12	10	15	20	46	mb	48	13,358	ZB-ZO-CS-0-02470
BINDAX-S,typ S 220-12/15	220	12	15	15	20	46	mb	48	8,905	ZB-ZO-CS-0-02472
BINDAX-S,typ S 220-12/20	220	12	20	15	20	46	mb	48	7,205	ZB-ZO-CS-0-02474
BINDAX-S,typ S 220-12/25	220	12	25	15	20	46	mb	48	6,004	ZB-ZO-CS-0-02475
BINDAX-S,typ S 220-12/30	220	12	30	15	20	46	mb	48	4,803	ZB-ZO-CS-0-05474
BINDAX-S,typ S 240-8/10	240	8	10	15	22	32	mb	48pcs.=60m	7,110	ZB-ZO-CS-0-05475
BINDAX-S,typ S 240-8/15	240	8	15	15	22	32	mb	48	4,740	ZB-ZO-CS-0-02497
BINDAX-S,typ S 240-8/20	240	8	20	15	22	32	mb	48	4,100	ZB-ZO-CS-0-02498
BINDAX-S,typ S 240-8/25	240	8	25	15	22	32	mb	48	3,770	ZB-ZO-CS-0-05476
BINDAX-S,typ S 240-8/30	240	8	30	15	22	32	mb	48	3,016	ZB-ZO-CS-0-05477
BINDAX-S,typ S 240-10/10	240	10	10	15	22	39	mb	48	8,730	ZB-ZO-CS-0-02486
BINDAX-S,typ S 240-10/15	240	10	15	15	22	39	mb	48	6,590	ZB-ZO-CS-0-02487
BINDAX-S,typ S 240-10/20	240	10	20	15	22	39	mb	48	5,590	ZB-ZO-CS-0-02488
BINDAX-S,typ S 240-10/25	240	10	25	15	22	39	mb	48	4,658	ZB-ZO-CS-0-05478
BINDAX-S,typ S 240-10/30	240	10	30	15	22	39	mb	48	3,727	ZB-ZO-CS-0-05479
BINDAX-S,typ S 240-12/10	240	12	10	15	22	46	mb	48	13,890	ZB-ZO-CS-0-02491
BINDAX-S,typ S 240-12/15	240	12	15	15	22	46	mb	48	9,260	ZB-ZO-CS-0-02492
BINDAX-S,typ S 240-12/20	240	12	20	15	22	46	mb	48	7,430	ZB-ZO-CS-0-02493
BINDAX-S,typ S 240-12/25	240	12	25	15	22	46	mb	48	6,192	ZB-ZO-CS-0-05480
BINDAX-S,typ S 240-12/30	240	12	30	15	22	46	mb	48	4,953	ZB-ZO-CS-0-05481

■ **BINDAX - TYPE WH**



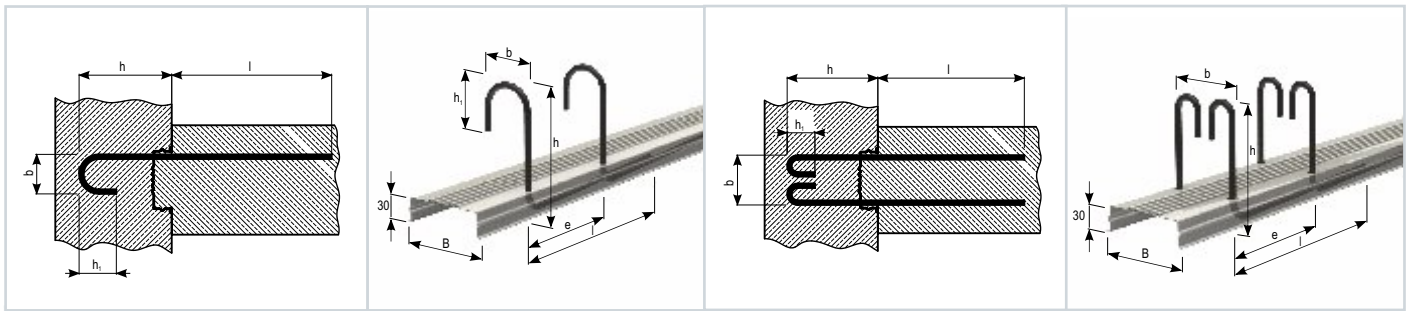
Symbol	Rail width B [mm]	Bar diameter φ [mm]	Bar spacing e [cm]	h [cm]	b [cm]	l [cm]	Measurement unit	Packaging [pcs/palette]	Weight [kg/m]	Art. no.
BINDAX - type H										
BINDAX-S,typ WH 60-8/10	60	8	10	15	8	32	mb	200pcs.=250m	2,610	ZB-ZO-CS-0-02520
BINDAX-S,typ WH 60-8/15	60	8	15	15	8	32	mb	200	1,740	ZB-ZO-CS-0-02521
BINDAX-S,typ WH 60-8/20	60	8	20	15	8	32	mb	200	1,470	ZB-ZO-CS-0-02522
BINDAX-S,typ WH 60-8/25	60	8	25	15	8	32	mb	200	1,225	ZB-ZO-CS-0-02523
BINDAX-S,typ WH 60-8/30	60	8	30	15	8	32	mb	200	0,980	ZB-ZO-CS-0-02524
BINDAX-S,typ WH 60-10/15	60	10	15	15	8	39	mb	200	2,350	ZB-ZO-CS-0-02517
BINDAX-S,typ WH 60-10/20	60	10	20	15	8	39	mb	200	1,910	ZB-ZO-CS-0-02518
BINDAX-S,typ WH 60-10/25	60	10	25	15	8	39	mb	200	1,592	ZB-ZO-CS-0-02519
BINDAX-S,typ WH 80-8/15	80	8	15	15	8	32	mb	150pcs.=187,5m	1,840	ZB-ZO-CS-0-02557
BINDAX-S,typ WH 80-8/20	80	8	20	15	8	32	mb	150	1,560	ZB-ZO-CS-0-02558
BINDAX-S,typ WH 80-8/25	80	8	25	15	8	32	mb	150	1,400	ZB-ZO-CS-0-02559
BINDAX-S,typ WH 80-8/30	80	8	30	15	8	32	mb	150	1,120	ZB-ZO-CS-0-02560
BINDAX-S,typ WH 80-10/15	80	10	15	15	8	39	mb	150	2,680	ZB-ZO-CS-0-02550
BINDAX-S,typ WH 80-10/20	80	10	20	15	8	39	mb	150	2,150	ZB-ZO-CS-0-02551
BINDAX-S,typ WH 80-10/25	80	10	25	15	8	39	mb	150	1,792	ZB-ZO-CS-0-02552
BINDAX-S,typ WH 80-12/10	80	12	10	15	8	39	mb	120	6,607	ZB-ZO-CS-0-02553
BINDAX-S,typ WH 80-12/15	80	12	15	15	8	46	mb	150	3,850	ZB-ZO-CS-0-02554
BINDAX-S,typ WH 80-12/20	80	12	20	15	8	46	mb	150	3,390	ZB-ZO-CS-0-02555
BINDAX-S,typ WH 80-12/25	80	12	25	15	8	46	mb	150	2,825	ZB-ZO-CS-0-02556

■ **BINDAX - TYPE W**





Symbol	Rail width B [mm]	Bar diameter φ [mm]	Bar spacing e [cm]	h [cm]	b [cm]	l [cm]	Measurement unit	Packaging [pcs./palette]	Weight [kg/m]	Art. no.
BINDAX - type W										
BINDAX-S,typ W 80-8/15	80	8	15	15	-	32	mb	150pcs.=187,5m	1,960	ZB-ZO-CS-0-02548
BINDAX-S,typ W 80-8/20	80	8	20	15	-	32	mb	150	1,470	ZB-ZO-CS-0-02549

■ BINDAX - TYPE H

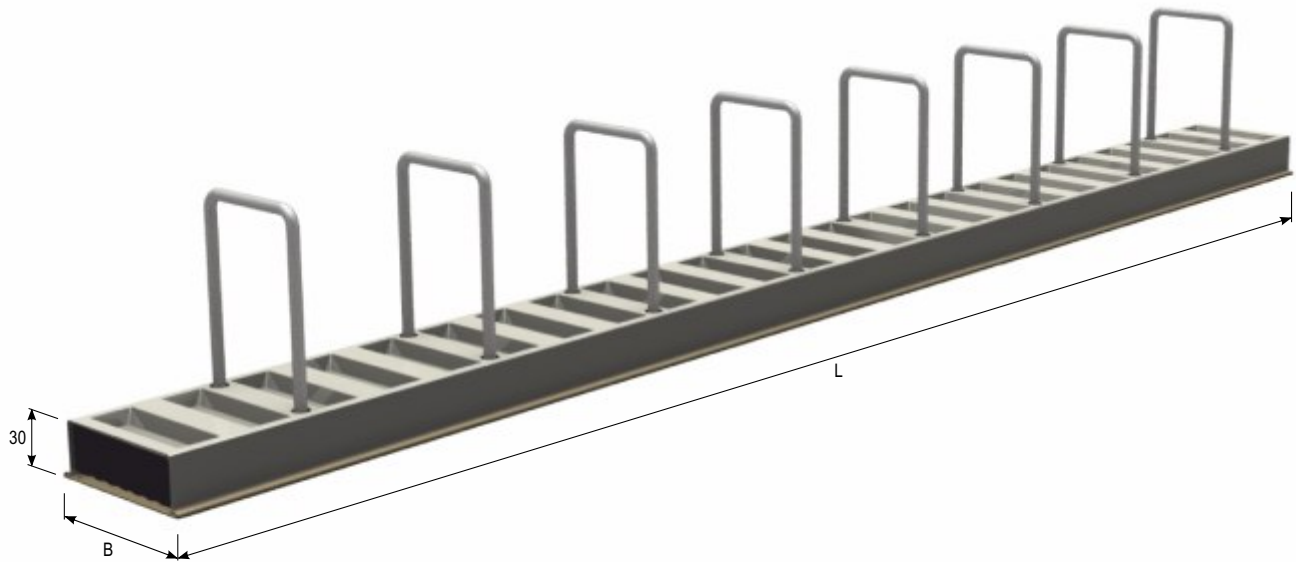


Symbol	Rail width B [mm]	Bar diameter ϕ [mm]	Bar spacing e [cm]	h [cm]	h ₁ [cm]	b [cm]	l [cm]	Measurement unit	Packaging [pcs/palette]	Weight [kg/m]	Art. no.
BINDAX - type H											
BINDAX-S,typ H 60-8/10	60	8	10	15	7	6	32	mb	200pcs.=250m	2,610	ZB-ZO-CS-0-02508
BINDAX-S,typ H 60-8/15	60	8	15	15	7	6	32	mb	200	1,740	ZB-ZO-CS-0-02509
BINDAX-S,typ H 60-8/20	60	8	20	15	7	6	32	mb	200	1,560	ZB-ZO-CS-0-02510
BINDAX-S,typ H 60-8/25	60	8	25	15	7	6	32	mb	200	1,300	ZB-ZO-CS-0-02511
BINDAX-S,typ H 60-8/30	60	8	30	15	7	6	32	mb	200	1,040	ZB-ZO-CS-0-02512
BINDAX-S,typ H 60-10/10	60	10	10	15	8	6	32	mb	200	4,150	ZB-ZO-CS-0-05482
BINDAX-S,typ H 60-10/15	60	10	15	15	8	6	39	mb	200	2,970	ZB-ZO-CS-0-02503
BINDAX-S,typ H 60-10/20	60	10	20	15	8	6	39	mb	200	2,410	ZB-ZO-CS-0-02504
BINDAX-S,typ H 60-10/25	60	10	25	15	8	6	39	mb	200	2,001	ZB-ZO-CS-0-02505
BINDAX-S,typ H 60-10/30	60	10	30	15	8	6	39	mb	200	1,607	ZB-ZO-CS-0-02506
BINDAX-S,typ H 80-8/10	80	8	10	15	7	6	32	mb	150pcs.=187,5m	2,913	ZB-ZO-CS-0-02535
BINDAX-S,typ H 80-8/15	80	8	15	15	7	6	32	mb	150	2,140	ZB-ZO-CS-0-02536
BINDAX-S,typ H 80-8/20	80	8	20	15	7	6	32	mb	150	1,870	ZB-ZO-CS-0-02537
BINDAX-S,typ H 80-8/25	80	8	25	15	7	6	32	mb	150	1,690	ZB-ZO-CS-0-02538
BINDAX-S,typ H 80-8/30	80	8	30	15	7	6	32	mb	150	1,352	ZB-ZO-CS-0-02539
BINDAX-S,typ H 80-10/10	80	10	10	15	8	6	39	mb	150	4,180	ZB-ZO-CS-0-02525
BINDAX-S,typ H 80-10/15	80	10	15	15	8	6	39	mb	150	3,380	ZB-ZO-CS-0-02526
BINDAX-S,typ H 80-10/20	80	10	20	15	8	6	39	mb	150	2,770	ZB-ZO-CS-0-02527
BINDAX-S,typ H 80-10/25	80	10	25	15	8	6	39	mb	150	2,308	ZB-ZO-CS-0-02528
BINDAX-S,typ H 80-10/30	80	10	30	15	8	6	39	mb	150	1,847	ZB-ZO-CS-0-02529
BINDAX-S,typ H 80-12/10	80	12	10	15	9,5	8	39	mb	120	6,898	ZB-ZO-CS-0-02530
BINDAX-S,typ H 80-12/15	80	12	15	15	9,5	8	46	mb	150	4,690	ZB-ZO-CS-0-02531
BINDAX-S,typ H 80-12/20	80	12	20	15	9,5	8	46	mb	150	3,700	ZB-ZO-CS-0-02532
BINDAX-S,typ H 80-12/25	80	12	25	15	9,5	8	46	mb	150	3,083	ZB-ZO-CS-0-02533
BINDAX-S,typ H 80-12/30	80	12	30	15	9,5	8	46	mb	150	2,467	ZB-ZO-CS-0-02534
BINDAX-S,typ 2H 110-12/15	110	12	15	15	9,5	9	43	mb	80	9,300	ZB-ZO-CS-0-02403

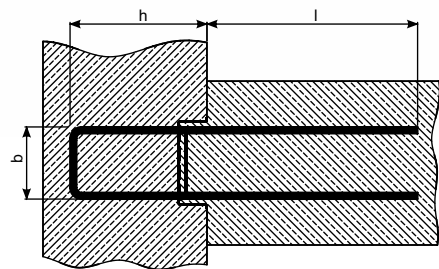
■ TOOLS

	Name	Packaging [pcs.]	Weight [kg/pcs]	Art. no.
	Pipe-shaped ferrule with a latch for bending the reinforcement bars	1	1,18	ZB-ZO-CS-0-02568
	Bar bending ferrule of the 'console' type. For rails with a maximum width up to 190 mm	1	3,10	ZB-ZO-CS-0-05611

■ **BINDAX - TYPE TP**

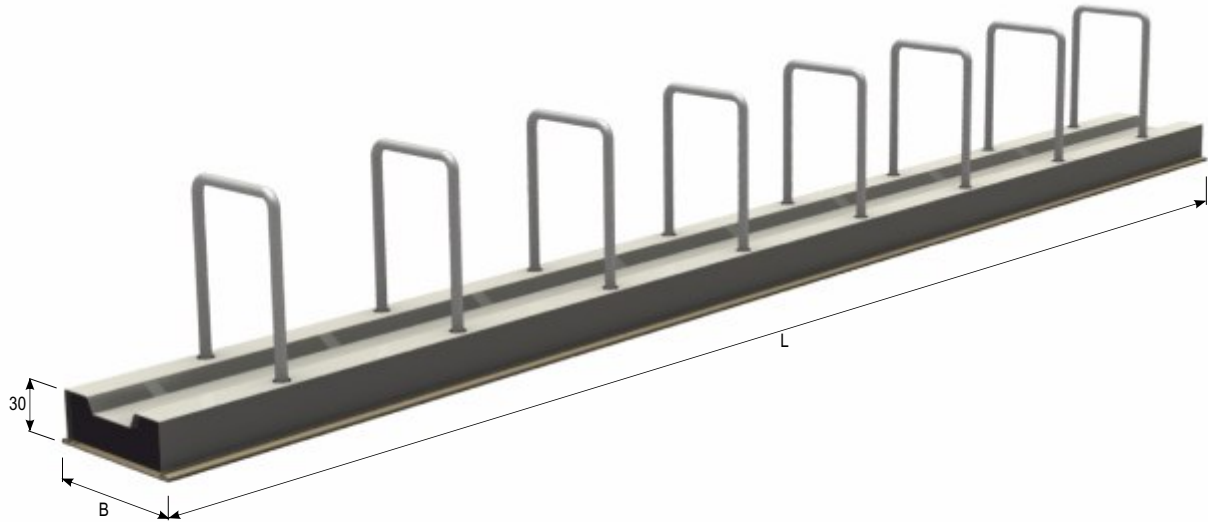


- standard rail length L=1,25 m
- cross-profiled sheet steel for optimum force transmission

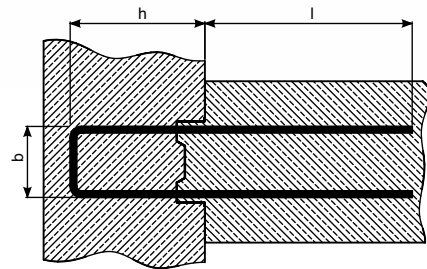


Symbol	Rail width B [mm]	Bar diameter φ [mm]	Bar spacing e [cm]	h [cm]	b [cm]	l [cm]	Measurement unit	Packaging [pcs/palette]	Weight [kg/m]	Art. no.
BINDAX - type TP										
BINDAX-S,typ TP 110-10/15	110	10	15	15	9	39	mb	80pcs=100m	6,003	ZB-ZO-CS-0-05521
BINDAX-S,typ TP 110-10/20	110	10	20	15	9	39	mb	80	4,937	ZB-ZO-CS-0-05522
BINDAX-S,typ TP 140-10/15	140	10	15	15	12	39	mb	108pcs.=135m	6,429	ZB-ZO-CS-0-05523
BINDAX-S,typ TP 140-10/20	140	10	20	15	12	39	mb	108	5,333	ZB-ZO-CS-0-05524
BINDAX-S,typ TP 140-12/15	140	12	15	15	12	46	mb	108	9,206	ZB-ZO-CS-0-05525
BINDAX-S,typ TP 140-12/20	140	12	20	15	12	46	mb	108	7,416	ZB-ZO-CS-0-05526
BINDAX-S,typ TP 160-10/15	160	10	15	15	14	39	mb	84pcs.=105m	7,685	ZB-ZO-CS-0-05527
BINDAX-S,typ TP 160-10/20	160	10	20	15	14	39	mb	84	6,569	ZB-ZO-CS-0-05528
BINDAX-S,typ TP 160-12/15	160	12	15	15	14	46	mb	84	10,497	ZB-ZO-CS-0-05529
BINDAX-S,typ TP 160-12/20	160	12	20	15	14	46	mb	84	8,679	ZB-ZO-CS-0-05530
BINDAX-S,typ TP 190-10/15	190	10	15	15	17	39	mb	72pcs.=90m	8,345	ZB-ZO-CS-0-05531
BINDAX-S,typ TP 190-10/20	190	10	20	15	17	39	mb	72	7,200	ZB-ZO-CS-0-05532
BINDAX-S,typ TP 190-12/15	190	12	15	15	17	46	mb	72	11,210	ZB-ZO-CS-0-05533
BINDAX-S,typ TP 190-12/20	190	12	20	15	17	46	mb	72	9,349	ZB-ZO-CS-0-05534

