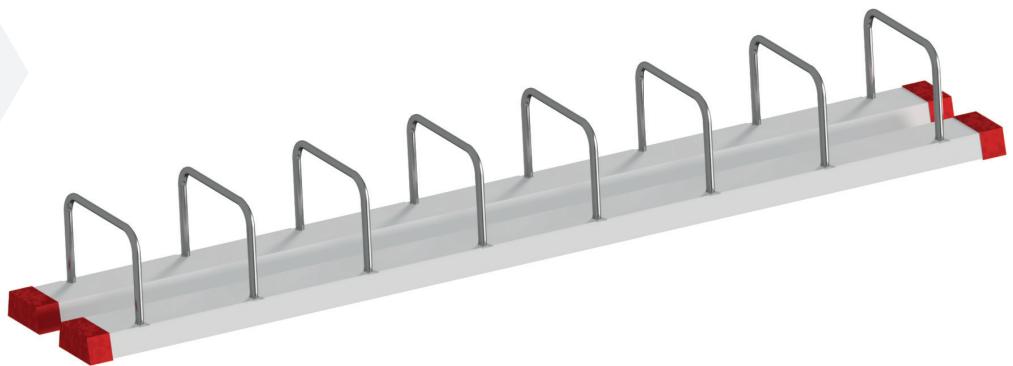




# The „Quick-Schiene“

**The strongest connection.**  
**Concrete on concrete.**  
**Approved without approval.**  
**Easy and uncompromising.**



  
**QUICK**  
BAUPRODUKTE





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## The „Quick-Schiene“

**Quick**

**Continuous  
further  
development**

**„Quick-  
Schiene“**

**Fast delivery  
times**

**Long-term  
experiences**

**Flexible  
production**

**Approved without  
approval**



## The „Quick-Schiene“ was trendsetting at that time and the first product of Quick-Bauprodukte GmbH.

Owing to the change from conventional wooden formwork to system formwork, the founder of Quick-Bauprodukte GmbH recognized the necessity of dispensing with the „drilling through“ of the new high-quality formwork during the production of construction joints. Instead, the reverse bendability of concrete steel was researched and advanced. The result was to place this pre-bent steel in a so-called storage box and to remove it after concreting. Now only the exposed steel has to be bent back and the reinforcement connection is ready.

**Today, the connections are used all over the world.**

**Directly from  
the inventor**

**In use worldwide**

## The „Quick-Schiene“ approved without approval

The „Quick-Schiene“ is the first connection that does not require any building authority approval or building type approval!

All verifications can be carried out in accordance with the technically applicable building regulations.

These are DIN EN 1992-1-1:2011-01 in conjunction with DIN EN 1992-1-1/NA:2013-04 (NA).

**The uniqueness of the „Quick-Schiene“** lies in the fact that the complete storage box is disassembled after concreting. You pour **concrete on concrete!** This is comparable to conventionally produced construction joints by formwork.

In construction joints in which large transverse forces occur the storage boxes are covered with a special interlocking foil.

## We fulfil your wishes

Thanks to our many years of experience, we are able to meet all our customers' wishes.

You have the choice between concrete steel Ø 6, 8, 10, 12 and 14 mm in the normal concrete steel grade B500B. On request, we can also supply galvanized steel or stainless concrete steel.

The standard element lengths are 0.80 m and 1.20 m (1.20 divisible to your real bracket/bar spacing of 10, 15 and 20 cm).

On request, we can also produce other element lengths to avoid box joints and waste cuttings.

We can supply everything from standard connections to special connections. Even storage boxes, pre-bent to radii, are possible.

**We distinguish ourselves by fast delivery times and great flexibility.**

# The advantages at a glance

**Tight end caps**

**Marking of all  
reinforcement  
boxes**

**Concrete on  
concrete**

**Made to measure**

**Flexible**

**recyclable**

**Uniform  
flexible bracket  
spacing in the  
joint area**



Ingo Bartusek - stock.adobe.com



The assembly boxes are completely removed! Your pour concrete on concrete contrary to the sheet metal box widely used on the market, which remains in the concrete.

The standard element length is 1.20 m due to the bracket spacing (10, 15, 20 cm). In this way, the statically required bracket spacing in the joint area is guaranteed.

We can prefabricate the „Quick-Schiene“ in the lengths required on site. This reduces clipping (waste) and the brackets in the box are not cut off.

The „Quick-Schiene“ can be supplied pre-bent to radius. The plastic box does not need to be pre-bent at the factory up to a radius > 3 m. The box is so flexible that it can be bent easily.

Pallet transports on the construction site with the construction crane bend the sheet metal boxes due to the constricting transport ropes / chains. The plastic box of the „Quick-Schiene“ does not deform.

Assembly is carried out by nailing it to the formwork or by fixing it to the reinforcement if the assembly side is on the closing side of the formwork.

**Concrete cover:**  
The sheet metal box reduces the concrete cover! With the „Quick-Schiene“ it is not a problem since the box is completely removed.

The end caps seal the box perfectly, so that no fresh concrete runs into the box.

The plastic is recyclable!

All reinforcement boxes are supplied type-marked.

Unlike the sheet metal box, the plastic box has no sharp edges. This prevents accidents at work.

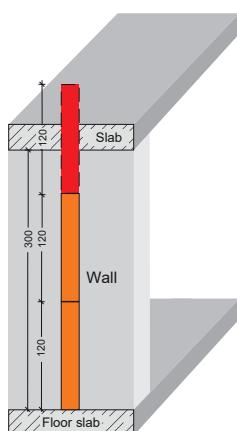
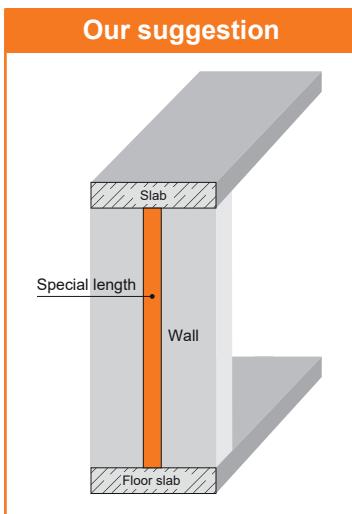
The brackets made of concrete steel B500B can be delivered in Ø 8, 10, 12, 14 mm. On request, we can produce the concrete steel galvanized or in stainless steel. The standard bracket distances are 10, 15 and 20 cm. We can also realize other distances. You can find the special bracket types on **page 14**.

The storage box is removed completely and very easily with the DUO lever.

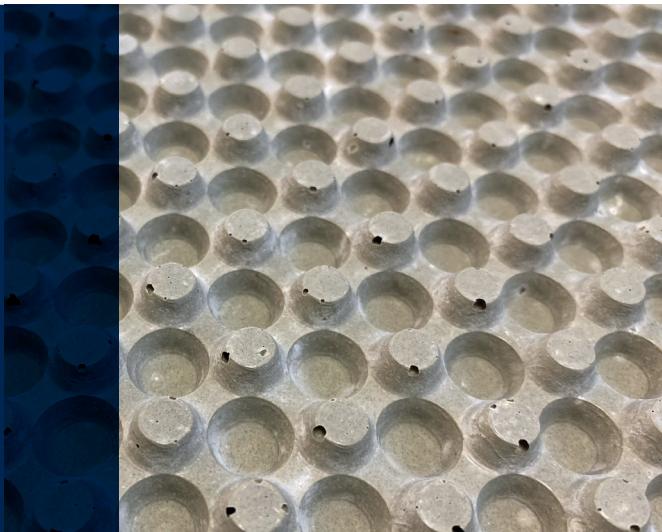
# Special elements

## Special lengths

We can prefabricate the „Quick-Schiene“ in the lengths required by the customer. This reduces clipping (waste) and the brackets in the box are not cut off.



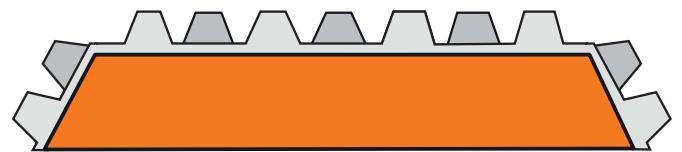
**Made to measure**



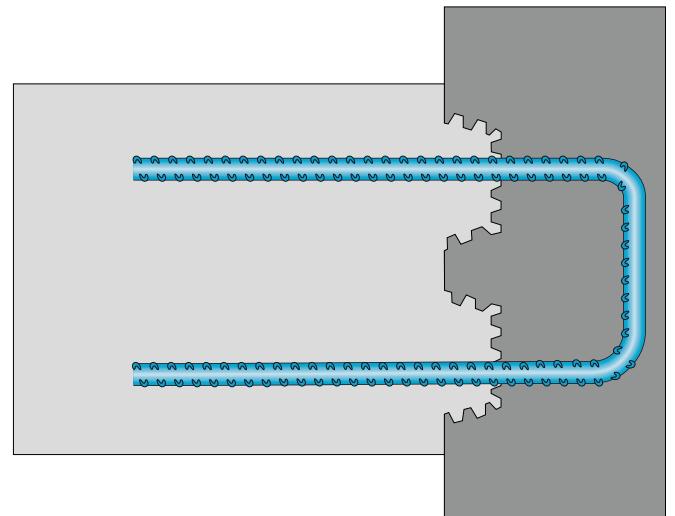
## Formation of construction joints

In construction joints in which large transverse forces occur the storage boxes can be covered with a special interlocking foil.

**Storage box with structure for cross-section interlocked joint**



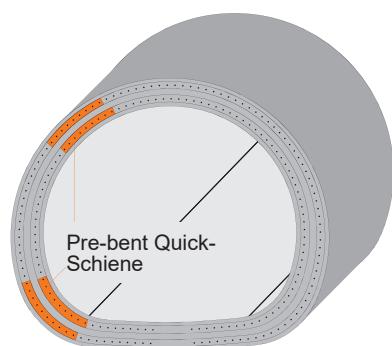
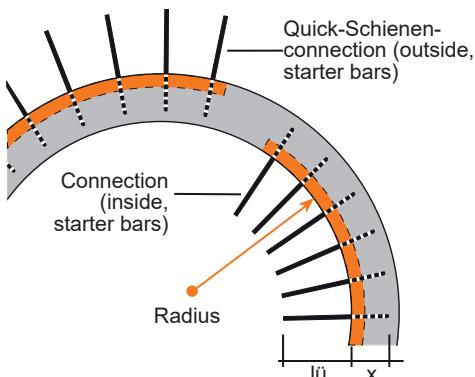
**Perfect composite**



# Special elements / removal

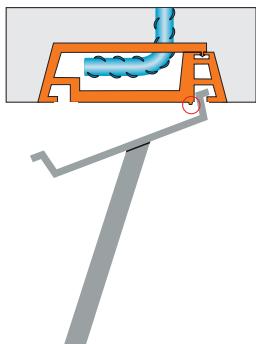
## Pre-bent elements

On request, the elements can already be pre-bent in the factory to a required radius.

