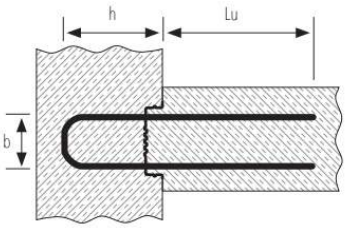
ExBox

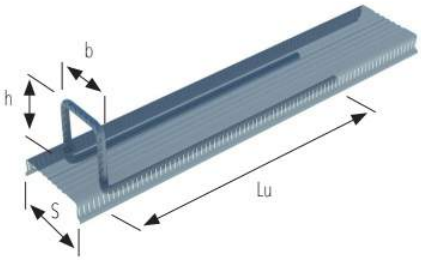
extrea®

Product description

System Exbox is used to provide continuity of reinforcement in reinforcement concrete structures.



S - Box width
Lu - overlap length of the bars
b - U-bar width
h - U-bar height
e - bars spacing



Application

Exbox reinforcement continuity system is used in structural joints of reinforced concrete structures which are concreted in different sections. Casing made of galvanized steel with easy to remove cover, can be fixed to formwork with nails or secured with tie wire.

Properties and advantages

- Standard length 1.25 m.
- Perfect concrete bonding through preforated steel sheet.
- Exbox is easy to remove from formwork.
- Durability and stability.
- Works with injection systems.
- Mandrel diameter used in point where bars are re-bend $d_{Br}=6*d_s$.
- 80% of permissible bars yield strength allowed.

Technical data

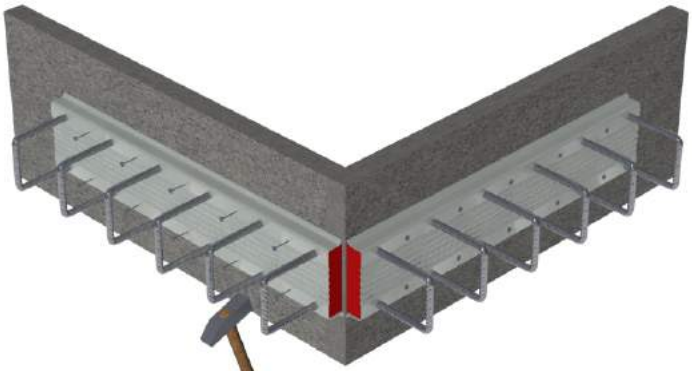
- Bars used in system Exbox used to provide reinforcement continuity in concrete structures are made of B500B, B500SP grade, or steel with not lower mechanical parameters.
- Bars can be re-bent only once, avoid re-bending in temperature lower than -15˚C.
- Re bend reinforcing steel bars may be exploited only up to 80% of yield strength ($f_{yd,red}=f_{yd}*0.8$).

Documents

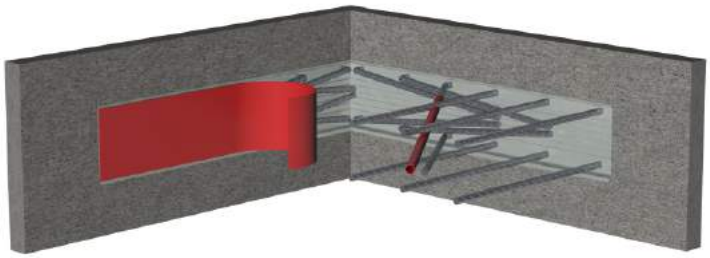
- National Technical Assessment - ITB-KOT-2017/0331
- Declaration of Performance.

Montage

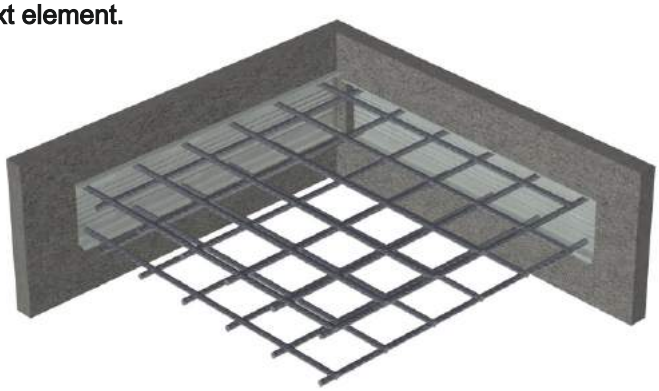
- Mount Exbox to formwork.



- Remove the plastic cover after dismantling of the formwork.



- Reband the bars from the box using a Tube to connect the Exbox reinforcement with the reinforcement of the next element.



Safety

Safety rules must be followed during installation. Protective gloves and fully operable tools should be used.

Storage

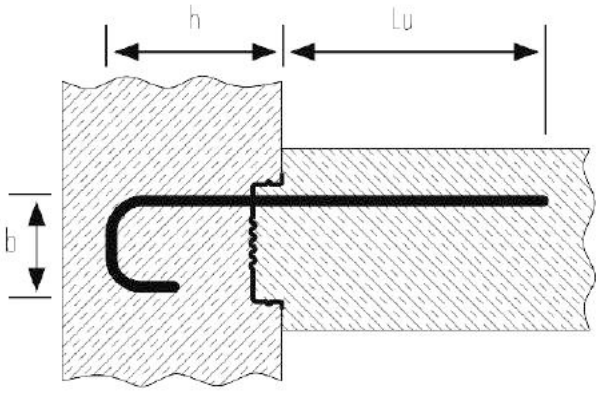
Prior to installation, protect against moisture and atmospheric factors.