■ BINDAX - TYPE TW



- standard rail length $L=1,25$ m
- cross-profiled sheet steel for optimum force transmission



Symbol	Rail width B [mm]	Bar diameter ϕ [mm]	Bar spacing e [cm]	h [cm]	b [cm]	l [cm]	Measurement unit	Packaging [pcs/palette]	Weight [kg/m]	Art. no.
BINDAX - type TW										
BINDAX-S,typ TW 110-10/15	110	10	15	15	9	39	mb	80pcs.=100m	5,906	ZB-ZO-CS-0-05535
BINDAX-S,typ TW 110-10/20	110	10	20	15	9	39	mb	80	4,840	ZB-ZO-CS-0-05536
BINDAX-S,typ TW 140-10/15	140	10	15	15	12	39	mb	108pcs.=135m	6,380	ZB-ZO-CS-0-05537
BINDAX-S,typ TW 140-10/20	140	10	20	15	12	39	mb	108	5,284	ZB-ZO-CS-0-05538
BINDAX-S,typ TW 140-12/15	140	12	15	15	12	46	mb	108	9,158	ZB-ZO-CS-0-05539
BINDAX-S,typ TW 140-12/20	140	12	20	15	12	46	mb	108	7,367	ZB-ZO-CS-0-05540
BINDAX-S,typ TW 160-10/15	160	10	15	15	14	39	mb	84pcs.=105m	6,519	ZB-ZO-CS-0-05541
BINDAX-S,typ TW 160-10/20	160	10	20	15	14	39	mb	84	5,403	ZB-ZO-CS-0-05542
BINDAX-S,typ TW 160-12/15	160	12	15	15	14	46	mb	84	9,331	ZB-ZO-CS-0-05543
BINDAX-S,typ TW 160-12/20	160	12	20	15	14	46	mb	84	7,513	ZB-ZO-CS-0-05544
BINDAX-S,typ TW 190-10/15	190	10	15	15	17	39	mb	72pcs.=90m	7,169	ZB-ZO-CS-0-05545
BINDAX-S,typ TW 190-10/20	190	10	20	15	17	39	mb	72	6,023	ZB-ZO-CS-0-05546
BINDAX-S,typ TW 190-12/15	190	12	15	15	17	46	mb	72	10,033	ZB-ZO-CS-0-05547
BINDAX-S,typ TW 190-12/20	190	12	20	15	17	46	mb	72	8,172	ZB-ZO-CS-0-05548

■ **NON-STANDARD COMPONENTS**

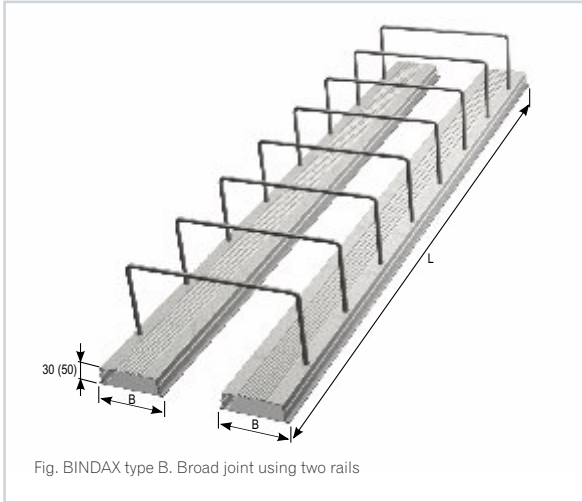


Fig. BINDAX type B. Broad joint using two rails

BINDAX reinforcement system in the non-standard versions:

- component length - 1,25 m; other lengths upon request
- rail width: 60, 80, 110, 140, 160, 190, 220, 240 mm
- reinforcement bar diameter: 8, 10, 12, 14, 16 mm
- rail bar spacing: 10, 15, 20, 25, 30 cm; other spacing distances available upon request
- loop width must be lower than the width of the reinforced component by at least 2 cm
- possibility of increasing thickness of the rail allows performance cavity bigger than 30mm.

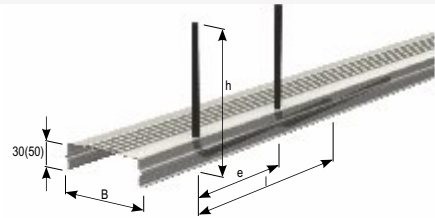
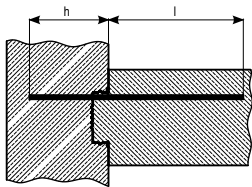
Designation examples:

BINDAX - N , typ KO $\frac{160}{10} / \frac{20}{20}$ $h=15$ cm, $b=14$ cm, $l=48$ cm

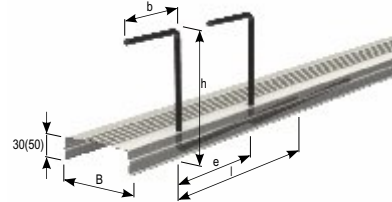
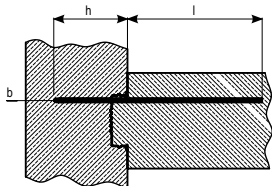
Non-standard components Rail width Bar diameter Bar spacing

■ **NON-STANDARD BAR TYPES**

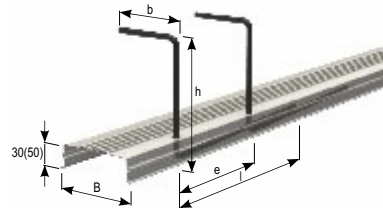
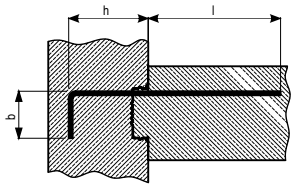
Type W: Single bar, perpendicular to the rail.



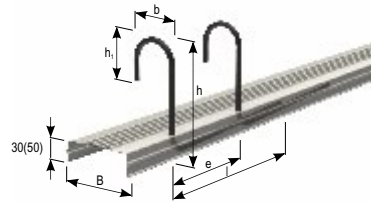
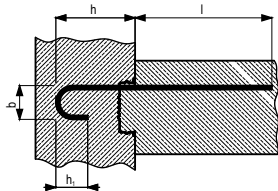
Type WH: Single bar bent by 90°. Bends placed along rail.



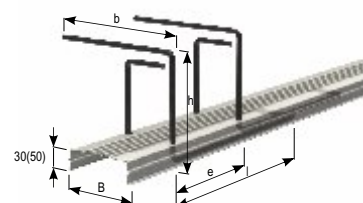
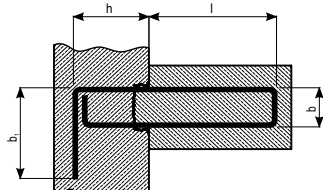
Type WS: Single bar bent by 90°.



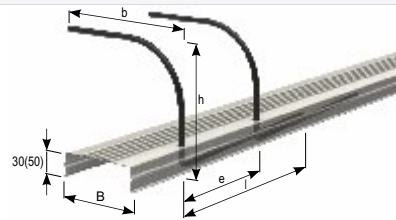
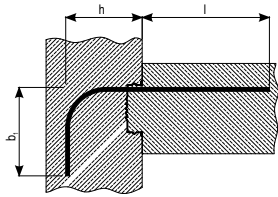
Type H: As in the standard version. Bends placed crosswise with respect to the rail. Width - 60 or 80 mm. Single-row variant.



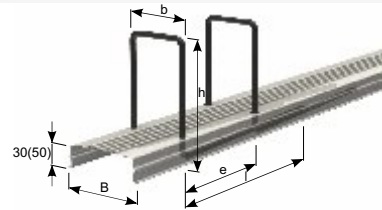
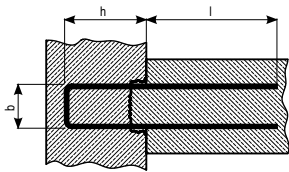
Type BK: Type BK: Symmetric 'console'-type loop. Closed loop. Available versions for the following loop spacings: 90, 120, 140, 170, 200, 220 mm.



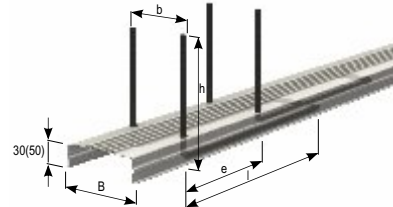
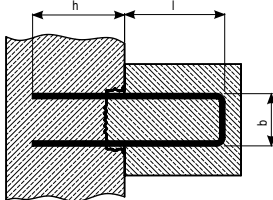
Typ BA: Arch allowing deep anchoring.



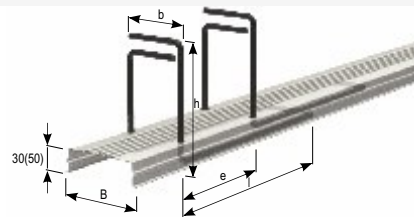
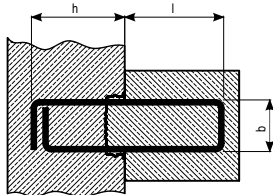
Typ S: Symmetric loop.



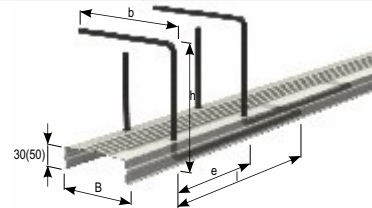
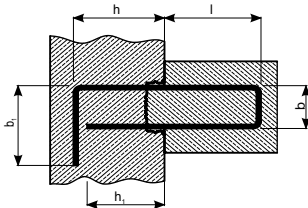
Typ KO: Symmetric 'console'-type loop. Open loop.



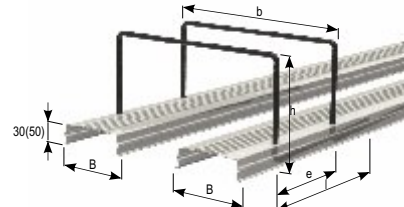
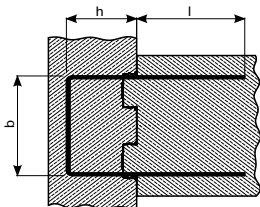
Typ K: Closed loop. Minimal size b=90 mm.



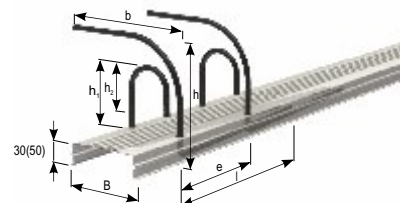
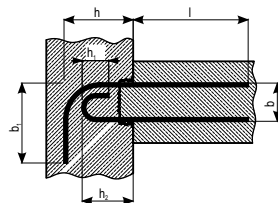
Typ KH: Semi-open loop



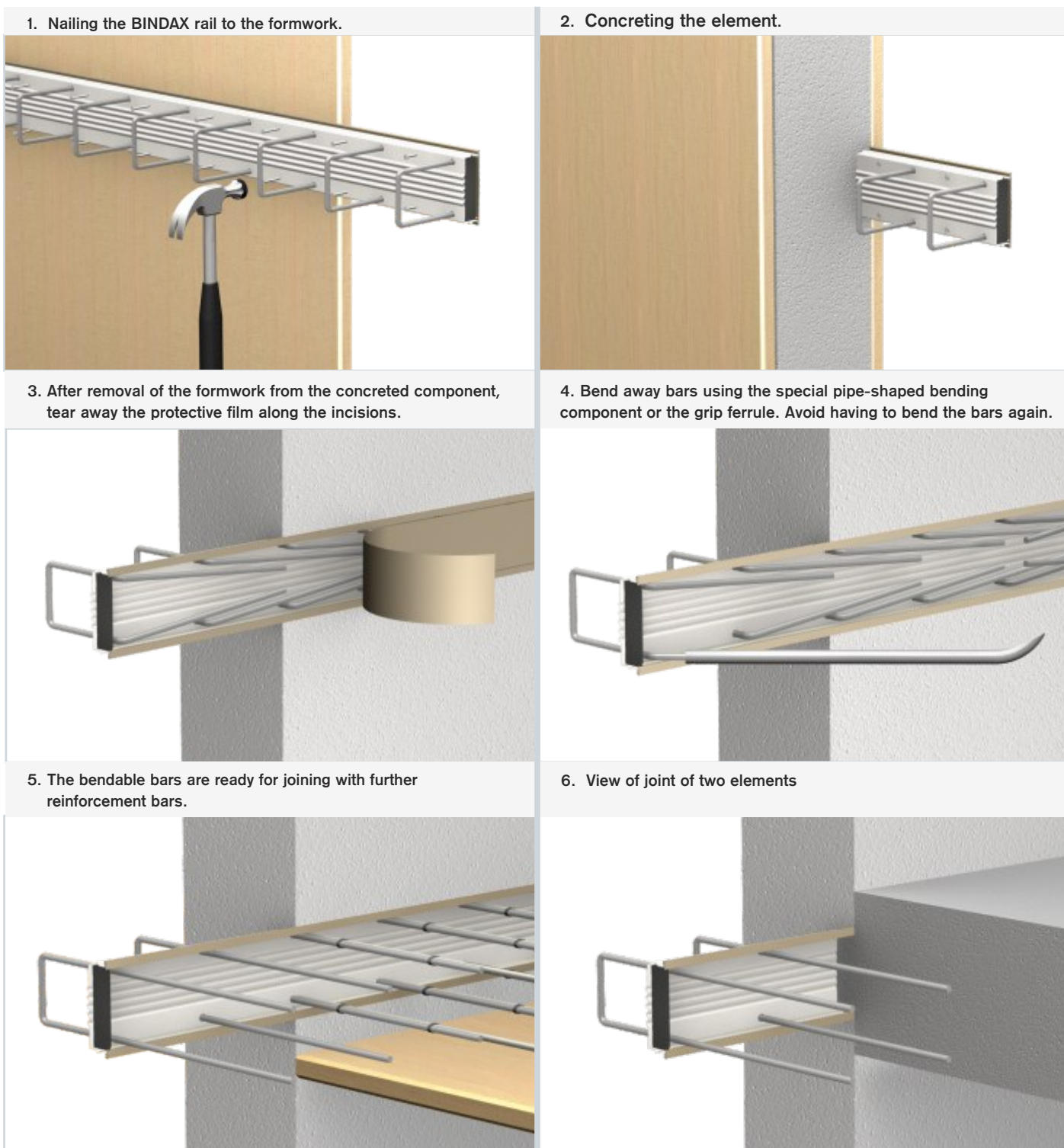
Typ B: Symmetric loop installed in two parallel rails.



Typ BA+H: Arch with single or dual rail



■ **ASSEMBLY INSTRUCTIONS**



Additional remarks:

- Before concreting the BINDAX bendable reinforcement bar system, the location of the component rebar needs to be inspected so as to maintain the required anchor lengths and bar overlay values. The 'h' dimension, or the section anchored in the first stage is calculated from the formwork face.
- Welding the bars in the bending area can negatively influence the properties of the steel, hence, it should be avoided. In the other sections, it should be executed at the responsibility of the contractor.
- The BINDAX system reinforcement bar load bearing capacity is lower by approx. 20% due to bending to fit the profiles and then bending away. Hence, reinforcement bars should be bent only once. Do not carry out bending in an ambient temperature below 15 °C.

■ REALIZATIONS

OFFICE COMPLEX WARSAW SPIRE IN WARSAW

Delivery of the reinforcement bended BINDAX system

General contractor:

Ghelamco Poland Sp. z o.o.



OFFICE COMPLEX BONARKA 4 BUSINESS IN CRACOW

Delivery of the reinforcement bended BINDAX system

General contractor:

Arc Office



POMERANIAN SCIENCE AND TECHNOLOGY PARK IN GDYNIA

Delivery of the reinforcement bended BINDAX system

General contractor:

Warbud



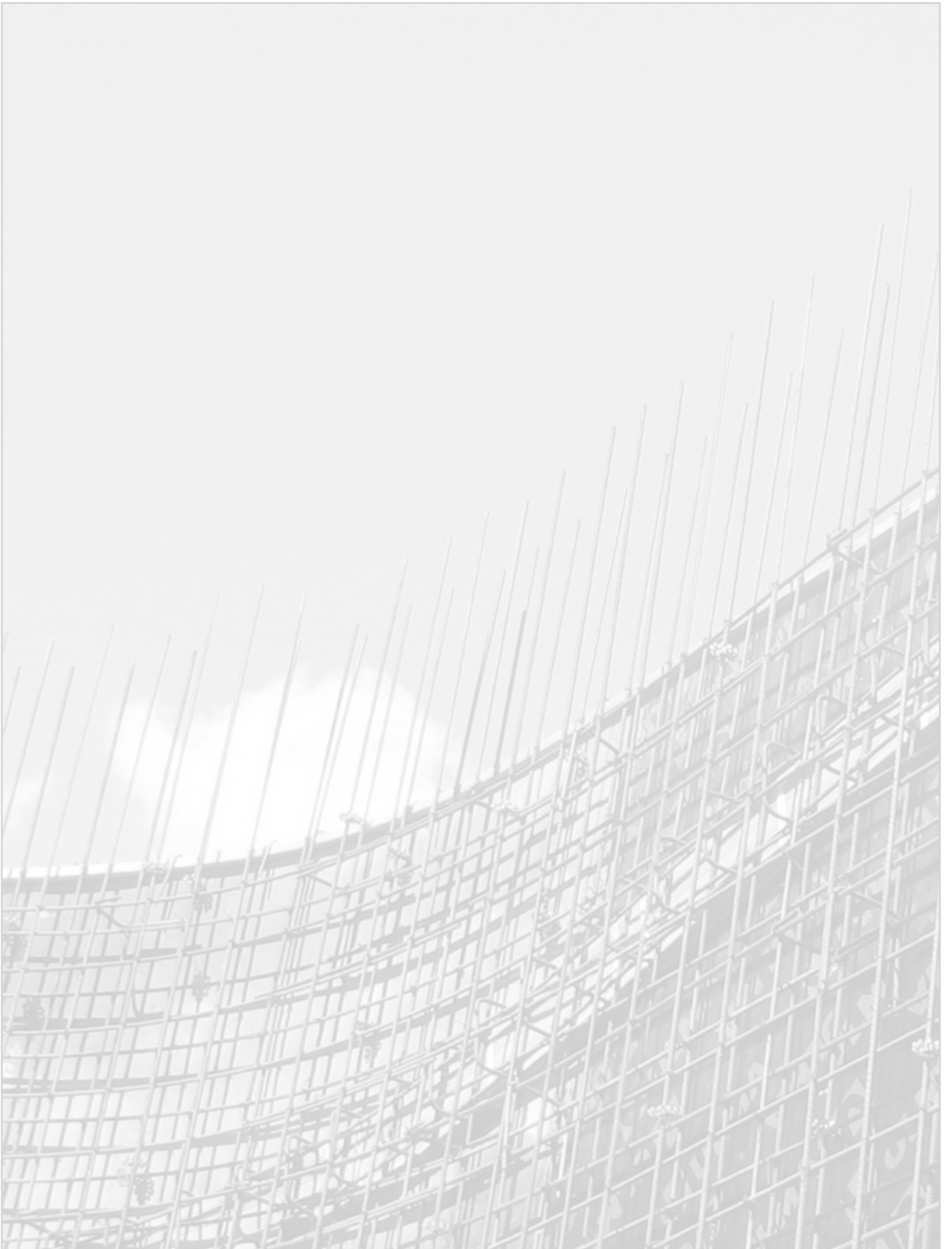
SILESIA MUSEUM IN KATOWICE

Delivery of the reinforcement bended BINDAX system

General contractor:

BUDIMEX S.A.