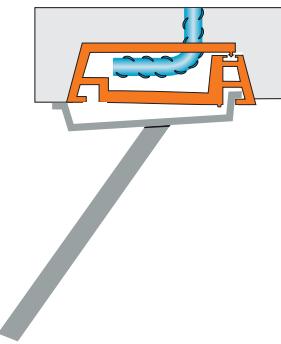


## Removal

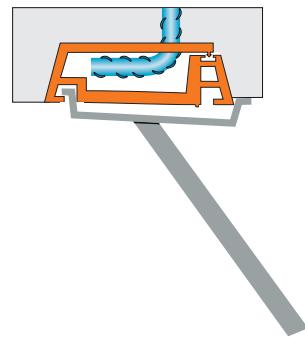
**Step 1:** Insert the DUO-lever into the groove on the side of the marking spring.



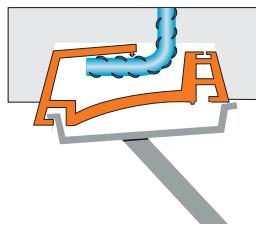
**Step 2:** Lift the DUO-lever until you hear a click. This means that the groove and spring have opened.



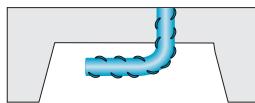
**Step 3:** Insert the DUO-lever into the groove on the other side.



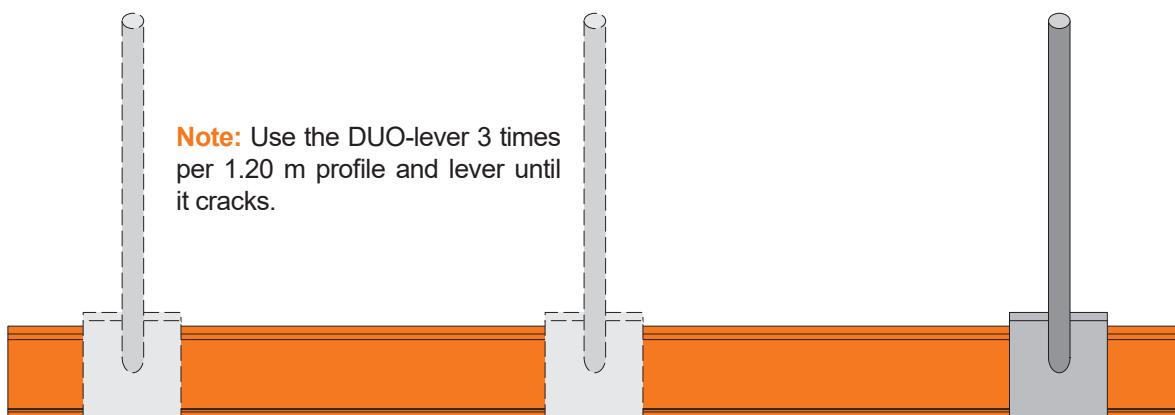
**Step 4:** Lever the DUO-lever around. The box slab pulls out behind the reinforcing steel.



**Step 5:** The removal is completed. Then the reinforcing steel can be bent back.



**Note:** Use the DUO-lever 3 times per 1.20 m profile and lever until it cracks.



# Product in use







## Approved without approval

### Type testing or general building authority approval:

No general building authority approval or building type approval is required for the „Quick-Schiene“ (formerly Quick BRA). This is confirmed by the Deutsches Institut für Bautechnik (German Institute for Building Technology) DIBt.



DIBt | Kolonnenstraße 30 B | 10829 Berlin

Quick Bauproducte GmbH  
Westendamm 3  
58239 Schwerte

Eine vom Bund und den Ländern gemeinsam  
getragene Anstalt des öffentlichen Rechts

**Einheitliche Erfüllung  
bautechnischer Aufgaben**

Bearbeitung: Frau Wittstock  
Tel.: +49 30 78730-267  
Fax: +49 30 78730-11267  
E-Mail: bwi@dibt.de

Datum: 11. 11. 2020

Geschäftszeichen:  
3121.00#10/000-1

**Frage zu Rückbiegeanschluss Quick-BRA für Arbeitsfugen im Stahlbetonbau**

Ihre Anfrage vom 27.10.2020 per e-mail

Sehr geehrte Damen und Herren,

der von Ihnen beschriebene Rückbiegeanschluss besteht aus einem Verwahrkasten aus Kunststoff, der nach dem Betonieren vollständig ausgebaut wird. Durch unterschiedliche Kastenprofile können unterschiedliche Beton-Oberflächen hergestellt und somit unterschiedliche Rauigkeiten erreicht werden. Die im Beton verbleibenden Bewehrungsstäbe werden bauseits zurückgebogen. Der eingesetzte Betonstahl hat eine Zulassung.

Für den oben beschriebenen Rückbiegeanschluss ist keine allgemeine bauaufsichtliche Zulassung oder Bauartgenehmigung erforderlich, da alle Nachweise nach geltenden technischen Baubestimmungen geführt werden können.

Die aktuell geltenden technischen Baubestimmungen sind DIN EN 1992-1-1:2011-01 in Verbindung mit DIN EN 1992-1-1/NA:2013-04 (NA).

Der Nachweis der übertragbaren Schubkräfte im Bereich von Fugen ist im Abschnitt 6.2.5 und durch die ergänzenden Angaben im NA geregelt. Dabei spielt die Rauigkeit der Fugenoberfläche eine Rolle. Bei welcher Fugenoberfläche welche Rauigkeit angesetzt werden darf, ist ebenfalls geregelt. Die eigentliche Qualität des oben beschriebenen Verwahrkastens dürfte dabei von untergeordneter Bedeutung sein.

Das Zurückbiegen der Bewehrung ist im Abschnitt 8.3 und die ergänzenden Angaben sind im NA geregelt.

Mit freundlichen Grüßen

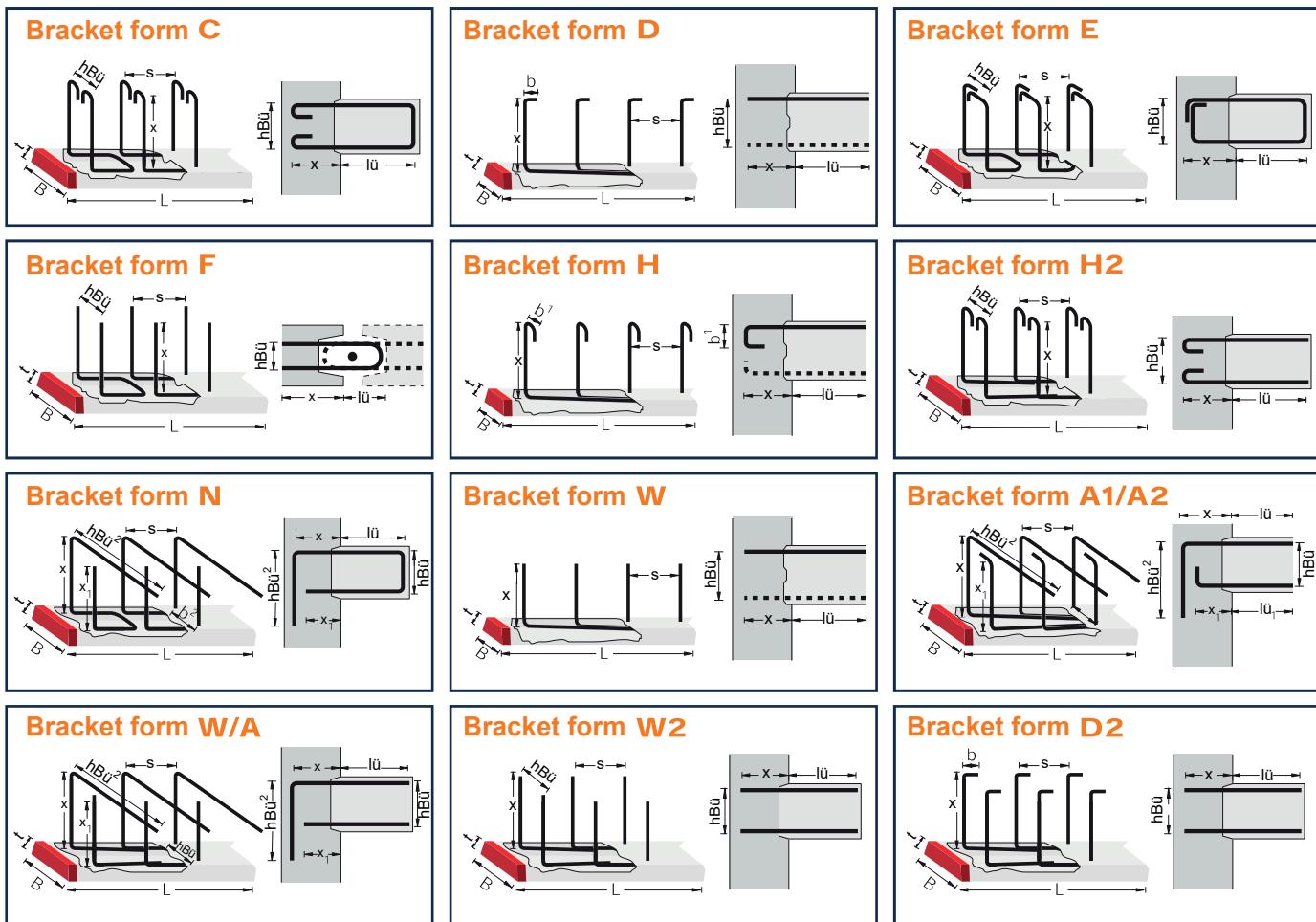


**Deutsches Institut für Bautechnik**

Kolonnenstraße 30 B | 10829 Berlin | Tel.: +49 30 787 30-0 | Fax: +49 30 787 30-320 | E-Mail: dibt@dibt.de | www.dibt.de  
Postbank IBAN DE32 1001 0010 0240 8501 03 | BIC PBNKDEFFXXX | Sparkasse IBAN DE74 1005 0000 0250 0104 02 | BIC BELADEBEXXX

200048854-478068

# Our special bracket forms



Anfrage / Bestellformular Quick-Schiene

Bracket form	Rod Ø mm	b mm	x mm	x1 mm	b1 mm	b2 mm	lü mm	lü2 mm	B mm	H mm	Radius inside m	Radius outside m	Interlocking foil Ifm.	Element length	Number of elements