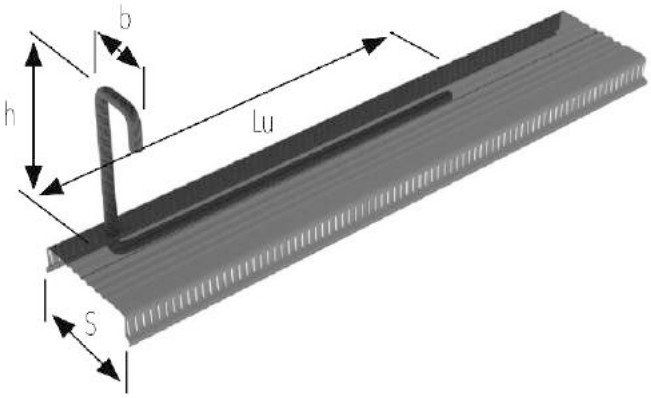
Notes

Additional types with non - standard dimensions and bar shapes are available on request.
Full list of available types available in catalogue an on the website www.extrea.pl.

Assortment

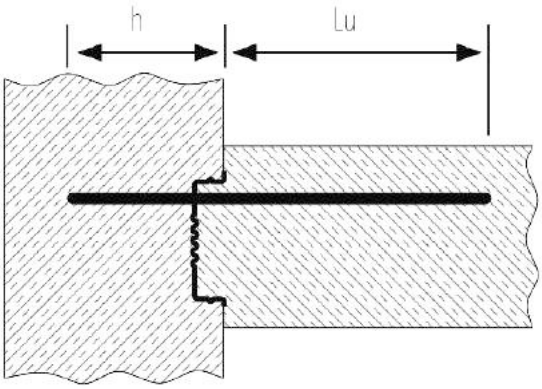
ExBox H type

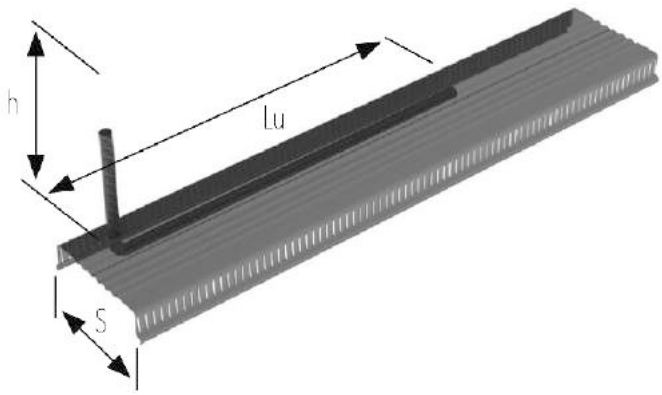




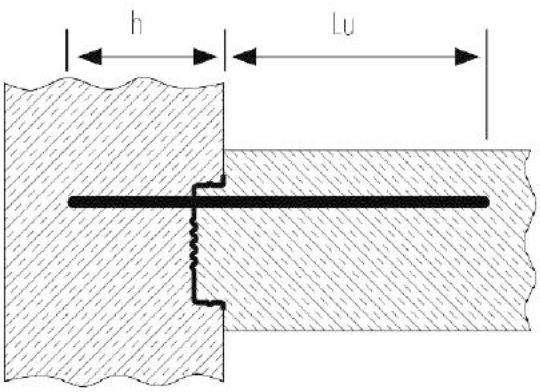
Art. no.	Box width S	Rebar diameter Ø	Bar spacing sw	h cm	b cm	Lu* cm	Packaging m/pallet	Weight kg/m
ExBox H								
40610810	60	8	10	15	7	32	200	2.61
40610815	60	8	15	15	7	32	200	1.74
40610820	60	8	20	15	7	32	200	1.56
40610825	60	8	25	15	7	32	200	1.30
40611010	60	10	10	15	9	39	200	4.15
40611015	60	10	15	15	9	39	200	2.97
40611020	60	10	20	15	9	39	200	2.41
40611025	60	10	20	15	9	39	200	2.00
40811210	80	12	10	15	9	39	120	6.90
40811215	80	12	15	15	9	46	150	4.69
40811220	80	12	20	15	9	46	150	3.70
40811225	80	12	25	15	9	46	150	3.08