GALLERY



Concrete reinforcement systems

BINDAX BENDABLE REINFORCEMENT SYSTEM

GALLERY



GALLERY



Concrete reinforcement systems

BINDAX BENDABLE REINFORCEMENT SYSTEM

GALLERY



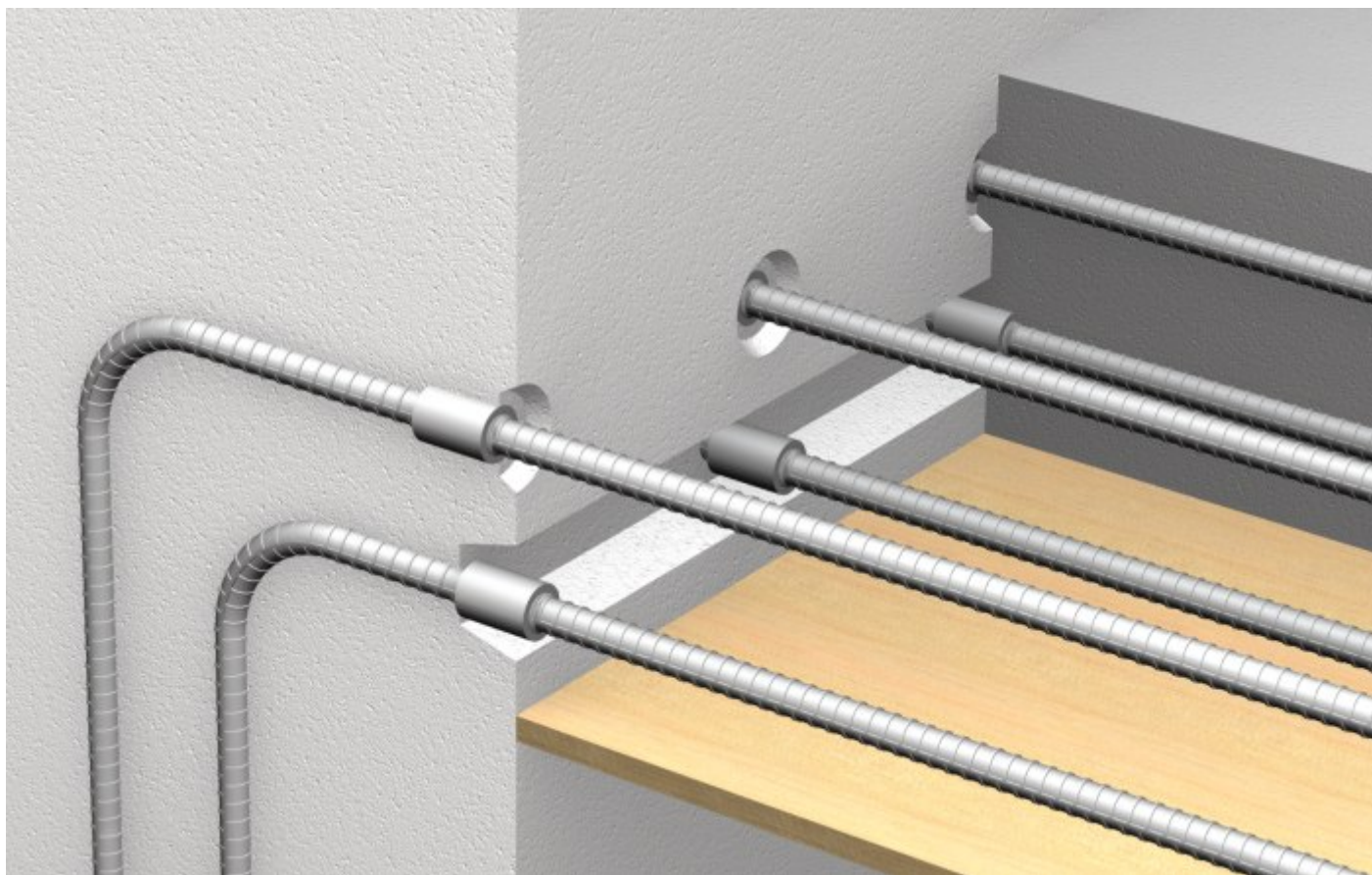
GALLERY





FORTEC SCREWED REINFORCEMENT SYSTEM



■ GENERAL INFORMATION**PRODUCT DESCRIPTION**

The elements of FORTEC system are intended to performing

- mechanical joining (screwing) reinforcing bars in the diameter range from 12 to 40 mm,
- anchoring reinforcement in the concrete reinforcement constructions,
- anastomoses reinforcement bars to the steel structure.

The whole system consists of galvanized bars, connecting sleeves and additional (complementary) elements. Reinforcement bars which are the part of the system are made from the steel grade BSt500S, B500SP or the other with not worst strength parameters.

Computational bearing capacity of joints reinforcement bars, made by using FORTEC connectors, you should take equal resistance of the used rods. In practice it means that reinforcement bar connected to FORTEC joints we treat as continuous on the entire length.

Screwed reinforcement system FORTEC generally is used as of the reinforcement bars on the element's length or in the place of the construction joints in concreting.

ADVANTAGES

- The FORTEC system allows to maintain of the full capacity of rebar in the place of connection.
- The ability to make the frontal connection of the two bars with diameters ϕ 12, 14, 16, 18, 20, 22, 25, 28, 32, 36 i 40 mm.
- Possibility making connection two bars in two different diameters (reduction connection)
- Possibility connection to steel construction (welded connection)
- Threaded parts meet the metric standards.
- Thanks to use the FORTEC system (kind of frontal connection), material usage is reduced (no overlapping).

- Easy and fast assembly – not need to be use dynamometric wrench and any other equipment/tools
- Possibility of making connection by unqualified employees, connection is making by the hand on the construction site.
- Optical control proper performance of connection.
- Plastic, colorful plugs and caps allow on easy identification reinforcement rebar with different diameter and protect by soiling of the thread inside the connecting muff, and connected bar both.
- Trapezoidal assembly strips makes shorter the time of assembly elements to the formwork and allow transfer of shearing forces at place of working joint.
- Shape and construction of trapezoidal assembly strip provide stability of element during concreting and protect by ingress of concrete to the inside of the strip.
- There is possibility of using Investor's own steel to performing threaded bars.
- On inquiry there is possibility performing connection directly to the construction site by the use mobile container equipment set.
- FORTEC screwed reinforcement has Technical Approval no. AT-15-8 331/2010 published by ITB in Warsaw.
- FORTEC screwed reinforcement has Technical Approval no. AT/2007-03-1128/1 published by IBDiM in Warsaw.
- FORTEC reinforcement connectors pass a full cycle of audits. Forbuild SA production plant has the Certificate the Compliance published by ITB in Warsaw. It means that the producer had implemented a production control system and lead the tests of samples according to the plan of the tests for assurance the product in the highest quality.

■ TECHNOLOGY OF MAKING THE JOINT

1. PREPARATION



Bar should be mechanically trimmed to size, perpendicular to its axis.

2. COLD FORGING



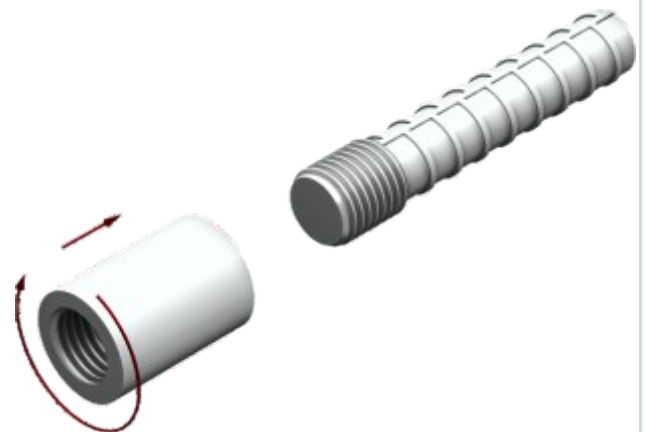
The FORTEC system requires a patented bar end upsetting technology for the purpose of elimination of cross-section weakening at the joints.

3. THREADING



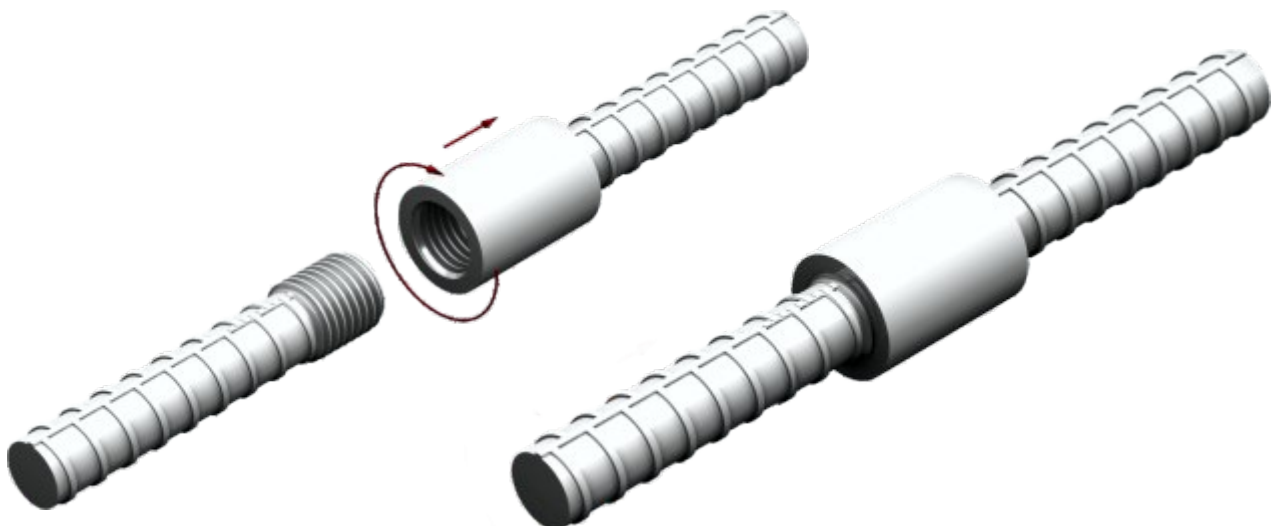
A metric thread is cut on to the upset bar ends. In combination positional type MB there are cut also rib of the bar in this way that muff could be screwed on the base bar on their full length.

4. SCREWING ON



Screw the connection sleeve onto the threaded bar.

5. READY CONNECTION

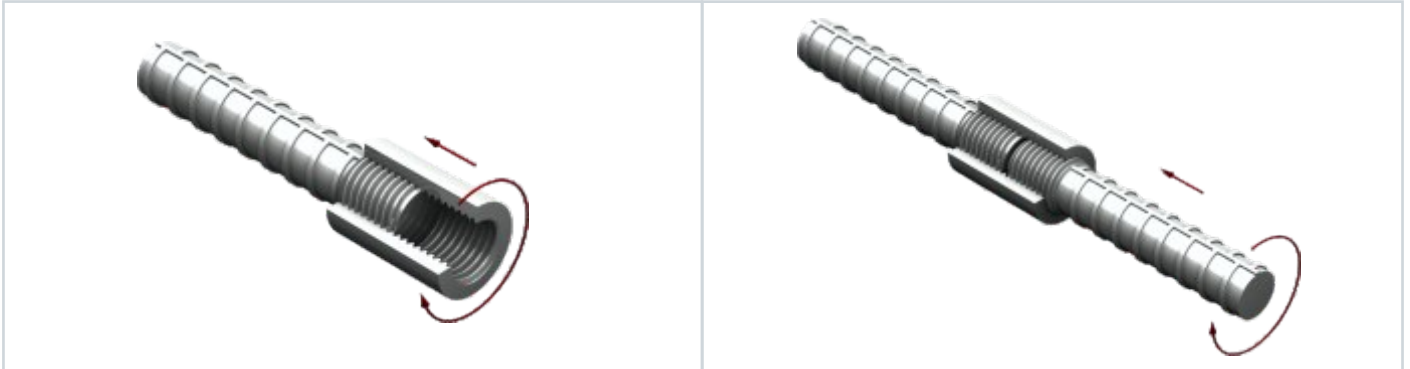


■ **JOINT TYPES**

STANDARD JOINTS (TYPE M)

Used in case when turning of the connected bar and moving it along its axis is possible. Making the joint:

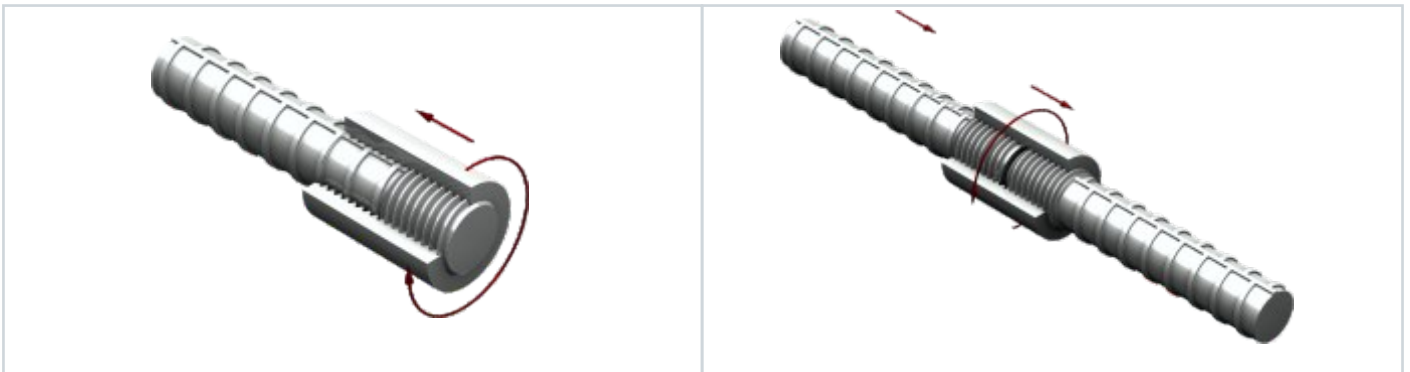
To the base bar, affix standard coupler (coupler is screwed on halfway through its length onto the base bar until one feels pronounced resistance), next screw in the connected bar into the sleeve until resistance.



POSITIONAL JOINT (TYPE MB)

Used when turning the connected bar is not possible, but moving it along its axis is.

Making the joint: Onto the connected bar install a standard coupler, until the end face of the bar and the sleeve (sleeve is screwed onto the connected bar completely) are flush with respect to each other. Next, move the connected bar to the base bar and screw the sleeve onto the base bar until pronounced resistance.



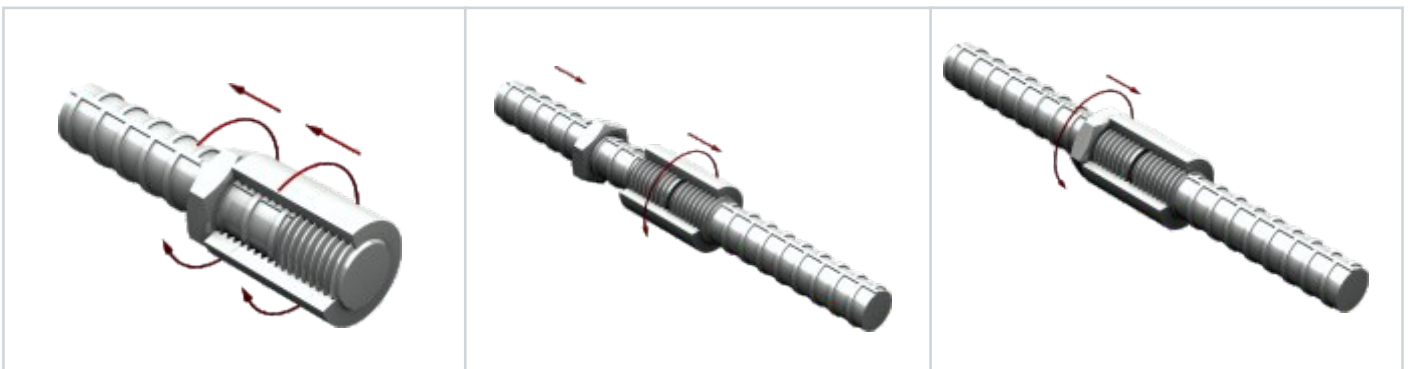
POSITIONAL STABILISED JOINT (TYPE MC)

Used, then turning the connected bar is not possible, but moving it along its axis is, and after execution of the joint, the connected bar must be placed with respect to the base bar very precisely.

Mode of execution: install on the connected bar, in the following order, as follows:

- locknut
- standard coupler, until the ends of the standard sleeve and the bar are flush with respect to each other.

Next, move the connected bar to the base bar and screw the standard coupler onto the base bar until pronounced resistance. The connected bar is stabilised by tightening the locknut to the standard sleeve until pronounced resistance.



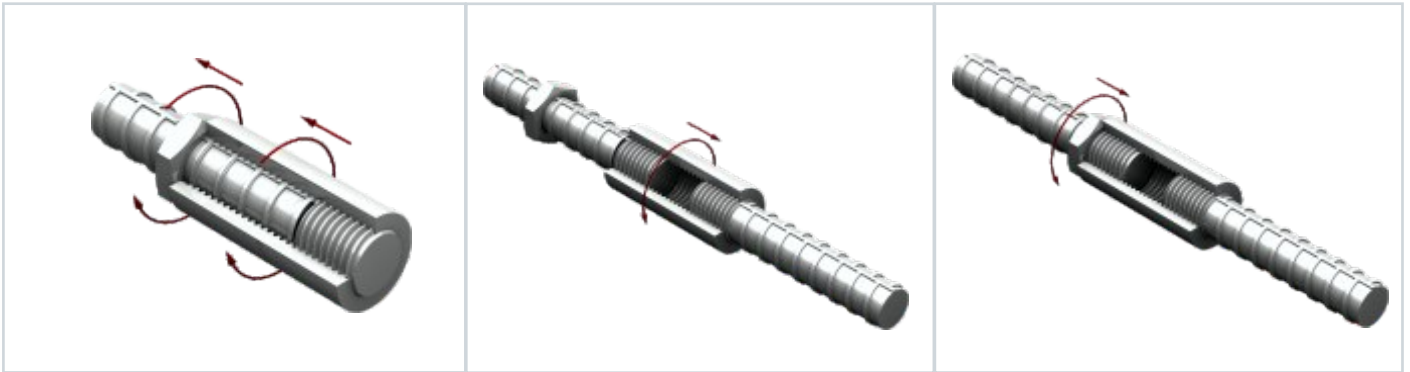
SPACED JOINT (TYPE MD)

Used when there may be a space between the face sides of the connected bars not exceeding the diameter of the joined bars.