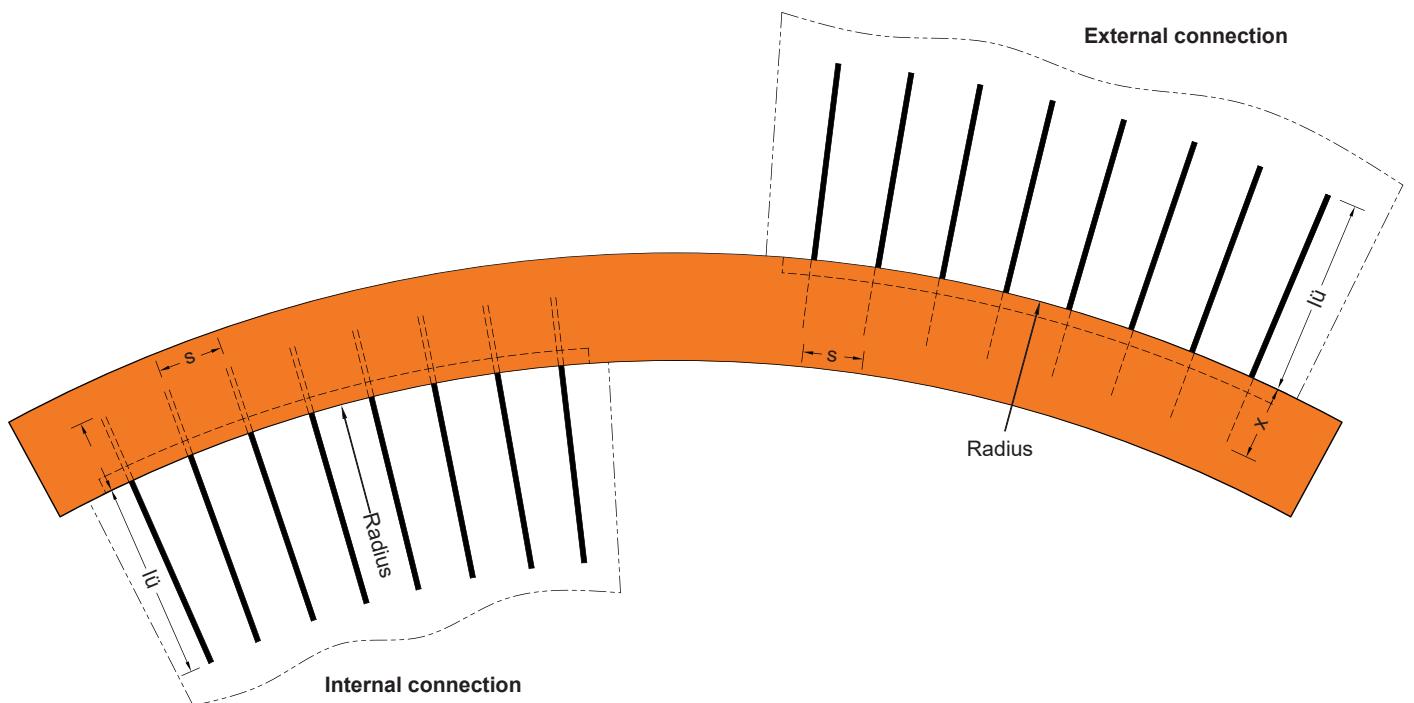
\*Standard-Element length = 120 cm, all other lengths on request

# Our „crooked“ types

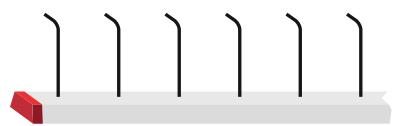
## Bent „Quick-Schiene“

**The Quick-Schiene® can be supplied in the following designs:**

- Internal connection
- External connection
- all standard and special bracket types
- all diameters and bracket spacings
- Box with structure for interlocked joint
- Radii > 3.00 m can be produced on site without any problems using the standard box.
- Radii < 3.00 m will be manufactured by Quick in the factory. The anchoring length „l<sub>ü</sub>“, which must be present and installed in the storage box, is decisive here.



# Our classics



Single-row „Quick-Schiene“ bracket type „A“

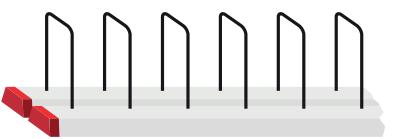
Item no.	Type	Element length	Rod	Distance	Bracket dimension			B	H	Pallet	Pallet	Weight	Schiene bracket type A
					Ømm	s/mm	x/mm	hBü/mm	lü/mm	mm	mm	Item	m
22542	Schiene 5-A-8/15	1200	8	150	170	60	320	50	25	160	192	1.7	
22543	Schiene 5-A-8/20	1200	8	200	170	60	320	50	25	160	192	1.3	
22544	Schiene 5-A-8/25	1200	8	250	170	60	320	50	25	160	192	1.1	
22545	Schiene 8-A-10/10	1200	10	100	170	80	390	75	30	160	192	4.2	
22546	Schiene 8-A-10/15	1200	10	150	170	80	390	75	30	160	192	2.9	
22547	Schiene 8-A-10/20	1200	10	200	170	80	390	75	30	160	192	2.3	
22548	Schiene 8-A-10/25	1200	10	250	170	80	390	75	30	160	192	1.9	
22549	Schiene 10-A-12/10	1200	12	100	170	110	460	100	35	160	192	6.9	
22550	Schiene 10-A-12/15	1200	12	150	170	110	460	100	35	160	192	4.8	
22551	Schiene 10-A-12/20	1200	12	200	170	110	460	100	35	160	192	3.7	
22552	Schiene 10-A-12/25	1200	12	250	170	110	460	100	35	160	192	3.1	

Two-row „Quick-Schiene“ type „15-B“; bracket width b = 70 mm

Item no.	Type	Element length	Rod	Distance	Bracket dimension			B	H	Pallet	Pallet	Weight	Schiene bracket type 15-B
					Ømm	s/mm	x/mm	hBü/mm	lü/mm	mm	mm	Item	m
24510	Schiene 15-B-8/15	1200	8	150	170	70	320	100	35	120	144	3.0	
24511	Schiene 15-B-8/20	1200	8	200	170	70	320	100	35	120	144	2.4	
24512	Schiene 15-B-8/25	1200	8	250	170	70	320	100	35	120	144	2.0	
24513	Schiene 15-B-10/10	1200	10	100	170	70	390	100	35	120	144	7.2	
24514	Schiene 15-B-10/15	1200	10	150	170	70	390	100	35	120	144	5.0	
24515	Schiene 15-B-10/20	1200	10	200	170	70	390	100	35	120	144	3.9	
24516	Schiene 15-B-10/25	1200	10	250	170	70	390	100	35	120	144	3.2	
24509	Schiene 15-B-12/15	1200	12	150	170	70	460	100	35	120	144	7.7	
245091	Schiene 15-B-12/20	1200	12	200	170	70	460	100	35	120	144	5.9	
24508	Schiene 15-B-12/25	1200	12	250	170	70	460	100	35	120	144	4.9	

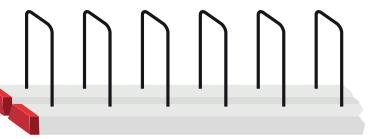
Two-row „Quick-Schiene“ type „20-B“; bracket width b = 120 mm

Item no.	Type	Element length	Rod	Distance	Bracket dimension			B	H	Pallet	Pallet	Weight	Schiene bracket type 20-B
					Ømm	s/mm	x/mm	hBü/mm	lü/mm	mm	mm	Item	m
24518	Schiene 20-B-8/15	1200	8	150	170	120	320	130	25	100	120	3,2	
24519	Schiene 20-B-8/20	1200	8	200	170	120	320	130	25	100	120	2,5	
24520	Schiene 20-B-8/25	1200	8	250	170	120	320	130	25	100	120	2,1	
24521	Schiene 20-B-10/10	1200	10	100	170	120	390	150	30	100	120	7,7	
24522	Schiene 20-B-10/15	1200	10	150	170	120	390	150	30	100	120	5,4	
24523	Schiene 20-B-10/20	1200	10	200	170	120	390	150	30	100	120	4,2	
24524	Schiene 20-B-10/25	1200	10	250	170	120	390	150	30	100	120	3,5	
24525	Schiene 20-B-12/10	1200	12	100	170	120	460	160	35	100	120	12,3	
24526	Schiene 20-B-12/15	1200	12	150	170	120	460	160	35	100	120	8,6	
24527	Schiene 20-B-12/20	1200	12	200	170	120	460	160	35	100	120	6,7	
24528	Schiene 20-B-12/25	1200	12	250	170	120	460	160	35	100	120	5,6	



**Two-row „Quick-Schiene“ type „25-B“; bracket width b = 170 mm**

Item no.	Type	Element length	Rod	Distance	Bracket dimension			B	H	Pallet	Pallet	Weight	Schiene bracket type 25-B
					Ømm	s/mm	x/mm	hBü/mm	lü/mm	mm	mm	Item	m
24530	Schiene 25-B-8/15	1200	8	150	170	170	320	180	25	70	84	3.3	
24531	Schiene 25-B-8/20	1200	8	200	170	170	320	180	25	70	84	2.6	
24532	Schiene 25-B-8/25	1200	8	250	170	170	320	180	25	70	84	2.2	
24533	Schiene 25-B-10/10	1200	10	100	170	170	390	195	30	70	84	8.0	
24534	Schiene 25-B-10/15	1200	10	150	170	170	390	195	30	70	84	5.6	
24535	Schiene 25-B-10/20	1200	10	200	170	170	390	195	30	70	84	4.4	
24536	Schiene 25-B-10/25	1200	10	250	170	170	390	195	30	70	84	3.7	
24537	Schiene 25-B-12/10	1200	12	100	170	170	460	200	35	70	84	12.8	
24538	Schiene 25-B-12/15	1200	12	150	170	170	460	200	35	70	84	8.9	
24539	Schiene 25-B-12/20	1200	12	200	170	170	460	200	35	70	84	6.9	
24540	Schiene 25-B-12/25	1200	12	250	170	170	460	200	35	70	84	5.8	

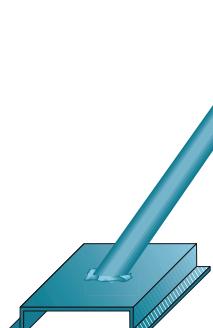


**Two-row „Quick-Schiene“ type „30-B“; bracket width b = 220 mm**

Item no.	Type	Element length	Rod	Distance	Bracket dimension			B	H	Pallet	Pallet	Weight	Schiene bracket type 30-B
					Ømm	s/mm	x/mm	hBü/mm	lü/mm	mm	mm	Item	m
24542	Schiene 30-B-8/15	1200	8	150	170	220	320	230	25	50	60	3.5	
24543	Schiene 30-B-8/20	1200	8	200	170	220	320	230	25	50	60	2.7	
24544	Schiene 30-B-8/25	1200	8	250	170	220	320	230	25	50	60	2.3	
24545	Schiene 30-B-10/10	1200	10	100	170	220	390	245	30	50	60	8.3	
24546	Schiene 30-B-10/15	1200	10	150	170	220	390	245	30	50	60	5.8	
24547	Schiene 30-B-10/20	1200	10	200	170	220	390	245	30	50	60	4.5	
24548	Schiene 30-B-10/25	1200	10	250	170	220	390	245	30	50	60	3.8	
24549	Schiene 30-B-12/10	1200	12	100	170	220	460	250	35	50	60	13.2	
24550	Schiene 30-B-12/15	1200	12	150	170	220	460	250	35	50	60	9.2	
24551	Schiene 30-B-12/20	1200	12	200	170	220	460	250	35	50	60	7.2	
24552	Schiene 30-B-12/25	1200	12	250	170	220	460	250	35	50	60	6.0	

## Accessories

Item no.	Type
24579	DUO-lever



# Measurement values of our classics

## Concrete grade C20/25

Measurement of the carrying capacity as per DIN EN 1992-1 and the DBV leaflet „Reverse bending of concrete steel and requirements for storage boxes as per Eurocode EC2“.