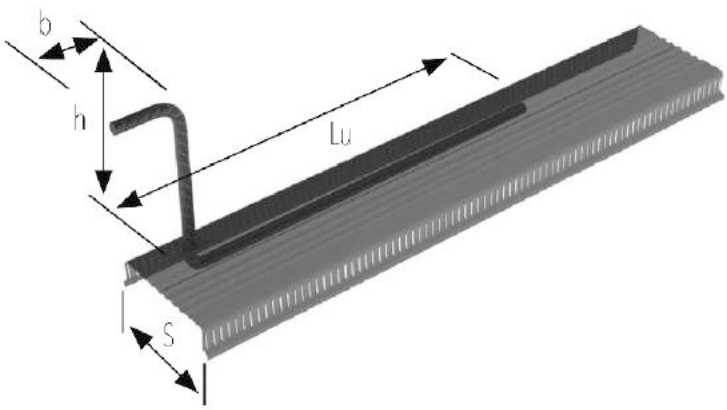
ExBox W type



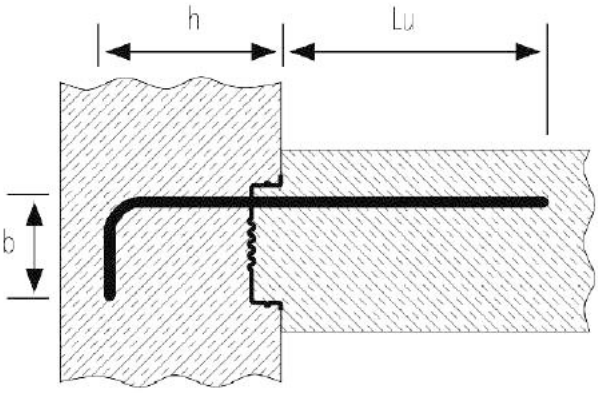


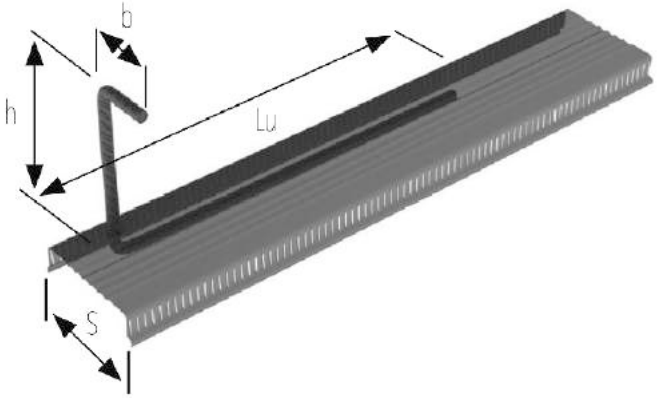
ExBox WH type





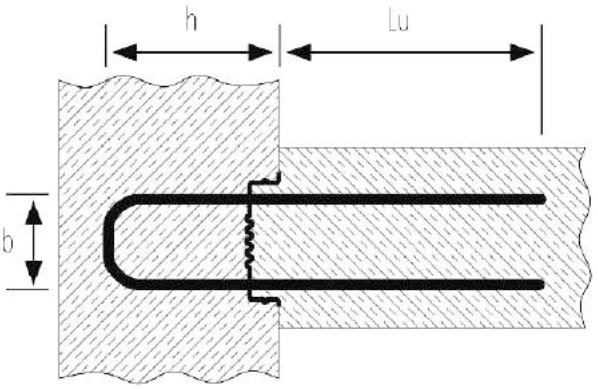
ExBox WS type

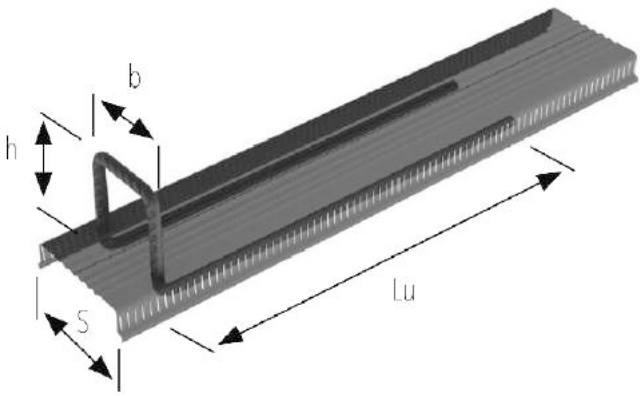




Art. no.	Box width S	Rebar diameter Ø	Bar spacing sw	h cm	b cm	Lu* cm	Packaging m/pallet	Weight kg/m
ExBox W/WS/WH								
40620810	60	8	10	15	7	32	200	2.61
40620815	60	8	15	15	7	32	200	1.74
40620820	60	8	20	15	7	32	200	1.47
40620825	60	8	25	15	7	32	200	1.23
40621010	60	10	10	15	9	39	200	6.70
40621015	60	10	15	15	9	39	200	2.35
40621020	60	10	20	15	9	39	200	1.91
40621025	60	10	20	15	9	39	200	3.71
40821210	80	12	10	15	9	39	120	6.61
40821215	80	12	15	15	9	46	150	3.85
40821220	80	12	20	15	9	46	150	3.39
40821225	80	12	25	15	9	46	150	2.83

ExBox S type





Art. no.	Box width S	Rebar diameter Ø	Bar spacing sw	h cm	b cm	Lu* cm	Packaging m/pallet	Weight kg/m.
ExBox S 80								
40800815	80	8	15	15	6	32	187.5	3.22
40800820	80	8	20	15	6	32	187.5	2.41
40800825	80	8	25	15	6	32	187.5	2.01
40801015	80	10	15	15	6	29	187.5	4.29
40801020	80	10	20	15	6	36	187.5	3.83
40801025	80	10	25	15	6	39	187.5	3.47

Assortment

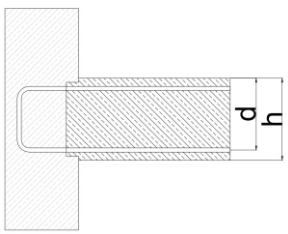
	Art. no.	Box width S	Rebar diameter Ø	Bar spacing sw	h cm	b cm	Lu* cm	Packaging m/pallet	Weight kg/m
ExBox S 110									
	41100810	110	8	10	15	9	32	100	5.27
	41100815	110	8	15	15	9	32	100	3.51
	41100820	110	8	20	15	9	32	100	2.89
	41100825	110	8	25	15	9	32	100	2.64
	41101010	110	10	10	15	9	39	100	8.13
	41101015	110	10	15	15	9	39	100	5.42
	41101020	110	10	20	15	9	39	100	4.34
	41101025	110	10	25	15	9	39	100	3.62
	41101210	110	12	10	15	9	30	100	9.56
	41101215	110	12	15	15	9	33	100	7.74
	41101220	110	12	20	15	9	46	100	6.04
	41101225	110	12	25	15	9	46	100	5.03
ExBox S 140									
	41400815	140	8	15	15	12	32	135	3.55
	41400820	140	8	20	15	12	32	135	3.09
	41400825	140	8	25	15	12	32	135	2.83
	41401010	140	10	10	15	12	39	135	7.56
	41401015	140	10	15	15	12	39	135	5.64
	41401020	140	10	20	15	12	39	135	4.37
	41401025	140	10	25	15	12	39	135	3.64
	41401210	140	12	10	15	12	40	135	11.77
	41401215	140	12	15	15	12	46	135	8.01
	41401220	140	12	20	15	12	46	135	6.06
	41401225	140	12	25	15	12	46	135	5.05
ExBox S 160									
	41600815	160	8	15	15	14	32	105	3.84
	41600820	160	8	20	15	14	32	105	3.37
	41600825	160	8	25	15	14	32	105	3.01
	41601010	160	10	10	15	14	39	105	7.24
	41601015	160	10	15	15	14	39	105	5.44
	41601020	160	10	20	15	14	39	105	4.49
	41601025	160	10	25	15	14	39	105	3.74
	41601210	160	12	10	15	14	43	105	12.12
	41601215	160	12	15	15	14	46	105	7.90
	41601220	160	12	20	15	14	46	105	6.34
	41601225	160	12	25	15	14	46	105	5.29
ExBox S 190									
	41900815	190	8	15	15	17	32	90	4.21
	41900820	190	8	20	15	17	32	90	3.55
	41900825	190	8	25	15	17	32	90	3.37
	41901010	190	10	10	15	17	39	90	7.86
	41901015	190	10	15	15	17	39	90	6.15
	41901020	190	10	20	15	17	39	90	5.05
	41901025	190	10	25	15	17	39	90	4.21
	41901210	190	12	10	15	17	46	90	12.83
	41901215	190	12	15	15	17	46	90	8.55
	41901220	190	12	20	15	17	46	90	6.98
	41901225	190	12	25	15	17	46	90	5.82