Mode of execution: install on the connected bar, in the following order, as follows:

- locknut
- spacer coupler, until the ends of the bar and the spacer coupler are flush with respect to each other.

Next, move the connected bar to the base bar, with a distance not exceeding the diameter of the joined bars, and screw the spacer coupler onto the base bar. The connected bar is to be stabilised through tightening the locknut to the spacer coupler until pronounced resistance.

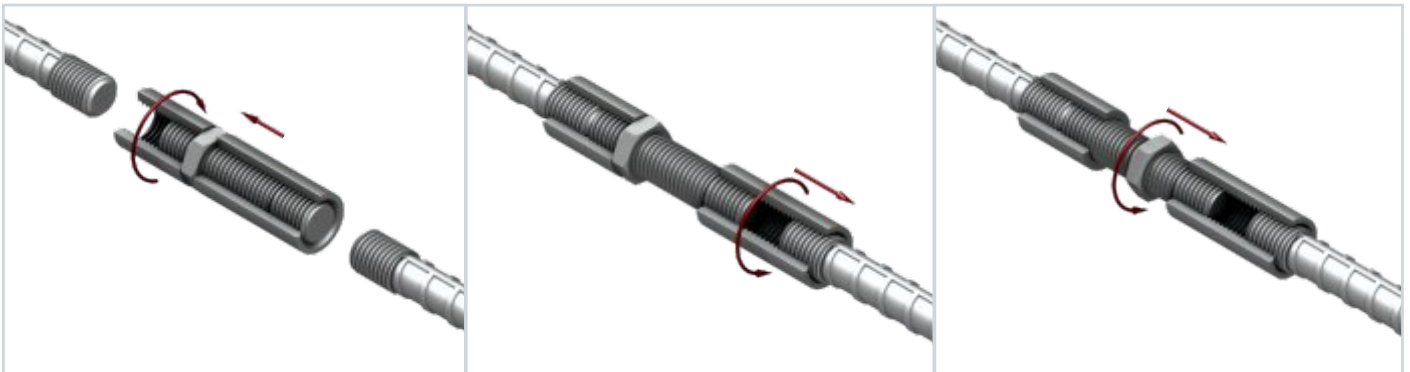


DISTANCE CONNECTION WITH USING OF SPACER SET (TYPE MD)

Used when there may be a space between the face sides of the connected bars not exceeding the diameter of the joined bars.

Mode of execution:

- Installation of the spacer set on connected bar (screwing in of the coupler until noticeable resistance on base bar)
- moving the connected bar to the base bar with a spacing not exceeding the diameter of the bars to be joined, and screwing in of the space sleeve onto the base bar
- stabilising the connected bar by screwing on, until noticeable resistance, of the locknut on to the spacer coupler.



REDUCTION JOINT (TYPE MR)

Utilised, when turning the connected bar and moving it along its axis is possible, but when the connected bar and the base bar have different diameters.

Mode of execution: On the base bar install a reduction coupler, and then screw the connected bar into the other end of the reduction coupler until pronounced resistance.



WELDED JOINT (TYPE W)

Used in case of necessity of connection of the reinforcement bar with a welded structure, if the bar may be turned and moved along its axis.

Mode of execution: welded coupler should be welded on to the steel structure. The size of the weld is equal to the depth of the weld slit, and then screw the connected bar into the welded coupler until pronounced resistance.

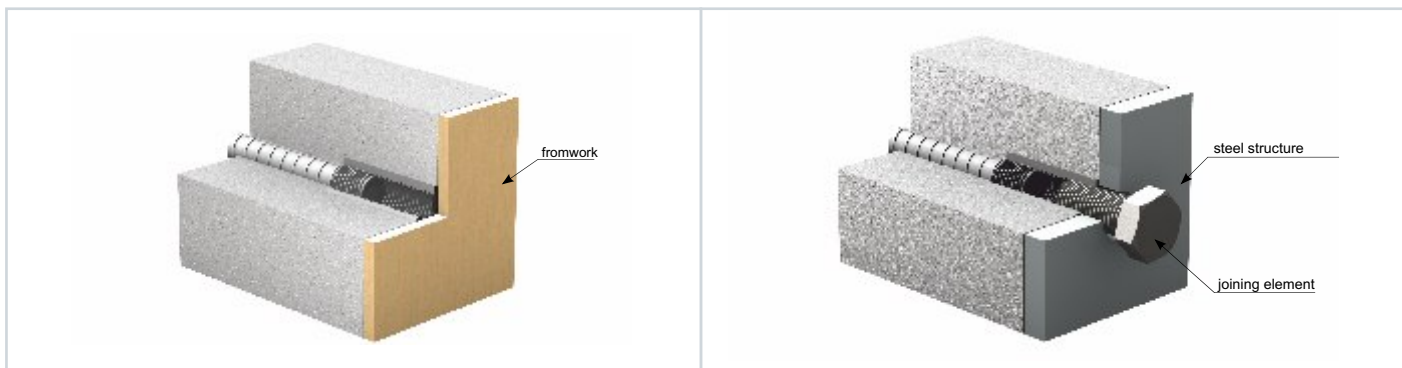


ANCHOR TYPES

SCREW ANCHOR (TYPE F)

Used in case of necessity of joining of reinforced concrete structures or components as a base with steel structures or components.

Mode of execution of joint: Install on the bar a spacer coupler, secure the other end of the coupler with a cap and place it so that it is flush with the formwork or any other required surface. Next, after preparation of the structure or the reinforced concrete component, disassemble the formwork and the sealing cap. The joining of the reinforced concrete structure (component) with the steel structure (component) through screwing in of an appropriate joining element into the coupler.



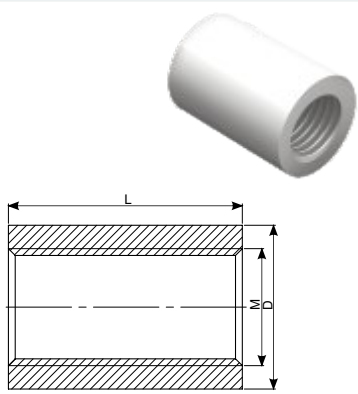
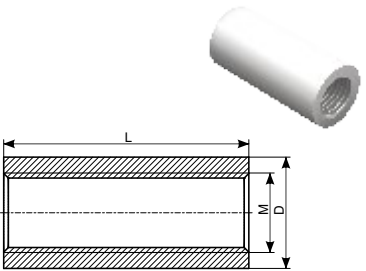
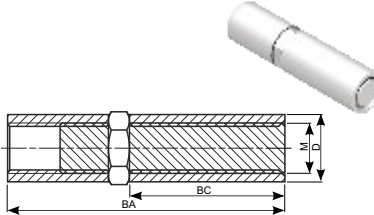
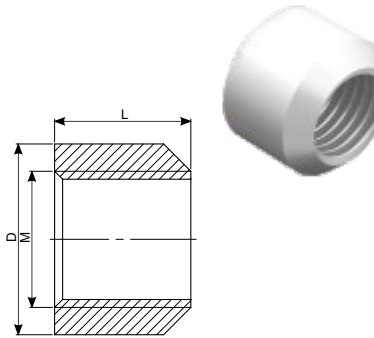
CONCRETE ANCHOR (TYPE ES, EL)

Used to anchor a reinforcing bar in concrete.

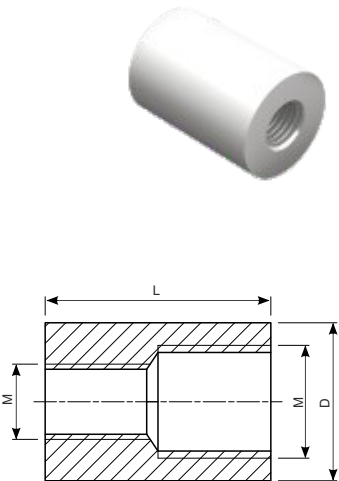
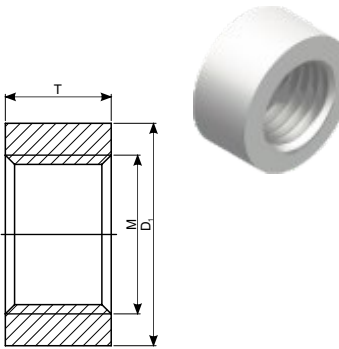
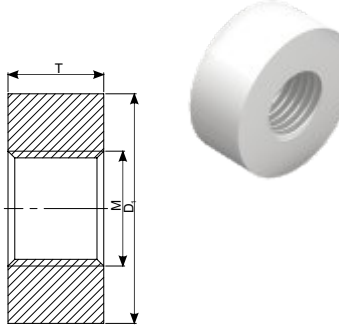
Mode of execution of anchoring: Install (screw in) until pronounced resistance the anchor plate on one end of the base plate. The other end of the bar is foreseen for a given type of joint and for joining with the remainder of the reinforcement. It ends with a threaded connection or a specific coupler.



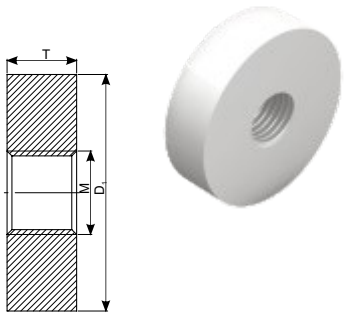
■ FORTEC JOINING ELEMENT PARTS

Standard coupler	Symbol	Bar diameter ϕ [mm]	Thread [mm]	Outer diameter D [mm]	Length L [mm]	Unit	Art.. no.		
	BS12M14	12	M14x2,0	20	28	pcs.	ZB-ZS-BT-0-02601		
	BS14M16	14	M16x2,0	24	32	pcs.	ZB-ZS-BT-0-02602		
	BS16M20	16	M20x2,5	28	40	pcs.	ZB-ZS-BT-0-02603		
	BS18M22	18	M22x2,5	34	44	pcs.	ZB-ZS-BT-0-05485		
	BS20M24	20	M24x3,0	34	48	pcs.	ZB-ZS-BT-0-02604		
	BS22M27	22	M27x3,0	36	54	pcs.	ZB-ZS-BT-0-05487		
	BS25M30	25	M30x3,5	42	60	pcs.	ZB-ZS-BT-0-02605		
	BS28M33	28	M33x3,5	48	66	pcs.	ZB-ZS-BT-0-02606		
	BS32M36	32	M36x4,0	52	72	pcs.	ZB-ZS-BT-0-02607		
	BS36M42	36	M42x4,5	60	84	pcs.	ZB-ZS-BT-0-05493		
BS40M45	40	M45x4,5	65	90	pcs.	ZB-ZS-BT-0-05549			
Spacer coupler									
	BD12M14	12	M14x2,0	20	44,0	pcs.	ZB-ZS-BT-0-02616		
	BD16M20	16	M20x2,5	28	61,1	pcs.	ZB-ZS-BT-0-02617		
	BD20M24	20	M24x3,0	34	73,0	pcs.	ZB-ZS-BT-0-02618		
	BD22M27	22	M27x3,0	36	82,1	pcs.	ZB-ZS-BT-0-02619		
	BD25M30	25	M30x3,5	42	92,5	pcs.	ZB-ZS-BT-0-02620		
	BD28M33	28	M33x3,5	48	101,6	pcs.	ZB-ZS-BT-0-02621		
	BD32M36	32	M36x4,0	52	109,9	pcs.	ZB-ZS-BT-0-02622		
Sets of distance	Symbol	Bar diameter ϕ [mm]	Thread [mm]	External dimensions [mm]			Length [mm]	Unit	Art.. no.
	BA20M24	20	M24x3,0	D	BA	BC	20	pcs.	ZB-ZS-BT-0-14161
	BA25M30	25	M30x3,5	40	164	92	25	pcs.	ZB-ZS-BT-0-14162
	BA28M33	28	M33x3,5	45	183	101	28	pcs.	ZB-ZS-BT-0-14163
	BA32M36	32	M36x4,0	50	199	112	32	pcs.	ZB-ZS-BT-0-14164
	BA36M42	36	M42x4,5	58	234	129	36	pcs.	ZB-ZS-BT-0-14165
	BA40M45	40	M45x4,5	62	278	139	40	pcs.	ZB-ZS-BT-0-14166
Weld coupler	Symbol	Bar diameter ϕ [mm]	Gwint [mm]	Średnica zewnętrzna D [mm]	Length L [mm]	Unit	Art. no.		
	BW12M14	12	M14x2,0	20	14	pcs.	ZB-ZS-BT-0-02593		
	BW14M16	14	M16x2,0	24	16	pcs.	ZB-ZS-BT-0-02594		
	BW16M20	16	M20x2,5	28	20	pcs.	ZB-ZS-BT-0-02595		
	BW18M22	18	M22x2,5	34	22	pcs.	ZB-ZS-BT-0-05577		
	BW20M24	20	M24x3,0	34	24	pcs.	ZB-ZS-BT-0-02596		
	BW22M27	22	M27x3,0	36	27	pcs.	ZB-ZS-BT-0-05578		
	BW25M30	25	M30x3,5	42	30	pcs.	ZB-ZS-BT-0-02597		
	BW28M33	28	M33x3,5	48	33	pcs.	ZB-ZS-BT-0-02598		
	BW32M36	32	M36x4,0	52	36	pcs.	ZB-ZS-BT-0-02600		
	BW34M42	34	M42x4,5	60	42	pcs.	ZB-ZS-BT-0-05580		
BW40M45	40	M45x4,5	65	45	pcs.	ZB-ZS-BT-0-05581			

FORTEC SCREWED REINFORCEMENT SYSTEM

Reduction coupler	Symbol	Bar diameter ϕ [mm]	Thread [mm]	Outer diameter D [mm]	Length L [mm]	Unit	Art. no.
	BT14-12	14-12	M16x2,0/M14x2,0	24	32	pcs.	ZB-ZS-BT-0-02610
	BT16-12	16-12	M20x2,5/M14x2,0	28	40	pcs.	ZB-ZS-BT-0-05559
	BT16-14	16-14	M20x2,5/M16x2,0	28	40	pcs.	ZB-ZS-BT-0-02611
	BT18-16	18-16	M22x2,5/M20x2,5	34	44	pcs.	ZB-ZS-BT-0-05560
	BT20-16	20-16	M24x3,0/M20x2,5	34	48	pcs.	ZB-ZS-BT-0-02612
	BT20-18	20-18	M24x3,0/M22x2,5	34	48	pcs.	ZB-ZS-BT-0-05561
	BT22-20	22-20	M27x3,0/M24x3,0	36	54	pcs.	ZB-ZS-BT-0-05562
	BT25-16	25-16	M30x3,5/M20x2,5	42	60	pcs.	ZB-ZS-BT-0-05563
	BT25-20	25-20	M30x3,5/M24x3,0	42	60	pcs.	ZB-ZS-BT-0-02613
	BT25-22	25-22	M30x3,5/M27x3,0	42	60	pcs.	ZB-ZS-BT-0-05564
	BT28-20	28-20	M33x3,5/M24x3,0	48	66	pcs.	ZB-ZS-BT-0-05565
	BT28-22	28-22	M33x3,5/M27x3,0	48	66	pcs.	ZB-ZS-BT-0-05566
	BT28-25	28-25	M33x3,5/M30x3,5	48	66	pcs.	ZB-ZS-BT-0-02614
	BT32-20	32-20	M36x4,0/M24x3,0	52	72	pcs.	ZB-ZS-BT-0-05567
	BT32-25	32-25	M36x4,0/M30x3,5	52	72	pcs.	ZB-ZS-BT-0-05568
	BT32-28	32-28	M36x4,0/M33x3,5	52	72	pcs..	ZB-ZS-BT-0-02615
	BT36-25	36-25	M42x4,5/M30x3,5	60	84	pcs.	ZB-ZS-BT-0-05569
	BT36-28	36-28	M42x4,5/M33x3,5	60	84	pcs.	ZB-ZS-BT-0-05570
	BT36-32	36-32	M42x4,5/M36x4,0	60	84	pcs.	ZB-ZS-BT-0-05571
	BT40-20	40-20	M45x4,5/M24x3,0	65	90	pcs.	ZB-ZS-BT-0-05572
BT40-25	40-25	M45x4,5/M30x3,5	65	90	pcs.	ZB-ZS-BT-0-05573	
BT 40-28	40-28	M45x4,5/M33x3,5	65	90	pcs.	ZB-ZS-BT-0-05574	
BT 40-32	40-32	M45x4,5/M36x4,0	65	90	pcs.	ZB-ZS-BT-0-05575	
BT 40-36	40-36	M45x4,5/M42x4,5	65	90	pcs.	ZB-ZS-BT-0-05576	
Locknut	Symbol	Bar diameter [mm]	Thread [mm]	Outer diameter D ₁ [mm]	T [mm]	Unit	Art. no.
	Ln12	12	M14x2,0	20	10	pcs.	ZB-ZS-BT-0-02586
	LN14	14	M16x2,0	24	10	pcs.	ZB-ZS-BT-0-02587
	LN16	16	M20x2,5	28	10	pcs.	ZB-ZS-BT-0-02592
	LN18	18	M22x2,5	30	10	pcs.	ZB-ZS-BT-0-05582
	LN20	20	M24x3,0	32	10	pcs.	ZB-ZS-BT-0-02588
	LN22	22	M27x3,0	36	13,5	pcs.	ZB-ZS-BT-0-05583
	LN25	25	M30x3,5	40	12	pcs.	ZB-ZS-BT-0-02589
	LN28	28	M33x3,5	45	16,5	pcs.	ZB-ZS-BT-0-02590
	LN32	32	M36x4,0	50	15	pcs.	ZB-ZS-BT-0-02591
	LN36	36	M42x4,5	58	21	pcs.	ZB-ZS-BT-0-05584
	LN40	40	M45x4,5	62	18	pcs.	ZB-ZS-BT-0-05585
Small BEASC anchor plate	Symbol	Bar diameter [mm]	Thread [mm]	Outer diameter D ₁ [mm]	T [mm]	Unit	Art. no.
	BEASC12	12	M14x2,0	30	12,6	pcs.	ZB-ZS-BT-0-05586
	BEASC14	14	M16x2,0	34	15	pcs.	ZB-ZS-BT-0-05587
	BEASC16	16	M20x2,5	38	18	pcs.	ZB-ZS-BT-0-05588
	BEASC18	18	M22x2,5	45	20	pcs.	ZB-ZS-BT-0-05589
	BEASC20	20	M24x3,0	48	20	pcs.	ZB-ZS-BT-0-05590
	BEASC22	22	M27x3,0	52	24	pcs.	ZB-ZS-BT-0-05591
	BEASC25	25	M30x3,5	60	25	pcs.	ZB-ZS-BT-0-05592
	BEASC28	28	M33x3,5	70	29	pcs.	ZB-ZS-BT-0-05593
	BEASC32	32	M36x4,0	75	33	pcs.	ZB-ZS-BT-0-05594
	BEASC36	36	M42x4,5	85	38	pcs.	ZB-ZS-BT-0-05595
	BEASC40	40	M45x4,5	95	40	pcs.	ZB-ZS-BT-0-05596

Large BEALC anchor plate

	BEALC12	12	M14x2,0	42	12,6	pcs.	ZB-ZS-BT-0-05597
	BEALC14	14	M16x2,0	45	15	pcs.	ZB-ZS-BT-0-05598
	BEALC16	16	M20x2,5	52	18	pcs.	ZB-ZS-BT-0-05599
	BEALC18	18	M22x2,5	60	20	pcs.	ZB-ZS-BT-0-05600
	BEALC20	20	M24x3,0	65	20	pcs.	ZB-ZS-BT-0-05601
	BEALC22	22	M27x3,0	75	24	pcs.	ZB-ZS-BT-0-05602
	BEALC25	25	M30x3,5	85	25	pcs.	ZB-ZS-BT-0-05603
	BEALC28	28	M33x3,5	95	29	pcs.	ZB-ZS-BT-0-05604
	BEALC32	32	M36x4,0	105	33	pcs.	ZB-ZS-BT-0-05605
	BEALC36	36	M42x4,5	120	38	pcs.	ZB-ZS-BT-0-05606
BEALC40	40	M45x4,5	130	40	pcs.	ZB-ZS-BT-0-05607	

MANUFACTURE

The FORTEC threaded reinforcement bar system is conducted at our plant. Finished elements with the plastic protection caps are delivered at the insertion site.