### „Quick Schienen“ types A and B with dimensions in [mm] and component assumptions h

Schiene Bügeltyp 15-B	Component height $h = 150 \text{ mm}$ , type „15-B“, two-row; bracket width $h_{\text{Bü}} = h_{\text{Büeff}} = 70 \text{ mm}$										
	Type	Rod	Distance	Bracket dimension			B	bi	t	VRd,i,eff [kN/m]	VRd,c,eff [kN/m]
				Ø/mm	s/mm	x/mm	$h_{\text{Bü}}/\text{mm}$	$l_{\text{ü}}/\text{mm}$	mm	mm	mm
Schiene 15-B-8/15	8	150	170	70	320	100	100	35		84.1	125.3
Schiene 15-B-8/20	8	200	170	70	320	100	100	35		63.1	98.6
Schiene 15-B-8/25	8	250	170	70	320	100	100	35		50.5	82.6
Schiene 15-B-10/10	10	100	170	70	390	100	100	35		113.3	221.3
Schiene 15-B-10/15	10	150	170	70	390	100	100	35		103.5	147.6
Schiene 15-B-10/20	10	200	170	70	390	100	100	35		77.6	113.1
Schiene 15-B-10/25	10	250	170	70	390	100	100	35		62.1	93.4
Schiene 15-B-12/15	12	150	170	70	460	100	100	35		113.3	174.2
Schiene 15-B-12/20	12	200	170	70	460	100	100	35		91.7	130.7
Schiene 15-B-12/25	12	250	170	70	460	100	100	35		73.3	105.0

Schiene Bügeltyp 20-B	Component height $h = 200 \text{ mm}$ , type „20-B“, two-row; bracket width $h_{\text{Bü}} = h_{\text{Büeff}} = 120 \text{ mm}$ , type „20-A“ 2 x single-row, $h_{\text{Bü},\text{eff}} = 120 \text{ mm}$										
	Type	Rod	Distance	Bracket dimension			B	bi	t	VRd,i,eff [kN/m]	VRd,c,eff [kN/m]
				Ø/mm	s/mm	x/mm	$h_{\text{Bü}}/\text{mm}$	$l_{\text{ü}}/\text{mm}$	mm	mm	mm
Schiene 20-A/B-8/15	8	150	170	120	320	130	50	25		113.3	243.6
Schiene 20-A/B-8/20	8	200	170	120	320	130	50	25		113.3	182.7
Schiene 20-A/B-8/25	8	250	170	120	320	130	50	25		99.8	148.1
Schiene 20-A/B-10/10	10	100	170	120	390	150	75	30		170.0	433.4
Schiene 20-A/B-10/15	10	150	170	120	390	150	75	30		170.0	289.0
Schiene 20-A/B-10/20	10	200	170	120	390	150	75	30		147.9	216.7
Schiene 20-A/B-10/25	10	250	170	120	390	150	75	30		118.4	175.2
Schiene 20-B-12/10	12	100	170	120	460	160	160	35		181.3	261.3
Schiene 20-B-12/15	12	150	170	120	460	160	160	35		122.2	174.2
Schiene 20-B-12/20	12	200	170	120	460	160	160	35		91.7	135.4
Schiene 20-B-12/25	12	250	170	120	460	160	160	35		73.3	112.2

Schiene Bügeltyp 25-B	Component height $h = 250 \text{ mm}$ , type „25-B“, two-row; bracket width $h_{\text{Bü}} = h_{\text{Büeff}} = 170 \text{ mm}$ , type „25-A“ 2 x single-row, $h_{\text{Bü},\text{eff}} = 170 \text{ mm}$										
	Type	Rod	Distance	Bracket dimension			B	bi	t	VRd,i,eff [kN/m]	VRd,c,eff [kN/m]
				Ø/mm	s/mm	x/mm	$h_{\text{Bü}}/\text{mm}$	$l_{\text{ü}}/\text{mm}$	mm	mm	mm
Schiene 25-A/B-8/15	8	150	170	170	320	180	50	25		204.0	381.0
Schiene 25-A/B-8/20	8	200	170	170	320	180	50	25		204.0	285.8
Schiene 25-A/B-8/25	8	250	170	170	320	180	50	25		186.6	228.6
Schiene 25-A/B-10/10	10	100	170	170	390	195	75	30		170.0	433.4
Schiene 25-A/B-10/15	10	150	170	170	390	195	75	30		170.0	289.0
Schiene 25-A/B-10/20	10	200	170	170	390	195	75	30		147.9	216.7
Schiene 25-A/B-10/25	10	250	170	170	390	195	75	30		118.4	175.2
Schiene 25-A/B-12/10	12	100	170	170	460	200	100	35		226.7	492.1
Schiene 25-A/B-12/15	12	150	170	170	460	200	100	35		224.0	328.1
Schiene 25-A/B-12/20	12	200	170	170	460	200	100	35		168.0	246.1
Schiene 25-B-12/25	12	250	170	170	460	200	100	35		134.4	198.0

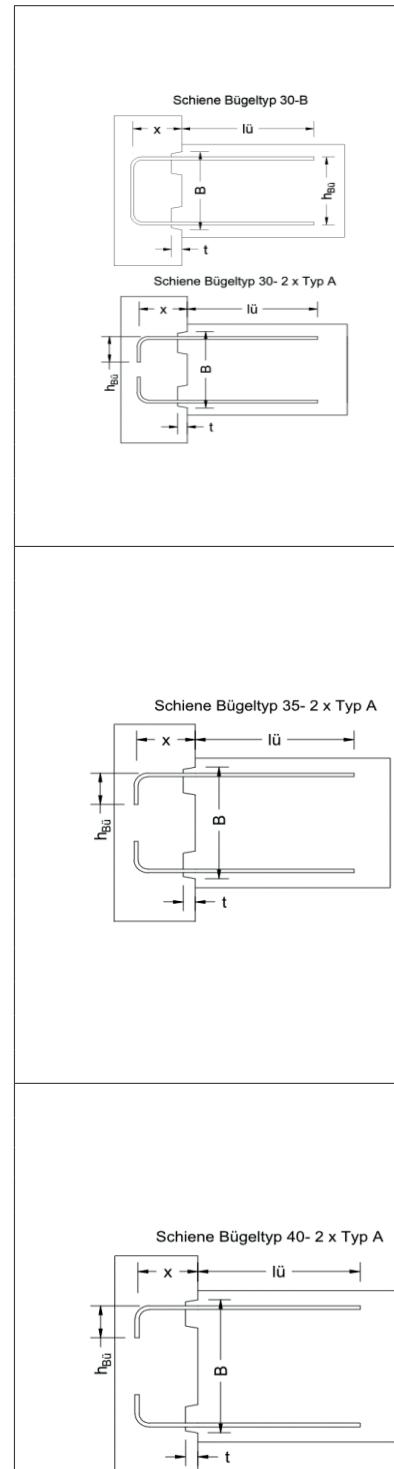
Carrying capacity values as per DIN EN 1992-1 with the DBV leaflet Reverse bending of concrete steel and requirements for storage boxes as per EC2											
Concrete strength $f_c = 20 \text{ N/mm}^2$						Composite conditions: $\eta_1 = 0,7$					
Transverse tensions $\sigma_{\text{t}}$ in the joint $\sigma_{\text{t}} = 0 \text{ N/mm}^2$ (positive = pressure)						(positive = pressure)					
Shear force along the joint						Shear force transverse to joint - slab without shear reinforcement					
VWK-GL	VWK-VZ	VWK-									

# Measurement values of our classics

## Concrete grade C20/25

Measurement of the carrying capacity as per DIN EN 1992-1-1 and the DBV leaflet „Reverse bending of concrete steel and requirements for storage boxes as per Eurocode EC2“.