Assortment

	Art. no.	Box width S	Rebar diameter Ø	Bar spacing sw	h cm	b cm	Lu* cm	Packaging m/pallet	Weight kg/m
ExBox S 220									
	42200815	220	8	15	15	20	32	60	4.37
	42200820	220	8	20	15	20	32	60	3.83
	42200825	220	8	25	15	20	32	60	3.58
	42201010	220	10	10	15	20	39	60	8.30
	42201015	220	10	15	15	20	39	60	6.37
	42201020	220	10	20	15	20	39	60	5.32
	42201025	220	10	25	15	20	39	60	4.43
	42201210	220	12	10	15	20	46	60	13.36
	42201215	220	12	15	15	20	46	60	8.91
	42201220	220	12	20	15	20	46	60	7.21
	42201225	220	12	25	15	20	46	60	6.00
ExBox S 240									
	42400815	240	8	15	15	22	32	60	4.74
	42400820	240	8	20	15	22	32	60	4.10
	42400825	240	8	25	15	22	32	60	3.77
	42401010	240	10	10	15	22	39	60	8.73
	42401015	240	10	15	15	22	39	60	6.59
	42401020	240	10	20	15	22	39	60	5.59
	42401025	240	10	25	15	22	39	60	4.66
	42401210	240	12	10	15	22	46	60	13.89
	42401215	240	12	15	15	22	46	60	9.26
	42401220	240	12	20	15	22	46	60	7.43
	42401225	240	12	25	15	22	46	60	6.19

Bearing capacity - shear load transverse to concrete joint

- Calculation according to EN 1992-1-1 section 6.2.2 as for monolithic produced building components.
- Shear load resistance for standard elements without shear reinforcement in the table on the next page.
- For non standard types bearing capacity can be estimated individually by planer or our technical support according to provisions of EN 1992-1-1.
- Effective static height assumed in calculation:



d - effective static height (d=h-c-Ø/2) [mm]
h - thickness of structural element
c - concrete cover
Ø - tensile reinforcement diameter

- Shear load capacity according to formula 6.2a nd 6.2b for elements without shear reinforcement with assumed factor Crk,c=0,15 and partial safety factor for concrete γ_c=1,5.
- Concrete cover due to enviromental conditions is to be considered.

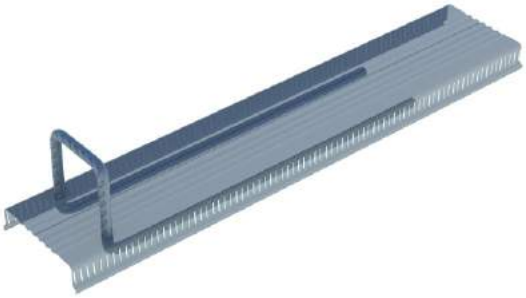
Bearing capacity - shear load transverse to the joint without additional shear reinforcement [kN/m]

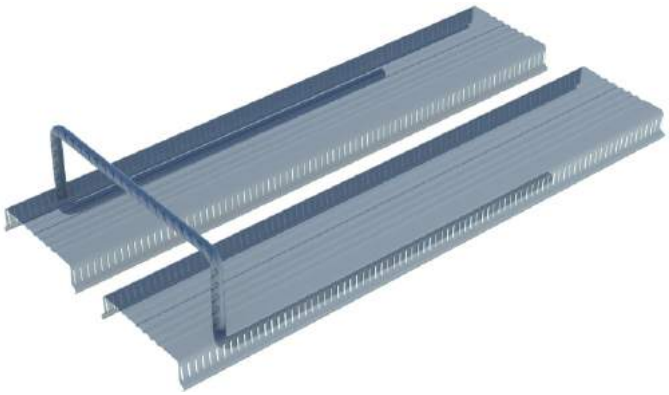
Rebar diameter Ø [mm]	Bar spacing sw [cm]	Concrete class C20/25	C25/30	C30/37
d=100 mm				
8	10	44.3	49.5	54.2
8	15	44.3	49.5	54.2
8	20	44.3	49.5	54.2
8	25	44.3	49.5	54.2
10	10	50.1	54.0	57.3
10	15	44.3	49.5	54.2
10	20	44.3	49.5	54.2
10	25	44.3	49.5	54.2
12	10	56.6	60.9	64.7
12	15	49.4	53.2	56.6
12	20	44.9	49.5	54.2
12	25	44.3	49.5	54.2
d=120 mm				
8	10	53.1	59.4	65.1
8	15	53.1	59.4	65.1
8	20	53.1	59.4	65.1
8	25	53.1	59.4	62.9
10	10	56.6	60.9	65.1
10	15	53.1	59.4	65.1
10	20	53.1	59.4	65.1
10	25	53.1	59.4	65.1
12	10	63.9	68.8	73.1
12	15	55.8	60.1	65.1
12	20	53.1	59.4	65.1
12	25	53.1	59.4	65.1
d=140 mm				
8	10	62.0	69.3	75.9
8	15	62.0	69.3	75.9
8	20	62.0	69.3	75.9
8	25	56.7	62.9	62.9
10	10	62.7	69.3	75.9
10	15	62.0	69.3	75.9
10	20	62.0	69.3	75.9
10	25	62.0	69.3	75.9
12	10	70.8	76.3	81.0
12	15	62.0	69.3	75.9
12	20	62.0	69.3	75.9
12	25	62.0	69.3	75.9
d=160 mm				
8	10	70.8	79.2	86.8
8	15	70.8	79.2	86.8
8	20	70.8	78.7	78.7
8	25	56.7	62.9	62.9
10	10	70.8	79.2	86.8
10	15	70.8	79.2	86.8
10	20	70.8	79.2	86.8
10	25	70.8	79.2	86.8
12	10	77.4	83.4	88.6
12	15	70.8	79.2	86.8
12	20	70.8	79.2	86.8
12	25	70.8	79.2	86.8