On request of client there is possibility preparing threaded bars directly at place of installation elements.

On the construction site there is delivered the set of machines so called container set.



APPROVALS, CERTIFICATES



Technical approval No. AT-15-8331/2010 published by ITB Warsaw



Technical approval AT/2007-03-1128/1 published by IBDiM Warsaw



The Certificate of the Factory Production Control no. ITB-1981/W published by Building Research Institute in Warsaw

■ **INSTALLATION EQUIPMENT**

To avoid transfer the bars during concreting the construction, to installation threaded bars in formwork is used the mounting bracket, steel strips or trapezoidal strip from PVC.

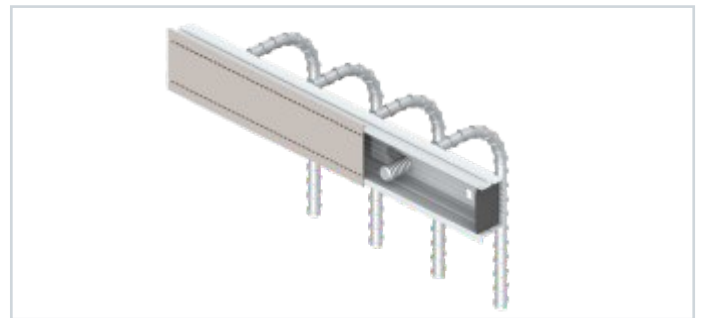
■ **LISTWA STALOWA**

GENERAL INFORMATION

Steel perforated (fluted) rail, inside which are placed threaded reinforcement rebar of FORTEC system, is used to forming furrows (notches) transfer shear forces occurring in the joint. The shape and construction of the rail guarantees stability of the element during concreting and protect by ingress the mixture to the inside of the profile. The specially designed shape of the perforated rail ensure proper preparation of the contact surface on the connection of the two, performed at different time elements- realization of the construction joints. The rail is made from galvanized steel plate, what protect it by the aggressive influence of the environment on the storage stage and during realization. In the rail there are embedded threaded reinforcement bars of FORTEC system. The rail and thus the threaded ends are protected by the thick plastic tape. Cut perforation in the tape let on it fast removal and commencement of reinforcement works.

ZASTOSOWANIE

- Facilities mounting system bars FORTEC with serial mounts,
- To the formation of connections transferring large shear forces.
- Standard length of the rail: 1,25m. Other lengths on inquiry.
- Standard depth of the rail (notch depth): 30 mm. Other depths on inquiry.



PVC or steel holder for nailing	Symbol	Bar diameter Φ [mm]	Thread D, [mm]	Unit	Mass [kg/pcs.]	Art. no.
	FORTEC PVC or steel holder for nailing M14	12	14	pcs.	0,080	ZB-ZS-BT-0-02579
	FORTEC PVC or steel holder for nailing M16	14	16	pcs.	0,080	ZB-ZS-BT-0-02580
	FORTEC PVC or steel holder for nailing M20	16	20	pcs.	0,100	ZB-ZS-BT-0-02581
	FORTEC PVC or steel holder for nailing M24	20	24	pcs.	0,100	ZB-ZS-BT-0-02582
	FORTEC PVC or steel holder for nailing M30	25	30	pcs.	0,100	ZB-ZS-BT-0-02583
	FORTEC PVC or steel holder for nailing M33	28	33	pcs.	0,250	ZB-ZS-BT-0-02584
	FORTEC PVC or steel holder for nailing M36	32	36	pcs.	0,270	ZB-ZS-BT-0-02585
Used to affix bars with sleeves to the formwork. Grip height $h = 10$ mm, grip diameter $D = 58$ mm.						
trapezoidal PVC batten	Symbol	D [mm]	Unit	Mass [kg/pcs.]	Art. no.	
	FORTEC trapezoidal PVC batten 60	12-20	1 m	0,52	ZB-ZS-BT-0-02577	
	FORTEC trapezoidal PVC batten 90	25-32	1 m	1,12	ZB-ZS-BT-0-02578	
	FORTEC batten end cap 60			pcs.	0,75/100 pcs.	ZB-ZS-BT-0-02608
	FORTEC batten end cap 90			pcs.	1,30/100 pcs.	ZB-ZS-BT-0-02609
	Holes may be cut out for different diameters - according to the customer's order (standard length - 1 running metre) a = spacing from batten end e = spacing between bars FORTEC trapezoidal batten 60 $h=3,5$ cm, $b=6,0$ cm FORTEC trapezoidal batten 90 $h=5,0$ cm, $b=9,0$ cm Please provide the values for a and e when placing the order.					


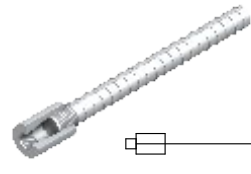

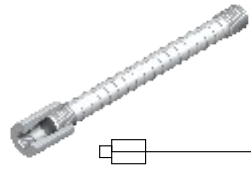
■ BAR ANCHOR DESIGNATIONS

- type A – connected bar with outside thread
- type M – base bar with standard coupler, standard joint
- type MB – base bar with standard coupler, positional joint
- type MC – base bar with standard coupler and locknut
- type MD – base bar with spacer coupler and locknut
- type MR – base bar with reduction coupler
- type W – connected bar screwed into welded coupler
- type F – base bar with spacer coupler, into which the screw is screwed (screw is not a component of FORTEC joining elements)
- type ES – connected bar screwed into small anchor plate
- type EL – connected bar screwed into large anchor plate

■ STRAIGHT / BENT THREADED BARS

M			MM		
MB			MBMB		
MMg			MMgg		
MMg			Mg		
Mk			MBggg		

■ BARS WITH REDUCTION COUPLER

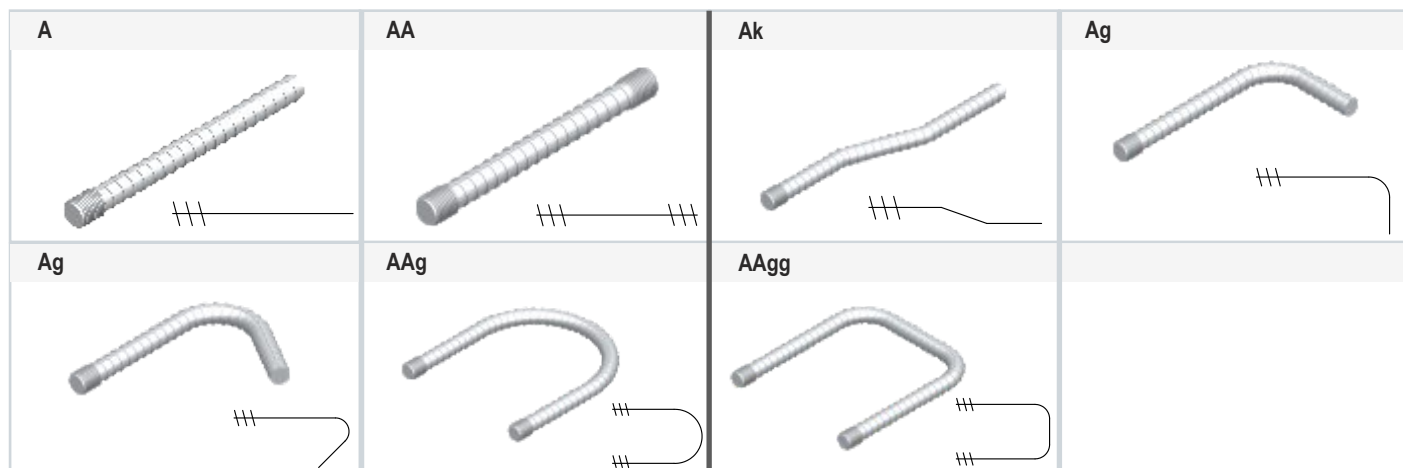
MR			MRA		
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- type MR – base bar with reduction coupler

Concrete reinforcement systems

FORTEC SCREWED REINFORCEMENT SYSTEM

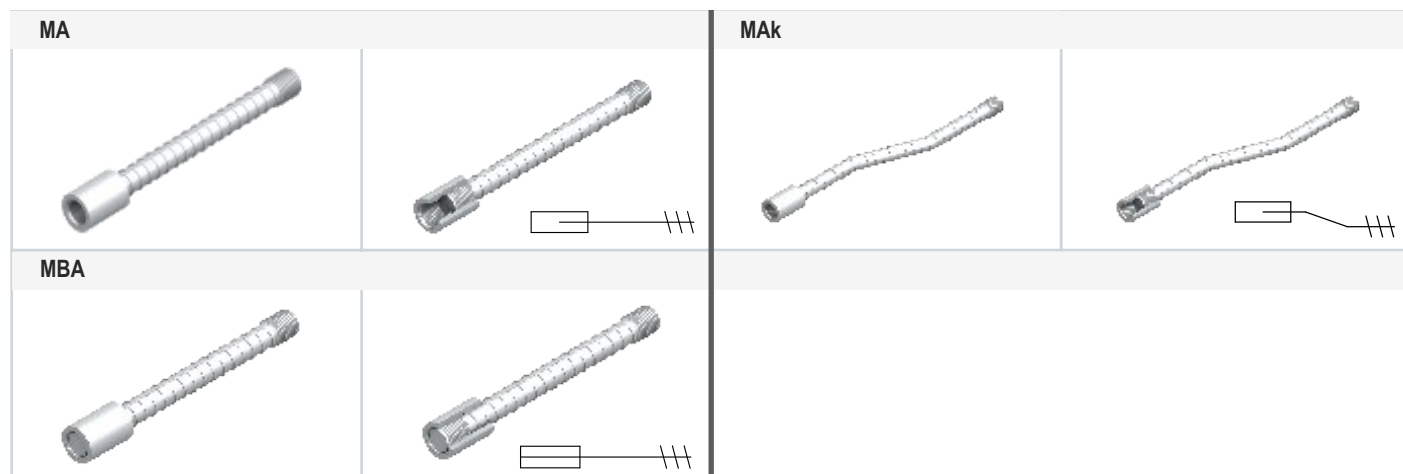
STRAIGHT / BENT THREADED BARS



- type A - connected bar with outside thread
- g - bar bend count

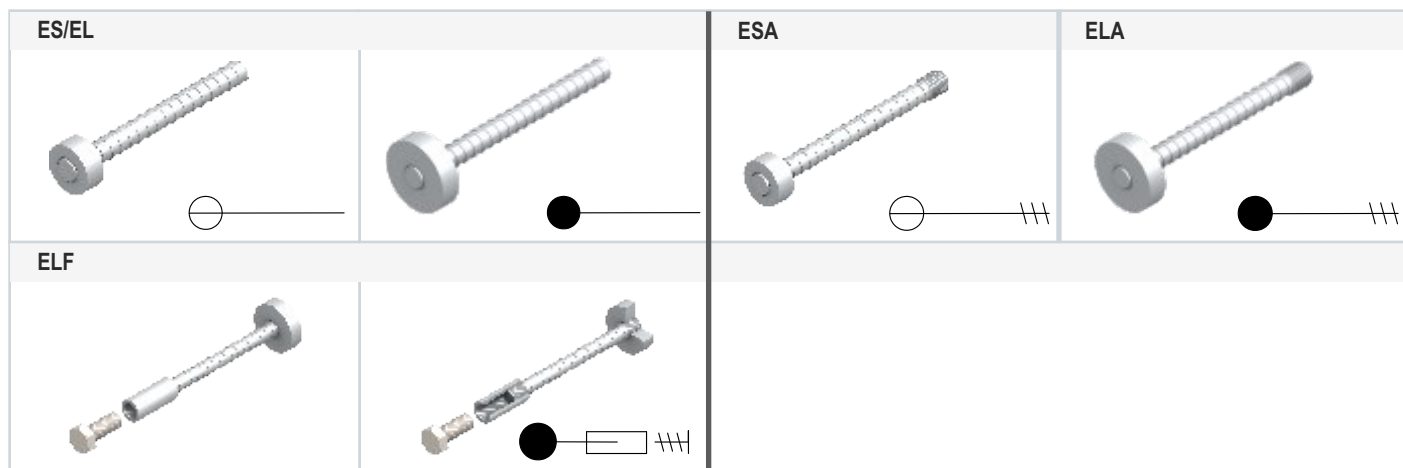
- K - bar overbend count

STRAIGHT / BENT BARS WITH STANDARD COUPLER



- type M – base bar with inside thread (joining coupler)
- type MB – base bar with standard coupler

BARS WITH ANCHOR PLATE



- type ES - connected bar screwed into small anchor plate

- type EL - connected bar screwed into large anchor plate

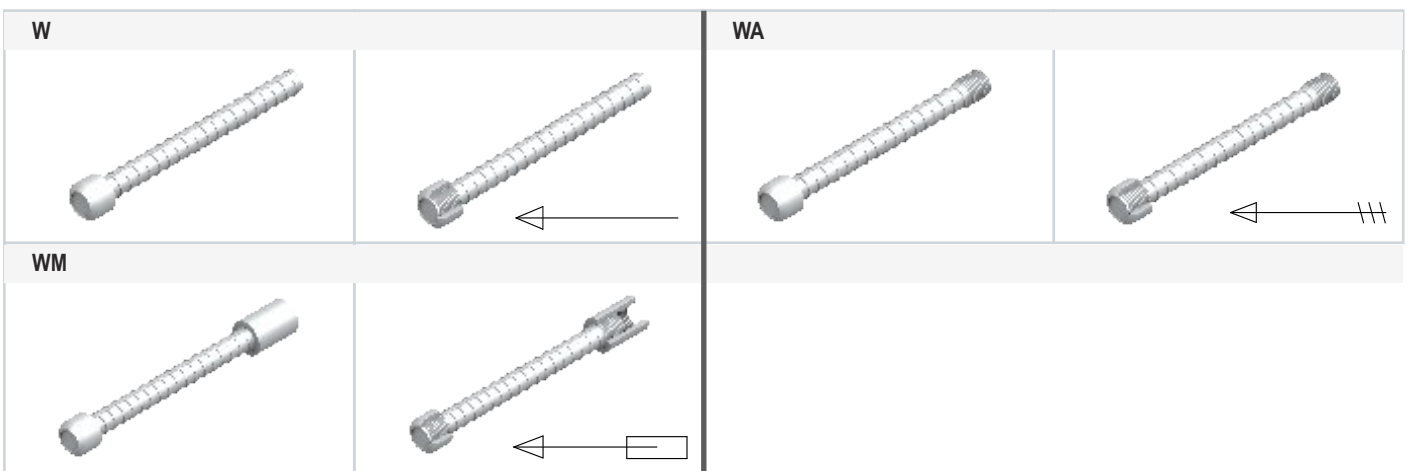
■ BARS WITH STANDARD/SPACER COUPLER AND LOCKNUT



■ type MC – base bar with standard coupler and locknut

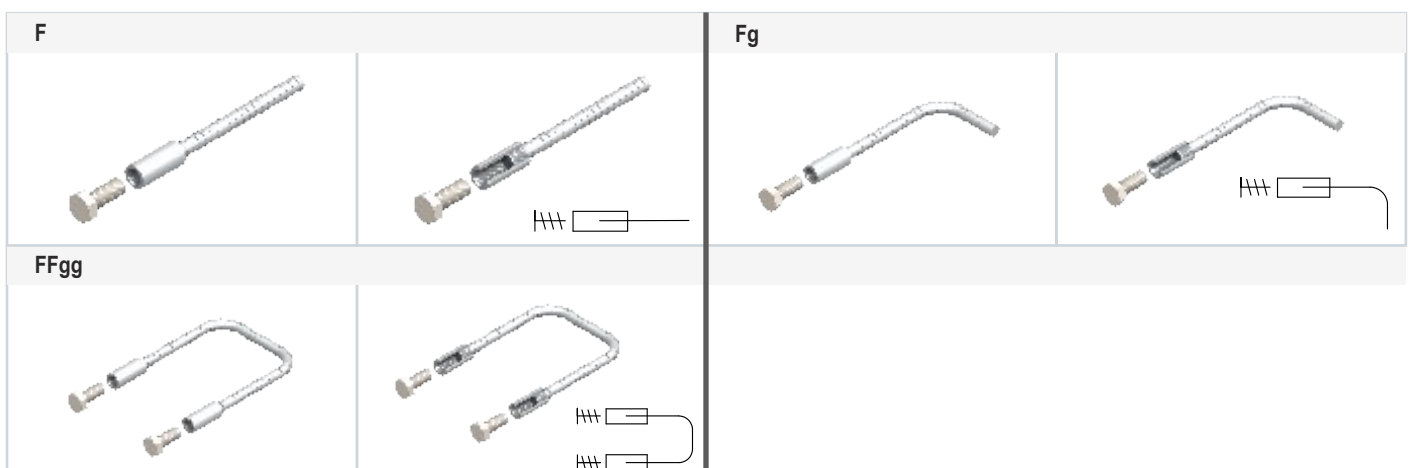
■ type MD – base bar with spacer coupler and locknut

■ BARS WITH COUPLER WELDED ON



■ type W – connected bar screwed into welded-on coupler

■ BARS WITH SPACER COUPLER (IN JOINTS WITH STEEL STRUCTURES)



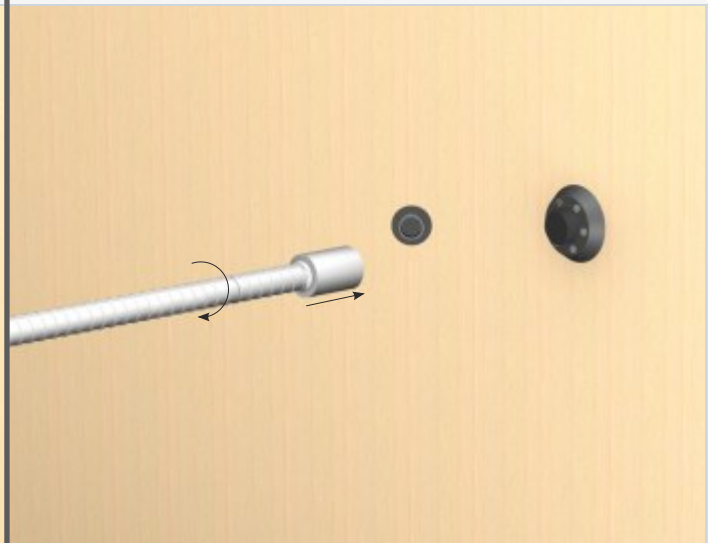
■ type F – base bar with spacer coupler, into which a screw is screwed (screw is not a component of the FORTEC joints)