### „Quick Schienen“ Types A and B with dimensions in [mm] and component assumptions h



Carrying capacity values as per DIN EN 1992-1-1 with the DBV leaflet Reverse bending of concrete steel and requirements for storage boxes as per EC2															
Concrete strength $f_c = 20 \text{ N/mm}^2$ Composite conditions: $\eta_1 = 0,7$															
Transverse tensions $\sigma_{tr}$ in the joint $\sigma_{tr} = 0 \text{ N/mm}^2$ (positive = pressure)															
Shear force along the joint						Shear force transverse to joint - slab without shear reinforcement									
VWK-GL		VWK-VZ		VWK-GL		VWK-VZ		VWK-GL		VWK-VZ					
VRd,i,eff [kN/m]		VRd,i,eff [kN/m]		indirect storage VRd,c,eff [kN/m]		direct storage VRd,c,Ges,eff [kN/m]		indirect storage VRd,c,Ges,eff [kN/m]		direct storage VRd,c,Ges,eff [kN/m]					
<b>Component height <math>h = 300 \text{ mm}</math>, type „30-B“, two-row; bracket width <math>h_{Bü} = h_{Bü,eff} = 220 \text{ mm}</math>, type „30-A“ 2 x single-row, <math>h_{Bü,eff} = 220 \text{ mm}</math></b>															
Type	Rod	Distance	Bracket dimension			B	bi	t							
		s/mm	x/mm	$h_{Bü}/\text{mm}$	$l_{ü}/\text{mm}$	mm	mm	mm							
Schiene 30-A/B-8/15	8	150	170	220	320	230	50	25	260.7	468.1	25.2				
Schiene 30-A/B-8/20	8	200	170	220	320	230	50	25	260.7	351.1	22.9				
Schiene 30-A/B-8/25	8	250	170	220	320	230	50	25	240.9	280.9	21.2				
Schiene 30-A/B-10/10	10	100	170	220	390	245	75	30	277.7	626.6	33.9				
Schiene 30-A/B-10/15	10	150	170	220	390	245	75	30	277.7	417.7	29.6				
Schiene 30-A/B-10/20	10	200	170	220	390	245	75	30	249.8	313.3	26.9				
Schiene 30-A/B-10/25	10	250	170	220	390	245	75	30	199.8	250.6	25.0				
Schiene 30-A/B-12/10	12	100	170	220	460	250	100	35	283.3	578.2	38.4				
Schiene 30-A/B-12/15	12	150	170	220	460	250	100	35	283.3	385.5	33.6				
Schiene 30-A/B-12/20	12	200	170	220	460	250	100	35	213.5	289.1	30.5				
Schiene 30-A/B-12/25	12	250	170	220	460	250	100	35	170.8	231.4	28.3				
Schiene 30-A/B-12/25	12	250	170	220	460	250	100	35	170.8	231.4	28.3				
<b>Component height <math>h = 350 \text{ mm}</math>, type „35-A“ 2 x single-row, <math>h_{Bü,eff} = 270 \text{ mm}</math></b>															
Type	Rod	Distance	Bracket dimension			B	bi	t							
		s/mm	x/mm	$h_{Bü}/\text{mm}$	$l_{ü}/\text{mm}$	mm	mm	mm							
Schiene 35-A-8/15	8	150	170	270	320	280	50	25	317.3	555.8	27.4				
Schiene 35-A-8/20	8	200	170	270	320	280	50	25	317.3	416.9	24.9				
Schiene 35-A-8/25	8	250	170	270	320	280	50	25	295.3	333.5	23.1				
Schiene 35-A-10/10	10	100	170	270	390	295	75	30	334.3	729.4	36.9				
Schiene 35-A-10/15	10	150	170	270	390	295	75	30	334.3	486.3	32.2				
Schiene 35-A-10/20	10	200	170	270	390	295	75	30	303.5	364.7	29.3				
Schiene 35-A-10/25	10	250	170	270	390	295	75	30	242.8	291.8	27.2				
Schiene 35-A-12/10	12	100	170	270	460	300	100	35	340.0	664.9	41.8				
Schiene 35-A-12/15	12	150	170	270	460	300	100	35	340.0	443.3	36.5				
Schiene 35-A-12/20	12	200	170	270	460	300	100	35	259.2	332.5	33.2				
Schiene 35-A-12/25	12	250	170	270	460	300	100	35	207.4	266.0	30.8				
Schiene 35-A-12/25	12	250	170	270	460	300	100	35	207.4	266.0	30.8				
<b>Component height <math>h = 400 \text{ mm}</math>, type „40-A“ 2 x single-row, <math>h_{Bü,eff} = 320 \text{ mm}</math></b>															
Type	Rod	Distance	Bracket dimension			B	bi	t							
		s/mm	x/mm	$h_{Bü}/\text{mm}$	$l_{ü}/\text{mm}$	mm	mm	mm							
Schiene 40-A-8/15	8	150	170	320	320	330	50	25	374.0	644.0	29.5				
Schiene 40-A-8/20	8	200	170	320	320	330	50	25	374.0	483.0	26.8				
Schiene 40-A-8/25	8	250	170	320	320	330	50	25	349.7	386.4	24.9				
Schiene 40-A-10/10	10	100	170	320	390	345	75	30	391.0	816.0	39.6				
Schiene 40-A-10/15	10	150	170	320	390	345	75	30	391.0	555.2	34.6				
Schiene 40-A-10/20	10	200	170	320	390	345	75	30	357.2	416.4	31.5				
Schiene 40-A-10/25	10	250	170	320	390	345	75	30	285.8	333.1	29.2				
Schiene 40-A-12/10	12	100	170	320	460	350	100	35	396.7	752.2	44.9				
Schiene 40-A-12/15	12	150	170	320	460	350	100	35	453.3	559.9	37.9				
Schiene 40-A-12/20	12	200	170	320	460	350	100	35	304.9	376.1	35.6				
Schiene 40-A-12/25	12	250	170	320	460	350	100	35	243.9	300.9	33.1				
Schiene 40-A-12/25	12	250	170	320	460	350	100	35	243.9	300.9	33.1				

# Measurement values of our classics

## Concrete grade C25/30

Measurement of the carrying capacity as per DIN EN 1992-1-1 and the DBV leaflet „Reverse bending of concrete steel and requirements for storage boxes as per Eurocode EC2“.

### „Quick Schienen“ Types A and B with dimensions in [mm] and component assumptions h

Schiene Bügeltyp 15-B	Component height h = 150 mm, type „15-B“, two-row; bracket width hBü = hBüeff = 70 mm											
	Type	Rod	Distance	Bracket dimension			B	bi	t			
				Ø/mm	s/mm	x/mm	hBü/mm	lÜ/mm	mm	mm	mm	
Schiene 15-B-8/15	8	150	170	70	320	100	100	35		96.4	148.8	14.6
Schiene 15-B-8/20	8	200	170	70	320	100	100	35		72.3	117.9	13.2
Schiene 15-B-8/25	8	250	170	70	320	100	100	35		59.5	99.3	12.3
Schiene 15-B-10/10	10	100	170	70	390	100	100	35		141.7	254.6	19.4
Schiene 15-B-10/15	10	150	170	70	390	100	100	35		118.6	172.0	16.9
Schiene 15-B-10/20	10	200	170	70	390	100	100	35		88.9	133.9	15.4
Schiene 15-B-10/25	10	250	170	70	390	100	100	35		71.1	111.1	14.3
Schiene 15-B-12/15	12	150	170	70	460	100	100	35		140.0	200.4	16.9
Schiene 15-B-12/20	12	200	170	70	460	100	100	35		105.0	151.0	15.4
Schiene 15-B-12/25	12	250	170	70	460	100	100	35		84.0	124.0	14.3

Schiene Bügeltyp 20-B	Component height h = 200 mm, type „20-B“ two-row; bracket width hBü = hBüeff = 120 mm, type „20-A“ 2 x single-row, hBü,eff = 120 mm											
	Type	Rod	Distance	Bracket dimension			B	bi	t			
				Ø/mm	s/mm	x/mm	hBü/mm	lÜ/mm	mm	mm	mm	
Schiene 20-A/B-8/15	8	150	170	120	320	130	50	25		141.7	281.5	18.9
Schiene 20-A/B-8/20	8	200	170	120	320	130	50	25		141.7	213.8	17.1
Schiene 20-A/B-8/25	8	250	170	120	320	130	50	25		115.1	173.7	15.9
Schiene 20-A/B-10/10	10	100	170	120	390	150	75	30		212.5	500.9	26.4
Schiene 20-A/B-10/15	10	150	170	120	390	150	75	30		212.5	333.9	23.0
Schiene 20-A/B-10/20	10	200	170	120	390	150	75	30		170.6	252.9	20.9
Schiene 20-A/B-10/25	10	250	170	120	390	150	75	30		136.5	205.4	19.4
Schiene 20-B-12/10	12	100	170	120	460	160	160	35		210.0	300.6	30.5
Schiene 20-B-12/15	12	150	170	120	460	160	160	35		140.0	205.7	26.6
Schiene 20-B-12/20	12	200	170	120	460	160	160	35		105.0	160.7	24.2
Schiene 20-B-12/25	12	250	170	120	460	160	160	35		84.0	133.7	22.5

Schiene Bügeltyp 25-B	Component height h = 250 mm, type „25-B“ two-row; bracket width hBü = hBüeff = 170 mm, type „25-A“ 2 x single-row, hBü,eff = 170 mm											
	Type	Rod	Distance	Bracket dimension			B	bi	t			
				Ø/mm	s/mm	x/mm	hBü/mm	lÜ/mm	mm	mm	mm	
Schiene 25-A/B-8/15	8	150	170	170	320	180	50	25		255.0	439.6	23.6
Schiene 25-A/B-8/20	8	200	170	170	320	180	50	25		255.0	329.7	21.4
Schiene 25-A/B-8/25	8	250	170	170	320	180	50	25		214.5	267.8	19.9
Schiene 25-A/B-10/10	10	100	170	170	390	195	75	30		212.5	500.9	32.2
Schiene 25-A/B-10/15	10	150	170	170	390	195	75	30		212.5	333.9	28.2
Schiene 25-A/B-10/20	10	200	170	170	390	195	75	30		170.6	252.9	25.6
Schiene 25-A/B-10/25	10	250	170	170	390	195	75	30		136.5	205.4	23.7
Schiene 25-A/B-12/10	12	100	170	170	460	200	100	35		283.3	568.7	36.7
Schiene 25-A/B-12/15	12	150	170	170	460	200	100	35		258.3	379.1	32.1
Schiene 25-A/B-12/20	12	200	170	170	460	200	100	35		193.7	285.9	29.2
Schiene 25-B-12/25	12	250	170	170	460	200	100	35		155.0	231.9	27.1

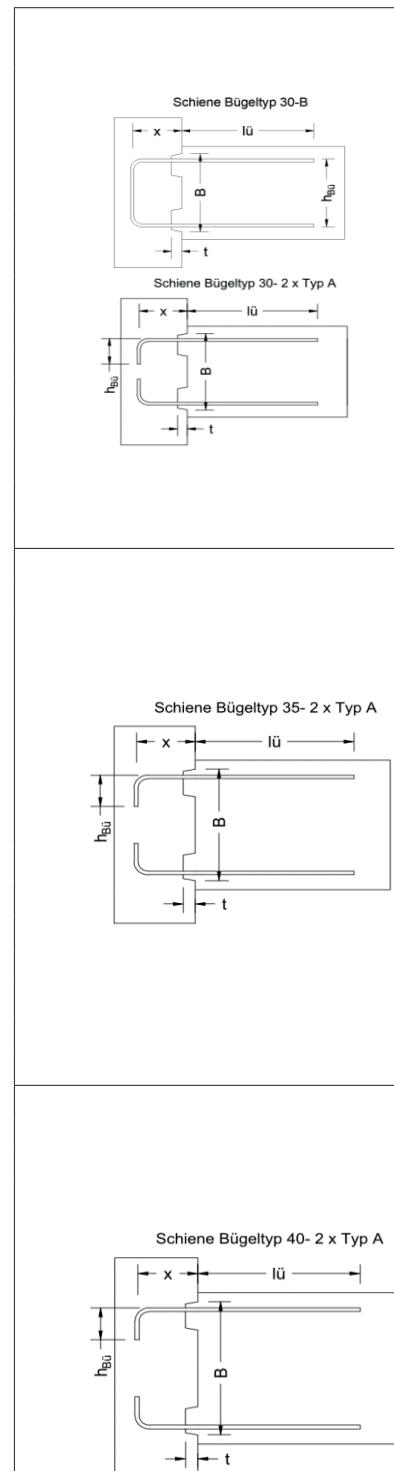
Carrying capacity values as per DIN EN 1992-1-1 with the DBV leaflet Reverse bending of concrete steel and requirements for storage boxes as per EC2											
Concrete strength fc = 25 N/mm²						Composite conditions: η1 = 0,7					
Transverse tensions σn in the joint σn = 0 N/mm²						(positive = pressure)					
Shear force along the joint						Shear force transverse to joint - slab without shear reinforcement					
VWK-GL			VWK-VZ			VWK-GL			VWK-VZ		
VRd,i,eff [kN/m]			VRd,i,eff [kN/m]			indirect storage VRd,c,eff [kN/m]			direct storage VRd,c,Ges,eff [kN/m]		
VRd,c,eff [kN/m]			VRd,c,eff [kN/m]			indirect storage VRd,c,Ges,eff [kN/m]			direct storage VRd,c,Ges,eff [kN/m]		

# Measurement values of our classics

## Concrete grade C25/30

Measurement of the carrying capacity as per DIN EN 1992-1-1 and the DBV leaflet „Reverse bending of concrete steel and requirements for storage boxes as per Eurocode EC2“.