Bearing capacity - shear load transverse to the joint without additional shear reinforcement [kN/m]

Rebar diameter Ø [mm]	Bar spacing sw [cm]	Concrete class C20/25	C25/30	C30/37
d=180 mm				
8	10	79.7	89.1	97.6
8	15	79.7	89.1	97.6
8	20	70.8	78.7	78.7
8	25	56.7	62.9	62.9
10	10	79.7	89.1	97.6
10	15	79.7	89.1	97.6
10	20	79.7	89.1	97.6
10	25	70.8	82.2	92.8
12	10	83.7	90.2	97.6
12	15	79.7	89.1	97.6
12	20	79.7	89.1	97.6
12	25	79.7	89.1	97.6
d=200 mm				
8	10	88.5	99.0	108.4
8	15	88.5	99.0	104.9
8	20	70.8	78.7	78.7
8	25	56.7	62.9	62.9
10	10	88.5	99.0	108.4
10	15	88.5	99.0	108.4
10	20	88.5	99.0	108.4
10	25	70.8	82.2	92.8
12	10	89.8	99.0	108.4
12	15	88.5	99.0	108.4
12	20	88.5	99.0	108.4
12	25	85.0	98.6	108.4
d=220 mm				
8	10	94.0	105.1	115.1
8	15	94.0	104.9	104.9
8	20	70.8	78.7	78.7
8	25	56.7	62.9	62.9
10	10	94.0	105.1	115.1
10	15	94.0	105.1	115.1
10	20	88.5	102.7	115.1
10	25	70.8	82.2	92.8
12	10	94.0	105.1	115.1
12	15	94.0	105.1	115.1
12	20	94.0	105.1	115.1
12	25	85.0	98.6	111.4
d=240 mm				
8	10	99.4	111.1	121.7
8	15	94.4	104.9	104.9
8	20	70.8	78.7	78.7
8	25	56.7	62.9	62.9
10	10	99.4	111.1	121.7
10	15	99.4	111.1	121.7
10	20	88.5	102.7	116.0
10	25	70.8	82.2	92.8
12	10	99.4	111.1	121.7
12	15	99.4	111.1	121.7
12	20	99.4	111.1	121.7
12	25	85.0	98.6	111.4

ExBox - non-standard type





Product description

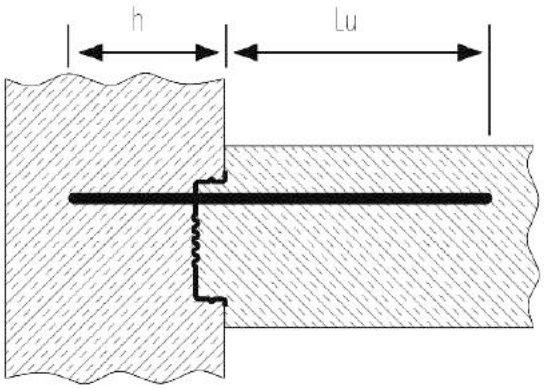
Reinforcement continuity system ExBox is intended for connecting reinforced concrete structures (ceilings, walls, stairs, etc.) which are concreted in different sections.

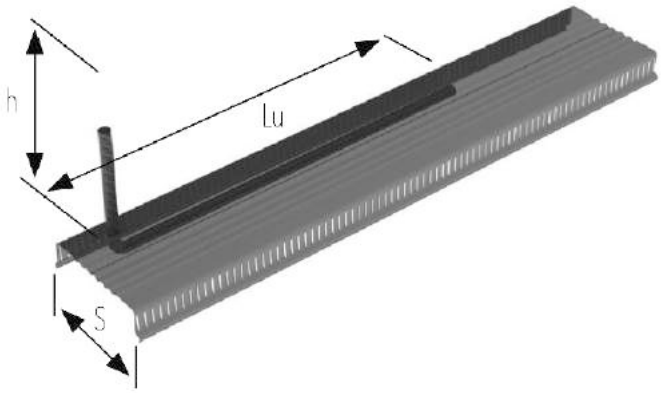
We supply ExBox elements in the following variants:

- Rail length up to 2.50 m.
- Rail widths: 50, 80, 90, 120, 150, 170, 190, 210, 240 mm.
- Eyelet types according to drawings.
- Reinforcement steel ⌀ 8, 10 and 12 mm - typical.
- Typical bar spacings 15, 20 and 25 cm.
- Possilbe different bar spacing.
- The eyelet width must be at least 2 cm smaller than the width of the reinforced element.