■ **ASSEMBLY INSTRUCTIONS - installation to formwork using a nailing grip**

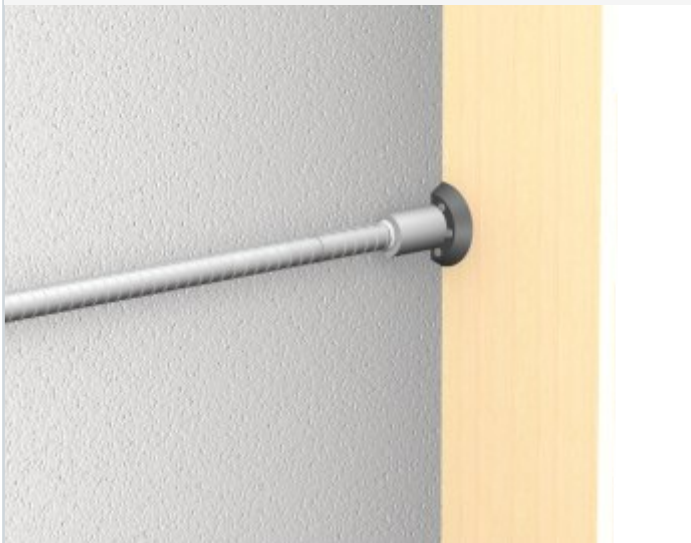
1. Nail the grip to the formwork



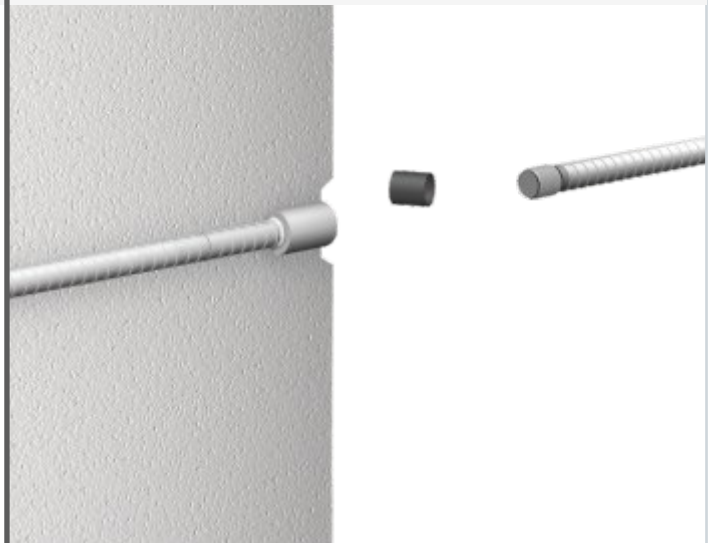
2. Remove protective caps and join base bar



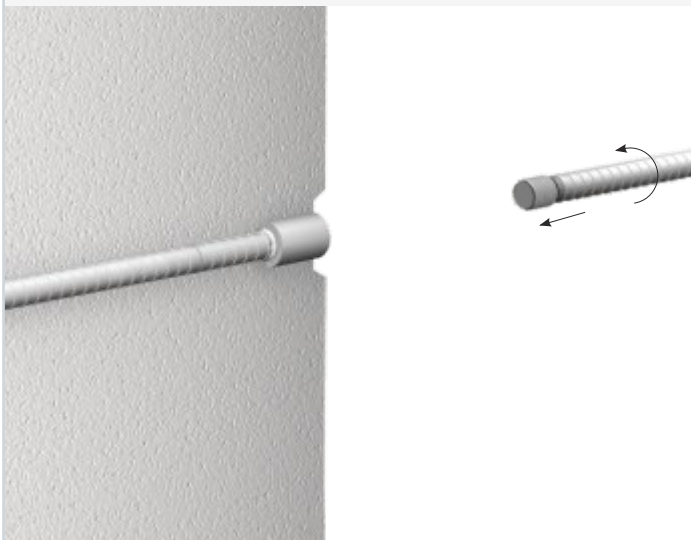
3. Concrete the component



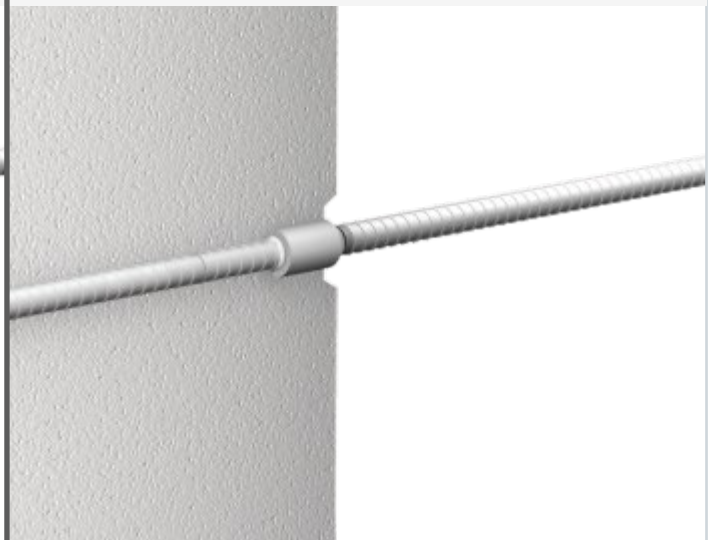
4. After removal of formwork from the component, remove the plastic caps from the connected bars



5. Screw on the connector bar



6. View of ready joint

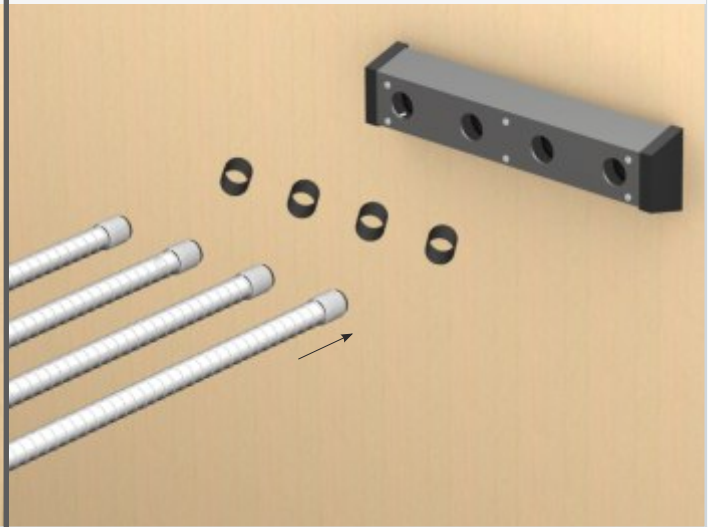


■ **ASSEMBLY INSTRUCTIONS - installation to formwork using a trapezoidal batten**

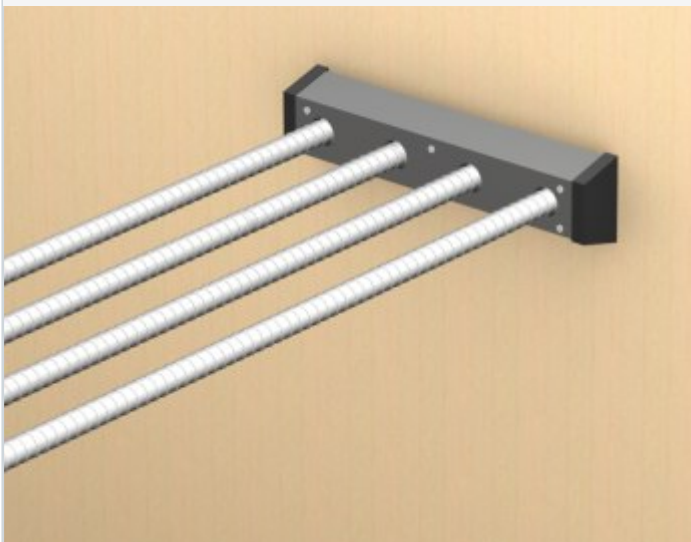
1. Attach the trapezoidal batten



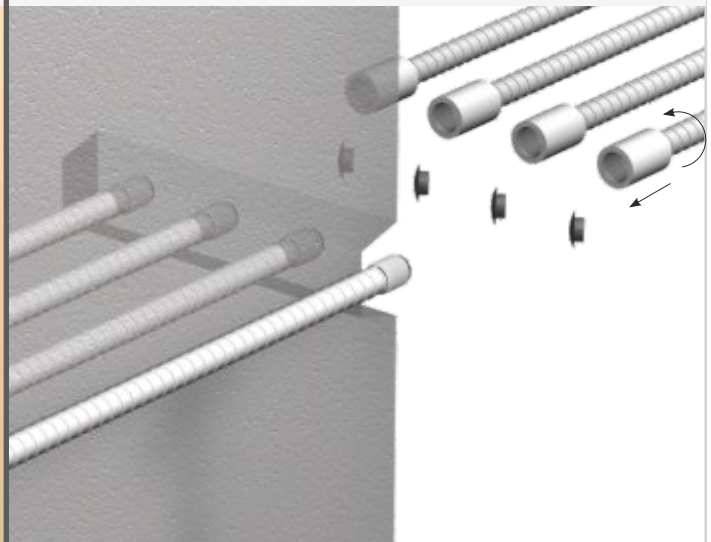
2. Remove protective caps, place threaded bars in the trapezoidal batten



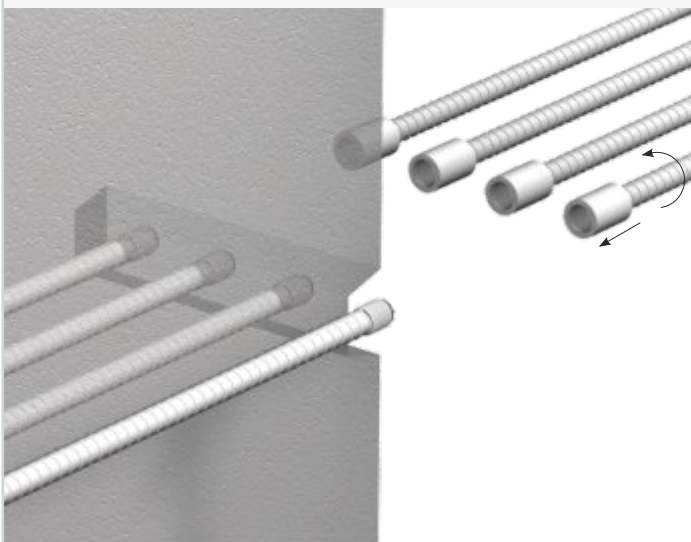
3. Trapezoidal batten with reinforcement bars installed



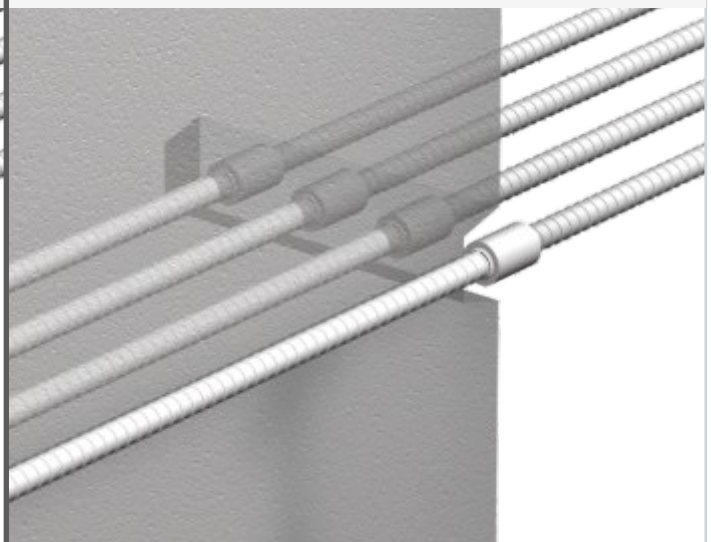
4. After concreting, and after removal of formwork from the component, remove the plastic caps from the connected bars



5. Screw on joint bars



6. View of ready joint



■ **REALIZATIONS**

OFFICE COMPLEX WARSAW SPIRE IN WARSAW

Delivery of the FORTEC reinforcement.

General contractor:

Ghelamco Poland Sp. z o.o.



INTERNATIONAL CHOPIN AIRPORT IN WARSAW

Delivery of the FORTEC reinforcement.

General contractor:

I stage - Ferrovial, Budimex, Estudio Lamela,
II stage - Hochtief, IHG



BONARKA CITY CENTER IN CRACOW

Delivery of the FORTEC reinforcement.

General contractor:

Arcadom Polska



SECOND LINE OF THE METRO IN WARSAW

Delivery of the FORTEC reinforcement.

General contractor:

AGP Metro Polska





GALLERY



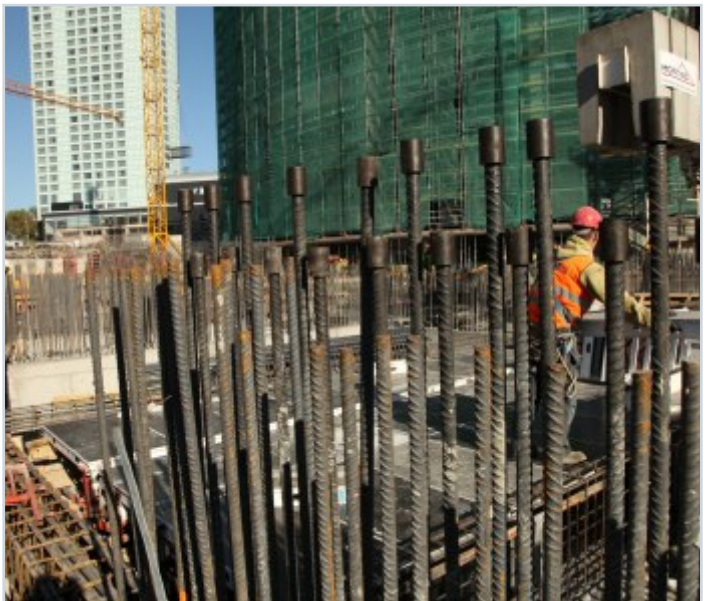
Concrete reinforcement systems

FORTEC SCREWED REINFORCEMENT SYSTEM

GALLERY



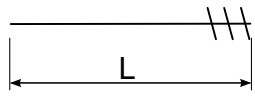
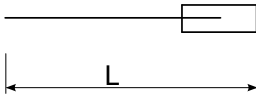
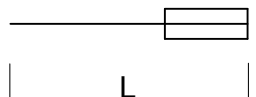
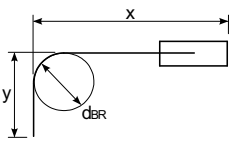
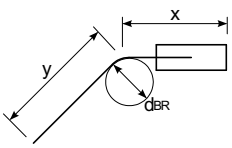
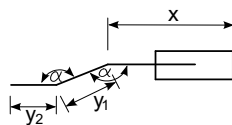
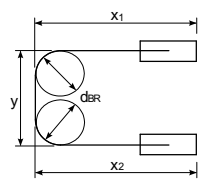
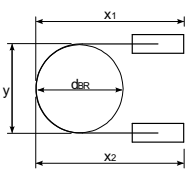
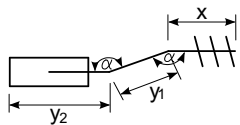
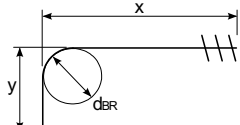
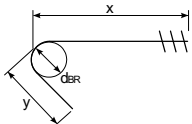
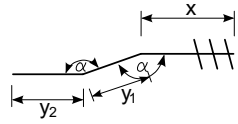
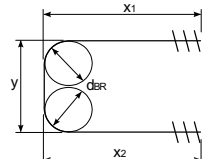
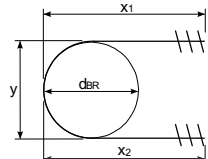
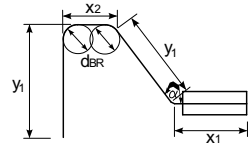
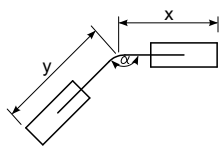
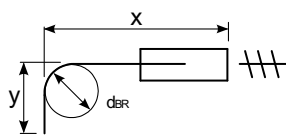
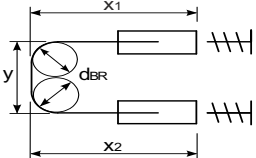
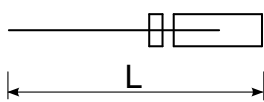
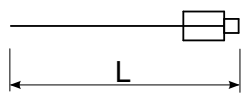
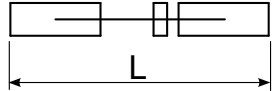
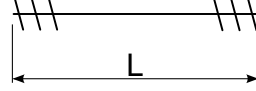
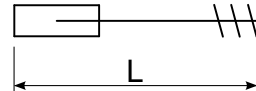
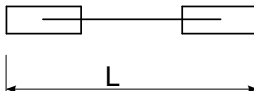
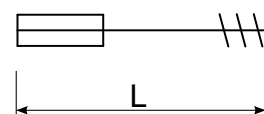
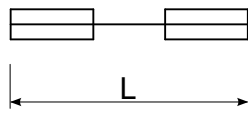
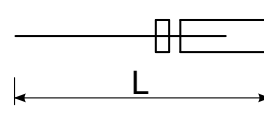
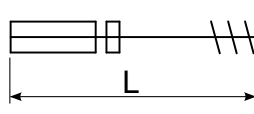
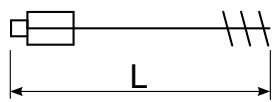
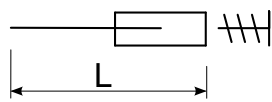
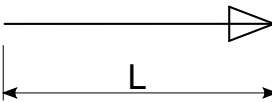
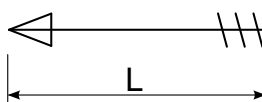
GALLERY