### „Quick Schienen“ Types A and B with dimensions in [mm] and component assumptions h



Component height $h = 300 \text{ mm}$ , type „30-B“, two-row; bracket width $h_{\text{Bü}} = h_{\text{Bü,eff}} = 220 \text{ mm}$ , type „30-A“ 2 x single-row, $h_{\text{Bü,eff}} = 220 \text{ mm}$									
Type	Rod	Distance	Bracket dimension			$B$	$b_i$	$t$	
			$\emptyset \text{ mm}$	s/mm	x/mm				
Schiene 30-A/B-8/15	8	150	170	220	320	230	50	25	325.8
Schiene 30-A/B-8/20	8	200	170	220	320	230	50	25	325.8
Schiene 30-A/B-8/25	8	250	170	220	320	230	50	25	276.8
Schiene 30-A/B-10/10	10	100	170	220	390	245	75	30	347.1
Schiene 30-A/B-10/15	10	150	170	220	390	245	75	30	347.1
Schiene 30-A/B-10/20	10	200	170	220	390	245	75	30	287.3
Schiene 30-A/B-10/25	10	250	170	220	390	245	75	30	229.9
Schiene 30-A/B-12/10	12	100	170	220	460	250	100	35	354.2
Schiene 30-A/B-12/15	12	150	170	220	460	250	100	35	328.0
Schiene 30-A/B-12/20	12	200	170	220	460	250	100	35	246.0
Schiene 30-A/B-12/25	12	250	170	220	460	250	100	35	196.8
Schiene 30-A/B-12/10	12	100	170	220	460	250	100	35	271.1
Schiene 30-A/B-12/15	12	150	170	220	460	250	100	35	213.1
Schiene 30-A/B-12/20	12	200	170	220	460	250	100	35	155.0
Schiene 30-A/B-12/25	12	250	170	220	460	250	100	35	105.8

Component height $h = 350 \text{ mm}$ , type „35-A“ 2 x single-row, $h_{\text{Bü,eff}} = 270 \text{ mm}$									
Type	Rod	Distance	Bracket dimension			$B$	$b_i$	$t$	
			$\emptyset \text{ mm}$	s/mm	x/mm				
Schiene 35-A-8/15	8	150	170	270	320	280	50	25	396.7
Schiene 35-A-8/20	8	200	170	270	320	280	50	25	396.7
Schiene 35-A-8/25	8	250	170	270	320	280	50	25	339.1
Schiene 35-A-10/10	10	100	170	270	390	295	75	30	417.9
Schiene 35-A-10/15	10	150	170	270	390	295	75	30	417.9
Schiene 35-A-10/20	10	200	170	270	390	295	75	30	348.9
Schiene 35-A-10/25	10	250	170	270	390	295	75	30	279.1
Schiene 35-A-12/10	12	100	170	270	460	300	100	35	425.0
Schiene 35-A-12/15	12	150	170	270	460	300	100	35	397.8
Schiene 35-A-12/20	12	200	170	270	460	300	100	35	298.3
Schiene 35-A-12/25	12	250	170	270	460	300	100	35	238.7
Schiene 35-A-12/10	12	100	170	270	460	300	100	35	310.3
Schiene 35-A-12/15	12	150	170	270	460	300	100	35	281.3
Schiene 35-A-12/20	12	200	170	270	460	300	100	35	222.8
Schiene 35-A-12/25	12	250	170	270	460	300	100	35	163.8

Component height $h = 400 \text{ mm}$ , type „40-A“ 2 x single-row, $h_{\text{Bü,eff}} = 320 \text{ mm}$									
Type	Rod	Distance	Bracket dimension			$B$	$b_i$	$t$	
			$\emptyset \text{ mm}$	s/mm	x/mm				
Schiene 40-A-8/15	8	150	170	320	320	330	50	25	467.5
Schiene 40-A-8/20	8	200	170	320	320	330	50	25	467.5
Schiene 40-A-8/25	8	250	170	320	320	330	50	25	401.5
Schiene 40-A-10/10	10	100	170	320	390	345	75	30	488.8
Schiene 40-A-10/15	10	150	170	320	390	345	75	30	488.8
Schiene 40-A-10/20	10	200	170	320	390	345	75	30	410.4
Schiene 40-A-10/25	10	250	170	320	390	345	75	30	328.3
Schiene 40-A-12/10	12	100	170	320	460	350	100	35	495.8
Schiene 40-A-12/15	12	150	170	320	460	350	100	35	537.5
Schiene 40-A-12/20	12	200	170	320	460	350	100	35	350.7
Schiene 40-A-12/25	12	250	170	320	460	350	100	35	280.6
Schiene 40-A-12/10	12	100	170	320	460	350	100	35	349.5
Schiene 40-A-12/15	12	150	170	320	460	350	100	35	386.1
Schiene 40-A-12/20	12	200	170	320	460	350	100	35	315.8
Schiene 40-A-12/25	12	250	170	320	460	350	100	35	246.8

Carrying capacity values as per DIN EN 1992-1-1 with the DBV leaflet Reverse bending of concrete steel and requirements for storage boxes as per EC2									
Concrete strength $f_c = 25 \text{ N/mm}^2$					Composite conditions: $\eta_1 = 0,7$				
Transverse tensions $\sigma_{\text{t}}$ in the joint $\sigma_{\text{t}} = 0 \text{ N/mm}^2$ </th									

# Measurement values of our classics

## Concrete grade C30/37

Measurement of the carrying capacity as per DIN EN 1992-1-1 and the DBV leaflet „Reverse bending of concrete steel and requirements for storage boxes as per Eurocode EC2“.

## „Quick Schienen“ Types A and B with dimensions in [mm] and component assumptions h

Schiene Bügeltyp 15-B	Component height h = 150 mm, type „15-B“, two-row; bracket width hBü = hBüeff = 70 mm									
	Type	Rod	Distance	Bracket dimension			B	bi	t	
				Ø/mm	s/mm	x/mm	hBü/mm	lü/mm		
Schiene 15-B-8/15	8	150	170	70	320	100	100	35		107.8
Schiene 15-B-8/20	8	200	170	70	320	100	100	35		82.7
Schiene 15-B-8/25	8	250	170	70	320	100	100	35		68.7
Schiene 15-B-10/10	10	100	170	70	390	100	100	35		170.0
Schiene 15-B-10/15	10	150	170	70	390	100	100	35		132.6
Schiene 15-B-10/20	10	200	170	70	390	100	100	35		99.4
Schiene 15-B-10/25	10	250	170	70	390	100	100	35		79.5
Schiene 15-B-12/15	12	150	170	70	460	100	100	35		156.5
Schiene 15-B-12/20	12	200	170	70	460	100	100	35		117.4
Schiene 15-B-12/25	12	250	170	70	460	100	100	35		93.9

Schiene Bügeltyp 20-B	Component height h = 200 mm, type „20-B“ two-row; bracket width hBü = hBüeff = 120 mm, type „20-A“ 2 x single-row, hBü,eff = 120 mm									
	Type	Rod	Distance	Bracket dimension			B	bi	t	
				Ø/mm	s/mm	x/mm	hBü/mm	lü/mm		
Schiene 20-A/B-8/15	8	150	170	120	320	130	50	25		170.0
Schiene 20-A/B-8/20	8	200	170	120	320	130	50	25		161.7
Schiene 20-A/B-8/25	8	250	170	120	320	130	50	25		129.4
Schiene 20-A/B-10/10	10	100	170	120	390	150	75	30		255.0
Schiene 20-A/B-10/15	10	150	170	120	390	150	75	30		255.0
Schiene 20-A/B-10/20	10	200	170	120	390	150	75	30		191.8
Schiene 20-A/B-10/25	10	250	170	120	390	150	75	30		153.5
Schiene 20-B-12/10	12	100	170	120	460	160	160	35		234.8
Schiene 20-B-12/15	12	150	170	120	460	160	160	35		156.5
Schiene 20-B-12/20	12	200	170	120	460	160	160	35		117.4
Schiene 20-B-12/25	12	250	170	120	460	160	160	35		94.4

Schiene Bügeltyp 25-B	Component height h = 250 mm, type „25-B“ two-row; bracket width hBü = hBüeff = 170 mm, type „25-A“ 2 x single-row, hBü,eff = 170 mm									
	Type	Rod	Distance	Bracket dimension			B	bi	t	
				Ø/mm	s/mm	x/mm	hBü/mm	lü/mm		
Schiene 25-A/B-8/15	8	150	170	170	320	180	50	25		306.0
Schiene 25-A/B-8/20	8	200	170	170	320	180	50	25		300.8
Schiene 25-A/B-8/25	8	250	170	170	320	180	50	25		240.6
Schiene 25-A/B-10/10	10	100	170	170	390	195	75	30		255.0
Schiene 25-A/B-10/15	10	150	170	170	390	195	75	30		255.0
Schiene 25-A/B-10/20	10	200	170	170	390	195	75	30		191.8
Schiene 25-A/B-10/25	10	250	170	170	390	195	75	30		153.5
Schiene 25-A/B-12/10	12	100	170	170	460	200	100	35		340.0
Schiene 25-A/B-12/15	12	150	170	170	460	200	100	35		290.4
Schiene 25-A/B-12/20	12	200	170	170	460	200	100	35		217.8
Schiene 25-A/B-12/25	12	250	170	170	460	200	100	35		174.2

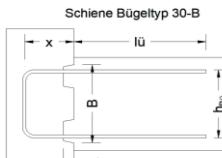
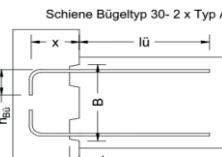
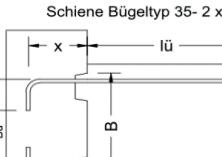
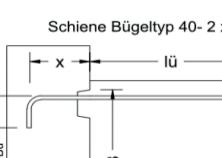
Carrying capacity values as per DIN EN 1992-1-1 with the DBV leaflet Reverse bending of concrete steel and requirements for storage boxes as per EC2											
Concrete strength fc = 30 N/mm <sup>2</sup>						Composite conditions: η1 = 0,7					
Transverse tensions σn in the joint σn = 0 N/mm <sup>2</sup>						(positive = pressure)					
Shear force along the joint						Shear force transverse to joint - slab without shear reinforcement					
VWK-GL		VWK-VZ		VWK-GL		VWK-VZ		VWK-GL		VWK-VZ	
VRd,i,eff [kN/m]		VRd,i,eff [kN/m]		indirect storage VRd,c,eff [kN/m]		direct storage VRd,c,Ges,eff [kN/m]		indirect storage VRd,c,eff [kN/m]		direct storage VRd,c,Ges,eff [kN/m]	

# Measurement values of our classics

## Concrete grade C30/37

Measurement of the carrying capacity as per DIN EN 1992-1-1 and the DBV leaflet „Reverse bending of concrete steel and requirements for storage boxes as per Eurocode EC2“.