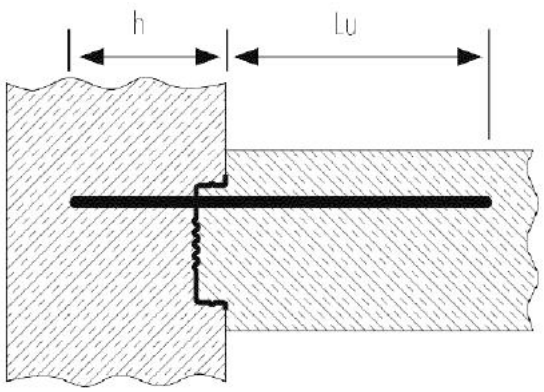
Assortment

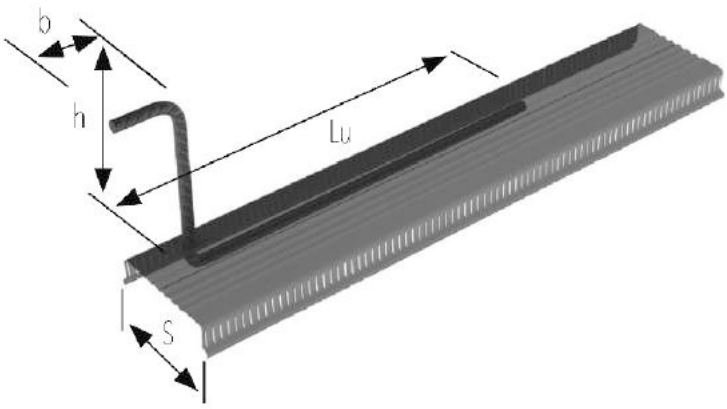
ExBox N bar sets - W type





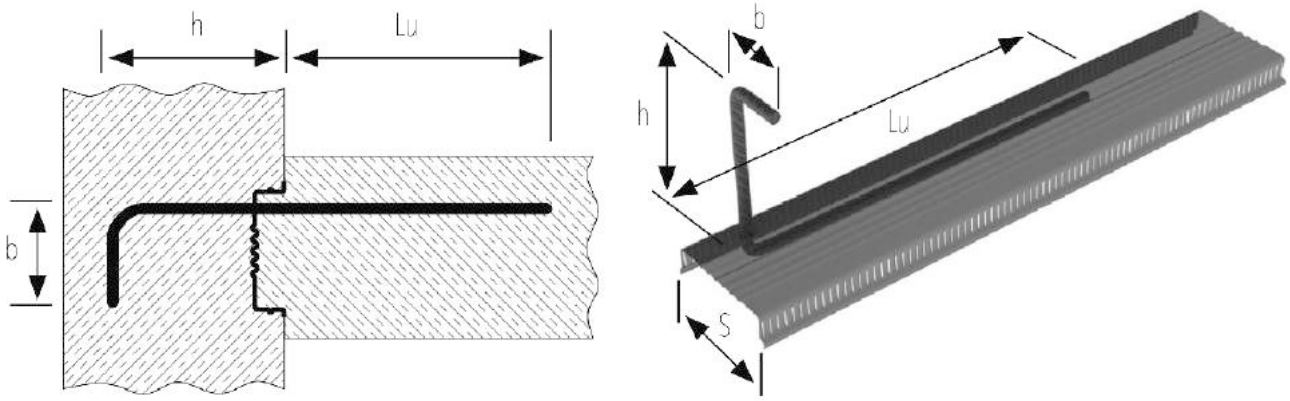
ExBox N bar sets - WH type



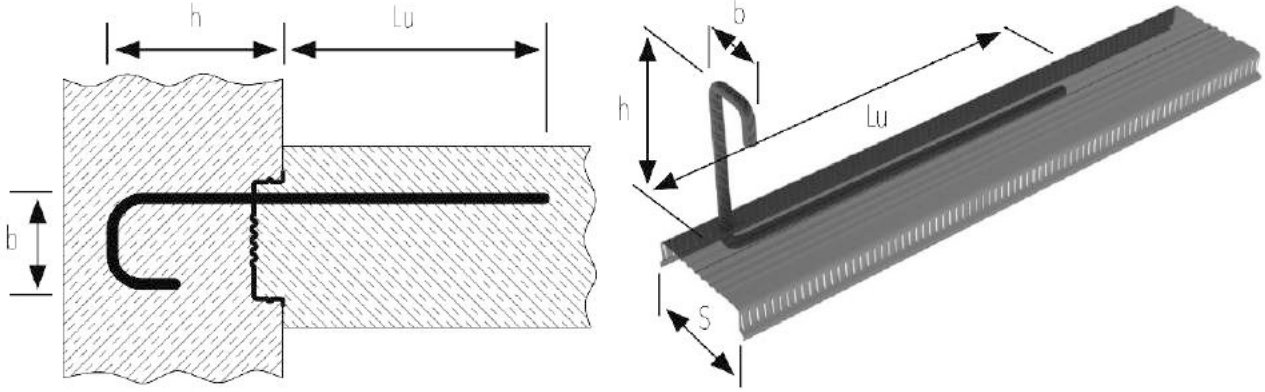


Assortment

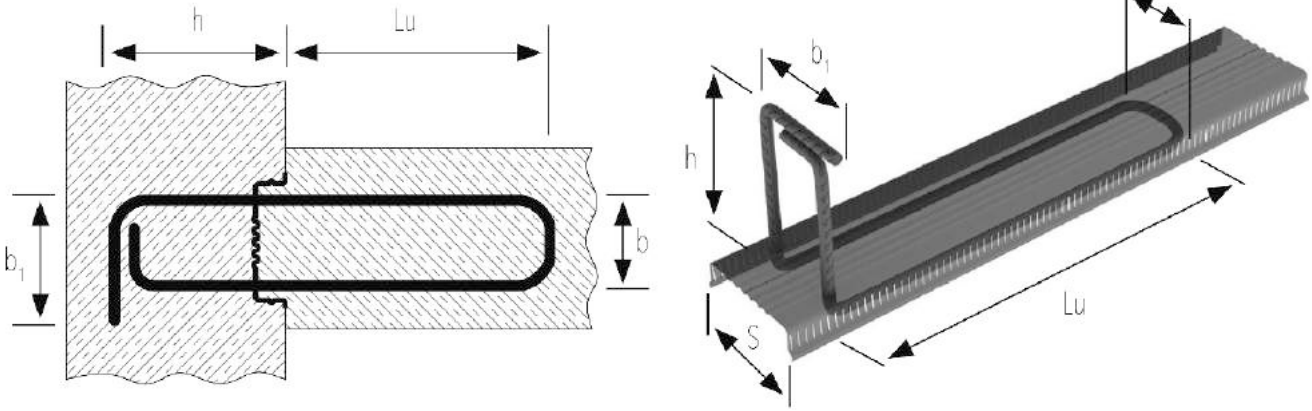