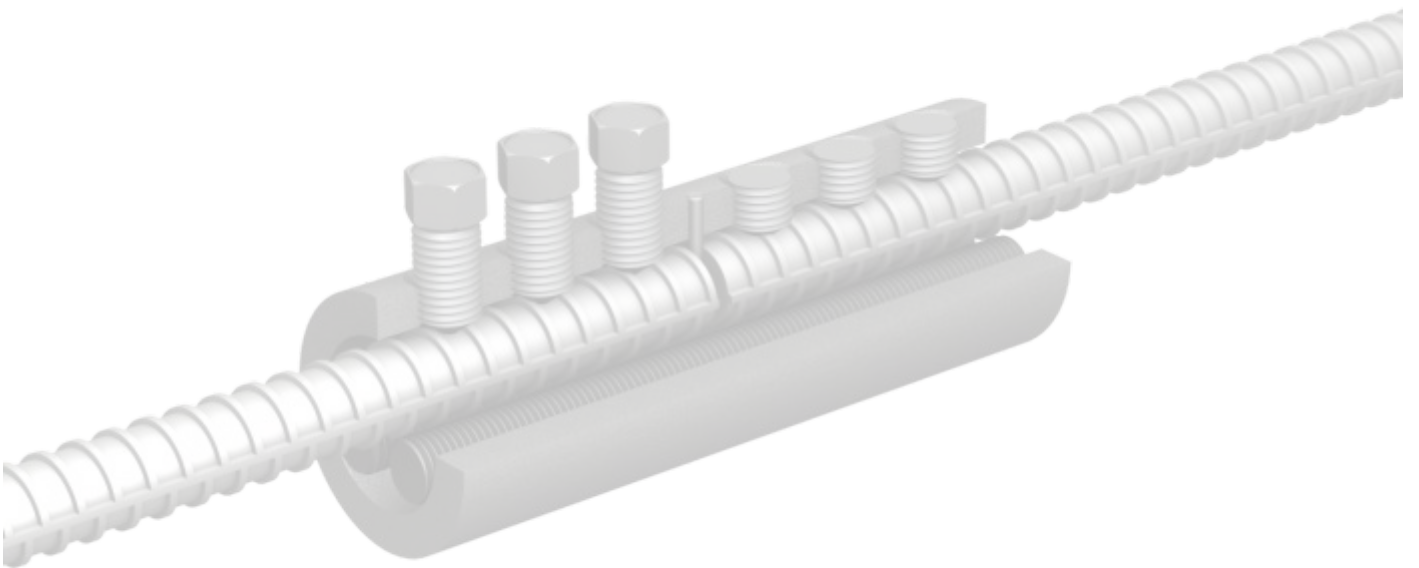


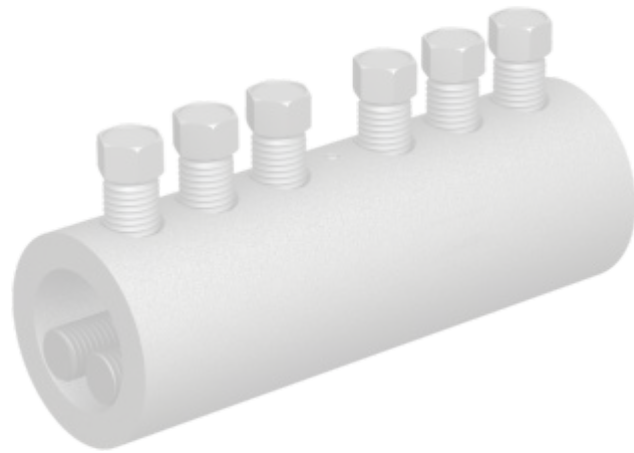
Concrete reinforcement systems

FORTEC SCREWED REINFORCEMENT SYSTEM

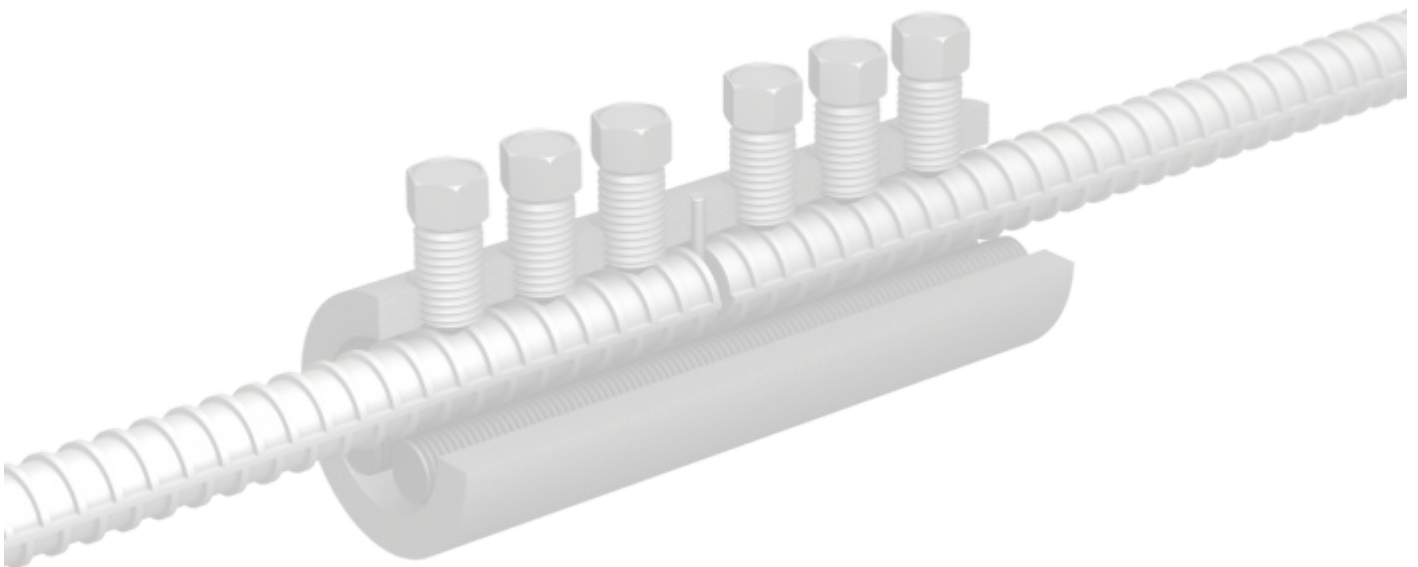
INQUIRY FORM

A 	M 	MB 	Mg - angle 90° 
Mg - any angle 	Mk 	MMgg 	MMg 
MAk 	Ag - angle 90° 	Ag - any angle 	Ak 
AAgg 	AAg 	MBggg 	MMg 
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MBA 	MBMB 	MD 	MCA 
MRA 	F 	W 	WA 

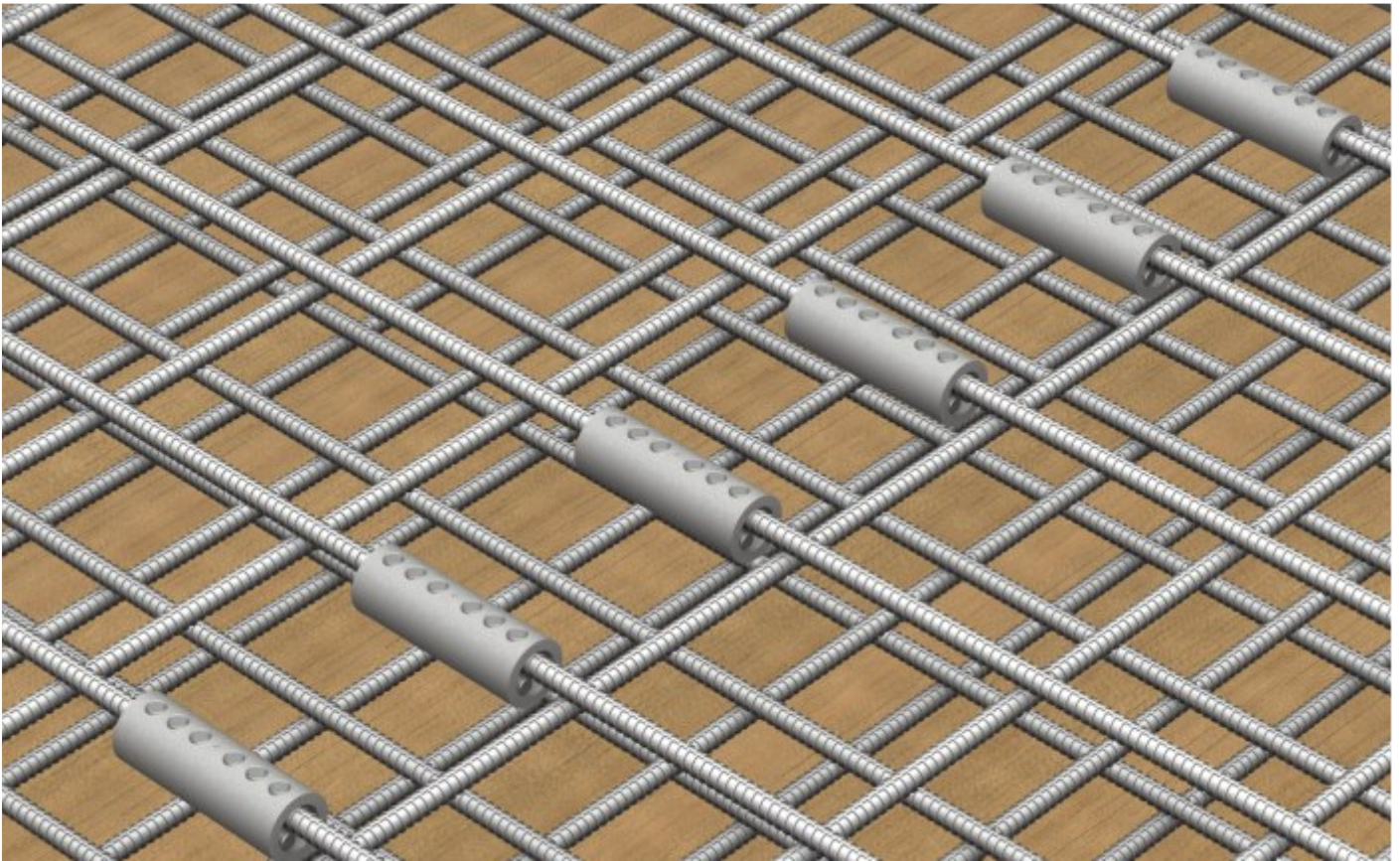




UNITEC COUPLER

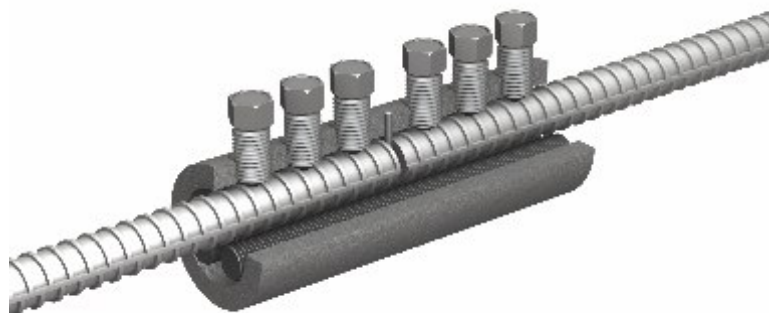


■ GENERAL INFORMATION



PRODUCT DESCRIPTION

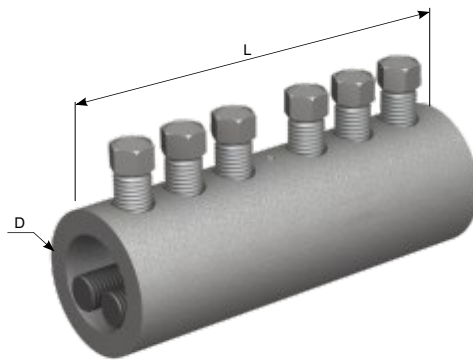
The Unitec system is a method of joining two reinforcement bars with a diameter range between 12 mm and 50 mm. It consists of couplers with integrated studs and a fixed number of screws. The number of screws depends on the diameter of the reinforcement bar. The system is used i. e. during replacement of corroded rebar, when joining new structures with existing structures and when joining together precast components.



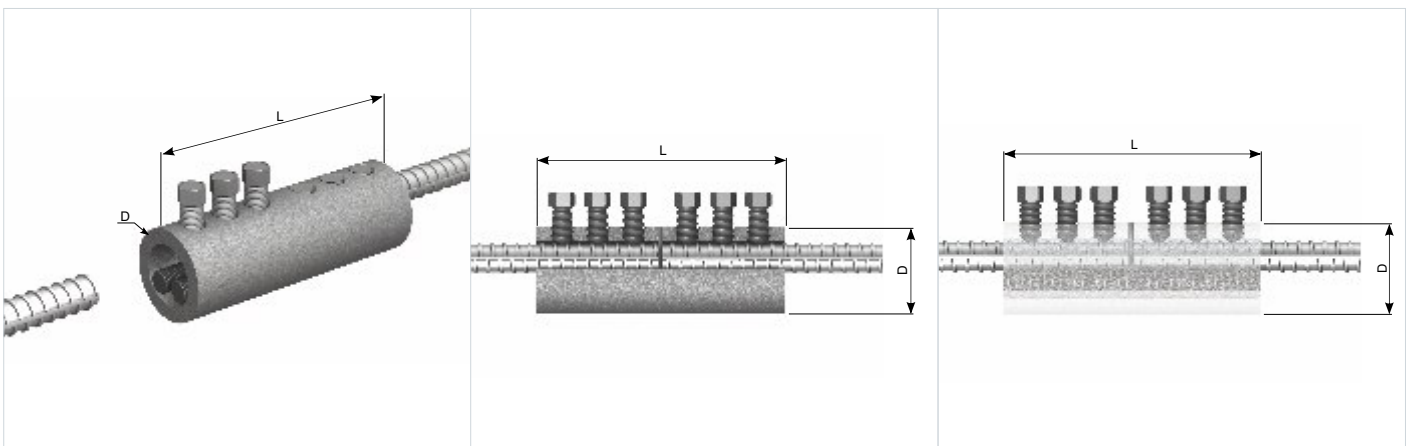
ADVANTAGES

- assembly at the construction site using a socket wrench or air wrench,
- no need to expand/prepare the end,
- instantly ready to use,
- perfect of concrete-anchored bars, repairs and upgrades, bent bars, etc.

■ ASSORTMENT



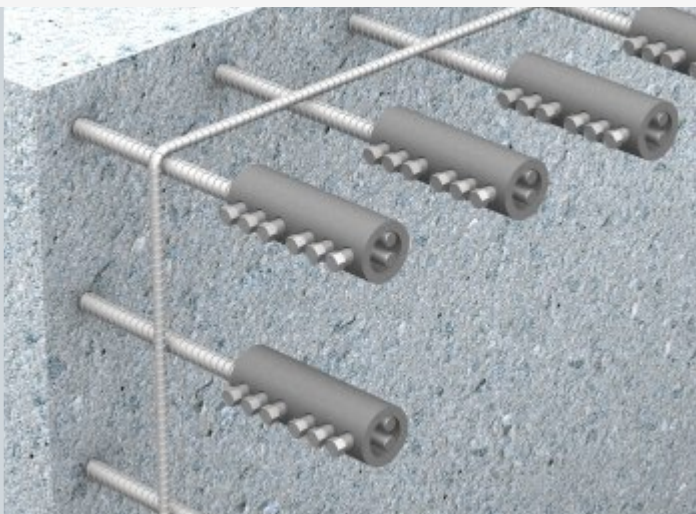
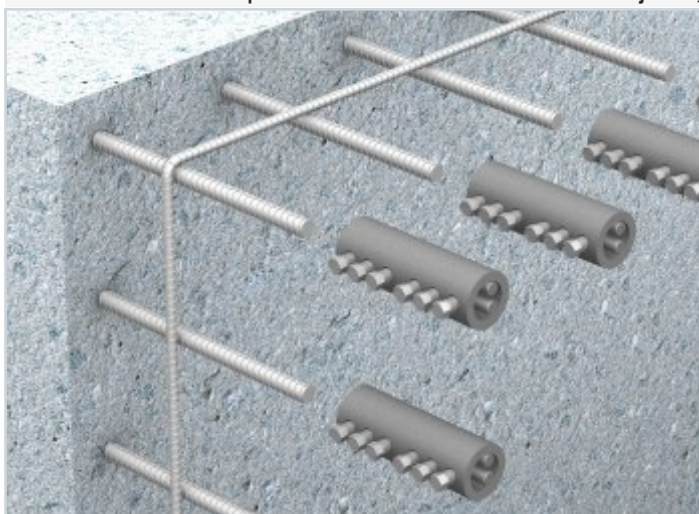
Symbol	Bar diameter ϕ [mm]	Outer diameter D [mm]	Length L [mm]	Sales unit	Art. no.
UNITEC D12	12	48	140	pcs.	ZB-ZS-XX-0-08796
UNITEC D16	16	48	140	pcs.	ZB-ZS-XX-0-08797
UNITEC D20	20	51	200	pcs.	ZB-ZS-XX-0-08799
UNITEC D22	22	58	180	pcs.	ZB-ZS-XX-0-10194
UNITEC D25	25	62	240	pcs.	ZB-ZS-XX-0-08800
UNITEC D28	28	76	220	pcs.	ZB-ZS-XX-0-08801
UNITEC D32	32	82	280	pcs.	ZB-ZS-XX-0-08802
UNITEC D36	36	89	360	pcs.	ZB-ZS-XX-0-08803
UNITEC D40	40	95	425	pcs.	ZB-ZS-XX-0-08804
UNITEC D50	50	104	620	pcs.	ZB-ZS-XX-0-10195



Symbol	Bar diameter ϕ [mm]	Screw count per coupler	Screw thread	Coupler mass [kg]	Mean torque until trimming of screw heads [Nm]
UNITEC D12	12	6	M12	1,6	140
UNITEC D16	16	6	M12	1,6	140
UNITEC D20	20	8	M12	2,5	140
UNITEC D22	22	6	M16	2,8	250
UNITEC D25	25	8	M16	3,8	250
UNITEC D28	28	6	M20	6,8	680
UNITEC D32	32	8	M20	8,5	680
UNITEC D36	36	10	M20	12,2	680
UNITEC D40	40	12	M20	15,4	680
UNITEC D50	50	18	M20	23,5	680

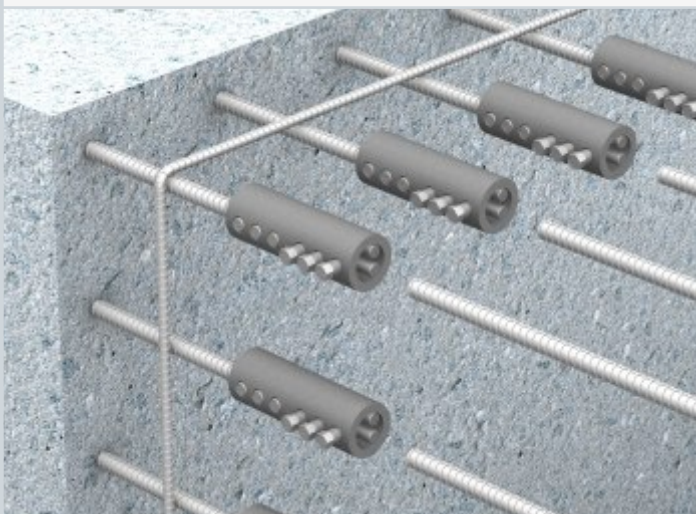
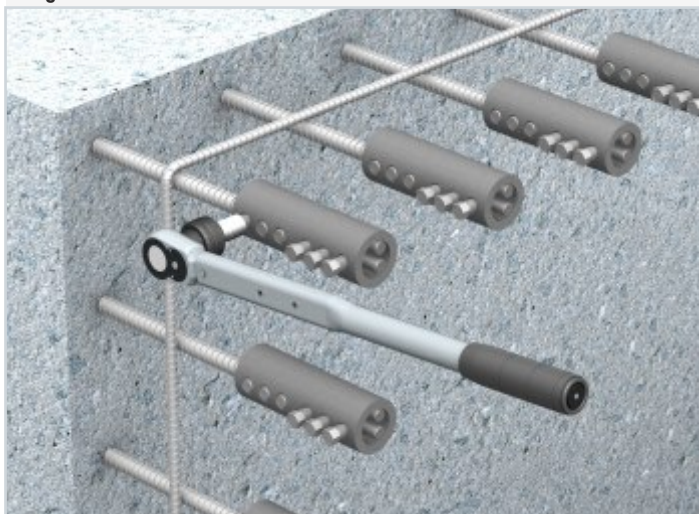
■ **INSTALLATION INSTRUCTIONS**

1. Place the Unitec coupler at the end of the first of the bars to be joined, until contact is made with the inside stud.