## „Quick Schienen“ Types A and B with dimensions in [mm] and component assumptions h

Carrying capacity values as per DIN EN 1992-1-1 with the DBV leaflet Reverse bending of concrete steel and requirements for storage boxes as per EC2															
Concrete strength $f_c = 30 \text{ N/mm}^2$ Composite conditions: $\eta_1 = 0,7$															
Transverse tensions $\sigma_{tr}$ in the joint $\sigma_{tr} = 0 \text{ N/mm}^2$ (positive = pressure)															
Shear force along the joint						Shear force transverse to joint - slab without shear reinforcement									
VWK-GL		VWK-VZ		VWK-GL			VWK-VZ								
VRd,i,eff [kN/m]		VRd,i,eff [kN/m]		indirect storage VRd,c,eff [kN/m]		direct storage VRd,c,Ges,eff [kN/m]		indirect storage VRd,c,Ges,eff [kN/m]		direct storage VRd,c,Ges,eff [kN/m]					
 	Component height $h = 300 \text{ mm}$ , type „30-B“, two-row; bracket width $h_{Bü} = h_{Bü,eff} = 220 \text{ mm}$ , type „30-A“ 2 x single-row, $h_{Bü,eff} = 220 \text{ mm}$														
	Rod	Distance	Bracket dimension			B	bi	t							
	Ømm	s/mm	x/mm	$h_{Bü}/\text{mm}$	$l_{Bü}/\text{mm}$	mm	mm	mm							
	Schiene 30-A/B-8/15	8	150	170	220	320	230	50	25	391.0	606.5				
	Schiene 30-A/B-8/20	8	200	170	220	320	230	50	25	387.9	457.3				
	Schiene 30-A/B-8/25	8	250	170	220	320	230	50	25	310.3	372.9				
	Schiene 30-A/B-10/10	10	100	170	220	390	245	75	30	416.5	813.2				
	Schiene 30-A/B-10/15	10	150	170	220	390	245	75	30	416.5	542.1				
	Schiene 30-A/B-10/20	10	200	170	220	390	245	75	30	322.4	411.1				
	Schiene 30-A/B-10/25	10	250	170	220	390	245	75	30	257.9	334.8				
	Component height $h = 350 \text{ mm}$ , type „35-A“ 2 x single-row, $h_{Bü,eff} = 270 \text{ mm}$														
	Bezeichnung	Rod	Distance	Bracket dimension			B	bi	t						
	Ømm	s/mm	x/mm	$h_{Bü}/\text{mm}$	$l_{Bü}/\text{mm}$	mm	mm	mm							
	Schiene 35-A-8/15	8	150	170	270	320	280	50	25	476.0	719.5				
	Schiene 35-A-8/20	8	200	170	270	320	280	50	25	475.0	539.6				
	Schiene 35-A-8/25	8	250	170	270	320	280	50	25	380.0	440.1				
	Schiene 35-A-10/10	10	100	170	270	390	295	75	30	501.5	945.8				
	Schiene 35-A-10/15	10	150	170	270	390	295	75	30	501.5	630.5				
	Schiene 35-A-10/20	10	200	170	270	390	295	75	30	391.2	475.9				
	Schiene 35-A-10/25	10	250	170	270	390	295	75	30	313.0	387.7				
	Component height $h = 400 \text{ mm}$ , type „40-A“ 2 x single-row, $h_{Bü,eff} = 320 \text{ mm}$														
	Bezeichnung	Rod	Distance	Bracket dimension			B	bi	t						
	Ømm	s/mm	x/mm	$h_{Bü}/\text{mm}$	$l_{Bü}/\text{mm}$	mm	mm	mm							
	Schiene 40-A-8/15	8	150	170	320	320	330	50	25	561.0	832.9				
	Schiene 40-A-8/20	8	200	170	320	320	330	50	25	561.0	624.7				
	Schiene 40-A-8/25	8	250	170	320	320	330	50	25	449.7	507.3				
	Schiene 40-A-10/10	10	100	170	320	390	345	75	30	586.5	1079.1				
	Schiene 40-A-10/15	10	150	170	320	390	345	75	30	586.5	719.4				
	Schiene 40-A-10/20	10	200	170	320	390	345	75	30	460.0	540.8				
	Schiene 40-A-10/25	10	250	170	320	390	345	75	30	368.0	440.6				
	Schiene 40-A-12/10	12	100	170	320	460	350	100	35	595.0	975.9				
	Schiene 40-A-12/15	12	150	170	320	460	350	100	35	602.6	726.0				
	Schiene 40-A-12/20	12	200	170	320	460	350	100	35	393.4	489.9				
	Schiene 40-A-12/25	12	250	170	320	460	350	100	35	314.7	398.5				
										37.9	76.2				

# Measurement values of our classics

## Concrete grade C35/45

Measurement of the carrying capacity as per DIN EN 1992-1-1 and the DBV leaflet „Reverse bending of concrete steel and requirements for storage boxes as per Eurocode EC2“.

„Quick Schienen“ Types A and B with dimensions in [mm] and component assumptions h

Component height h = 150 mm, type „15-B“, two-row; bracket width hBü = hBüeff = 70 mm								
Type	Rod	Distance	Bracket dimension			B	bi	t
	Ømm	s/mm	x/mm	hBü/mm	lü/mm	mm	mm	mm
Schiene 15-B-8/15	8	150	170	70	320	100	100	35
Schiene 15-B-8/20	8	200	170	70	320	100	100	35
Schiene 15-B-8/25	8	250	170	70	320	100	100	35
Schiene 15-B-10/10	10	100	170	70	390	100	100	35
Schiene 15-B-10/15	10	150	170	70	390	100	100	35
Schiene 15-B-10/20	10	200	170	70	390	100	100	35
Schiene 15-B-10/25	10	250	170	70	390	100	100	35
Schiene 15-B-12/15	12	150	170	70	460	100	100	35
Schiene 15-B-12/20	12	200	170	70	460	100	100	35
Schiene 15-B-12/25	12	250	170	70	460	100	100	35

Carrying capacity values as per DIN EN 1992-1-1 with the DBV leaflet Reverse bending of concrete steel and requirements for storage boxes as per EC2					
Concrete strength $f_c = 35 \text{ N/mm}^2$		Composite conditions: $\eta_1 = 0,7$			
Transverse tensions $\sigma_{tr}$ in the joint $\sigma_{tr} = 0 \text{ N/mm}^2$			(positive = pressure)		
Shear force along the joint		Shear force transverse to joint - slab without shear reinforcement			
VWK-GL	VWK-VZ	VWK-GL		VWK-VZ	
VRd,i,eff [kN/m]	VRd,i,eff [kN/m]	indirect storage VRd,c,eff [kN/m]	direct storage VRd,c,Ges,eff [kN/m]	indirect storage VRd,c,eff [kN/m]	direct storage VRd,c,Ges,eff [kN/m]
118.9	194.1	16.3	40.8	40.8	40.8
93.1	155.4	14.8	37.0	37.0	37.0
77.6	132.1	13.8	34.4	34.4	34.4
198.3	316.7	21.7	54.2	54.2	54.2
145.8	221.4	18.9	47.3	47.3	47.3
109.3	173.8	17.2	43.0	43.0	43.0
88.6	145.2	16.0	39.9	39.9	39.9
172.1	250.3	18.9	47.3	47.3	47.3
129.1	194.1	17.2	43.0	43.0	43.0
103.3	160.3	16.0	39.9	39.9	39.9

Component height h = 200 mm, type „20-B“ two-row; bracket width hBü = hBüeff = 120 mm, type „20-A“ 2 x single-row, hBü,eff = 120 mm								
Type	Rod	Distance	Bracket dimension			B	bi	t
	Ømm	s/mm	x/mm	hBü/mm	lü/mm	mm	mm	mm
Schiene 20-A/B-8/15	8	150	170	120	320	130	50	25
Schiene 20-A/B-8/20	8	200	170	120	320	130	50	25
Schiene 20-A/B-8/25	8	250	170	120	320	130	50	25
Schiene 20-A/B-10/10	10	100	170	120	390	150	75	30
Schiene 20-A/B-10/15	10	150	170	120	390	150	75	30
Schiene 20-A/B-10/20	10	200	170	120	390	150	75	30
Schiene 20-A/B-10/25	10	250	170	120	390	150	75	30
Schiene 20-B-12/10	12	100	170	120	460	160	160	35
Schiene 20-B-12/15	12	150	170	120	460	160	160	35
Schiene 20-B-12/20	12	200	170	120	460	160	160	35
Schiene 20-B-12/25	12	250	170	120	460	160	160	35

198.3	355.4	21.1	52.7	52.7	52.7
178.6	271.8	19.2	47.9	47.9	47.9
142.9	221.7	17.8	44.5	41.8	44.5
297.5	623.2	29.5	70.4	73.7	73.7
282.4	420.5	25.8	64.4	64.4	64.4
211.8	321.4	23.4	58.5	58.5	58.5
169.5	261.9	21.7	54.3	49.6	54.3
258.2	378.1	34.1	81.9	85.3	85.3
172.1	265.5	29.8	74.5	74.5	74.5
129.1	209.3	27.1	67.7	67.7	67.7

	Schiene 20-B-12/25	12	250	170	120	460	100	100	35
	Component height h = 250 mm, type „25-B“ two-row; bracket width hBü = hBüeff = 170 mm, type „25-A“ 2 x single-row, hBü,eff = 170 mm								
Type	Rod	Distance	Bracket dimension			B	bi	t	
	Ømm	s/mm	x/mm	hBü/mm	lÜ/mm	mm	mm	mm	
Schiene 25-A/B-8/15	8	150	170	170	320	180	50	25	
Schiene 25-A/B-8/20	8	200	170	170	320	180	50	25	
Schiene 25-A/B-8/25	8	250	170	170	320	180	50	25	
<hr/>									
Schiene 25-A/B-10/10	10	100	170	170	390	195	75	30	
Schiene 25-A/B-10/15	10	150	170	170	390	195	75	30	
Schiene 25-A/B-10/20	10	200	170	170	390	195	75	30	
Schiene 25-A/B-10/25	10	250	170	170	390	195	75	30	
<hr/>									
Schiene 25-A/B-12/10	12	100	170	170	460	200	100	35	
Schiene 25-A/B-12/15	12	150	170	170	460	200	100	35	
Schiene 25-A/B-12/20	12	200	170	170	460	200	100	35	
Schiene 25-B-12/25	12	250	170	170	460	200	100	35	