ExBox N bar sets - WS type



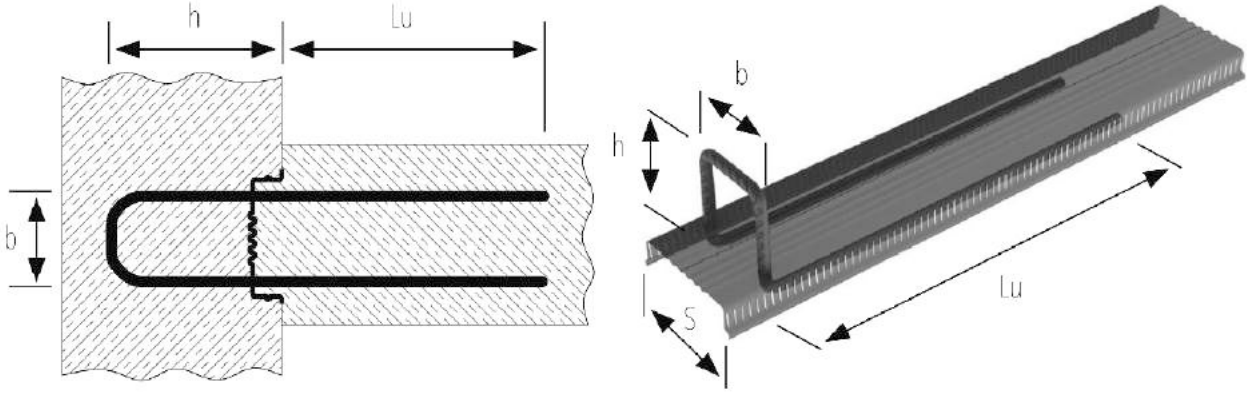
ExBox N bar sets - H type



ExBox N bar sets - BK type

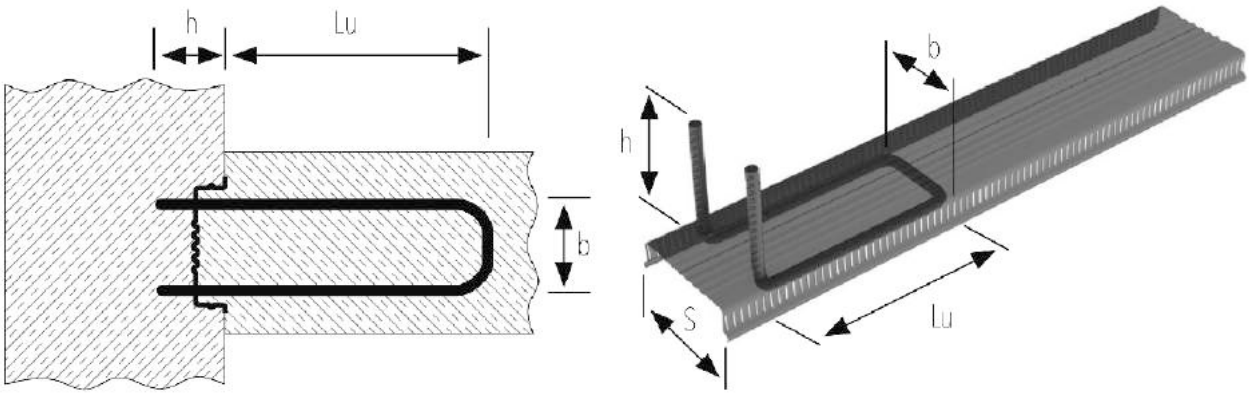


ExBox N bar sets - S type

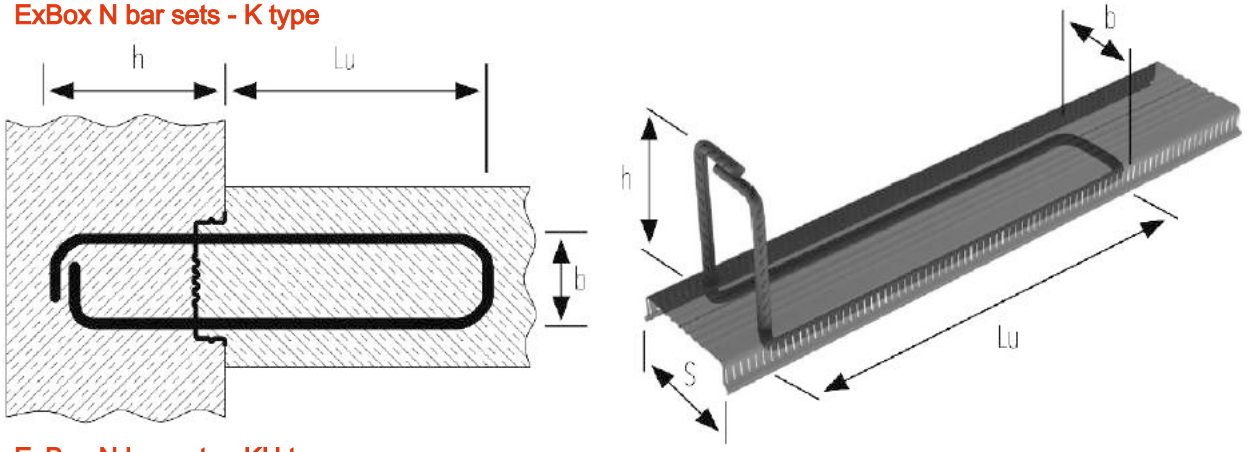


Assortment

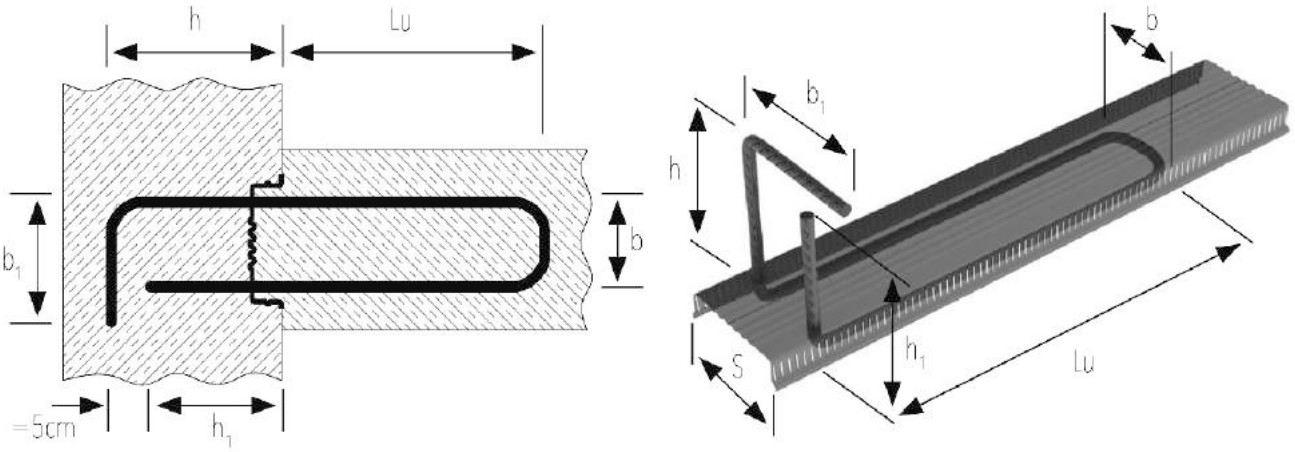