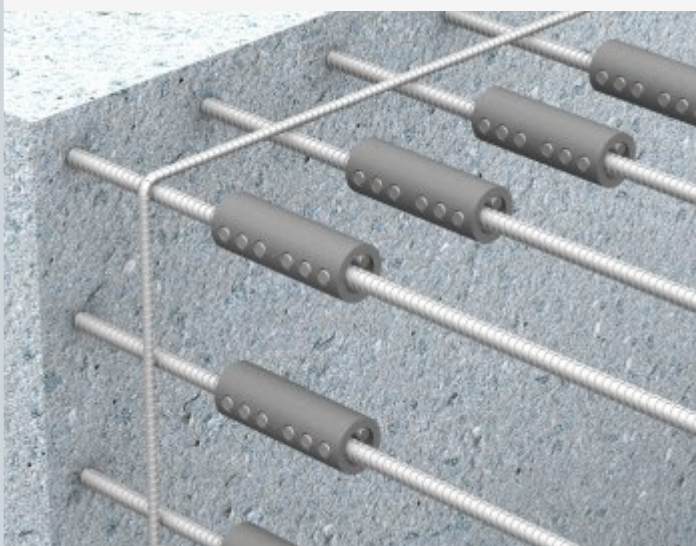
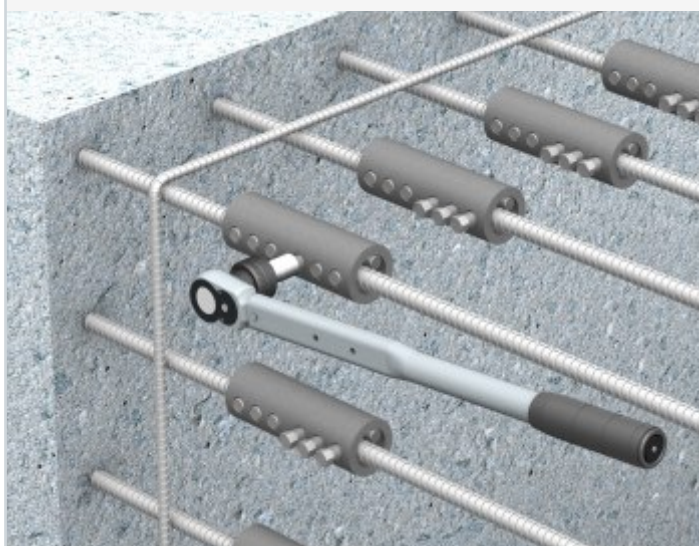
2. Using the wrench, screw tightly the screws, beginning from the centre one, to the outside one, so that one could then set the location of the joint as compared to the first of the bars to be joined. Then, in the same order, tighten the screws with the air wrench until the screw heads are severed.

3. Insert second bar into joining component, until contact with the internal stud.



4. Repeat the entire procedure from positioning the bar with respect to the joining component all the way to severing the screw heads.

5. Ready joint.

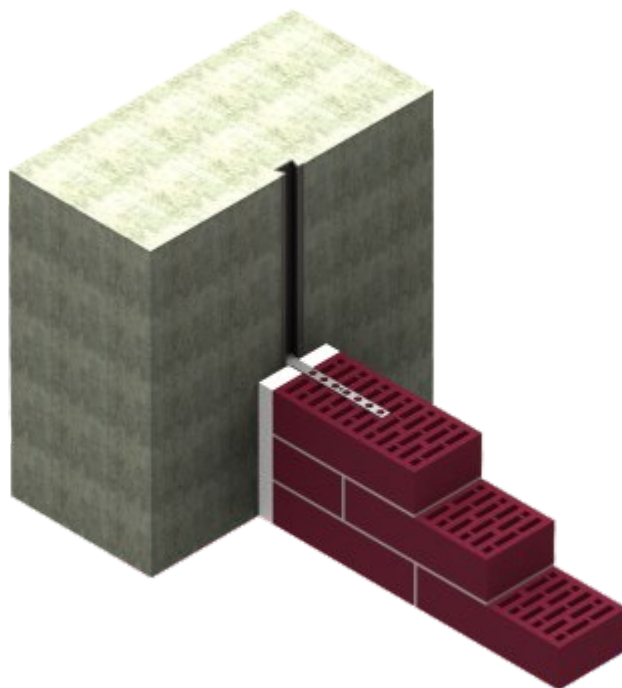




MURO-BET ANCHORING SETS



■ GENERAL INFORMATION



MURO-BET anchoring sets

PRODUCT DESCRIPTION

MURO-BET anchoring sets are used to connection brick wall felling or brick facade cover (with expansion joint or thermal insulation) to concrete construction.

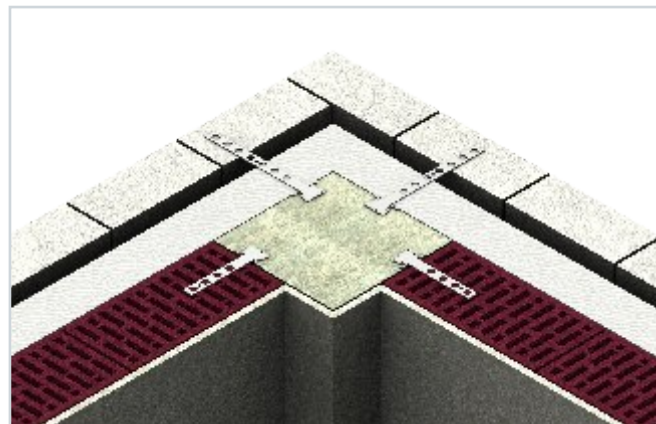
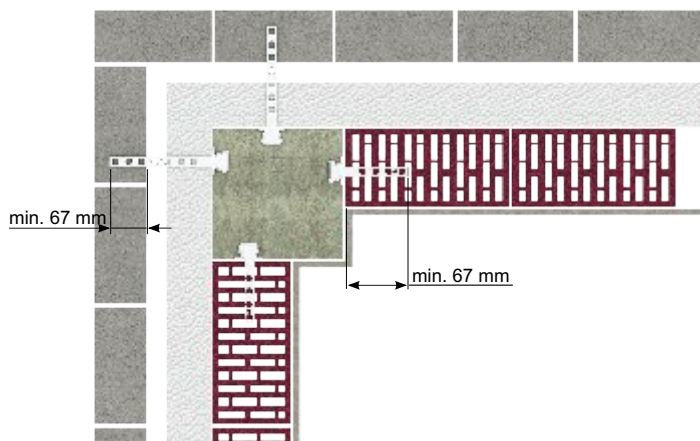
Metal components of the set are made out of galvanised steel type DX51D+Z200 per standard PN-EN 10346, with continuous coating.

The devices were designed and manufactured according to standard PN-EN 845-1:2003+A1:2008 - 'Specification for ancillary components for masonry - Part 1: Anchors, anchor rails, hangers and brackets.

ADVANTAGES

- certain anchoring bricked walls by the concrete elements,
- simple installation,
- it eliminates possibility uncontrolled brakes on the connection of the bricklaying elements to reinforcement concrete elements,
- it eliminates possibility of the formation of scratches of bricked wall by the influence of settling structural elements.

USAGE



■ PRODUCT RANGE



* flat bar anchor size - 1 mm

** anchor rail size - 0,5 mm

Symbol	Lenght [mm]	Unit	Package [bunch, box]	Art. no.
MURO-BET anchor rail	2500	mb	50 mb	ZB-ZK-MB-0-02384
MURO-BET 120 type flat bar anchor	120	pcs.	200 pcs.	ZB-ZK-MB-0-02380
MURO-BET 180 type flat bar anchor	180	pcs.	200 pcs.	ZB-ZK-MB-0-02381
MURO-BET 240 type flat bar anchor	240	pcs.	200 pcs.	ZB-ZK-MB-0-02382

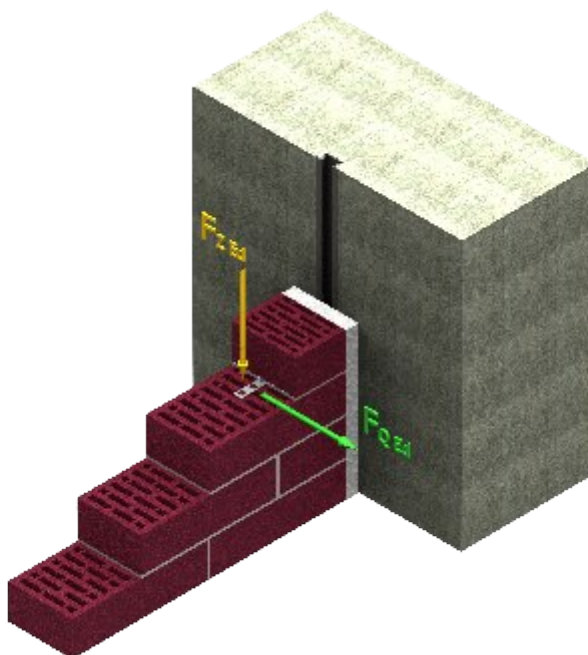
MARKING



MURO-BET anchoring sets has CE marking.

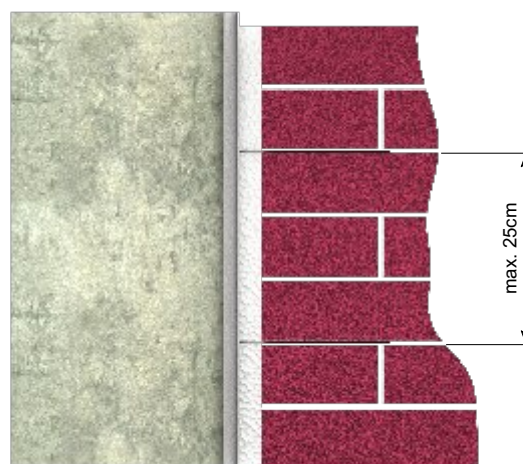
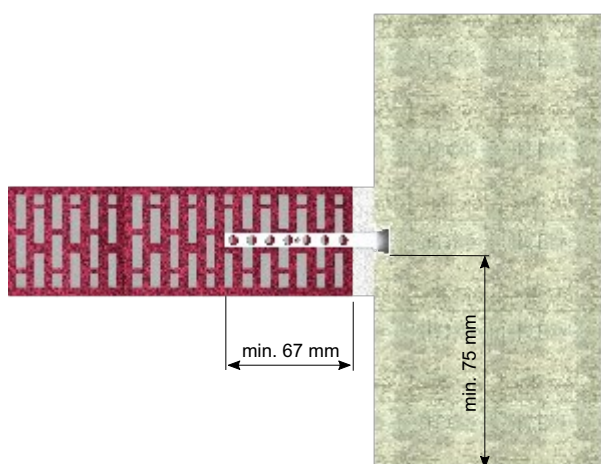
SHEAR RESISTANCE OF FLAT BAR ANCHORS

The shear resistance values for flat bar anchors were determined pursuant to recommendations of Polish Standard PN-EN 845-1:2003, and the values were confirmed through laboratory tests.



SHEAR RESISTANCE OF FLAT BAR ANCHORS	
vertical	horizontal
Max $F_{z,Ed} \leq 1,8 \text{ kN}$	Max $F_{Q,Ed} \leq 1,6 \text{ kN}$

INSTALLATION RECOMENDATIONS

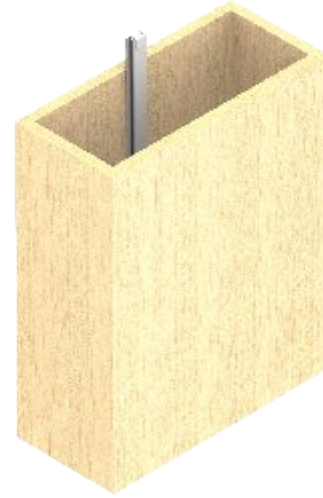


- The distance of anchoring rail from the edge of the concrete element- min.75mm,
- The minimum anchorage of anchoring flat should be not less than 67mm, irrespective of their nominal length.

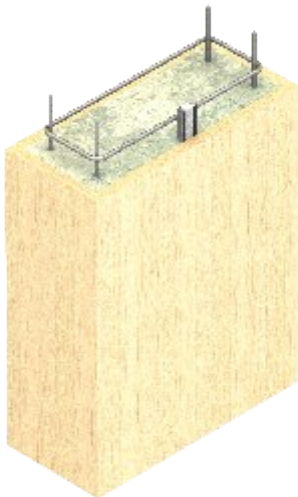
- On 1 meter height of the wall it should be used four anchoring flat, located at about 25 cm,
- Anchors can be placed at any point along the rail,
- Anchoring rail should be mounted by the help of the nails to the formwork at about 25 cm.

■ INSTALLATION INSTRUCTIONS

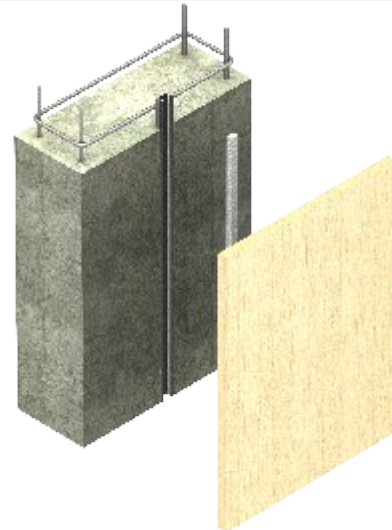
1. Nail the Muro-Bet anchor rail to the formwork



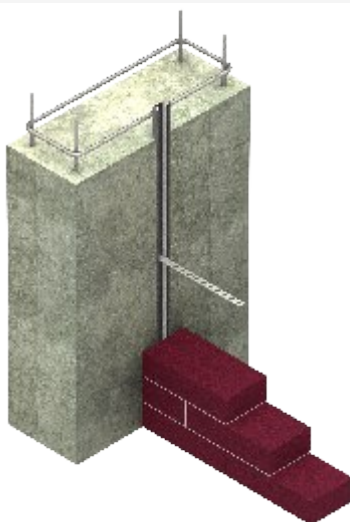
2. Concrete the element



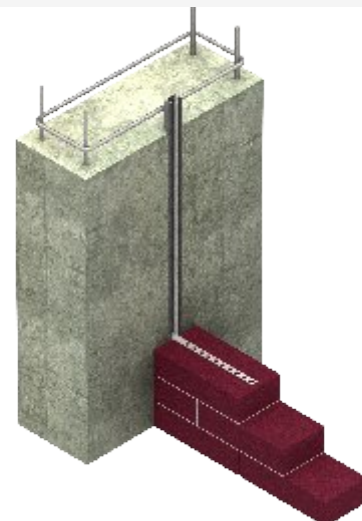
3. After removal of formwork from the concreted component, remove the styrofoam from the anchor rail



4. Install flat bar anchors in the MURO-BET rail

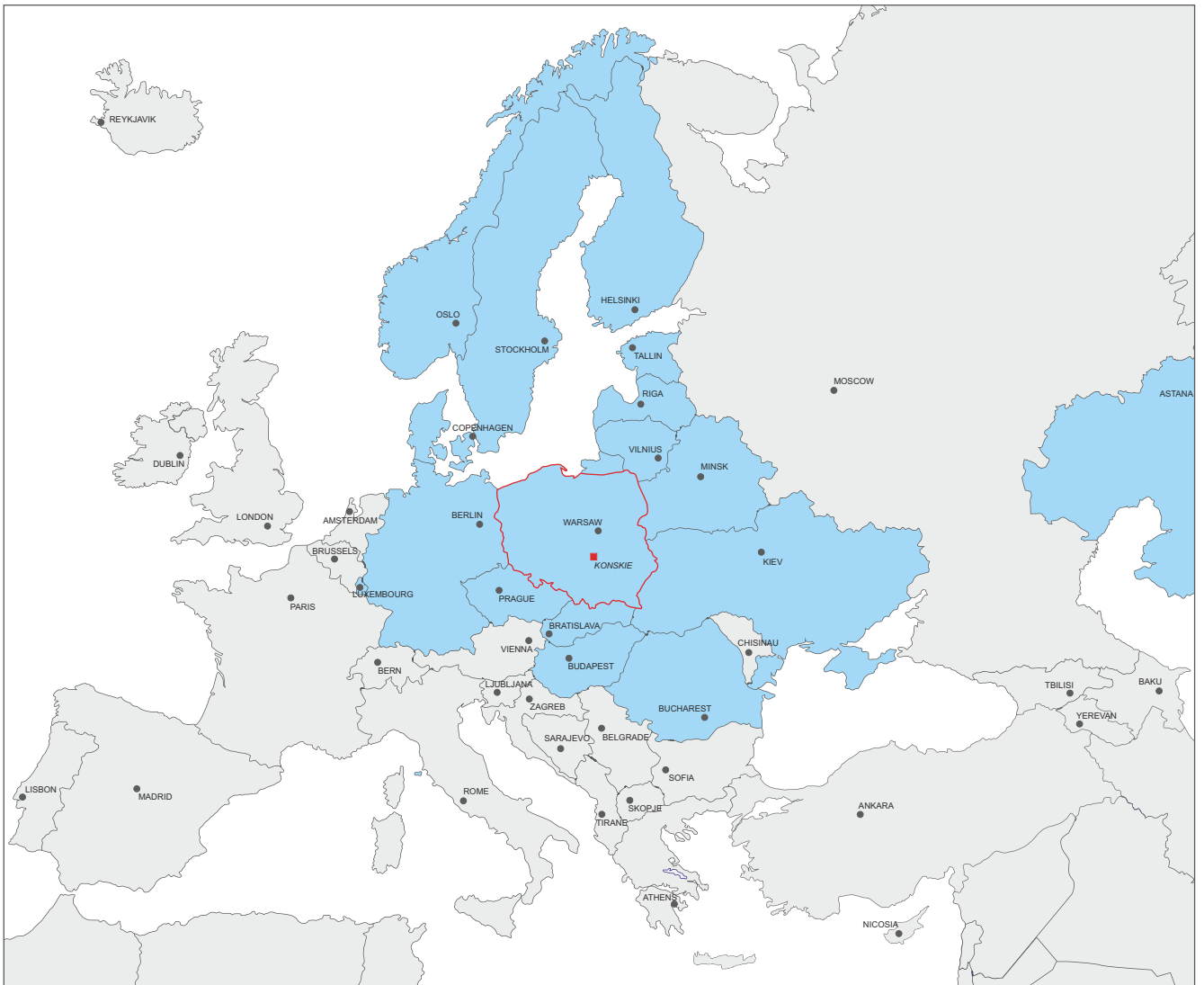


5. View of ready joint with installed flat bar anchors



NOTES

A large grid of graph paper for taking notes, consisting of 20 columns and 30 rows of small squares.





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