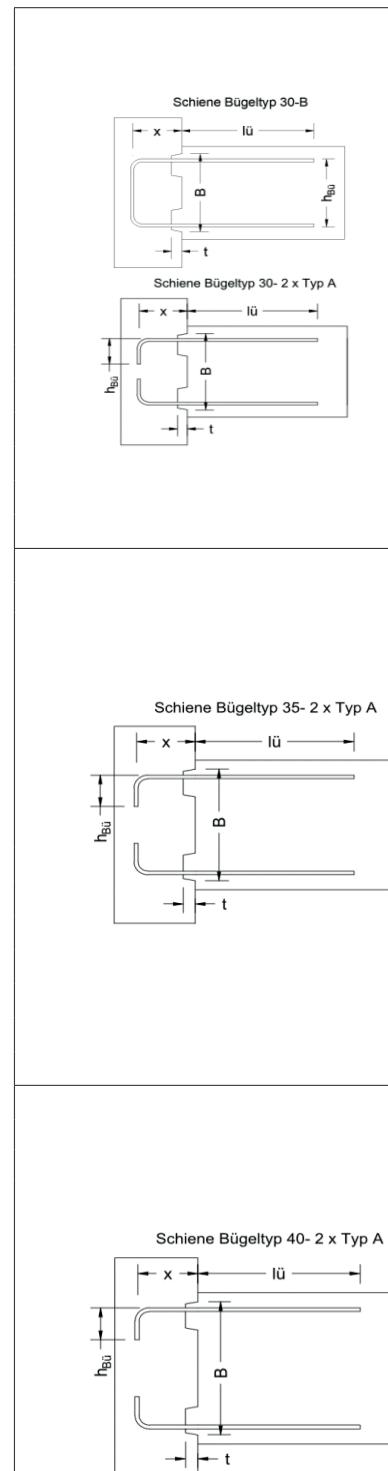
100.2	173.3	23.1	62.9	36.3	62.5
357.0	547.1	26.4	60.5	41.6	66.0
331.6	419.0	24.0	58.1	37.8	60.0
265.2	342.1	22.3	55.7	35.1	55.7
297.5	623.2	36.1	77.0	90.1	90.1
282.4	420.5	31.5	72.4	78.7	78.7
211.8	321.4	28.6	69.5	61.9	71.5
169.5	261.9	26.6	66.4	49.6	66.4
396.7	707.6	41.1	88.8	102.7	102.7
320.7	475.4	35.9	83.6	89.7	89.7
240.5	362.9	32.6	80.4	70.3	81.5
192.4	295.4	30.3	75.7	56.3	75.7

# Measurement values of our classics

## Concrete grade C35/45

Measurement of the carrying capacity as per DIN EN 1992-1-1 and the DBV leaflet „Reverse bending of concrete steel and requirements for storage boxes as per Eurocode EC2“.

### „Quick Schienen“ Types A and B with dimensions in [mm] and component assumptions h



Component height h = 300 mm, type „30-B“, two-row; bracket width h <sub>Bü</sub> = h <sub>Bü,eff</sub> = 220 mm, type „30-A“ 2 x single-row, h <sub>Bü,eff</sub> = 220 mm									
Type	Rod	Distance	Bracket dimension			B	bi	t	
			Ømm	s/mm	x/mm				
Schiene 30-A/B-8/15	8	150	170	220	320	230	50	25	456.2
Schiene 30-A/B-8/20	8	200	170	220	320	230	50	25	427.3
Schiene 30-A/B-8/25	8	250	170	220	320	230	50	25	341.8
Schiene 30-A/B-10/10	10	100	170	220	390	245	75	30	485.9
Schiene 30-A/B-10/15	10	150	170	220	390	245	75	30	473.9
Schiene 30-A/B-10/20	10	200	170	220	390	245	75	30	355.4
Schiene 30-A/B-10/25	10	250	170	220	390	245	75	30	284.3
Schiene 30-A/B-12/10	12	100	170	220	460	250	100	35	495.8
Schiene 30-A/B-12/15	12	150	170	220	460	250	100	35	406.4
Schiene 30-A/B-12/20	12	200	170	220	460	250	100	35	304.8
Schiene 30-A/B-12/25	12	250	170	220	460	250	100	35	243.8
Component height h = 350 mm, type „35-A“ 2 x single-row, h <sub>Bü,eff</sub> = 270 mm									
Type	Rod	Distance	Bracket dimension			B	bi	t	
			Ømm	s/mm	x/mm				
Schiene 35-A-8/15	8	150	170	270	320	280	50	25	555.3
Schiene 35-A-8/20	8	200	170	270	320	280	50	25	523.1
Schiene 35-A-8/25	8	250	170	270	320	280	50	25	418.5
Schiene 35-A-10/10	10	100	170	270	390	295	75	30	585.1
Schiene 35-A-10/15	10	150	170	270	390	295	75	30	574.8
Schiene 35-A-10/20	10	200	170	270	390	295	75	30	431.1
Schiene 35-A-10/25	10	250	170	270	390	295	75	30	344.9
Schiene 35-A-12/10	12	100	170	270	460	300	100	35	595.0
Schiene 35-A-12/15	12	150	170	270	460	300	100	35	492.2
Schiene 35-A-12/20	12	200	170	270	460	300	100	35	369.2
Schiene 35-A-12/25	12	250	170	270	460	300	100	35	295.3
Component height h = 400 mm, type „40-A“ 2 x single-row, h <sub>Bü,eff</sub> = 320 mm									
Type	Rod	Distance	Bracket dimension			B	bi	t	
			Ømm	s/mm	x/mm				
Schiene 40-A-8/15	8	150	170	320	320	330	50	25	654.5
Schiene 40-A-8/20	8	200	170	320	320	330	50	25	618.9
Schiene 40-A-8/25	8	250	170	320	320	330	50	25	495.1
Schiene 40-A-10/10	10	100	170	320	390	345	75	30	684.3
Schiene 40-A-10/15	10	150	170	320	390	345	75	30	675.8
Schiene 40-A-10/20	10	200	170	320	390	345	75	30	506.8
Schiene 40-A-10/25	10	250	170	320	390	345	75	30	405.5
Schiene 40-A-12/10	12	100	170	320	460	350	100	35	694.2
Schiene 40-A-12/15	12	150	170	320	460	350	100	35	664.1
Schiene 40-A-12/20	12	200	170	320	460	350	100	35	433.6
Schiene 40-A-12/25	12	250	170	320	460	350	100	35	346.9

Carrying capacity values as per DIN EN 1992-1 with the DBV leaflet Reverse bending of concrete steel and requirements for storage boxes as per EC2									
Concrete strength fc = 35 N/mm <sup>2</sup> Composite conditions: η1 = 0,7									
Transverse tensions σn in the joint σn = 0 N/mm <sup>2</sup> (positive = pressure)									
Shear force along the joint					Shear force transverse to joint - slab without shear reinforcement				
VWK-GL		VWK-VZ		VWK-GL		VWK-VZ		VWK-VZ	
VRd,i,eff [kN/m]		VRd,i,eff [kN/m]		indirect storage VRd,c,eff [kN/m]		direct storage VRd,c,Ges,eff [kN/m]		indirect storage VRd,c,eff [kN/m]	

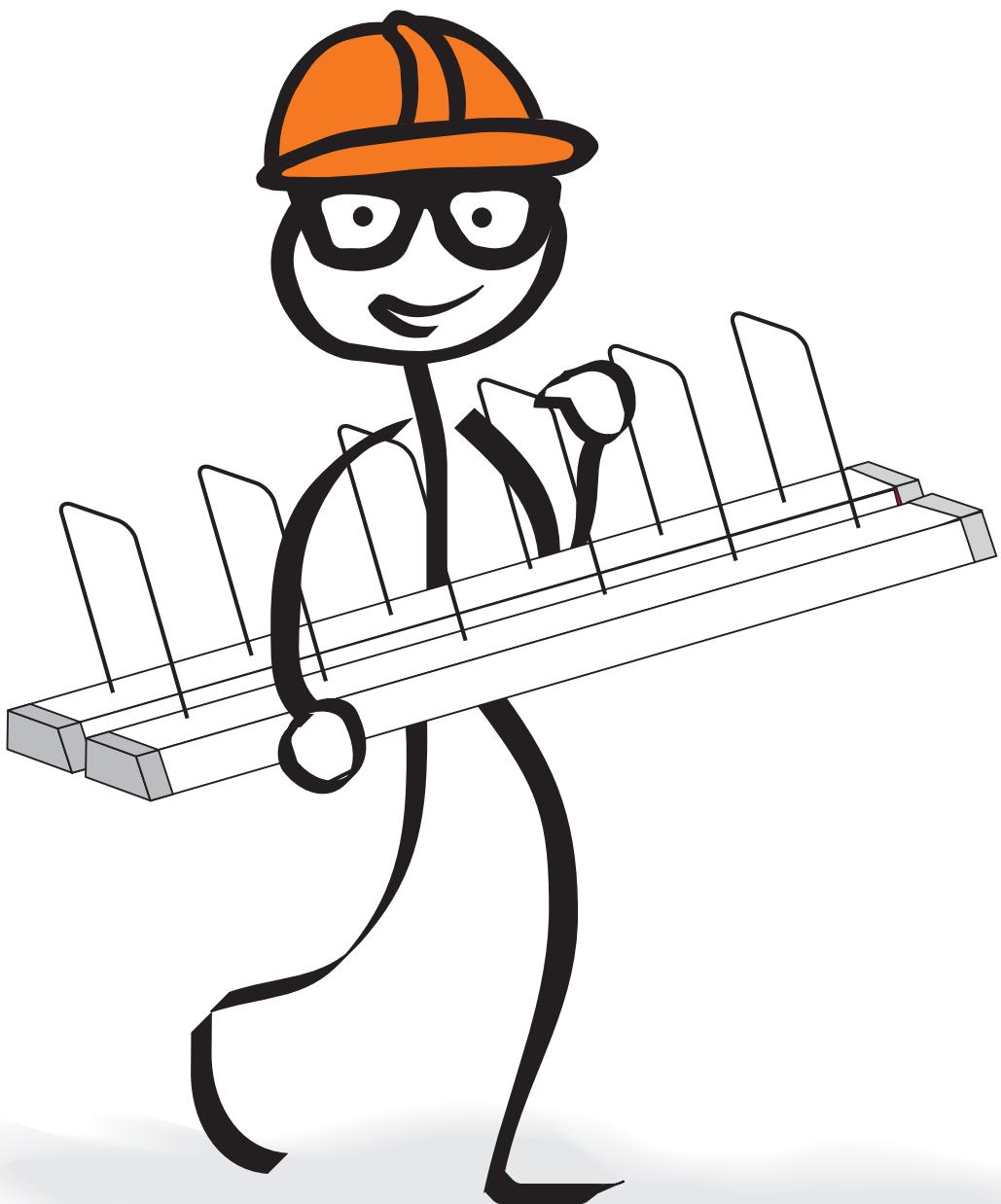


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