ExBox N bar sets - KO type



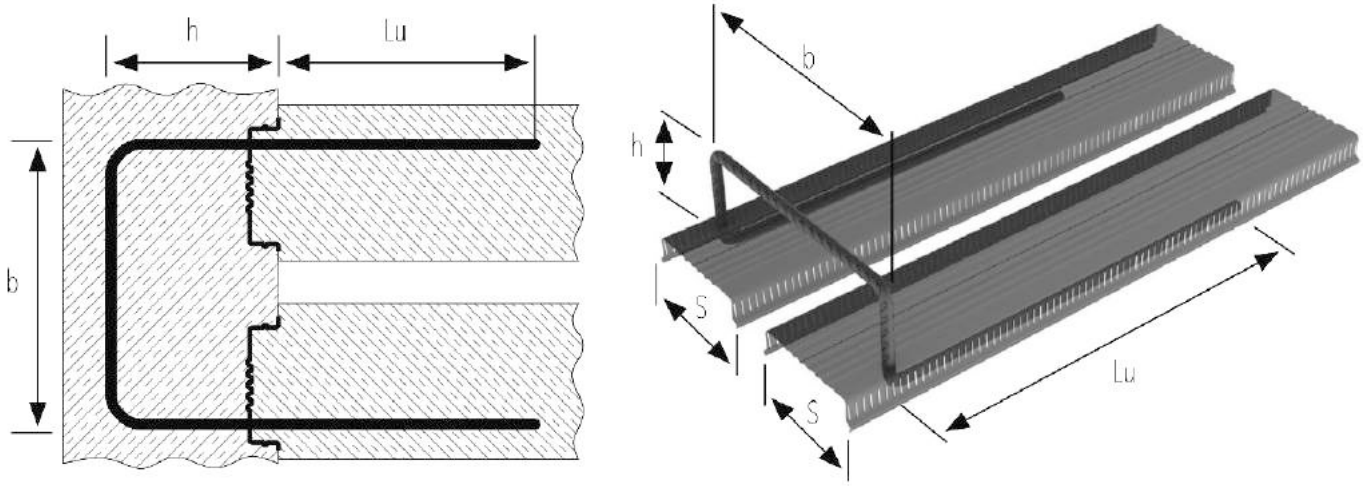
ExBox N bar sets - K type



ExBox N bar sets - KH type

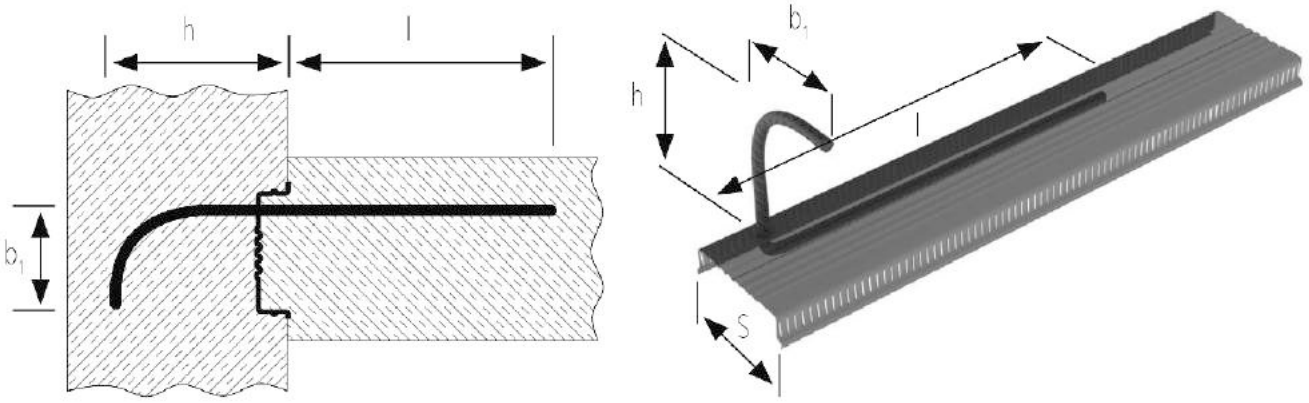


ExBox N bar sets - B type



Assortment

ExBox N bar sets - BA type



ExBox N bar sets - BA+H type